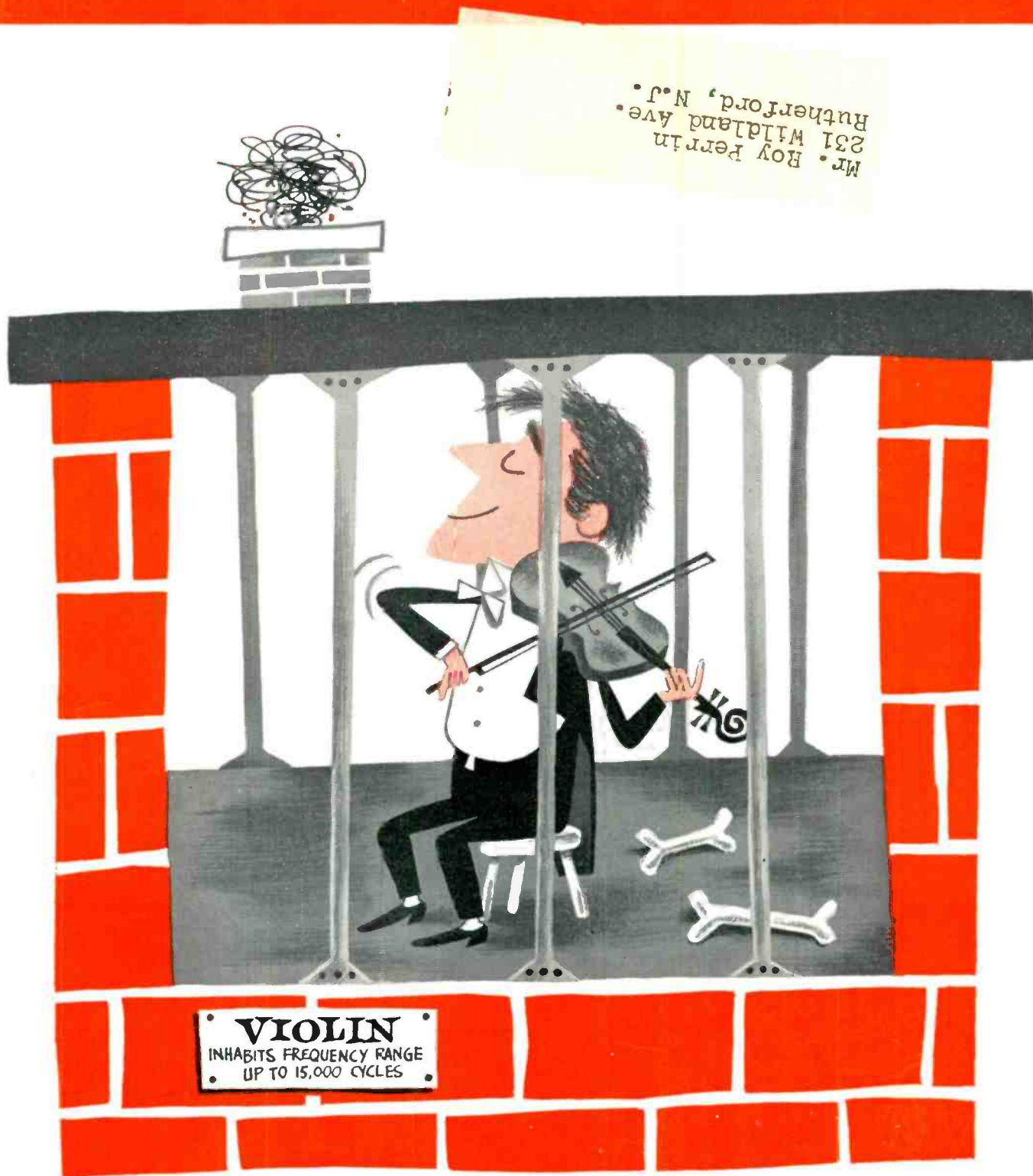




# TAPE RECORDING



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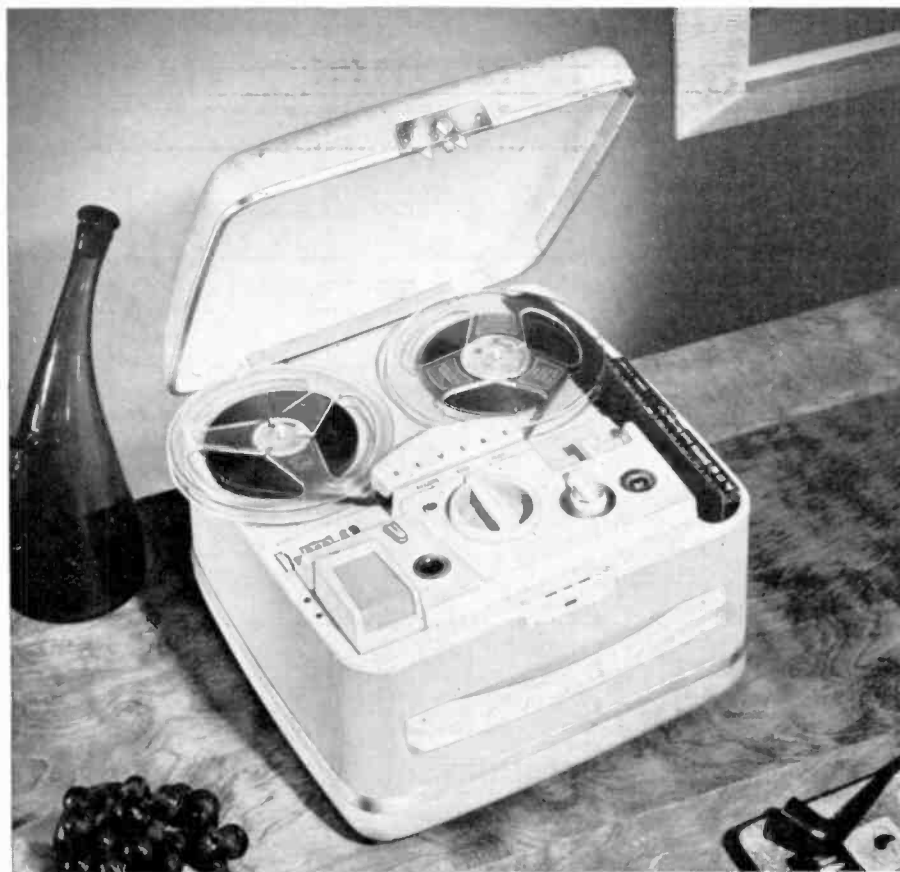
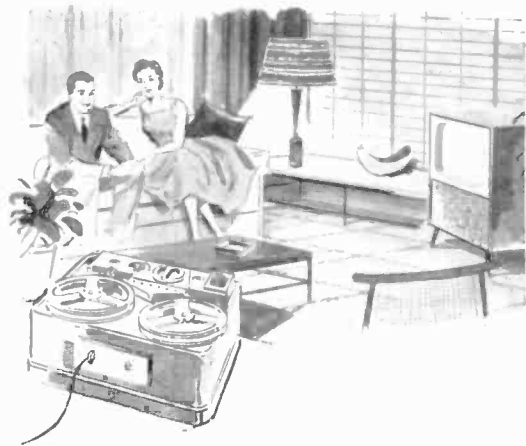
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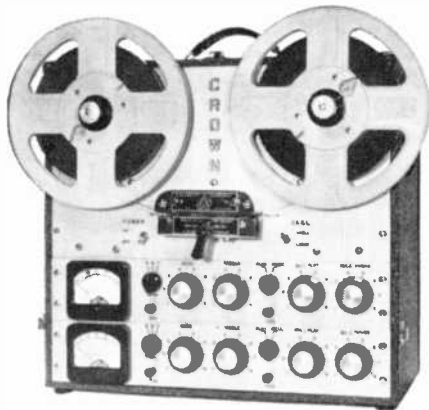
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±2 db 40-17000 CPS	7½	.09%	54 db
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Division of  
**INTERNATIONAL RADIO & ELECTRONICS CORP.**  
ELKHART, INDIANA

# TAPE RECORDING

VOL. 7 NO. 3

FEBRUARY 1960

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Cover courtesy Minnesota Mining & Mfg. Co.



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# CROSTALK

from the Editors

THE NATIONAL BETTER Business Bureau is questioning the propriety of some phonograph manufacturers advertising their units as "three-channel" stereo, whereas the units actually are two-channel but have three speakers. In some cases the manufacturers use a crossover network to separate the low and high frequencies which are fed to different speakers.

\* \* \* \* \*

THIS SEPARATION OF TONES, claim the manufacturers, entitles them to claim that the addition of another speaker does, in fact, add another sound outlet but does not and cannot provide more transmission channels than there are on the stereo record.

\* \* \* \* \*

TO BE CONGRATULATED are those manufacturers who, even though they employ the third speaker, refuse to dub their units as "three-channel" stereo.

\* \* \* \* \*

THE MAGNETIC RECORDING Industry official definition of stereo was employed by the National Better Business Bureau as the criterion. This definition calls for two or more channels to be complete from microphone to speakers. The NBBB asked the offending manufacturers to "exercise discipline in employing accurate, descriptive terminology" in their advertising so that they would enjoy public confidence.

\* \* \* \* \*

AS A MATTER OF FACT all stereo records are two-channel and, so far as we can now see, two channels is their absolute limit. If stereo ever does go three-channel commercially, tape will be the only medium on which it can be recorded.

\* \* \* \* \*

SOME YEARS AGO Pentron had a six-channel stereo unit which had all six channels on regular one-quarter inch tape. This was used for demcnstration at audio shows and was not commercially available. They had recorded a six-man combo, each man on a separate track and had placed speakers on the stage in the same position as the orchestra would have been grouped. The effect was very realistic.

\* \* \* \* \*

TOPS IN THIS FORM of stereo reproduction was the Philadelphia Orchestra—Bell Labs experiment in the 1930's. They placed a microphone before each instrument in the orchestra in Philadelphia and sent the pickup over telephone lines to Constitution Hall in Washington, D. C. A speaker for each line was set up on the stage in its proper place, corresponding to the placement of the mike. The result was excellent considering the equipment available in those days and the fact that the sound had to be sent over regular phone lines.

\* \* \* \* \*

THERE IS ONE firm in the midwest which is planning to bring out four-channel stereo, employing two two-channel heads in staggered form and having four preamps and amplifiers and four speakers. This will be real four channel, not like the ersatz "three-channel" mentioned above. This is something for real dyed-in-the-wool audiophiles to play with.

\* \* \* \* \*

SINCE WE HAVE two ears, it seems but logical that two-channel stereo is plenty and here to stay. Stereo recordings are made with three channels but this is done to give the sound engineers the opportunity to properly balance the resultant two-channel tape or disc made from the recording and to give them maximum control.

\* \* \* \* \*

SO IF YOU see an ad for three channel stereo—take a second look—it might have been invented by an adman madman, not an engineer.

\* \* \* \* \*

THE FIRST HI-FI SHOW to be run under the auspices of the Magnetic Recording Industry Association will be held in San Francisco's famed Cow Palace from January 23-26. If you are nearby do plan to stop in. There will be live demonstrations of recording techniques featuring the Limelighters trio.



# NEW TAPES

★—Fair    ★★—Good    ★★★—Very Good    ★★★★—Excellent

## CLASSICAL



Music        ★★★★★  
 Artists      ★★★★★  
 Performance ★★★★★  
 Fidelity     ★★★★★

**TCHAIKOVSKY SYMPHONY #4**  
 The Mannheim National Symphony, Herbert Albert, conducting  
**LIVINGSTON 4T-4**  
 4-track, 7 1/2 ips  
 \$8.95...42 mins.

A masterpiece, quite sensitive and moving. You become enveloped in the music which, thanks to the well thought out stereo directionality, surrounds you and gently tugs your listening apparatus toward it.

Wonderfully clean yet luxuriously resonant sound, beautifully engineered. This tape is one that should be played when you have the time to sit and really listen. There is an overall balance about the orchestra that is a joy to behold. The sound is not boxed-in; it is spacious, yet well tied together in one delightful package of well played, well recorded music.

Fidelity brilliance, a pleasure from start to finish.



Music        ★★★★★  
 Artists      ★★★★★  
 Performance ★★★★★  
 Fidelity     ★★

**RHAPSODY ON A THEME OF PAGANINI, OP. 43, by Rachmaninoff**  
 Rubinstein; Reiner; Chicago Symphony Orchestra  
**RCA KCS-2005**  
 4-track, 3 3/4 ips, cartridge  
 \$6.95...24 mins.

When composing this, Rachmaninoff had a choreographic plan in mind thinking that he could interest Mikhail Fokine, a Russian choreographer, in doing a ballet. He did just that eventually, and his suggestion that the ballet be based on the legend about Paganini, who sold his soul

to an evil spirit, was also followed. Without having seen the ballet, the music is such it is not too difficult to imagine your own choreographic effects.

Mr. Rubinstein, who plays no favorites when it comes to composers, is the greatest. He loves to play, and those who favor their work generally perform it exceptionally well. Such is the case with this masterful keyboard interpreter.

The balance of piano and orchestra is excellent. Reproduction on this cartridge, however, is not as rich nor does it possess the usual high quality of the majority of RCA releases.



Music        ★★★★★  
 Artists      ★★★★★  
 Performance ★★★★★  
 Fidelity     ★★★★★

## STRAUSS CONDUCTS STRAUSS

Emperor Waltz, Tales From the Vienna Woods, The Blue Danube, Voices of Spring, Vienna Blood  
 Eduard Strauss conducts the Orchestra of the Vienna State Opera  
**STEREOPHONIC MUSIC SOCIETY S16**  
 4-track, 7 1/2 ips, reel-to-reel  
 \$7.95...44 mins.

It was a boon to music lovers everywhere when Johann Strauss decided on a musical career contrary to his father's wishes that he be a merchant. His works have contributed much to musical culture.

His waltzes were small tone-poems with new and interesting modulations and beautifully conceived rhythmic and harmonic details. The selections on this delightful release bear this out perfectly. Bubbling, three-quarter time charmers.

Stamp this one "Must Get" if you cotton to waltz music. Spacious stereo sound welded solidly together. Both conductor and orchestra perform superbly.

## POPULAR



Music        ★★★★★  
 Artists      ★★★★★  
 Performance ★★★★★  
 Fidelity     ★★★★★

## MORE SONGS OF THE FABULOUS FIFTIES

Side 1: All the Way, Tom Dooley, Smoke Gets in Your Eyes — Moonlight Love, Cherry Pink & Apple Blossom White, Moments to Remember, Hernando's Hideaway

Side 2: Memories Are Made of This, My Happiness, Theme from "The Threepenny Opera," On the Street Where You Live, It's Not For Me To Say, Mockin' Bird Hill

Roger Williams with Orchestra directed by Marty Gold  
**KAPP KT-41015**  
 4-track, 7 1/2 ips, reel-to-reel  
 \$7.95...34 mins.

"Mr. Piano," Roger Williams was once dubbed and rightfully so. He doesn't just play a piano, he makes it interpret a melody and speak its interpretation.

We had all heard Tom Dooley so often we were not happy at the prospect of listening again, but we had a surprise in store. Mr. Williams' arrangement is absolutely great. In fact, all the selections on this tape are of more recent popularity, but they are certainly not played routinely.

Comparing the Theme from "The Threepenny Opera" with Mack the Knife gave us a real jolt. How anything so lovely could be comparable to something so ridiculous as Mack the Knife is beyond us.

The orchestra accompanying Mr. Williams is by no means mediocre. All in all, this is quite a singable, danceable, listenable tape.



Music        ★★★★★  
 Artists      ★★★★★  
 Performance ★★★★★  
 Fidelity     ★★★★★

## TRY A LITTLE TENDERNESS

Side 1: I've Grown Accustomed To Her Face, It's The Talk of the Town, How Long Has This Been Going On? It's Easy To Remember, The Song Is You, As Time Goes By

Side 2: Lover Man, That's All, When I Fall In Love, Crazy She Calls Me, I Got It Bad, Try A Little Tenderness

Tyree Glenn With Strings and Rudy Tylor's Orchestra

**ROULETTE RTC-504**  
 4-track, 7 1/2 ips  
 \$7.95...38 mins.

In this mad, scurrying thing called life we could all do with not a little, but a whopping big dose of tenderness. So often have we contended that most all music is good if given the proper treatment, the proper expression and arranging.

Tyree Glenn can certainly express on the slide trombone and vibes. He is a musician's musician. Alternately, he makes the trombone growl and purr. Delightful string backing.

Enchanting standards, orchestrally tailored to fit the mood they represent; tender jazz, expertly performed. Nice to listen or dance to.

Top drawer fidelity.

## STRICTLY FOR DANCING

Anything Goes, Moonglow, Hindustan, June in January, Hold Me, I Found A Million Dollar Baby, Button Up Your

LIVINGSTON presents **LENNY HERMAN**  
 "KING OF STEREO"  
 SHOW TUNES and OLD FAVORITES  
 4T-5 4 TRACK \$7.95



Music ★★★★★  
 Artists ★★★★★  
 Performance ★★★★★  
 Fidelity ★★★★★

Overcoat, Melody of Love, Honeymoon, In A Little Spanish Town, Dreamy Melody, Small Hotel, A Pretty Girl Is Like A Melody, Swinging Down the Lane, Ain't She Sweet

Max Pillar and His Dance Band  
 BEL CANTO STB/54  
 2-track, 7 1/2 ips  
 \$6.95... 22 mins.

When Max Pillar and his band perform, it is done with a purpose and that purpose is to get people out of their chairs and on the dance floor. This release accomplishes that purpose very well.

The music is gay and bouncy and quite fast moving. Should anyone try to keep up the pace of dancing to every number on this tape, they would end up stumbling for the nearest chair. But for dancing to a few numbers, it is most appropriate.

Selections were well chosen for this release, they are selections which will appeal to folks of all ages.

Fidelity is excellent and we most certainly do recommend this for your next dance party.



Music ★★★★★  
 Artists ★★★★★  
 Performance ★★★★★  
 Fidelity ★★★★★

AN EVENING WITH LERNER & LOWE  
 Brigadoon: Overture, Come to Me, Bend to Me, Down on MacConnachy Square, There But for You Go I, The Heather on the Hill, I'll Go Home with Bonnie Jean, Almost Like Being in Love.

My Fair Lady: Overture, Wouldn't It Be Lovely, With A Little Bit of Luck, On the Street Where You Live, Get Me to the Church on Time, Show Me, I've Grown Accustomed to Her Face, Finale: I Could Have Danced All Night

Robert Merrill, Jan Peerce, Jane Powell, Phil Harris with the RCA Victor Symphony Orchestra and Chorale, directed by Johnny Green

RCA GPS-242  
 2-track, 7 1/2 ips, reel-to-reel  
 \$15.95... 45 mins.

It appears that there was quite a collection of singing talent assembled for this, but unfortunately it was terribly miscast. The singers just don't seem to fit the songs they sing.

Mr. Peerce shakes the air with his booming voice and at times we find it difficult to discern what he is singing. We get the range, but not the words.

So too, does Mr. Merrill pour it on, but he at least keeps more the quality of a musical, rather than an opera.

# IT'S THE BIGGEST NEWS IN STEREO TAPE!

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All 3 Volumes .....\$5.96

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## TAPE RECORDING

### Severna Park, Md.

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Volume 5 @ \$2.75

Volume 6 @ \$2.75

2 Volumes (specify which 2) @ \$4.48

3 Volumes @ \$5.96

Name .....

Address .....

City .....Zone.....State.....

Miss Powell's voice is sweet, but she seems subdued in a duet with Mr. Merrill.

Phil Harris won't ever sound like anything but a Southerner, from the *deep* South. He has an easy manner, however, which makes pleasant listening.

Except for the fact that the orchestra is somewhat faded in favor of the singers, the reproduction is quite good.

## SHOWS



Music ★★  
Artists ★★★  
Performance ★★★  
Fidelity ★★★

### BROADWAY '58-'59

From "Gypsy": Some People, Everything's Coming Up Roses, Mama's Talkin' Soft, Together Wherever We Go, Small World, You'll Never Get Away From Me  
From "Redhead": I Feel Merely Marvelous, Uncle Sam Rag, Look Who's in Love, I'll Try, My Girl Is Just Enough Woman for Me, Two Faces in the Dark  
From "Flower Drum Song": Love, Look Away, You Are Beautiful, Sunday, A Hundred Million Miracles, I Enjoy Being a Girl, Chop Suey  
From "Destry Rides Again": Once I Knew a Fella, Ring on the Finger, Hoop de Dingle, Anyone Would Love You, I Know Your Kind, I Say Hello

Eddie LeMar, His Piano and Orchestra  
WARNER BROS. WST 1304

4-track, 7 1/2 ips, reel-to-reel  
\$7.95....32 mins.

While original sound tracks or recordings of shows by the original cast make keen listening, they are not always danceable, although the songs are well suited to it.

Eddie LeMar has selected 24 sparklers from four of the biggest Broadway hits of '58-'59, and given them a brisk swinging arrangement, with a good touch, making them perfect for dancing.

The music moves along at a lively pace and Mr. LeMar's piano tinkling can be heard throughout. We note, however, that the brass dominates the percussion at times and blares out with a shrill sound.

Solid, sassy, swinging sound.



Music ★★★  
Artists ★★★  
Performance ★★★  
Fidelity ★★★★★

### GONE WITH THE WIND

Tara's Theme, Invitation to the Dance, Melanie's Theme, Ashley, The Prayer, Bonnie Blue Flag, Scarlet's Agony, War Belle Watling, Bonnie's Death, Rhett Butler, Bonnie's Theme, Ashley and Melanie (Love Theme), The Oath, Return To Tara  
Muir Mathieson conducting the Sinfonia of London

WARNER BROS. WST 1322

4-track, 7 1/2 ips  
\$7.95....38 mins.

This is the most complete version of the musical score from the motion picture *Gone With The Wind* ever made available to the public. The score was written by Max Steiner who took it to London and his friend Muir Mathieson to bring it to life on tape.

We cannot truthfully say that the music is as impressive as the picture, far from it. It is soothing, gentle background music, which does not seem to have the sparkle necessary to make it able to stand alone.

While the Sinfonia of London handles the score as well as it could possibly be handled, we find ourselves wishing the music had been left just where it belongs—with the motion picture. Here it achieves a stature it cannot obtain otherwise.

Stereo engineering and fidelity are excellent however.



Music ★★  
Artists ★★★  
Performance ★★★  
Fidelity ★★★★★

### ONCE UPON A MATTRESS

Side 1: Overture, Many Moons Ago, An Opening For A Princess, In A Little While, Shy, Sensitivity, The Swamps of Home, Normandy

Side 2: Song of Love, Spanish Panic, Happily Ever After, Man to Man Talk, Very Soft Shoes, Yesterday I Loved You, Finale

Original Cast; Musical Direction by Hal Hastings

KAPP KT 41012

4-track, 7 1/2 ips

\$7.95....44 mins.

Once Upon A Mattress is a musical comedy, based on the famed fairy tale of *The Princess And The Pea* with some modern interpretation thrown in.

Carol Burnett, who plays Winnifred, is a great comedienne and she has a clear, high-pitched, very loud voice which she uses to the utmost. The rest of the cast are adequate in their rolls, but it is Miss Burnett's charm and humor that stand out.

This recording is exceptionally pure; sound is sharp and distinct and the stereophonic effect is well directed. A gem for those of you collecting original show releases.

## MISCELLANEOUS



Music ★★★★★  
Artists ★★★★★  
Performance ★★★★★  
Fidelity ★★★★★

### MALLET MAGIC

Mocquitos' Parade March, Flapperette, Bumble Bee Bolero, Chinese Doll, Chiapanecas, Maxixe Mambo, Samba



Macabre, Maple Leaf Jump, Tulip Polka, Buffoon, Glockenspiel Gavotte, La Rosita  
 Harry Breuer and His Quintet  
 AUDIO FIDELITY AFST 1825  
 4-track, 7 1/2 ips, reel-to-reel  
 \$8.95...30 mins.

More — let's have more. Outstanding, different, imaginative arranging, completely enjoyable.

Harry Breuer's forte is marimba, vibraphone and glockenspiel. Put 'em all together in the manner of Mr. Breuer and you come up with an entirely new, fresh sound. His melodic excursions take you on an adventure into the world of music unlike any you've booked passage on to date.

Instruments played with mallets give off a crystal ring, "clean as a hound's tooth." And the speed with which they are manipulated is terrific.

Close miking, deep stereo depth, can't find anything but praise for this one in all respects.

### NEW TAPES RECEIVED

- Bel Canto, Louis and Keely, Louis Prima; Keely Smith, 4-track, ST/70
- Elektra, Songs of a Russian Gypsy, Theodore Bikel, 4-track, ETC-1501
- Elektra, Chain Gang Songs, Josh White, 4-track, ETC-1505
- Everest, Herman's Heat & Puente's Beat, Woody Herman, Tito Puente, 4-track, STBR-1014
- Hifitape, Bahia, Arthur Lyman, 4-track, R 815
- Kapp, Jane In Spain, Jane Morgan, 4-track, KT-41015
- Roulette, A Man Ain't Supposed To Cry, Joe Williams, 4-track, RTC-506
- Vanguard, The Queen's Birthday Salute, The Royal Artillery Band, 4-track, VTC 1602
- Vanguard, Beethoven Concert, Sir Adrian Boult and the Philharmonic Promenade Orchestra of London, 4-track, VTF 1605
- Vanguard, Berlioz Requiem, Hartford Symphony Orchestra; Fritz Mahler, conductor, 4-track, VTP-1610
- Verve, Seven Pieces, The Jimmy Giuffre 3, 4-track, VSTC-212
- Vox, George Feyer and His Orchestra Plays Jerome Kern—Cole Porter, 4-track, XTP 710

### HAVE FUN AT YOUR NEXT PARTY

Tape record this old fashioned melodrama and play it back. Good for a hundred laughs. Five parts, three male, two female . . . and a donkey. Full directions for sound effects. Complete set of scripts (six copies) as presented on air—only \$2.95 postpaid.

**HI-FI TAPE RECORDING**  
 Severna Park, Md.

# ASPIRIN WON'T CURE THIS HEADACHE

Science does not know what effect magnetization has on the electrical impulses of the brain and neither do we. We know, however, that permanent magnetization of your recording heads and tapes will give you a hi-fi headache; a headache caused by many factors inherent in normal recorder use.

This headache we can cure with Robins Head Demagnetizer (HD-6) or Robins Bulk Tape Eraser (ME-99) shown below. Both are listed by Underwriters Laboratories, Inc.



GIBSON GIRL®



Robins Head Demagnetizer for monaural and stereo tape recording heads (HD-6)

Removes permanent magnetization, reduces noise level, harmonic distortion and improves signal to noise ratio. U. L. approved. List \$10.00.



New Magnetic Bulk Tape Eraser (ME-99)

Assures greatly improved recordings by removing completely recorded and unwanted signals. Reduces background noise levels of tape from 3 to 6 db below normal erase head level. Accepts reels up to 10 1/2". U. L. approved. List \$33.00

"How To Get The Most Out Of Tape Recording" by Lee Sheridan, for the non-professional recordist, this book tells about how to buy and operate a tape recorder, developments in stereo, legality of tape recording, making money with a tape recorder, etc. (TE-128), 128 pg., illust. \$1.00.

Another Robins book "Tape Editing and Splicing" (TE-24), 24 page illustrated book, \$.35

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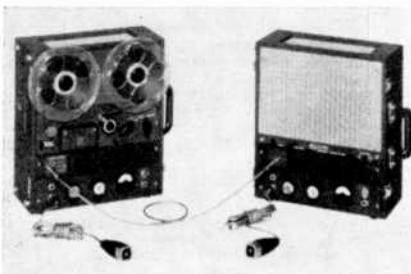
# NEW PRODUCTS

## TELECTRO 350



Telectrosonic Corp., 35-16 37th Street, Long Island City 1, N. Y., is marketing its Model 350 dual track recorder, which has speeds of  $1\frac{7}{8}$ ,  $3\frac{3}{4}$  and  $7\frac{1}{2}$  ips. Features include: push button controls, a solenoid actuated automatic shut-off, uniform braking, and a multi speaker system with a dual-cone 6" speaker with  $3\frac{1}{2}$ " tweeter to provide full range reproduction. The frequency response is 50 to 15,000 cycles and distortion is held to less than 2%. Also, there are output jacks for external speakers and amplifiers, high and separate low-level inputs for recording from microphone, phonograph, radio and TV set, a digital type counter to locate recorded material, a record level indicator to determine recording input level and a separate 'record' indicator to indicate unit is in record position. The recorder is priced to sell for \$149.95. Contact the manufacturer for details.

## ROBERTS UNITS



Roberts Electronics Inc., 1028 N. La Brea, Hollywood 38, California, has introduced two new matched units for home recording, the 90-S stereo recorder and the A901 recording amplifier. The 90-S incorporates an amplifier, pre-amplifier, and speaker with dual channel outputs and a precision—balanced hysteresis-synchronous drive motor. This recorder is priced at \$325. The A-901 amplifier includes separate microphone, a VU meter for second channel balance, and a woofer-tweeter speaker combination for full dimensional playback sound. The cost of the speaker-amplifier is \$149.50. The companion stereo components are electronically matched and designed with identical overall dimensions. For further details, contact Roberts Electronics.

## E-V CERAMIC MIKE



Electro-Voice Inc., Buchanan, Michigan, is marketing a new ceramic cardioid microphone. It is designed for public address, call and paging systems, amateur radio, home recorders, and general communications. This mike is dead from the rear making it especially suitable for amateur radio VOX operation. It is also tailored for single side-band. Other specifications include an output level of -55 db and a frequency response from 60 to 8000 cps. The cost is \$24.50. For further details, write the manufacturer.

## AMPEX CUSTOM LINE



Ampex Audio has introduced its 1960 Custom line of stereo high fidelity consoles. Shown above is Model 6662 Contemporary Walnut, which includes stereo AM-FM radio, audio-control pre-amp, and the Ampex stereo tape recorder which records stereo and monaural, and plays both two and four track stereo tapes. The Custom line is also available with a precision 4-speed stereo record player, or a combination of either plus the AM and FM radio tuner. All versions include the audio control center preamp, and a pair of matched speaker/amplifier systems. Each of the two amplifiers deliver 15 watts of power (total of 30 watts audio power, 60 watts peak), through correctly enclosed bass and treble sound projectors in each of the two channels. Consoles in this series are priced from \$675 to \$1295. Write Ampex for more information.

## UNIVERSAL AUDIO-CART

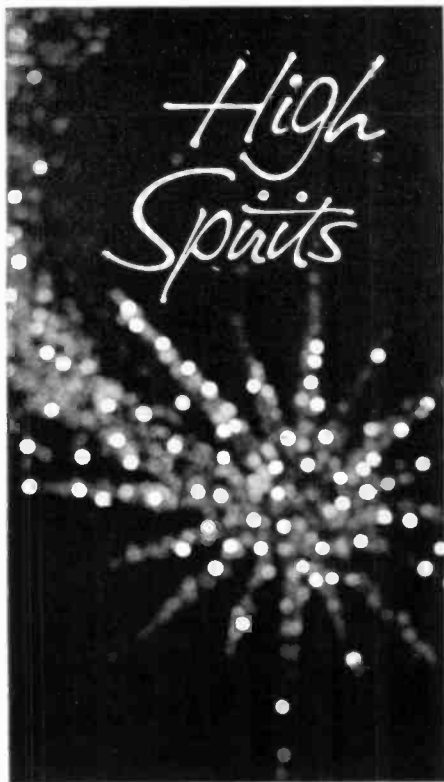


A mobile Audio-Cart has been introduced by Universal Woodcrafters, Inc., La Porte, Indiana. Strongly constructed of beautiful furniture veneer, the Audio-Cart has 3" wheels for moving from room to room, has three front compartments for holding 27 reels of tape; has a rear accessory compartment for holding microphones, extra reels, accessories, attachments, extension cords, and a special rear compartment for out-of-the-way storage of the lid of the tape recorder. Priced at \$29.95, this cart is available in a choice of light neutral mahogany, or utility pebble finish. Write to Universal for more information.

## CARTRIDGE RECORDER



Modernophone, Inc., 30 Rockefeller Plaza, New York 20, N. Y. has introduced a new tape recorder which will have a self-contained cartridge containing an endless reel of tape. Cartridges will be supplied in various time sequences, from 15 seconds up to 55 minutes. This recorder, while designed for Modernophone's own special purpose of contributing to learning efficiency, can also be used as a high quality general tape recorder for entertainment purposes. It contains a clock control which enables the individual to pre-set the machine for starting and stopping at any period selected. The machine can also be used without clock control for use as an ordinary tape recorder. For more information, and price, contact the manufacturer.



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- Berlioz .....Rakoczy March

**audiotape**

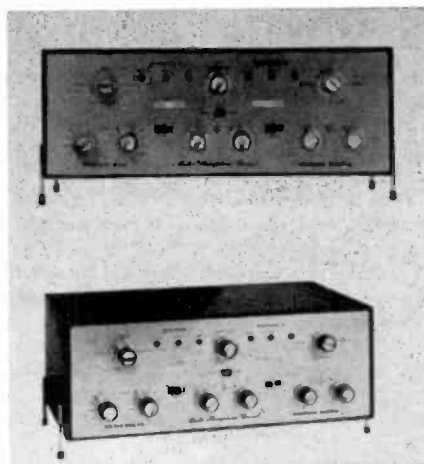
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444 Madison Ave., New York 22, New York  
Offices in Hollywood & Chicago

#### MODEL 210A MIKE

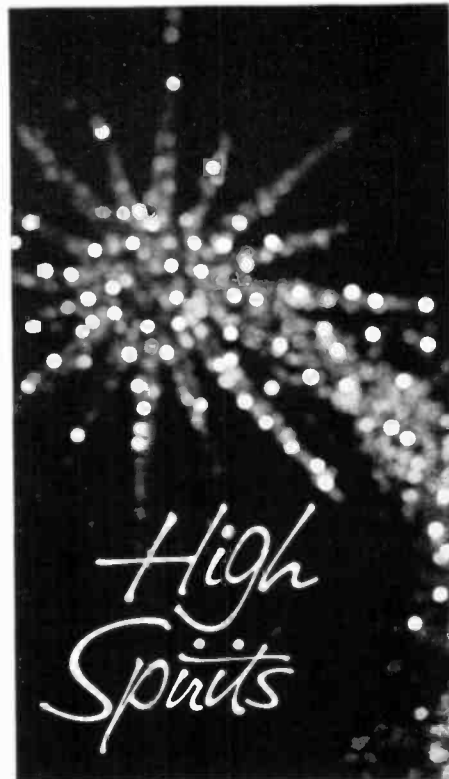


The Turner Company, 909 17th St., N.E., Cedar Rapids, Iowa, has introduced a new dynamic mike known as the Model 210A. This microphone has a smooth response from 40 to 20,000 cps; output level is —86 db at 50 ohm impedance, —80 db at 200 ohm impedance; an overall measurement of 9½ inches; and it can be mounted on desk stand, floor stand or boom. Complete with 20-foot plastic-jacketed 3-conductor shielded cable set, this omni-directional mike sells for \$125. Write to the Turner Company for more information.

#### STEREO CONTROL CONSOLE



Brand Products, Inc. has announced a new stereophonic control console on behalf of the Madison Fielding Corp. The console includes a new mixer control, plus 3rd channel output. It provides for 12 inputs including tuner, tape, microphone, phonograph, and others. There are five outputs. The panel contains nine knobs plus two switches for complete selection and control of any of the input channels for either stereo or monaural operation. It blends left and right channel in any proportion to feed a third channel. Inquiries may be directed to Brand Products, Inc., 11 Lorimer St., Brooklyn, N. Y.



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Here's a great opportunity for tape fans. "High Spirits," a sparkling program of toe-tapping classics, is now available from Audiotape dealers in a money-saving bonus package.

No matter what type of tape equipment you have, you can enjoy this exhilarating program, for it's available in two-track stereo, four-track stereo and dual-track monaural sound (all at 7½ ips on 1200 ft. of Audiotape)

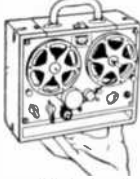
#### THE OFFER

You get the "High Spirits" recording and a 7" reel of Audiotape (on 1½-mil acetate base) for the price of two 7" reels of tape plus \$1.00. And since you're getting two 1200-ft. reels of professional-quality Audiotape—with "High Spirits" recorded on one of them—you're actually paying only a dollar for this fine program of lively classics. Don't wait. See your Audiotape dealer now.

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### HI-FI TAPE RECORDING

Severna Park, Md.

# TAPE CLUB NEWS

## Spanish Division Formed

World Tape Pals has established a Spanish Language Division and now includes a Spanish-language column in the club bulletin, Tape Topics. This new division is to be directed by Juan Manuel Handal, P.O. Box 385, La Paz, Bolivia.

Senor Handal's first meeting with U.S. tape pals was at Indianapolis. He was conducted on sightseeing tours and a party in his honor was held by nearly a dozen local club members.

After a most pleasant visit in Indianapolis, Juan flew to Dallas where he was met at the airport by Harry and Marjorie Matthews. Here he was a guest at a get-together at the home of some club members, he visited the Texas State Fair and attended a dinner and forum co-sponsored by Dallas civic groups to promote better U.S.-Latin American relations.

Before leaving, Juan was presented with a voluntary contribution of \$11.00 from Dallas members for the purpose of inserting advertisements in Bolivian newspapers regarding the new Spanish Division of World Tape Pals.

## New Club

We have received word of a new foreign club which, although it has been active locally for some time, just recently began to accept overseas memberships. It is known as The New Zealand Tape Recording Club and its secretary is Murray J. Spiers.

This club issues a Directory and Manual which lists club members, their interests, etc. It is folder style and is kept up to date by quarterly mailings.

A tape library is also maintained, which the club feels is of special interest to overseas members who wish to learn something about their "Little World In Miniature" in the South Pacific.

New Zealand members also listen to "Tape Digest" which is the club's "magazine" on tape. This travels around the Dominion bi-monthly on a round robin basis. Although this service cannot be extended to overseas members, copies will be sent them should they send in a tape.

We have included this new club in our box listing below. The club welcomes inquiries for membership.

## Where Are You?

The secretary of The Australian Tape Recordists' Association writes that they received an inquiry from a Mr. Herbert M. Siegel who neglected to include his address.

Secretary Wallen would be most happy to send along the information if Mr. Siegel will write again giving his address. Should the gentleman in question not read this, perhaps someone who knows him will.

Also, the secretary reports that mail addressed to Mr. Rus. Hughes, late of 2215 N.E. 4th Ave., Florida keeps coming back marked "return to sender." Should any reader know the whereabouts of this gentleman, the A.T.R.A. secretary would appreciate your letting him know.

## Traveling Voicespontent

VS-er Carl Williams of Amsterdam, New York, and the Club's Northeastern District Deputy, holds the unofficial record for making personal visits to his tape friends. The summer's travels brought Carl's total of voicespontents visited to well over 100. The novelty of meeting face to face a person you've gotten to know quite well just by tape has now worn off, Carl says. But the thrill and the pleasure are always there, he adds.

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J. P. Paquette, Recruiter  
1993 Morgan Boulevard  
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### CATHOLIC TAPE RECORDERS OF AMERICA, INTERNATIONAL

Jerome W. Ciarrocchi, Secretary  
26 South Mount Vernon Avenue  
Uniontown, Pennsylvania

### CLUB DU RUBAN SONORE

J. A. Freddy Masson, Secretary  
Grosse Ile, Cte, Montmagny,  
P. Que., Canada

### ORGAN MUSIC ENTHUSIASTS

Carl Williams, Secretary  
152 Clizbe Avenue  
Amsterdam, New York

### TAPE RESPONDENTS INTERNATIONAL

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

### THE VOICESPONDENCE CLUB

Charles Owen, Secretary  
Noel, Virginia

### UNITED RECORDING CLUB

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

### WORLD TAPE PALS, Inc.

Marjorie Matthews, Secretary  
P. O. Box 7211, Dallas 15, Texas

## FOREIGN

### AUSTRALIAN TAPE RECORDISTS ASSOC.

John F. Wallen, Hon. Secretary  
Box 970, H., GPO, Adelaide, South Australia

### TAPE RECORDER CLUB

A. Alexander, Secretary  
123 Sutton Common Rd.  
Sutton, Surrey, England

### THE NEW ZEALAND TAPE RECORDING CLUB

Murray J. Spiers, Hon. Secretary  
39 Ponsby Road  
Auckland, W.I., New Zealand

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

# TAPE IN EDUCATION

Robert C. Snyder

In a recent letter, Mrs. Nancy B. Lane of Wellesley, Massachusetts, asked for practical information on the use of the tape recorder in the elementary school classroom.

She commented in her letter that most articles she had seen in magazines spoke of the many uses of the tape recorder only in general terms and areas.

In fairness to the authors, however, there are good reasons for this. Trying to tell someone how to use a tape recorder for educational purposes is rather like trying to tell someone how to be creative or how to write a novel or compose a song. After all, one of the great features of the tape recorder is its usefulness in creating new audio teaching materials cheaply and quickly, yet of the highest possible quality.

But, perhaps we had better get to some practical thoughts and then we will outline the details of a possible use of the tape recorder for a common instructional situation in the elementary grades.

Essentially, a tape recorder is two things—a record player and a record maker.

As a record player, the tape recorder is a superior instrument, surpassing the usual disc record player in several ways. A good tape recorder has the capability of giving *sustained* higher quality reproduction than disc playing equipment. This is because of the wear that occurs in the grooves of the disc when played. After only a few playings the disc begins to lose frequency response and become scratchy—then the original quality is gone.

A taped recording, on the other hand, may be played hundreds or thousands of times with little or no appreciable loss in quality.

It is for this reason that many serious sound enthusiasts and teachers immediately copy their new records onto tape, play the tape, and file the record.

Moreover, many recordings of historical events or educational materials contain unwanted sections. Tape can easily be edited in advance to eliminate unwanted sections and group desired passages without the noticeable interruptions which would occur if the teacher were to try to shift from section to section of one or more discs.

Therefore, use your tape recorder as a record player for educational purposes just as you would use a disc record player. Present to your classes any useful illustrative or instructional materials which are already available on tape from your school board, state college, commercial tape recording companies or other sources. Add to these materials which you copy or excerpt from discs or motion picture sound tracks. Top off with your own tape recordings made from radio and television broadcasts and from public events which occur in your own town or within easy travel which you can record yourself.

As a record maker, the tape recorder has special advantages.

It is easy to operate. Even a beginner can obtain excellent recordings by following the directions given with his machine.

Tape recordings are inexpensive and can be of any desired length without waste of materials.

Recording tape can be erased and reused almost endlessly providing extreme economy in recordings for classes in speech, music, language, etc.

With a modern tape recorder and readily available accessories it is possible to make taped recordings of historic events, speech, drama, music, or other sound from almost any type of source. Patch cords or connecting cords of various types come with most new recorders today to permit taping directly from radio, television sound, motion picture sound projectors, public address equipment, disc players, and other tape recorders as well as through a microphone. Similar cords can be purchased for older machines from your audio-visual dealer or through a radio or electronic parts dealer.

As a record maker, because of ease of use and economy of operation, the tape recorder has two especially valuable uses for the teacher. There are preparation of well organized pre-tested audio presentations of instruction, commentary, music, etc., and use as an analytical device for self-evaluation of performance by both teachers and students.

Every teacher can find dozens—perhaps hundreds—of articles on audio-visual techniques and the preparation of instructional audio-visual presentations.

With a tape recorder the teacher can write out and voice in advance an ideal commentary on an experiment, a series of slides, a set of charts, maps, or other visual aids. The recorded commentary can be listened to objectively by the teacher before use, corrections made, omissions taken care of, and redundancies and unclear phraseology improved.

When this taped commentary is used in class the teacher knows there will be no digressions from the subject, no accidental omissions, and no running out of time with some material not yet covered.

The teacher also knows that the taped presentation will get the maximum amount of effective teaching into the given period because it has been well planned *and then executed exactly as planned.*

Use of pre-taped presentations also frees the teacher for other phases of the instruction—handling of equipment or exhibits, supervision of student performance of art or science activities covered in the taped instruction, etc.

Pre-taped presentations also permit use to be made of the abilities of others. Selections and excerpts from readings of prose, poetry and plays, renditions of instrumental or vocal music, or voicings of foreign languages can be pre-taped in unexcelled comparative presentations, which can be played over and over as needed without any variation in the technique or quality of the performance of any of the performers, and without any loss of quality in the taped recording.

(To be continued next month)

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# QUESTIONS & ANSWERS

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

### Oscillator Squeal

**Q**—I enjoy your magazine so very much that I cannot resist the temptation to write you and state the fact. For people who are interested in recorders, your magazine has no equal. Usually I read about other fellows' troubles. Now I have some of my own, but before I discuss mine I'll say something to the fellow who has the "Squeal" trouble on page 13 of your recent September issue. I have been through it myself and have only one suggestion. . . . as long as nothing can be done to actually remove the cause, I have found that if I turn on my machine several minutes before I intend to record from radio, this gives the machine time to warm up well and the oscillator seems to become stabilized and the whistle doesn't wander all over the dial. On my Crestwood, the whistle seems to level itself off somewhere beyond the range of hearing and doesn't bother any more. However it takes several minutes before this happens. There is one other real good solution. . . . get a good FM tuner.

Now about my own problem. My Crestwood, 303 (five years old) has developed a steady AC hum. This hum is only audible when the volume is down, and is not amplified when the volume is turned up. The machine plays as well as ever and also records OK except for the hum. However, the hum comes through with the recording. I have had a local service man examine the machine and he doesn't seem to be able to locate the trouble. Any suggestions? From my meagre knowledge of this subject, it sounds like a leaking condenser, but I don't know how to find it.

At the risk of making this letter too long, I want to add a comment about Mr. Alfred A. Greenburg's letter, printed in your December issue. I guess he proved that you can't please everyone. I was astonished to see that he thinks monaural was such a "flop." Also his statement that a tape cartridge machine is so "unique". He doesn't seem to realize that the tape business, like any other business has to go through its own process of evolution and growth. He probably doesn't know that even his LP discs are made from tape in the first place. In your reply to his letter, you might have reminded that there was a time when even a phonograph was "unique". . . along about the time Mr. Edison invented it. Well, it has been nice talking to you, and I hope you can give me some suggestion about how to get rid of the hum in my recorder.—L. F. B., Clayton, N. Y.

### Hum-m-m

**A**—While a basic hum of this sort may come from a number of sources we would suspect that your filter capacitor might be breaking down and need replacement. You might also have your technician

check the transformer in addition to the capacitor.

Other possible causes include an "open" in the microphone circuit resulting from a bad component or the failure of a resistor or capacitor in the unit which creates an AC power loop in the chassis. Such troubles are difficult to find and it takes thorough probing with a scope to locate the source of the trouble. The Sigma Electric Co. in New York City seems to be the last stronghold for Crestwood parts and they may be able to help.

### 4 Track

**Q**—I have a Wollensak monaural I am considering converting to 4 track with a new head and a record/play amp. I use the equipment primarily for recording FM and record music. Is the fidelity of 4 track monaural recording as good as my present 2 track system. Who makes the best 4 track replacement head. C. W. M., St. Paul, Minn.

**A**—Speed for speed there should be no difference in the fidelity but there will be a drop in volume due to the lesser width of the tracks. This sometimes increases the signal to noise ratio but I believe you will find the conversion satisfactory.

The Nortronics Company makes a head kit for the Wollensak which has the new head already mounted on a bed plate. All that needs to be done to make the conversion is to remove the old head and plate, insert the new one and connect up the leads. The Wollensak company is also offering a head assembly, which is the Nortronics unit. We would suggest you contact the respective companies.

### Noisy Motor

**Q**—I wonder if you or your readers can tell me if there is anything I can do in this matter.

I have a V-M tape recorder, a Minerva-Crescent and an RCA Victor, and they all have worked very satisfactorily over a period of years with very little trouble. The Minerva-Crescent operates so silently that even if you hold your ear within a foot of the machine there is practically no noise of any kind whatever. The V-M is almost as silent. The RCA Victor, however, has quite a loud motor noise—the kind you'd expect any motor to make. As this machine has three speakers and very good volume, I wonder if there is anything that could be done to cut down the noise of the motor.—E. M. G., Montreal, Quebec, Canada.

**A**—We suggest you check the motor fan for bent blades and the mechanism itself for worn idlers, belts or pulleys. If it definitely is the motor, it may be in need of new bearings or some oiling. You might remove it from the chassis and run it by itself as a double-check. A new motor may be necessary.

# FEEDBACK

Excerpts from readers' letters will be used in this column.

Address all correspondence to: The Editor, HI-FI TAPE RECORDING, Severna Park, Maryland.

To the Editor:

I note with considerable interest your letter to Mr. Alfred Greenberg which appears in the December issue of HI-FI TAPE RECORDING. May I say that, although I would agree with your ultimate aim, I certainly take exception to a large amount of what you have to say to make your point for the four-track tapes.

First of all, it is NOT generally true that the tape is priced approximately the same as that of the record, and most certainly not less. You may be able to find a specific instance of the latter, but I consider it very misleading to your readers to imply that this will be true generally. It is not even true on two-record sets most of the time. Let us be realistic. Very few popular or classical selections are of a length which requires two stereo records to record them completely. However, as long as you have cited a case in which the two are cheaper, I would cite a case in which they are not. Let us consider a popular album by Kapp Records: Songs of the Fabulous Forties with Roger Williams at the piano. I believe this is a particularly good choice since Kapp is a company whose library is available on tape ONLY in the four-track mode. On stereo records this set is a two-record album and their records are \$4.98 list price for a total of \$9.96. The quarter-track stereo tape of this recording lists at \$11.90. Now, let us consider the discount price. In today's issue of *The New York Times* a shop has an advertisement which notes that records listing at \$4.98 may be purchased for \$3.69. This, for two, will be \$7.38. Now from personal experience, I know the discount price of the tape to be \$9.68. You will note that the tape price is approximately \$2 more in each case. Now let us consider another very popular record from MGM: The soundtrack of *Gigi*. List is \$5.95 for the disc, \$7.95 for the tape. The discount price is \$4.29. Again, by experience, the tape was \$6.50. I am able to obtain many of the \$7.95 tapes for \$5.95, but in many cases the records are about \$4, so there we are again. I think it only fair to your readers to state that for most recordings, the tape will be about \$2 more than the recording on records. If for certain recordings it should be less, that is fine. Personally, I think the tape is more than worth the additional two dollars and so will many of your readers.

As for your comments on monaural tapes, well, for most people the fact that Muzak and others make available background music on tape will be about as much use as a reduction of \$50 in the price of a Rolls Royce. Monaural tapes were better than their disc equivalents, but not by a great deal and certainly not, to most people, by the many dollars asked for them. (I have some pre-recorded monaural tapes in my collection, so I am not merely speaking from hearsay).

Let us now consider the cartridge tapes. You state that some six companies have announced they will bring music out in cartridge form. I'll even concede that perhaps they have. For example Mercury, one of the major record firms, had released exactly TWO such tapes at the time of the New York High Fidelity Music Show early in October. If there have been further releases, I have not seen any advertisement to that effect. I would also note in passing that the cartridge tape of the *1812 Overture* is exactly the same price as the four-track tape at 7½ ips, each being \$7.95. This is also exactly \$2 more than the stereo disc of the same recording. To choose a cartridge tape recorder instead of a reel one at the present time is, in my opinion, a waste of money.

In the December issue you also have an article showing how the tape can be removed from the cartridges to play on a reel-to-reel type machine. Fine. What you fail to state is that many machines do not have the proper equalization built into them at 3¾ ips for the RCA tapes and that the tapes are NOT going to sound as they should when played on such machines. There is considerable high frequency "boost" in the playback pre-amps of the cartridge machines and when they are played on machines without it they are going to give the impression that the sound from them is nothing like the quality that has been reported. Also it just so happens that RCA will issue the four track tapes in the not-too-distant future. As you announced in a previous issue that you were on the "inside" in the tape industry you should have included this as well.

You have stated several times that the quality of the 7½ ips four-track stereo tapes is equal to that we have had with the 7½ ips half-track stereo tapes. May I say that I agree but in fairness to your readers you should state under exactly what conditions the statement is true. The quarter-track tapes require a head which is much more precision built than did the half-track ones for the same quality. The tape pre-amplifier must be a better engineered unit capable of a much higher gain but with very low noise because the output of the quarter-track head is less than that of a half-track head. Yet your magazine consistently runs articles which, in effect, suggest that all one needs to do is to install a quarter-track head and all will be well. The less expensive tape recorders had in many cases tape pre-amps which were barely adequate to take the signal from a half-track head and amplify it to acceptable quality. Not once have you mentioned the matter of head impedance, or whether the replacement head had exactly the same electrical characteristics as

(Continued on page 33)

## HOW'S YOUR HEARING?

### Tapebook #2

by James M. Laing, M.Ed.

Are You Getting The Most Out of Your HI-FI or Stereo?

Can You Understand Speakers? Hear Lyrics Plainly?

Protected hearing is the key to your listening enjoyment.

Hearing is one of your most precious human possessions. It, however, like every other precious possession, requires protective care. Without proper protection your hearing can leave you completely, and without warning.

To properly protect your hearing there are two things you must do: (1.) test your hearing periodically, and (2.) seek early medical guidance as soon as a hearing test indicates a possible hearing loss.

Periodical hearing tests are important because, unlike most other ailments, a hearing loss gives you little positive warning. A hearing loss can creep into your life so gradually that you can be completely unaware of its presence.

Test your hearing . . . and be sure!

To help you check your hearing periodically is the purpose of this "hearing check recording."

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The Philharmonic-Symphony Orchestra of New York, set up in Carnegie Hall, with its musical director Dimitri Mitropoulos. The single pick-up microphone hangs about 30 ft. in front of the orchestra, above the audience. CBS Photo

# *Recording Large Orchestras*

*by L. L. Farkas*

*... not always an easy task, but certainly a most rewarding one.*

**L**ARGE orchestras, particularly those devoted to the classical and symphonic type of music, are best recorded by using a distant perspective. Here a close and distinct quality of tone is not the aim, but rather a full and pervasive blend of all the voices of the orchestra.

For this kind of pick-up you must return to the straight set-up. Location of the various instruments is similar to the arrangement used for close perspective; the main difference lies in the large increase in distance between the microphone and the orchestra. Naturally this precludes the use of this kind of set-up in the home or the small hall. But since it is used to record large orchestras, it must be assumed that such groups will normally be playing in a large hall, in a theater, or outdoors where space will not be at a premium.

There are two methods for making the straight distant-perspective type of set-up. In the first one you set the microphone in a trial position approximately thirty feet away from the first row of instruments, which are usually the strings, and about twenty feet above their level. Probably the easiest way to position the microphone at that height is to hang it

with its face tilted downward at an angle toward the strings. Once the microphone is set in this spot, check it by recording a selection featuring the string section alone. If the tones of the instruments do not have sufficient brilliance, vary the position of the microphone either forward or back until the strings have acquired their smooth singing quality. You can then proceed to set the other sections behind the violins, varying the relative position of the various instruments until you have obtained the correct balance of volume and perspective.

Now while this method of setting the strings and then moving the other portions of the orchestra to make them fit may work perfectly well where space is not limited, other means must be found for setting up the large orchestra in places where the instruments must remain relatively fixed. The general and the easiest method of making the set-up for the symphonic orchestra which usually fills the whole stage of a hall or theater is to shift the location of the microphone. In practice a tentative position is checked and the microphone is moved until a compromise can be effected in which

the levels of sound as well as the perspective from the different sections are approximately the same. The location of the instruments are then shifted only for minor changes which affect the balance within a section without actually disturbing the overall balance of the orchestra.

Most distant pick-ups are made with only one microphone; but there are times when one pick-up beam is not wide enough to cover the area occupied by the full orchestra. Now while this condition can be remedied by pushing back the microphone, often space limitations or the room characteristics which affect the tone definition may prevent such a simple solution. Then you must resort to using two microphones for the pick-up.

In this case the two units, separated by a distance from one to two feet, are hung in the approximate location of the single unit. The increased coverage is obtained by turning the heads so that each beam encompasses roughly two-thirds of the instruments. Each microphone will thus pick up opposite sides of the orchestra. Their beams will overlap in the center, but this should not affect the overall pick-up. If it should increase the volume of the instruments directly in the center of the stage, all you need do to counteract the effect is to spread the two microphones slightly farther apart or, even more simply, turn the heads of the microphones so that they face further toward the sides of the orchestra. Of course you must have a mixer to connect these two microphones to your recorder. Adjust the mixer so that the output or volume from each microphone remains the same on the center instruments. You can do this by setting the control of each microphone separately while the orchestra is playing. Once you have your microphones adjusted in this way, you can then proceed with balancing the volume and perspective of the orchestra as you have with the other types of set-ups.

One thing you should bear in mind with the distant pick-up: with the added distance between the microphone and the orchestra, you will not be able to check the level of each instrument separately before combining its tones with those of the other instruments of the section. Rather you will have to listen to the tones of the section as a whole and make sure that no one instrument predominates. In your recording the section should sound more as a full but slightly distant chord than an intimate and distinct group of voices.

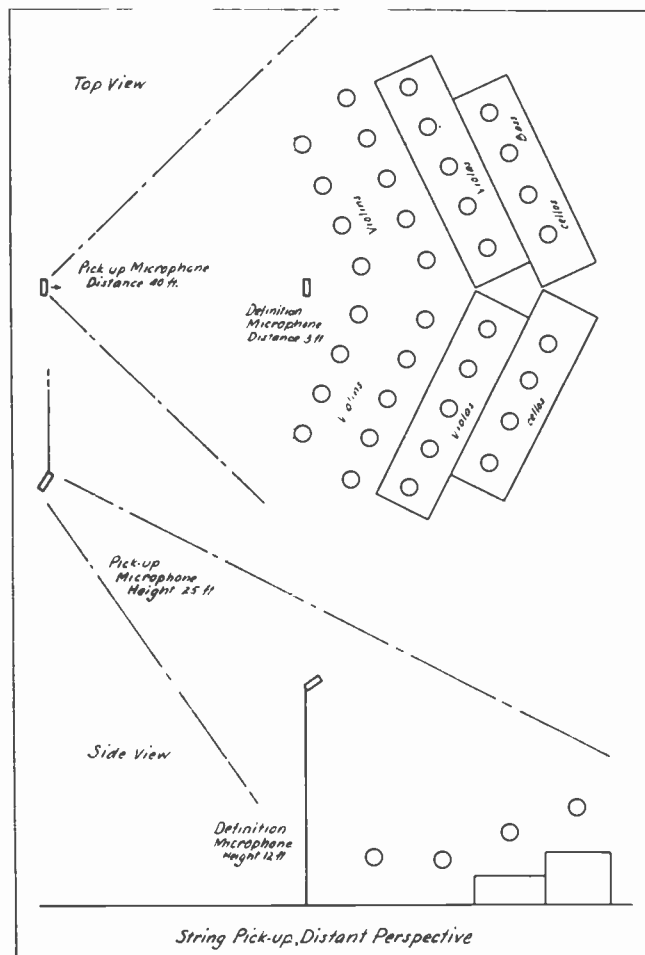
There is one danger. Sometimes, due to the acoustics of the room, a noticeable amount of tone definition may be lost. In such case, particularly if moving in the orchestra microphone affects the perspective balance, an extra—definition—microphone will have to be used. This microphone, raised on a stand to a height of about ten feet, should be located three to five feet away from the front row of instruments. Not used to pick up any one portion of the orchestra, it is opened only enough to supply the missing tone definition, generally from the violins or woodwinds. The exact amount that its control must be turned on will depend upon the volume of the orchestra and also on the characteristics of the room. You will have to experiment, checking several control settings for this microphone on trial recordings until you have obtained good definition on the desired voices without changing the perspective or overall balance of the orchestra.

Of course you may say that as an amateur you may have neither the privilege nor the time to make trial runs for your recording. This is true, if you can attend only the regular performance. But if you can get permission to be present during the rehearsal—which should not be too difficult if

you contact the local director of the show—you should be able to check out your microphone positions while the instruments are rehearsing. Then a knowledge of the conditions you might encounter will help you diagnose and remedy a particular defect with the least amount of disturbance to the musicians and the director of the orchestra.

Solos sometimes present a problem on distant pick-ups. Generally the soloist or the musicians of the section being featured stand up to play their part. The slight increase in sound caused by raising the instrument toward the center of the microphone beam is usually enough to make the desired tones predominate. When this method does not prove satisfactory, then a separate microphone must again be used. In this instance, however, the microphone picks up not only tonal definition, but the full voice of the solo instrument or section. This means that while the volume of the featured tones is raised to accentuate the solo part, these tones must maintain the same distant perspective as the rest of the orchestra. This applies not only to instruments, but also to vocal parts, sounds, or any other types of pick-up featured with the orchestra. Here again, if it can be made, the trial recording is important, for with the distant pick-up, one or two instruments out of balance may not be noticed until the full orchestra is playing, and then they may seriously mar the rendition.

Often a P.A. (public address) system is used to amplify



When using a distant perspective for recording you can angle the microphone toward the strings, test this section by itself, and then position the other instruments until you obtain the correct volume and perspective balance. Of course, where portions of the orchestra cannot be moved, the location of the microphone must be shifted until proper balance is achieved.

solo spots for the audience. This can introduce an additional pick-up problem. Generally the sound used by the P.A. system is picked up either by a separate house microphone or it may be tapped directly off your recording set-up. In either case the sound is fed to loudspeakers located at various spots throughout the hall or auditorium. Now when the volume of these loudspeakers is adjusted fairly low while the orchestra is playing as a whole and then boosted only when solos are rendered, the recording should not be affected. The slight increase in the room echo caused by the P.A. system during the full orchestral parts may even enhance the recorded tones of the instruments by making them more brilliant.

In too many instances however the volume of the P.A. system is raised so high at all times that it makes the orchestra tones boom and sometimes even spill over into a feedback howl or blurrp. There is only one remedy for this condition: pull down the level of the P.A. system. Of course if the P.A. system is not monitored and controlled, then dropping the level may make the level on solo parts too low and the effect on the audience will be lost. If both audience and recording have the same importance, you have no alternative but to follow the example of radio broadcasting stations which place a man to control the P.A. system from a position inside the hall or auditorium. From this location he can then adjust the level of the loudspeaker to eliminate any trace of harmful echo while the orchestra is playing normally and also prevent excessive distortion by boosting solos no more than is necessary to make them stand out.

If no P.A. system man is available, and this is generally the case since such operation is both expensive and complex, you must attempt to adjust the level on the loudspeakers so that they still furnish the desired sound on solos without

interfering with the quality of your recording. At best this is a compromise. You can mitigate the situation slightly by using a low level on your recorder. This will cut down some of the echo and may make the difference between a poor and an acceptable recording.

Whether or not the orchestra uses a P.A. system its pick-up quality will be affected by the number of people in the audience. For instance, a large hall will have much more reverberation when it is empty than when it is filled with people. This occurs because persons and their clothing have sound absorbing properties that essentially change the acoustics of the room. The recorded resonance of any tone will therefore be cut down in proportion to the number of persons present. This explains why an orchestra may sound brilliant when picked up during rehearsal in an empty hall and then sound dead when recorded with an audience. For that reason when you balance an orchestra in an empty hall, do not cut down the echo (by hanging drapes, laying carpets, or decreasing the level of the P.A. system) to the point where you feel it sounds exactly right. Leave some of the reverberation in for a large part of it will be absorbed by the audience.

A few words about outdoor pick-ups, particularly using the distant perspective. There space is not a problem in the same sense that it was indoors. You have plenty of room to set your microphone as far back as you wish; you do not have to worry about room reverberation; but you may still run into distortion caused by a P.A. system. With the loudspeakers dispersed over a wide area, the boosted sound may be picked up by your microphone at different times—depending upon the distance of the loud speakers from your pick-up point—after the direct tones of the orchestra. The



Andre Kostolanetz and his symphonic orchestra using a distant perspective set-up. Note the ribbon microphone hung from the balconies of the theater and also the distant position of the solo and chorus microphones.



delayed sound will then muffle parts of the orchestration and also make some of the tones stutter, thus ruining the presentation and the recording. Again the remedy is to cut down the volume of the P.A. system. If this cannot be done, then the only alternative is to reduce the pick-up perspective by moving the microphone closer to the orchestra. Since this results in an increase of the orchestra tones picked up by the microphone, the sound level on your recorder must be reduced, causing a corresponding decrease in the amount of loudspeaker sound recorded.

Extraneous noise, such as the sound of traffic, the roar of an aircraft, or even the hubbub of people talking, will frequently appear in the outdoor pick-up as background. Although it may not be noticed during the recording, it can be painfully evident during the playback. The best way to prevent such noise is to make a check recording. A few minutes of tape will suffice to indicate the background noise of a location; and if it is too high, either the site can be changed or efforts be made to direct the microphone away from the source of noise.

Wind will also affect an outdoor pick-up. The slightest breeze blowing past the microphone will sound like a cataract. And even if the microphone is protected by a windshield (metallic screen or a handkerchief tied over the pick-up head), the wind will still cause distortion for it changes the density of the air through which the tones travel and hence their velocity. Consequently the tones will not arrive at the microphone in their proper sequence and will therefore sound distorted. And when the sound scattering effect of the wind is added, you will then record the same weird tones you may have noticed when listening to a broadcast of the band at a football game. The music distorts and then seems to be blown away, only to return loud and clear for a few minutes, and then distort and fade once more.

Under such conditions it is useless to try to maintain a distant perspective. No matter how large the orchestra, you must make your pick-up as close as possible, even if several microphones must be used to encompass the full orchestra. As in the case of noise, the more direct the tones, the lower will be the interference. At short distances the wind also has less time to affect the tones so that both its effect and its noise can be effectively reduced.

One final factor which will change the balance of an orchestra, whether it be indoors or outdoors, is the weather. As the density of the air varies, as the atmosphere becomes more or less saturated with moisture, so will the speed at which the sound waves travel from the orchestra to the microphone. On some days the tones of the orchestra will be dampened to the point where they sound dead, while on others, the music will be crisp and clear.

The instrument most affected by these changes is the bass. At times, particularly on damp days, it will boom out, predominating so much over the other instruments that you will have to move it back or turn it away from the microphone. At other times it will scarcely be heard. You can notice this effect if you happen to record an orchestra in the same room day after day. For that reason you cannot take for granted that a good set-up at one time in a particular location will continue to produce the same balance from then on. Each time you make an orchestra pick-up, you will have to check its balance on a trial recording and perhaps make slight adjustments in the position of the various instruments to compensate for the variations introduced by the weather.



The NBC Symphony in a full stage set-up. There is a definition microphone above the woodwinds. This is used when a noticeable amount of tone definition is lost due to the acoustics of a room and an extra mike is needed to keep the perspective balance.

With so many different factors which may affect the quality of a recording, plus the possible errors of musicians during any one performance, it might appear difficult to obtain a perfect rendition of an orchestral work. Still if this cannot be done with one selection, it can be obtained by utilizing the best portions of several recordings. This is current practice for quality recording of large orchestras, especially with long symphonic works. The various portions selected are then spliced into one composite piece. In this way the edited recording is often much better than the result that could be obtained from any one performance. This is going into fine points, but if you happen to be a perfectionist as well as an ardent classical music fan, you might try your hand at editing repeated parts of your favorite works. It is a meticulous task, but definitely rewarding.

Should you now strive for high fidelity tapes of the large orchestra, you must remember one thing. Even with a high-priced microphone and a well designed recorder, even with careful editing of a desired selection, you will not be able to obtain a good recording unless the loudspeaker on which you check your balance has a good frequency response. This means that it must be capable of reproducing all tones with equal fidelity. On a small loudspeaker using a sounding board or baffle of a limited size, you may not hear all the tones which you have actually recorded. The very high and low tones may not be reproduced; and while you can emphasize these tones by positioning the instruments producing the most of them and thus sometime force some of these high or low notes through, the effect is never that of high fidelity. Parts of the deep bass notes are bound to be lost and a number of the string harmonics will be cancelled.

The best way to check all that you are recording is to connect the output of your recorder to a fairly large external speaker. You can use a separate high fidelity speaker or, if you have a good radio receiver, preferably the console type, you can by using a matching transformer (500 ohms to voice coil) connect the output of your recorder directly to the voice coil terminals of the receiver loudspeaker. In this way you will assure that the playback tones are a very close reproduction of the tones picked up by the microphone. Therein lies the path to perfection in orchestra pick-ups.

# TIPS FOR TAPISTS

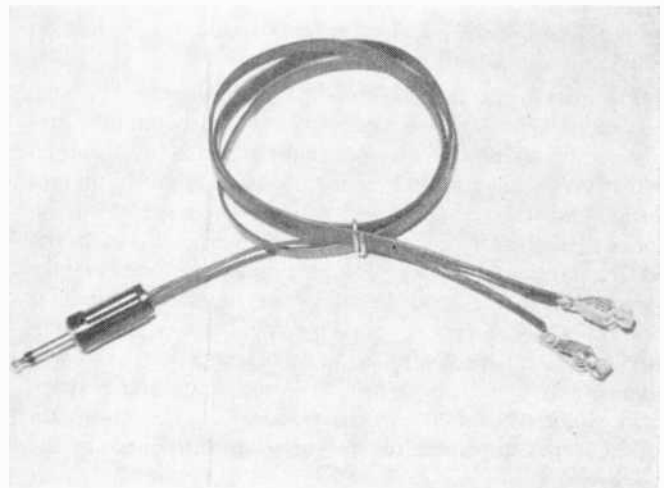
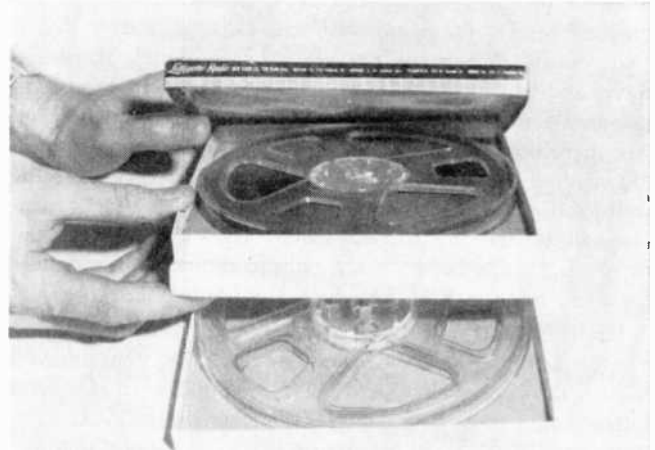
by John A. Comstock

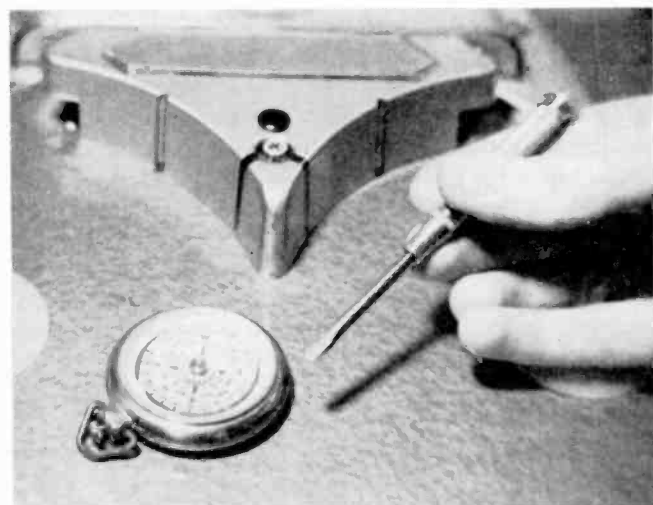
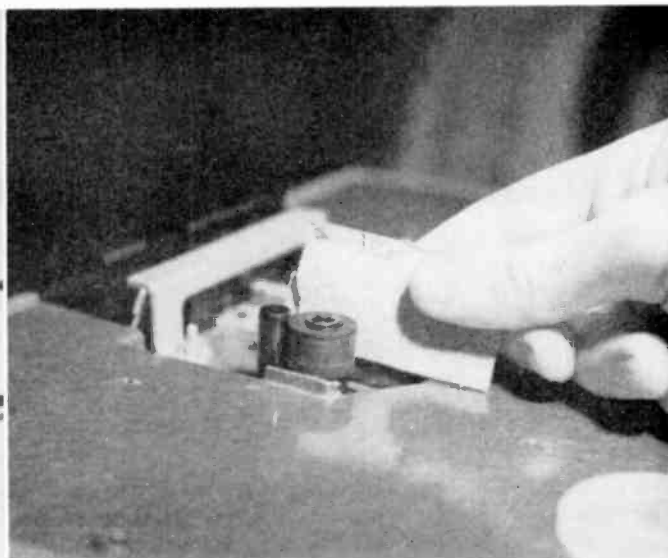
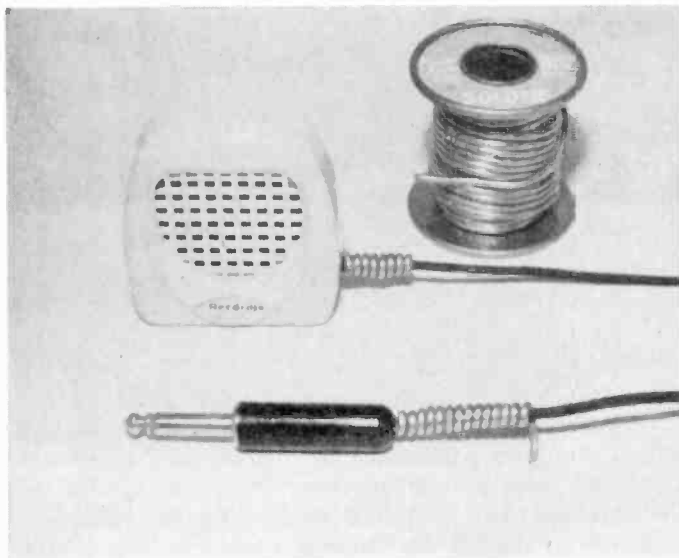
. . . . Got a tape recording problem? Perhaps you will find a solution among the hints illustrated below.

Bottom, left: A couple push-on radio knobs can be used as "reel-locks" so that reels of tape won't slip from your recorder's spindles when you are carrying it in a vertical position. To make the knobs fit snugly, ream them out a little.

Bottom, right: A spare length of ribbon type TV lead-in wire with clips attached to one end, plug to the other, makes a handy "jumper" cable for connecting tape recorder to speaker of radio, TV, or hi-fi. Ready made jumpers cost over a dollar—this one about fifty-cents.

Below: Keep takeup reels near recorder reels of tape by cementing the takeup reel's carton lid to the bottom of the recorded tape reel's carton as shown. This "piggy-back" arrangement eliminates the necessity of hunting up a takeup spool when a tape recording is to be played.



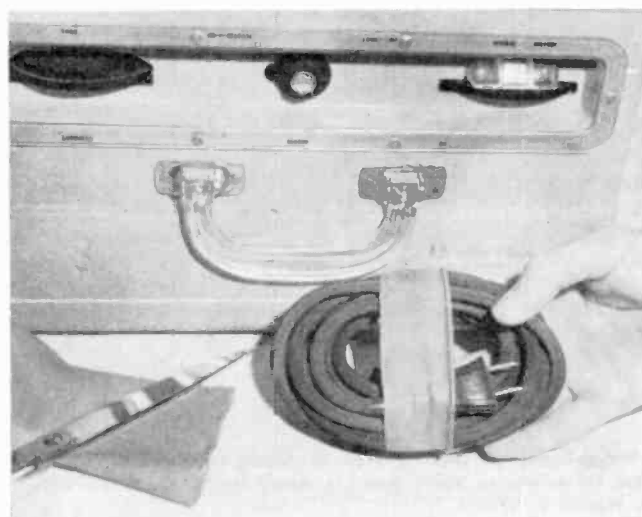


Top, left: After considerable use, tape recorder microphone cords become worn inside and out near the mike case and push plug. Prolong the life of your mike's cord by coiling wire solder around it as shown.

Top, right: After some use, a tape recorder's rubber pressure roller becomes covered with "glaze" and the tape tends to slip over its surface. To restore the rubber roller's grip, hold medium grade sandpaper to it lightly while it is turning. Don't grind off any more rubber than necessary, however.

Middle, left: Don't ever use magnetized tools around your recorder's head—the stray magnetic field might be induced into the head. A pocket compass makes a good sensitive "magnetism detector."

Bottom, right: Keep your tape recorder's power cord neatly coiled by cutting a giant rubber band from the wrist section of an old rubber glove and slipping it over the coiled up cord. With it compactly coiled up in this manner, probably you can keep it stored underneath your recorder's lid.



# What's a cps?

**R**ECORDER SPECIFICATION: 50 to 15,000 cps  $\pm$  3 db. Is that good?

Last issue we found that the db is an audio yardstick that measures the strength of sound, among other things. We also found that the human ear was very unlikely to detect any change in sound level less than 3 db—either louder + or lower —.

So in effect, the recorder specification given above states in part that the output throughout its range will have no detectable difference.

Which brings us to the subject of this article—the rest of the specification—the cycles per second, usually abbreviated cps.

First let's find out what a cycle is . . . and about that there is nothing difficult. It is simply one complete turn of events. Cycles may be long, such as the period of time it takes the sunspots to go from maximum to maximum, which is approximately 11 years or they may be short, as in the case of a plucked string on an instrument which may go through 4,000 cycles in a second.

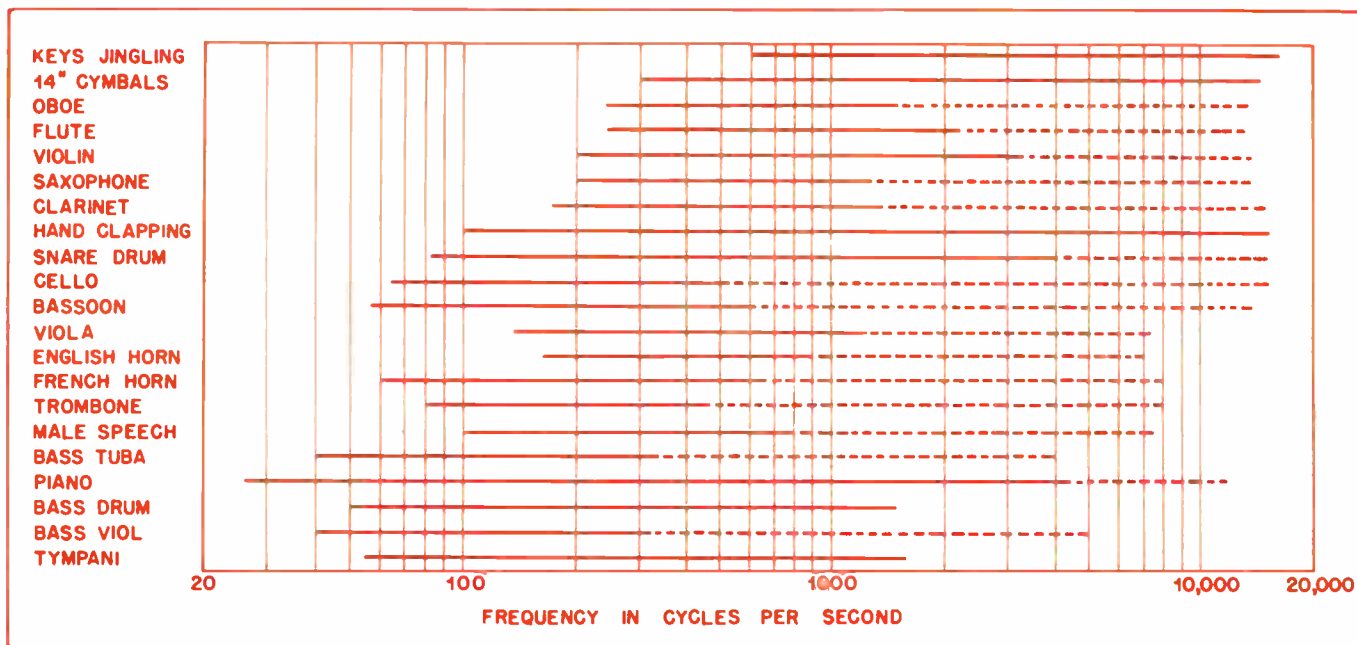
Your radio tuning dial is marked in cycles although the numbers are so large kilocycles (thousands of cycles) are used. 600 kilocycles (kc) on the radio dial indicates that

the wave from that station has a frequency of 600,000 times, or cycles, per second. On the FM dial the dial numbers are lower but the frequencies are higher because this dial is marked off in megacycles (mc) (millions of cycles) so 100 on the FM dial indicates a vibration rate of 100,000,000, cycles a second.

The cycles per second which concern us the most when talking about specifications are those which fall within the range of human hearing. This lies from 16 cps to 20,000 cps but it is only the very young with brand new ears that can cover this range. As we grow older our ears become less sensitive to the high frequencies. This creeps on so gradually than many persons are totally unaware of the hearing loss. Such a person with a "hi-fi" rig of good quality capable of being able to reproduce the range of human hearing, simply cannot hear it above his cutoff point.

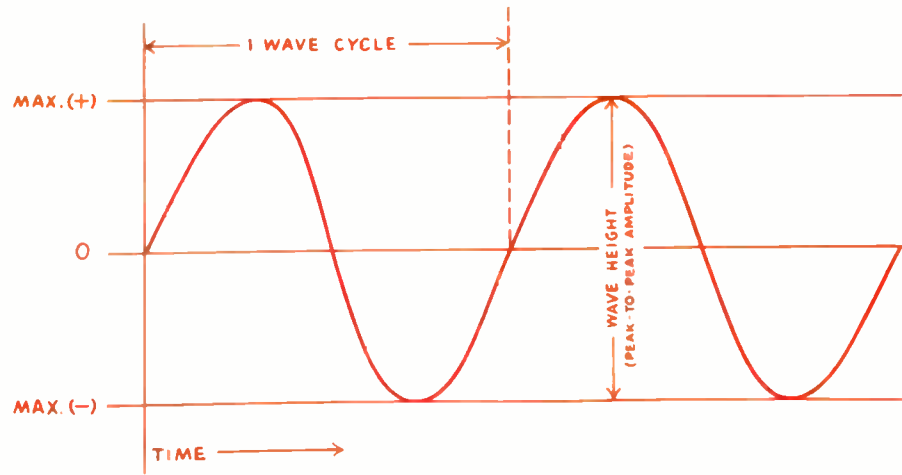
The loss in the low frequency range is less severe in most cases. A hearing test by an audiometrist is a good investment for anyone to make.

Below 16 cycles per second you do not "hear" a vibration but merely feel it. Above the highest frequency of which you are capable of hearing, you sense nothing. Even if sound is issuing from a speaker and a meter tells you so,



The chart above shows the range of various common sounds and their overtones. The solid bars indicate the fundamental sound, the dotted lines the overtones which give the identifying timbre to an instrument. Chart adapted from the book "Tape Recorders and Tape Recording" by Harold D. Weiler.

A cycle is one complete turn of events whether it be a spot on a wheel or spots on the sun. This diagram shows the cycle of a sine wave. You will note that it starts at zero, swings to maximum plus then through zero to maximum minus and back to zero again where it started. The number of cycles per second determines the tone. The height is the amplitude of the wave.



the room will be utterly quiet if the frequency is above your hearing range.

Should a person hit the middle C key on a piano, a felt covered hammer will fly up inside the instrument and strike a wire. This will cause the wire to vibrate and, in so doing, will transmit this vibration to the air which in turn conveys it to the ear drum for recognition by the ear. A musician will say "That is middle C" but an engineer will say "that note has a frequency of 261.6 cycles per second."

Since the piano has a limited range, from 27.5 cycles per second for the low A to 4186 for the high C at the other end, the specifications for recorders' amplifiers and other audio gear could not be described in terms of the piano, although this might be clearer to the average person.

Other instruments will reach out to higher points on the sound scale, some of them going to the limits of hearing.

The feature that determines the timbre or sound characteristic of each instrument is not the fundamental note being played on it but the overtones it generates. In fact, in some instruments the fundamental note is produced at such low intensity that it can be filtered out and its absence will not be noticed.

Thus to faithfully capture the sound of a piano a recorder cannot cut off at the highest note or 4186 cycles per second, but must be capable of recording up to about 10,000 cycles in order to capture the overtones that will make the music recognizable as piano music.

Nor must frequency range be confused with loudness. You can bang away at the lowest note on the piano until both your ear drums and the windows rattle but you will not change the frequency of the note one iota. However, you will change the amount of db's, or loudness by hearty thumping on the keyboard.

If you could see sound waves in the air they would look very much like the water on a still pond when a stone is dropped in. Like the water waves which spread outward in an ever expanding circle on the water, sound waves do the same except in the air. They also move in the same fashion through any other medium.

Let us suppose we thump a drum with one sharp blow. The drumhead will recede under the pressure of the stick and as the stick is removed and the pressure released it will not only spring forward to the point where it originally rested but beyond. This compresses the air and sends out a wave. Then the drumhead retracts and in so doing leaves behind it a "hole" in the air—a rarified area which is in sharp contrast to the compressed air wave immediately before it.

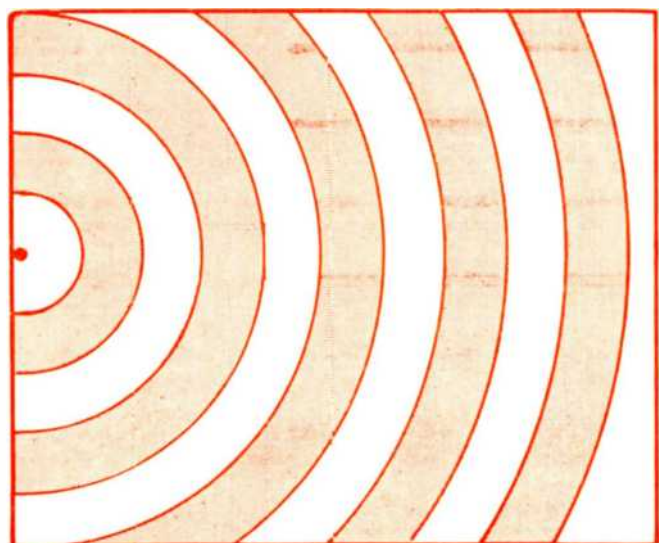
Now suppose we should pluck a string on an instrument. As with the drum, the string will send out alternate waves of compressed and rarified air as it vibrates back and forth. The number of such waves taking place in one second is the cycles per second rating of that sound.

In addition to these vibrations, the string will also vibrate within its length producing sounds of a lower order but higher frequency. These waves are multiples of the original frequency and provide the overtones mentioned earlier which must be recorded if the sound is to be reproduced in truly life-like fashion. This production of overtones is characteristic of almost all sound.

A pure frequency, devoid of overtones, can be produced on an audio generator and a tune played or recorded from such a source has a peculiar lifeless quality about it.

Looking at the recorder specifications—50 to 15,000 cps  $\pm 3$  db—is that good? We'd say its good.

One point to remember, however, the chain is only as strong as its weakest link. If your microphone will not go above 8000 cps that's all you will get on the tape, even though the recorder can go higher and similarly, if your loudspeakers will not encompass the range you will be limited by their output . . . so when buying, check both ends as well as the middle.



Like ripples on a millpond, sound spreads out through the transmitting medium, be it the air or some other substance. Each wave consists of a compression followed by a low pressure area. This moves outward by transferring its motion to the surrounding molecules. These waves striking the ear drum cause the sensation of sound in our consciousness.



# Tape Announcing

by Sheldon O'Connell

. . . an exciting new profession where it pays to be heard, and not seen.

**T**APE announcing, the acquired knack of reading aloud just as the professional broadcaster does, can be fun and show worthwhile results in relatively short time if you'll experiment with some of the methods used to develop it, and let your recorder be your guide. These skills can then be put to use in a variety of ways, on part-time commercial basis, civil defense or community service projects.

Most people can acquire professional reading skill. This doesn't require a native ability to express oneself persuasively and easily in normal conversation, that is another art, one that can be a valuable personal asset. No, tape announcing, like radio announcing is concerned mainly with sound and interpretation. Consider how much easier it must be to read aloud, than to speak right off the top without material. The pauses, hesitation, fumbling for words that are often a part of normal conversation are absent from the radio announcement. This is usually a free-flowing stream of news and opinion delivered in sure, unhurried tones. The actual thinking part of the assignment has been prepared, the tape announcer, like his radio counterpart is con-

cerned only with reading the words out as spoken thought.

While the end result often sounds "natural" and compelling, the means of achieving a warm tone and conviction are often artificial, so that when the announcements are finished and put away for the day, the calculated manner of speaking, inflection and phrasing is usually put away until next time too. After the microphone is turned off, people who make their living in this profession usually revert to whatever their regular speech mannerisms happen to be, whether its a tendency to mumble, speak in a slight monotone or whatever, all in a completely natural way.

In order to qualify for free lance announcing assignments on tape, its vitally important to first reach a high degree of professionalism, so that reading delivery comes smoothly and easily. This can be arrived at through practice with the tape recorder. The first hurdle to overcome is that of simply reading aloud, just putting the words together in any kind of fashion, as long as they're voiced. Its helpful to maintain a brisk pace during these sessions, developing agility in forming words quickly so they can be read almost as quickly

Message repeaters, of immense value in tape announcing, run their cycle and then repeat automatically. Convenient electrical outlets and closeted storage space are often built into the display "islands," which will also house recorder and auxiliary speaker if needed.





Tim Kendrick operates a tape announcing service for industrial exhibitors. His tapes, keyed to a relaxed and friendly manner, repeat engineering data and other specialized information, accompany technical demonstrations, explain machining processes. For this local trade fair, tapes and equipment went on location for one week.

as they're scanned, minus the hesitations and uncertainty that usually marks the beginner.

After reading speed has been reached its time to listen to the tape playbacks for another dimension, where meaning has been lost, or for words that ring false and lack conviction. For some time these exercises may sound like a primary grade student laboriously putting words together in anything but natural rhythm. Some people are natural readers, able to read lines aloud just as they would be spoken, but most of us develop this ability only through practice.

Tape announcing is not to be confused with oratory, though both are intended to inform or influence. Tape announcing is closer allied to the broadcast field and its emphasis on the purely auditory sell. Many radio speakers who have had the advantage of guided practice with tape recordings create the illusion of speaking easily and naturally while they are actually reading a prepared text. While there is a place in this world of ours for oratory too, the ring of splendid prose, the call to rally on occasions of great social or political significance, the tape announcer whether he's to be heard in the local supermarket or sales promotion at the department store should be concerned mainly with developing the sound and skills of a professional reader.

Material for practice sessions is always near at hand, newspaper copy, magazine commercials, news reports. Many can skim through the newspaper silently and absorb much of what is read, however lifting the words off the paper and putting them into speech while reading along does take some practice. Before working on how to stress meaning and orally underline key words and phrases, its necessary to work on a phase at a time beginning with speed reading. A handy accessory for these practice sessions is a clip board to hold the variety of material used in general announcing.

Commercials scissored from magazines are fine for this purpose, they can also be marked for pauses and emphasis. Nightly newspapers too offer a wealth of material in Special Sale advertisements, news of merchandise reductions and

other features the tape announcer will eventually work with. Since tape repeater cartridges can carry a lot of information to strollers in a shopping center, specials reviewed in the newspaper will help to recognize selling points and advertising matter that forms the basis of a good commercial.

One of the fastest ways to develop a professional sound and avoid the tyro's pitfall, choppy delivery, is to link words together instead of reading each word as a unit and then going on to the next. It makes for, smooth flowing sound to join them in phrases as if each phrase were one word, without breaking the tone. If we were to transfer this effect to print it would look as if the words—werejoinedtogether.

Key words, usually the name of the advertiser, his product or other information are orally underlined by dwelling slightly longer on the word, reading it with greater deliberation. The most important words, those that carry the meaning are usually lifted well above the normal pitch level, less important words not so high. This intonation is usually present in enthusiastic conversation but when reading it has to be mentally "written in", otherwise the words may run to a narrow monotone with few and relatively small changes in pitch.

Tape recording a sentence five times, each time placing the emphasis on a different word will show the importance of pitch changes and also help break up a stereotyped intonation pattern. Listening and copying can sometimes be a good thing. An announcement recorded off the air provides a good piece for study. A written copy is made first, then with successive playings, the symbols are added to indicate pauses, intonation, pacing and emphasis. It doesn't take much more than practice and a basic knowledge of good speech habits to announce for tape as others announce for radio.

Not only in broadcasting is there a need for people with announcing skills, opportunity exists in other areas as well. The producers of documentary and industrial films, training

and sales pictures make use of free lance narrators to read script for the soundtrack and hire for each assignment.

These firms, many of them quite small, are kept busy producing a variety of films which are used in education, displays and sales conventions. Since the procedure for recording to soundtrack is greatly different from straight studio work, foreknowledge of what to expect can be an advantage.

The microphone is generally suspended above the table to permit easy movement of script from side to side. Each page of script is stapled to a piece of cardboard keeping it firm and easy to read. Script is divided into several small paragraphs the reading length of each, timed to coincide with action on the screen. When recording onto soundtrack the tape announcer is guided by a tiny cue or signal light, this flashes once as a signal to read a paragraph, each paragraph is preceded by a separate cue. Since the booth where this work is done is completely dark except for a pencil light above the script, the signal flash is easily seen. If the light flashes twice during a sound take, this is the signal to go back to the beginning of the paragraph and then wait for the single flash to begin again, if the light should flash just once after the paragraph has begun, this is an indication to continue along and read the following paragraph without waiting for the separate cue.

Before rehearsal and general timings the film's producer will outline the mood or story line of the picture, describe the message or whatever feature it should sell. Marginal notes at the side of the script will help recall various points to be remembered when the action is described during narration.

The procedure in applying for work of this nature is to

simply look in the yellow pages for motion picture enterprises, there are several of these which produce industrial and sales films very much interested in using people with announcing skills. The practice is to audition live, at which time a tape is made and kept by them, or forward a tape at their request.

Perhaps the greatest opportunity for tape announcing lies in the voicing of materials for variety stores, service stations or department stores, anywhere products are sold in quantity. These are all excellent prospects for tape recorder rental together with a reel of custom-made announcements that repeat automatically after the tape runs its cycle.

Promoting a service of this nature however takes time and effort to solicit business, additional equipment may be required too, a used tape recorder, some Cousino message repeaters and auxillary speakers.

The recorded announcements can be presented in different ways depending on the product and store traffic, periods of silence between the messages or brief interludes of music. Golden Crest records have marketed an album ideal for this purpose, called "Station Break" it is identifiable by the color photo on the jacket of a fine tape recorder and turntable set-up. The record contains 30 individual selections each timed to last a minute, just the thing for fillers and interludes they can also be faded out easily for voice over music announcements.

There are opportunities in tape announcing for both men and women who've developed professional reading skill. Those who wish to qualify for it can look back on those practice sessions with the recorder as time well invested in a promising new profession where it pays to be heard and not seen.



Hurry Hurry! Milling crowd at Carnival called to platform by taped spiel, as reverse horn speakers at mid-right boom out news of next attraction. Some of the old time barkers prefer to work live, but find tape tracks useful for effects in wild animal show and other production staging. Taped announcements for playback in outdoor area require extra amplification for clear sound dispersion.



Dinah Shore warbles in her mellow, easy manner. Overhead mike on flexible boom picks up every note.

**"T**HAT can't be *me!*" Sound familiar? Every new recorder owner has heard it more than once and probably will again. Human nature being what it is, we all have preconceived ideas of how we sound, but when we are actually faced with a recording of our voice we wrinkle our noses in disbelief.

This need not be the case in all instances, however. There is a great difference between a poorly made attempt at recording and a well thought out, well made recording. While some will still feel they sound unnatural upon playback, a good recording may make others sound great.

Attempting to touch upon all the unsatisfactory situations which can arise when recording and the conditions necessary to meet the challenge would be like attempting to transform an ice cube into a diamond. It simply cannot be done. Each recording situation is new, each is different, each has its own surroundings, its own treatment.

Obtaining a good vocal recording is dependent upon three main factors: (1) the person or group being recorded and what sounds they produce, (2) the recording technique used, and (3) the room in which the recording is made. Many variations are used depending upon the circumstances. For instance, you would not record a booming opera baritone practicing his scales in the same manner as a 5 year old crooning over its stuffed teddy bear.

There are, however, certain general practices which can

# Recording Your Voice

by Jean Cover

be followed for most recording, and which provide a solid basis for recording techniques.

## Microphone Care

Needless to say, the microphone you use and how you use it when recording voice is most important.

All microphones are extremely sensitive and should be handled carefully. This does not mean that they are so delicate you cannot move them about and use generously. It means you should refrain from banging them against the living room wall when you become angry over a poor recording try, from leaving close to sources of heat, and from dropping, especially on hard surfaces.

They should be covered and put away in a snug harbor after each use. Even dust can cut down its performance quality.

## Test Your Voice

Just as a test to get an idea of what you sound like, before pushing the record button on your machine, there is a simple stratagem you can try. Cup the palm of your hand and with the fingers outstretched place the palm toward your mouth and the fingers pointing toward your ear. In this way you catch the sound in your palm and direct it toward your ear.

By doing this you will at least get an impression of how you sound, and can practice a bit before making an actual recording.

## Plan Ahead

When you are preparing to record someone, either a subject or script should be readied in advance so that the recording will come off smoothly, unless, of course, it is a surprise and the subjects are not aware they are being taped. Should a bumpy spot emerge, you should be able to keep things humming so that the continuity is not lost entirely.

Being human, folks sometimes break up in the middle of a recording, or they get mike fright and freeze. For a casual sounding recording, it is well to have them warm up first, and as inconspicuously as possible turn on the recorder at an appropriate moment. Of course, the easy erasing and editing features of tape can remedy a bad situation, but why look for such extras. Organized thoughts bring about a much better recording than disorganization.

## Acoustics

Any recording is affected to some extent by a room's surroundings. Since sound waves are partly absorbed and partly bounced back when they strike a surface, it is easy to understand that in a well draped room with padded furnishings and thick carpeting a high majority of the waves will be absorbed; and, consequently, in a bare room the sound will be reflected and will be quite bouncy.

In the furnished room the duration of each sound will be short and a recording made here is rightfully known as a "dead" recording. The bouncing, reflected sound of the bare



NBC Photo

Dorothy Warenskold sings into a bi-directional type mike. Her position is approximately 1 foot away from and slightly over the mike, which is just about right.

room has a hollow, reverberant character and is considered a "live" recording.

When a recording is made in a room with characteristics midway between these two extremes, it will have the desired brilliance without being hollow sounding.

These changes in the character of sound caused by room acoustics are much more noticeable when picked up by a microphone than they would be to the average listener. It follows then that room acoustics should be considered when planning a recording.

#### Level Adjustment

Before beginning any recording, you should test the sound level. This is the sound intensity being fed into the recording amplifier. A level which is too high will cause a high degree of distortion in a recording; too low will cause muddiness. All recorders vary, but a level check can be ascertained by the electronic eye, neon bulb or volume meter of a recorder. Test your voice by watching the lights or needle of your level indicator when speaking in your loudest voice and also when talking softly. Should the lights knock together, or the needle bang against the right side of your meter, you are immediately aware that your level is much too high. On the other hand, too soft a sound will hardly move the indicators at all. Adjust your volume until you find a proper medium for the voice recording you are preparing to tape. A safe point at which to begin is to set your volume control halfway to the loudest setting, thus giving yourself enough leeway in either direction for adjustment.

#### Microphone Placement

Generally, for average recording, place the microphone in a position to receive direct sound. An individual, however, should speak over the top of the mike rather than

directly into it. This cuts down sibilance—the hissing (caused by the "s" sound), and popping (caused by the "p" sound), both of which are characteristic of the human voice.

Some people are more prone to these annoying sibilance noises than others, and it is probable that another type mike is desirable, or perhaps a blast filter may be the answer. This is an acoustically equipped device to filter out sibilance.

In any case, if these sounds pop up when testing for a recording, try turning the mike at an angle not greater than 45 degrees, or moving it toward or away from you, adjusting your level accordingly.

Generally, when recording one person, place the microphone approximately one and one-half to two feet from the subject. Changing the distance between the microphone and the sound source changes the proportion of direct to reflected sound and, therefore, also changes the character of the recording. As the distance is increased, the sound becomes more alive and fuller, and the room appears to be larger. The *apparent* acoustics of a room can be changed by changing this distance.

It is well to try the differences in sound created by such changes before recording. As a test, you can make a continuous recording by reading a sentence with the mike about one foot from your mouth, then three feet, six and nine feet, respectively. Do this in variously furnished rooms. The difference in sound will be quite apparent on playback.

When you actually begin recording, do not creep closer and closer to the mike, hold the distance you have found to be best. This applies in most cases, except perhaps when special sound effects are desired. Treat the mike as you would a person and speak naturally.

#### Types of Microphones

The general purpose microphone which comes with a recorder is usually of the crystal or ceramic type, and it is adequate for most of the applications for which it will be used. It has a frequency range of 100 to 7500 cps which is approximately the range of the human voice.

A higher quality, more rugged, microphone is one of the dynamic type which has a frequency range of from 60 to 9000 cps. This improves a voice recording in that it becomes more like the original with better recording of the higher frequencies which provide timbre and "presence".

Microphones are available in unidirectional, omnidirectional, and bidirectional types, and also in variations and combinations of these directional patterns. These patterns are so important they permit a recordist to control the frequency response, type, amount and character of the recorded sound. A microphone will pick up any noises which are loud enough to actuate its diaphragm, but by choosing the correct microphone and utilizing its directional characteristics, unwanted sounds can practically be eliminated.

A unidirectional type mike is one that picks up direct sound from one side only, although it is somewhat curved and will pick up a little from the side backgrounds. This is satisfactory for individual voice recording.

One of the most popular mikes for home recordists is one that is bidirectional with a switch to make it unidirectional if desired. This is a mike which picks up sound from two sides. Actually, it is two mikes in one. A level can be set using both sides of the mike.

Omnidirectional is, of course, a microphone for picking up surrounding sound from all directions.

Some mikes have a much greater resistance to wind noises than others and for anyone who wishes to do much



outdoor voice recording it would be well to investigate these special types.

### Recording Effects

There are variations which can be used in recording methods, depending upon their specific purpose.

Should you be practicing an oratory, you should assume the same conditions in practice as you will have at the time of delivery as closely as possible. For instance, if you will be standing, practice the speech standing by putting your mike on a mantle or other raised level. Likewise, if you will be seated at the time of delivery, practice it seated. Test your recorder level at the most emphatic part of your oratory, and at your normal speaking level and set your machine at a point somewhere in between.

Special effects can be achieved in a variety of ways. For instance, to obtain a booming, eerie sound, poise a mike at the edge of a 20 gallon trash can and record with your head in the can. The sound reflection from the metal is picked up by the mike and is quite weird.

Or to simulate a large room and its effect on sound, place your mike in the bathtub alcove of your bathroom. Deliver your oration toward the alcove at the usual recording distance from the mike. The results are startling.

When dramatics are involved, whispers or side remarks should be delivered close to the mike, but across, rather than directly into it. Someone playing a sinister roll will likewise sound best close to the mike. On the other hand, hysterical laughter, screams, shouts, or a tirade of angry comments are more effectively done well back from the microphone.

Since children invariably do the opposite of what they are directed to do, when recording them it is usually best to do so candidly. Should they be instructed to recite or sing before a microphone, chances are you will not get much and that which you do get will be of little value. To get them at their very best, catch them unawares. You need not even hide the microphone—simply place it out of their reach and let them become used to its presence. One adult can make the recording while another coaxes the children.

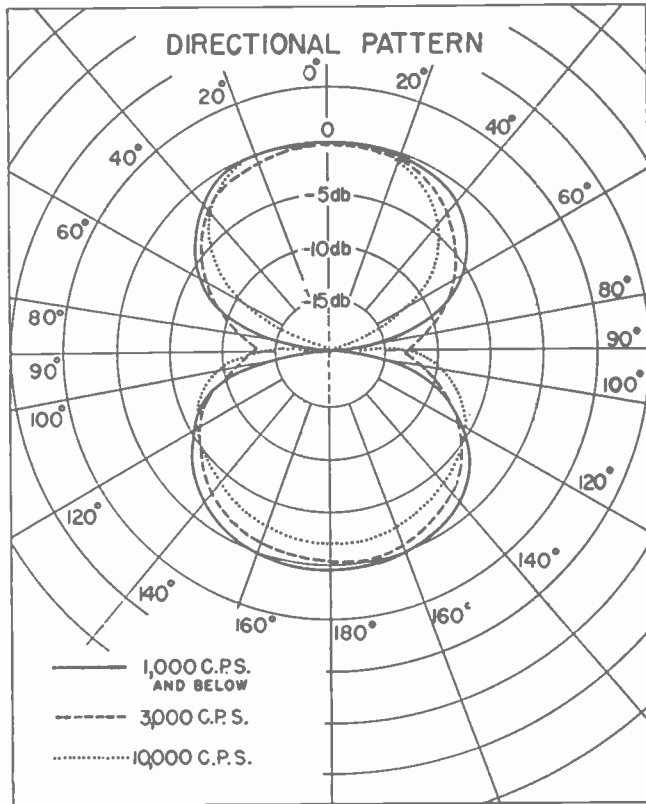
Candid recordings of any one are fun at any time. However, these can sometimes be most embarrassing and a good way of how not to win friends and influence people. Always play such a recording privately before playing back to the victims and anyone else who may be present.

When recording groups, it is well to first get a level on each individual so that weaker voices can be placed closer to the mike and stronger ones farther away.

Whoever, whatever, whenever, wherever you record, remember that your microphone will be doing its job at all times. This means it will pick up any and all sound directed to it. Therefore, should you pound a table when practicing a speech, have a window open where traffic is close by, accidentally rock on the cat's tail, or drop something while the mike is open and the record button is down, you will pick it all up on the recording.

Also, never stand your mike on your recorder, a radio or piano when recording. The sensitive mike will pick up vibrations of strings, turning motors, hisses, etc. which will be distinguishable upon playback.

To facilitate your gaining a skillful recording technique, you will need practice. Only by experience can you acquire this talent. Choose your location, your surroundings, your subjects and your equipment with care and the results should be satisfactory.



Above: This shows the pickup pattern of a bi-directional mike, the Shure Brothers Gradient 300. Note the high front and rear response and the "dead" areas on the sides. A mike having this pattern would be excellent for recording groups as both sides may be worked.

Below: A novel and practical use of Altec Lansing's "Lipstik" microphone, affixed to a broadcaster's script, is shown below. The extreme versatility of this mike permits use in coat lapel, breast pocket, in hand, or on stand.



# NEW PRODUCT REPORT

STAFKSTED



## WOLLENSAK 1600 RECORDER

*... two speed dual track monaural, electronic control, back-spacer, lightweight.*

**C**OMPACT and lightweight, there is not a wasted inch on this new Wollensak 1600. It is very attractive in appearance with an all metal magnesium lightweight case with an oyster-white lid and controls. It measures only 6½" x 10¼" x 11¾" and weighs only 21 pounds yet it will take 7" reels of tape. The power consumption is 100 watts which would make it practical to operate in an automobile or boat with a power converter.

What sets this machine apart from others is the electronic control feature. By means of metallic tabs placed on the tape by the user, this machine can be made to stop, rewind or even replay and turn itself off automatically.

This is accomplished by two contact strips, one on each side of the head covers, as can be seen in the photo.

The one on the left, which also in-

corporates the stop pin which turns off the recorder at the end of the tape or if the tape breaks, is the repeat contact post.

The metallic tab is placed on the dull (oxide) side of the tape even with the top edge wherever you wish to have the tape replay.

To prevent the automatic repeat from operating, either remove the tab or override it by pressing the rewind button.

This automatic repeat is used in conjunction with the automatic rewind which has a set of contacts on the right side of the machine.

The metallic tab to operate this feature is placed on the dull side of the tape, however, it is placed so that it is even with the bottom edge. This may be placed anywhere on the tape, either at the end of a reel, to have the reel

**Product: Wollensak 1600  
Electronic Control**

**Manufacturer: Wollensak  
Optical Co., Chicago 16, Ill.**

**Price: \$299.50**

repeat, or at the end of any particular bit on the tape. The rewind begins when the metal tab passes over the contacts and the machine will continue to rewind until the end of the tape passes out from under the stop pin, or a repeat tab contacts the repeat switch.

If the tape has both rewind and repeat tabs on it, the end of the tape cutoff will not operate unless the tape is threaded back of the rewind post as is shown in the photo.

Kissin, cousin to the rewind-repeat controls on the tape is the back spacer bar on the front of the machine. When depressed, this puts the machine in rewind and upon being released the machine will reverse its motion and start to play.

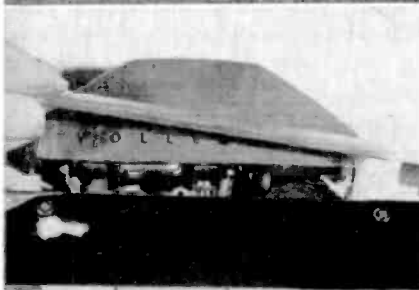
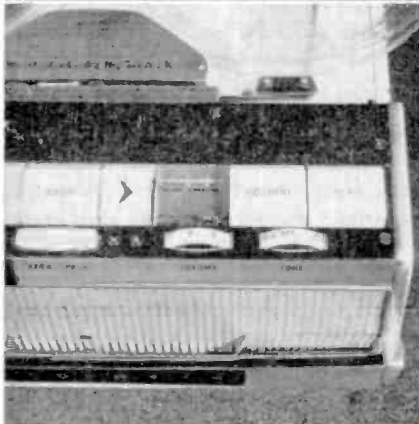
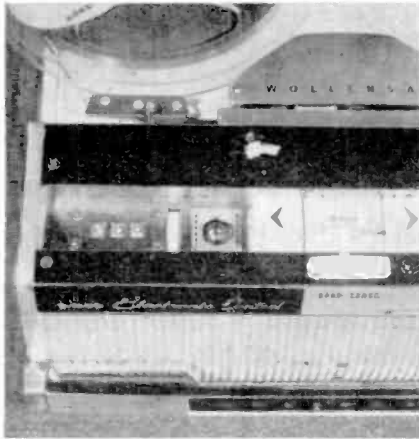
The feature is especially valuable for those who use their recorders for office dictation or "homework."

In addition, there is a press to talk button on the microphone. This button controls the tape motion and may be used intermittently, as in dictation, or pressed in and locked into place. One feature we liked on this mike was the fact that it has a ⅜-27 thread in the mounting hole so that it will screw on a standard microphone stand.

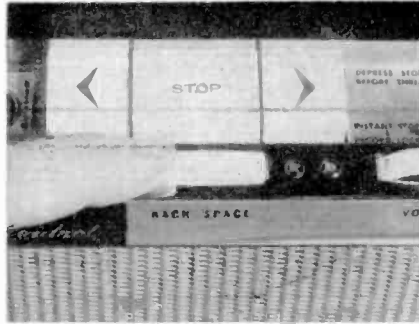
This electronic operation of the ma-



The recorder with lid in place and ready to be carried. A plastic traveling case is available as an accessory.



Upper: Left side of recorder showing cutoff switch, speed control, odometer counter, record and overload indicators. Center: right side showing automatic reversal contact, tone and volume controls and record and play buttons. Lower: bar lifts out for access to heads for cleaning. Below: button on mike controls recorder.



Tape motion controls are grouped in center and include fast rewind, fast forward and stop. Finger points to back spacer bar which reverses tape motion.

chine also permits feather-touch controls, and we do mean feather-touch. The slighted pressure on the fast forward, stop, rewind, play or record buttons will immediately send the machine into action. This feature will be appreciated by women.

When in record, a red light lights beneath the button and, if in play, the play button is illuminated with a white light.

Record level control is by means of neon bulb indicators, one for normal recording and the other which lights up when an overload is applied to the tape. A record interlock safety is provided, which also acts as an instant stop lever.

The index counter is of the odometer type with three digits.

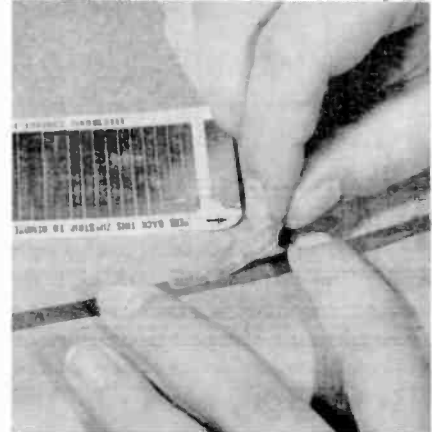
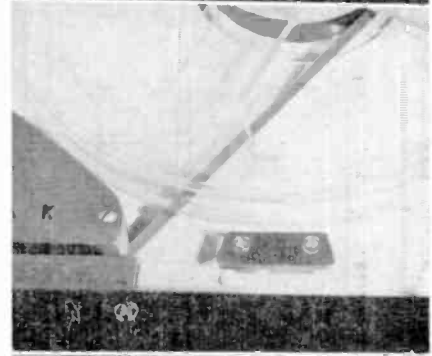
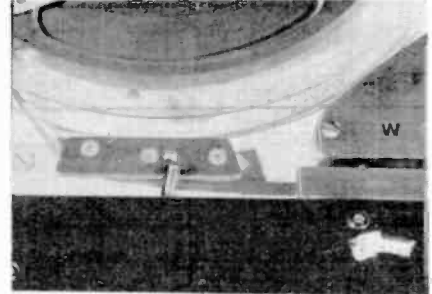
Inputs and outputs are grouped on a panel at the back of the recorder. These include a mike input with contacts for the mike switch control (this also doubles as a phono-radio input), a monitor switch, which permits using the 10 watt amplifier as a PA system, the AC power input and an external speaker jack. There is also a pre-amp output for connection to an external amplifier.

Recordings may be monitored by plugging headphones into the external speaker jack and putting the monitor switch in PA-Monitor position.

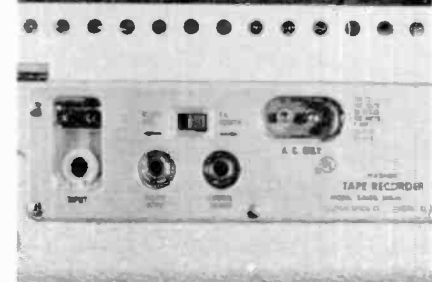
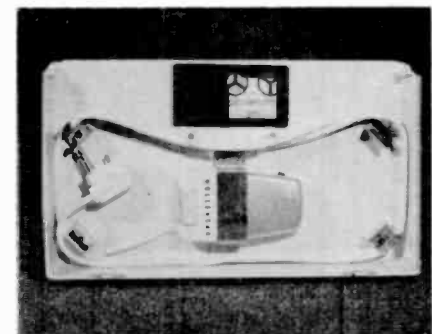
There is no need to demagnetize the heads on this recorder for a demagnetizing current is applied to the heads each time the record key is released.

Frequency response goes to 15,000 cps  $\pm$  3 db at the 7½ speed and to 8000 at the 3¾ ips speed.

This is an excellent machine and we feel worthy of your consideration if you are planning the purchase of a monaural recorder. It can be adapted to stereo and other models based on this design will have stereo incorporated.



Top: cutoff switch which stops recorder at end of tape or if tape breaks. This also is repeat contact post which causes machine to go into play and repeat tape. Middle: automatic rewind contacts showing how tape is bypassed if automatic rewind is not desired. Lower: applying metallic tab to tape. Below: Lid and back panel of recorder.



# NEW PRODUCT REPORT

STAFF TESTED



## ROBINS MODEL ME-99 DEMAGNETIZER

**R**OBINS new head demagnetizer makes the task of bulk erasing easy, quick and complete. Engineered to professional broadcast recording standards, it provides superior demagnetizing of tape by reducing the background noise levels of tapes from 3 to 6 db below normal erase head levels.

This new type degausser is extremely easy to operate. You simply place the reel of tape on the spindle, push the button, rotate the reel gently once every 10 seconds, remove the spindle and, still holding down the button, carefully slide the reel of tape off the demagnetizer and move it approxi-

mately two feet away. Only after you have cleared this distance do you finally release the button.

For 1/2" tapes or tapes with high signal levels, you simply turn the tape over and repeat the operation.

Don't be so hurried as to pull the reel of tape off the spindle after turning instead of first removing the spindle and sliding it off. If you do so, the tape picks up a thumping noise instead of being clear.

There are two openings on the demagnetizer for inserting the spindle. The Robins 99 accepts any size reel up to 10 inches. For larger reels, you insert the spindle in the outer opening.

*Product: Robins Model ME-99 Demagnetizer*

*Distributor: Robins Industries Corp., 36-27 Prince Street, Flushing 54, N. Y.*

*Price: \$33.00*

Wear and tear of both the tape and your recorder for erasing are eliminated with this handy recording accessory. Also, should your machine not be equipped for stereo erase, this eraser does the job efficiently and eliminates the time consuming job of sending the tape through the single track erase head twice.

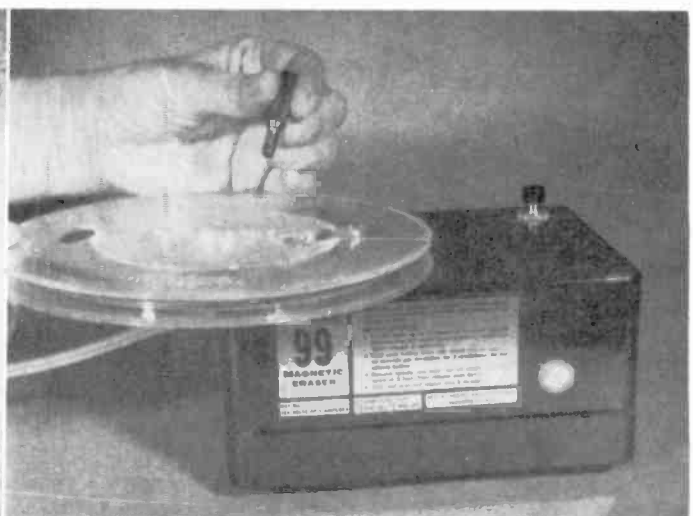
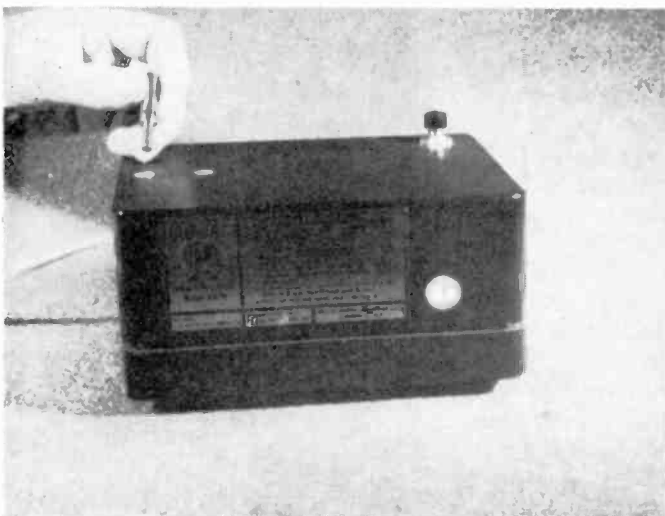
You can now erase all your old, unwanted recordings so quickly and efficiently, you will probably find yourself with a goodly supply of fresh tape on hand you were unaware you had around.

Since this device houses a powerful electro-magnet, it should not be used in the proximity of any tapes which are not to be erased.

The duty cycle is 7 minutes on then 7 minutes off. Current consumption is 5 amperes at regular line voltage.

Our tests of the unit revealed that it lived up to the claims made for it.

Specifications: Size, 3 3/4 x 5 1/4 x 6 3/4"; operates on 110-120 volts, 50-60 cycle AC; shipping weight, 8 1/2 lbs.



Left: For larger size reels, the spindle is moved to the outer opening of the demagnetizer. Right: Removing the pin preparatory to sliding the reel off the machine. When the reel is actually removed after demagnetization the button must be held down.

(Continued from page 15)

the one it was replacing. It is not as inexpensive to build a tape recorder with quality for quarter-track as for half-track and many manufacturers did not even manage to build a decent half-track machine. (In this connection I am still waiting for your rating of recorders to come out "Staff Tested-Lousey".)

I think it is little wonder that many of your readers seem to be finding that the quality of the 7½ quarter-track tapes does not seem to be living up to the advance publicity. The way they are hearing them they probably are not. The playback head must be in very precise adjustment and the electronics carefully designed. Why not just come right out and suggest the readers hear the quarter-track tapes on a machine such as Ampex or Mangnecord? Even if they cannot afford a machine of this price it will be a reference for them.

Incidentally I am in the process of installing a quarter-track head in my Ampex 612. The Ampex head is NOT made for this machine but it is of physically the right size and can be fitted as a third head thus enabling me to play both the two-and four track stereo tapes properly without the necessity of a head shift. The operation is not a simple one, nor, as for that matter, inexpensive. Even after the head is physically mounted into the machine there is the matter of the electronic adjustment, additional leads to be shielded, a new switch to give a choice of monaural, half-track stereo, and quarter-track stereo. Ampex has shown absolutely no interest in providing any information about the relative characteristics of their quarter-track stereo head and the heads which were included in the 612. When finished I expect the quality of the quarter-track tapes to be equal to that I have enjoyed for several years from the half-track ones. I have every reason to think it will be.—A. E. Foster.

*Our recent comments concerning prices seems to have stirred up quite a bit of disagreement, resulting in a number of letters of which Mr. Foster's is one. Our thanks to the others who also wrote. Our arithmetic was not based on discounted prices for either tape or disc.*

*Our comments regarding monaural seem not to have been as plain as we intended. What we meant was that monaural music on tape is now bigger than ever by virtue of its use in every background music service of any importance. While monaural tapes for home use are scarce as hen's teeth, the background and broadcast fields have more than made up the difference. These tapes are not available to the general public for home use.*

*The statement that RCA will issue 7½ ips 4 track tapes is news to us. We contacted RCA about it and such a definite decision was also news to them. Perhaps in the future they may do so but at the moment there is no official announcement of it nor are there any definite plans.*

**Recordings Wanted**

To the Editor:

As a charter subscriber to TAPE RECORDING magazine since the first issue, I would like to say that I have enjoyed reading each

issue very much. Through reading it I have been able to keep posted on each new development in the tape recording industry.

During the last 15 years I have been in the process of building a complete library of Bill Harris and Woody Herman recordings and tapes. Bill Harris won the top trombone awards in the *Down Beat* and *Metronome* magazines' readers poll for ten years.

I would like to know if any of your readers have any unreleased recordings, transcriptions, radio and TV air shots, movie sound tracks or tapes of Bill Harris or Woody Herman. I would be very interested in obtaining tape copies of them.

Keep up the good work that you are doing in your magazine.—Robert J. Neu, 6023 W. Keefe Avenue Parkway, Milwaukee 16, Wisconsin.

Can anyone help?—Ed.

Snowed

To the Editor:

I received many cards, letters, and tapes from the printing of my letter to you. I did not think you would print it. I found many wonderful people; I answered all of them. I sincerely thank you. I enjoy your magazine. I was surely snowed by the mail I received.—H. A. Barkus, 2621 University Avenue, San Diego 4, Calif.

Rigor Mortis

To the Editor:

In your November issue, in the "Feed-back" column John Schmidt proves his good judgment as regards truth and facts regarding tapes.

Also Tom Geisler's pertinent remarks on the "Chaotic State of Stereo" which does apply to an utter lack of Promotion and Push in informing the world of what tape recorders do.

Since my earliest connections with the first radios in 1921 to this day of radio, TV and tape recorders, never have I seen such closeness to Rigor Mortis which seems to hold back forceful, descriptive interest creating action on the part of the tape recorder manufacturers.

Ask for literature of that class, so we can mail it to people so we can create interest and boost sales—and we get none.

Look into the magazines and need I tell you all ads for the Christmas trade are phono and disc ads. Is the tape business rigged by the disc combine? It certainly smells that way.

We know what we have. Are recorders made to be held back in sales with the smaller the turnover and higher the cost, the less business—which favors the noise on most platters?

Will all of you who are interested speak up! We need promotional literature, we need access monthly to the latest recorded tapes available. Who will prove by action their duty.—John Kadletz, Dealer, Chatfield, Minn.

**Who's Confused?**

In our last issue was a picture showing the application of splicing tape and the caption admonished not to use tapes with soft adhesive for splicing. Included in the pix was the familiar home type Scotch tape dispenser. It happens that Scotch also markets their splicing tape on this same dispenser so some confusion arose. The point of the whole thing—use only splicing tape for splices.

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

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

1. Am I successful in my chosen profession?
2. Is my position secure?
3. Have I advanced or been content to lag?
4. Has my earning capacity reached a maximum?
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7. Do opportunities slip by me ungrasped?
8. What can I do to improve?

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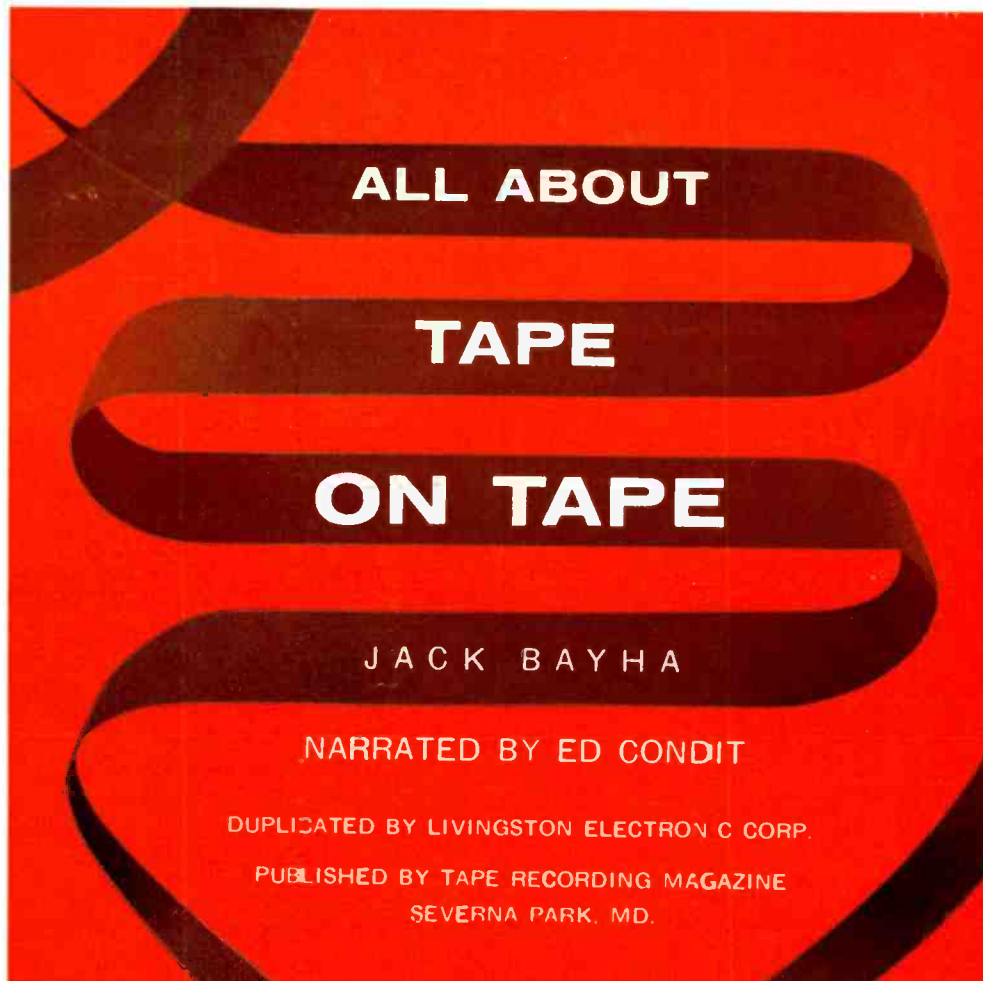
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