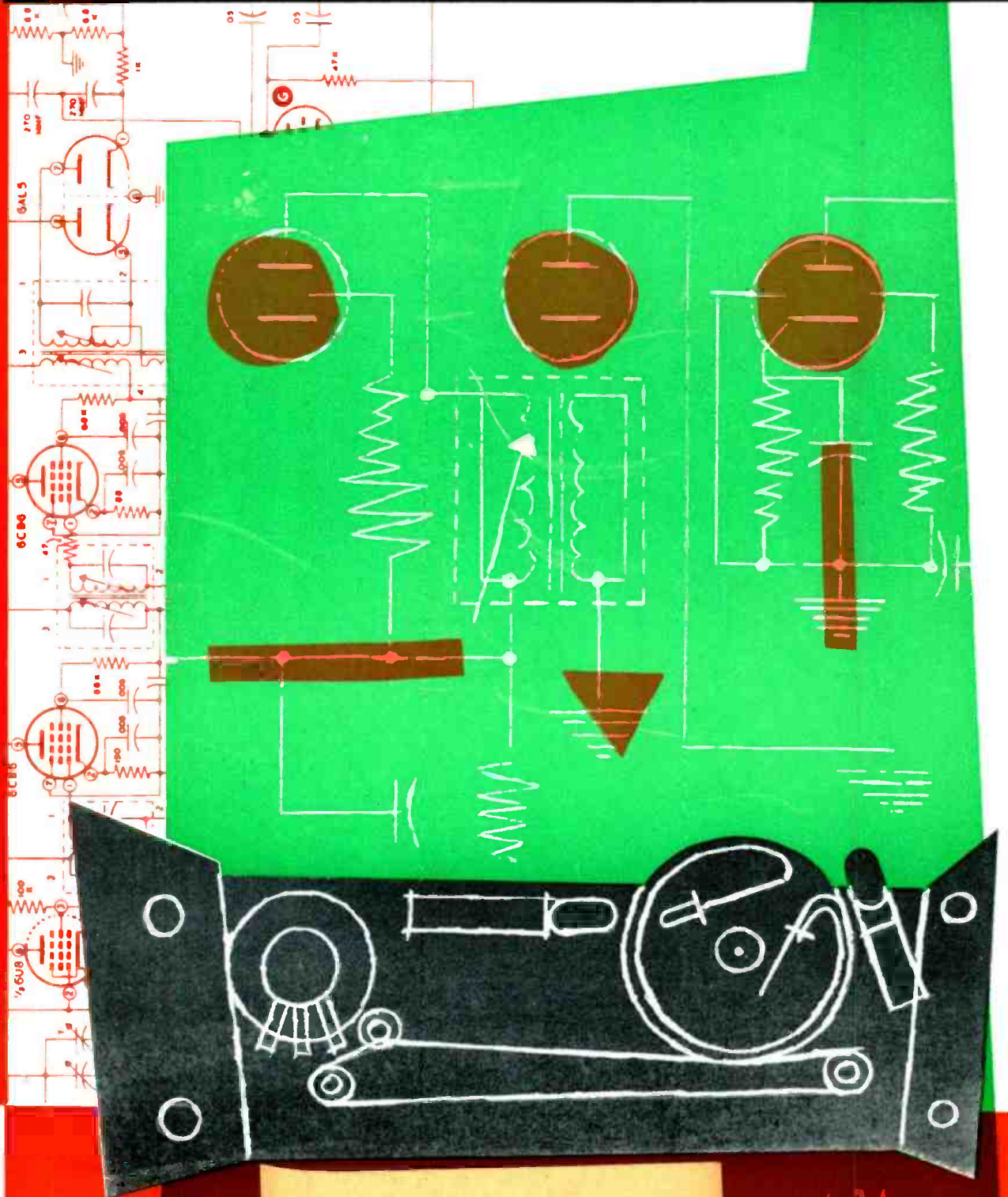


HI-FI

# TAPE RECORDING



February,  
1957

35c

Mr. Sydney G. Brooks  
Brooks Jewelry  
Cadiz, Ohio

31  
9/

now you can meet every tape recording need

with this **COMPLETE audiotape LINE**



**1. PLASTIC-BASE AUDIOTAPE** on 1½-mil cellulose acetate meets the most exacting requirements of the professional, educational and home recordist at minimum cost. Known the world over for matchless performance and consistent uniform quality. Series 51, in the red box.

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**6. COLORED AUDIOTAPE** on green or blue 1½-mil plastic base provides fast, easy color cueing and color coding, at no extra cost.

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**8. HEAD ALIGNING TAPE** pre-recorded with precise head alignment, giving a highly accurate reference for aligning recording heads.

**9. TYPE "EP" AUDIOTAPE** provides extra precision and guaranteed freedom from defects, for computers, telemetering and high-speed magnetic data recording.

**10. AUDIOFILM** extends Audiotape's unsurpassed sound quality to motion picture and TV film recording. Available in 35mm, 17½mm and 16mm sizes.

**11. "HOW TO MAKE GOOD TAPE RECORDINGS"** The complete handbook of tape recording, containing 150 pages of up-to-the-minute information of practical value to every tape recordist. \$1.50 paper bound, \$2.50 cloth bound.

**12. AUDIO HEAD DEMAGNETIZER** removes all permanent magnetism from recording and reproducing heads in a matter of seconds.

**13. AUDIO HEAD CLEANER**, especially formulated for use on magnetic recording heads — superior to carbon tetrachloride.

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**15. AUDIO SELF-TIMING LEADER TAPE** A strong, durable leader tape of white "Mylar" with spaced markings for precise timing of leader intervals.

*New 5-Reel Cellophane Package*



gives extra protection against dust and dirt — keeps tape and boxes factory fresh.

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... it now costs no more than ordinary tape!

**AUDIO DEVICES, Inc.**

444 Madison Avenue, New York 22, N.Y.  
Offices in Hollywood — Chicago      Export Dept., 13 E. 40th St., New York, N.Y.

\*DuPont Trade Mark



YOU GET  
**BETTER TAPE RECORDINGS**

WITH **Electro-Voice®**  
**MICROPHONES**



The vital key to fidelity in your tape recordings is the microphone. The quality of the entire performance hinges on the ability of the microphone to translate with supreme accuracy the living, breathing reality of the words and music you put into it.

For 29 years, *Electro-Voice* has engaged in continuing research and engineering to bring you the finest. Because of skillful design, precision fabrication and manufacturing know-how, *Electro-Voice* is standard in television and broadcast stations as well as professional recording studios.

Vastly extend the use of your fine tape machine by adding a better *Electro-Voice* microphone. Shown here are but a few of the many models in the complete *Electro-Voice* line. Choose one that suits you best.

See Condensed Catalog No. 124-G72  
or ask for additional information.

**Electro-Voice®**

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**For Solo and Group Pick-ups**  
Model 926. Slim, modern crystal microphone. Omnidirectional. Excellent for recording parties and training sessions. Tilttable. 18 ft. cable. List Price: \$27.50



**Excellent Bass for Music Pick-up**  
Model 911. Mercury crystal microphone. Fine quality omnidirectional pick-up, with excellent bass response. Provides smooth, wide-range reproduction of music. "On-Off" switch. Tilttable head. With 18 ft. cable. List Price: \$32.50



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**For Economical All-Around Use**  
Model 915. Century crystal microphone, shown in use at left. Can be used in hand, on table or stand. Omnidirectional. Rugged, lightweight. With 5 ft. cable. List Price: \$12.50



**"623"**

**SLIM DYNAMIC**

For Finer Recording  
of Voice and Music

Model 623 Slim Dynamic Microphone

Modern design gives smooth, wide-range reproduction. Omnidirectional. Exclusive Acoustalloy diaphragm. Very rugged, long-lasting. Has convenient "On-Off" switch. Tilttable head. Use on stand or in hand. Choice of high or low impedance simply by changing wire in connector. With 18-ft. cable.

List Price \$55.00

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*Emperor*  
**3 Speaker**  
**Hi-Fi**  
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Now with  
**STEREOPHONIC SOUND**



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**PENTRON STEREO-MAGIC**

Only the new Pentron Emperor recorder offers this newest concept in audio pleasure. The Emperor's "roving" tweeter in a separate baffle, perfectly balanced with 2 heavy duty woofers in the recorder, reweaves the whole complex beauty of the music even at low volume. Don't miss the experience. Hear and feel this difference in audio dimension — see the Emperor's bold incomparable styling at your Pentron dealer.

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**HI-FI**

**TAPE RECORDING**

VOL. 4 No. 3

FEBRUARY, 1957

MARK MOONEY, JR.  
*Editor and Publisher*

JOHN L. ALLEN,  
*Circulation Manager*

JEAN COVER  
*Assistant Editor*

ROBERT W. LAPHAM,  
*Art Director*

JAMES H. MILLS, SR.,  
*Technical Consultant*

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

GEORGIA SIGSBEE  
*Music Editor*

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40 to  
15,000 cycles

and REMOTE OPERATION

*True High Fidelity*

**AMPRO<sup>®</sup>**  **TAPE RECORDER**

Thanks to one of the finest amplifying systems ever incorporated in a tape recorder. Ampro gives you faithful reproduction from 40 to 15,000 cycles per second! As shown on the chart, Ampro is capable of reproducing the lowest notes of the string bass to the highest notes of the violin, duplicating faithfully the original performance.

Contributing to Ampro's "live performance" sound is a crossover network system which combines two electronically balanced speakers to achieve matchless realism through perfect tonal separation. The lower frequencies are reproduced by a 6x9 inch elliptical Alnico-5 "woofer" and the higher frequencies by a 3 1/2" round Alnico-5 "tweeter."

**SOLENOID OPERATED CONTROLS**

You'll find Ampro wonderfully easy to operate. It's the only Push-Button Tape Recorder with 100% solenoid operation . . . insures instant Stop without "drag" or "flutter"; instant Record and Playback. Ampro has eliminated all mechanical linkage, providing quieter operation while reducing danger of tape breakage.

**EXCLUSIVE REMOTE CONTROLS**

The Ampro Hi-Fi's 100% solenoid operation permits the exclusive use of a forward-reverse foot control and a stop-start microphone which permits operation and control of the unit from a distance. A real benefit for recording, dictation and transcribing.

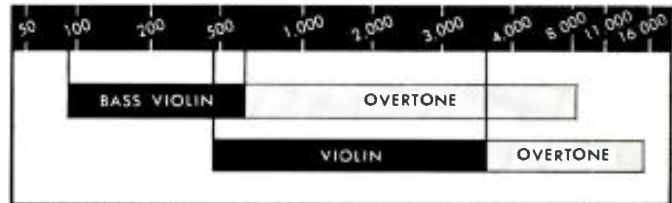


CHART SHOWING AMPRO FREQUENCY RANGE

**OTHER FEATURES :**

A smooth-running high torque AC motor gives absolute minimum "wow" and "flutter" (less than 0.3% RMS at 7 1/2 i.p.s. and 0.4% RMS at 3 3/4 i.p.s.). Signal to Noise Ratio is 45 decibels.

- Automatic Selection Locator
- Automatic Tape Transport Shut-off
- Two-speed Operation, 3.75 and 7.5 i. p. s.
- Electronic Recording Level Eye
- Fast Forward Key — 72 i. p. s.
- Fast Rewind Key — 120 i. p. s.
- Amplifier By-pass for High Fidelity Systems

- Ampro Hi-Fi Two Speed Recorder . . . . . **\$249.95**
- Ampro Hi-Fi with built-in radio . . . . . **284.45**
- Ampro Matching Console Speaker . . . . . **69.95**

Graflex dealers offer convenient Graflex Easy Payment Plan. Pay 10% down . . . monthly payments as low as \$13.50.

Write Dept. T-27, Graflex, Inc., Rochester 8, N.Y.

Prices include federal tax where applicable and are subject to change without notice.



**GRAFLEX**

*Price-Winning Cameras and Equipment*



It is most heartening and interesting to watch and listen to how tape is developing into the lives of so many here in this small, but acutely alive, community. And if here, then this must well be the trend across the nation.

The tape companies are so busy that some are working "across the board" trying to keep up with the demand. The dealers are constantly ordering more and more tape playback and recording machines and trying to see that an adequate supply of tapes is on hand to keep up with the consumption. Business is good, music is better!

As for the husbands who have a difficult time convincing their wives that another addition to the present set is necessary here are a few suggestions. First, be sure she hears stereophonic sound. Second, teach her to work the tape machine. Too many women stand in awe of this mechanism only because it is an unknown factor. Any woman who can thread a needle, balance a budget or run a household can work a tape machine with ease. Under your supervision have her put on one of her favorite selections and see how easy it would be for her to have music while she goes about the house

"working her fingers to the bone." And here is a tip if you find it hard to get her to sit down and relax in the evening (a tradition in this household used on both family and friends) . . . turn off all the lights to prevent distractions (this cuts talking too) and play beautiful music . . . the more she hears, the more she will want to hear. And the next time you desire that extra piece of equipment she will be backing you up!

## CLASSICAL ORCHESTRAL

GRIEG  
Lyric Suite  
Norwegian Dances  
Holberg Suite  
Wedding Day at Troldhaugen  
Bamberg Symphony  
Edouard van Remoortel, Conductor  
PHONOTAPES-SONORE PM 146  
7 1/2, Dual—\$8.95

This tape, in its entirety, I would label sheer beauty. The strings are lyrical, the brasses resonant and you will find the orchestra "sings" throughout.

The Lyric Suite demonstrates the exquisite charm and power of Grieg's melodic style. The interplay of instruments, such as between flute and oboe, clarinet and bassoon, displays his harmonic originality. The title of this composition is truly descriptive.

An exponent of Norwegian music, Grieg has filled all four movements of the "Norwegian Dances" brim full of the spirit of his country.

The "Holberg Suite" is composed of an old world style woven with the romantic. This is an expressive and colorful composition. Omegatape (35003, August 1955) also has a fine release of this suite.

The final selection vividly expresses the warmth and closeness Grieg felt for the countryside in which he dwelled.

Don't miss this tape . . . it is excellent.

## LIGHT CONCERT

VIENNESE NIGHTS  
Blue Danube  
Feuerfest Polka  
Carnival in Rome  
Vienna Pro Arte Orchestra  
Anton Paulik, Conductor  
ALPHATAPE 23  
7 1/2, Dual—\$3.95 (5-inch reel)

Here are a few of the outstanding additions to our Stereophonic Catalogue in various categories:

### CLASSICAL

MOZART: Concerto No. 2, 3 for French Horn and Orch. (K. 447, 417), James Stagliano and Zimblet Sinfonietta  
Boston 7-4 BN

### CHORAL

STRAUSS, JOHANN: Voices from Vienna, Vol. 1, incl. Blue Danube, Sweet's from Vienna, Thunder and Lightning, featuring the 106 voice Vienna Choir with Orchestral Accompaniment.  
Audiosphere 706 BN

### ORGAN

BACH, J. S.: Toccata and Fugue in d minor, Kurt Rapf playing Piaristenkirche Organ; also contains Mendelssohn's Sonata #2, Franck's Chorale in E major  
Audiosphere 711 BN

### POP

LENNY HERMAN: Music in Motion, Vol. 1 — Standard dance favorites with striking stereo effects.  
Livingston T-1088 BN

### FOLK

JOSH WHITE COMES A-VISIT- IN', Josh White with instrumental and choral accompaniment in You Know, Baby; She's Too Much For Me; Bury Me High; Come Along, Charlie and others  
Livingston T-1085 BN

### HAMMOND ORGAN

BILL THOMSON GOES LATIN, outstanding Latin melodies including Brazil, Poinciana, Carioca, Orchids in the Moonlight and others. One of the most delightful tapes by this highly versatile artist!  
Livingston T-1091 BN

And for superb Monaural listening:

CARL SANDBURG SINGS NEW SONGS FROM THE AMERICAN SONGBAG, including Boll Weevil, Foggy, foggy dew, Careless Love, The Horse Named Bill, I'm sad and I'm lonely, and other ageless favorites.  
Lyricard LY 5-4 (5")

Largest  
Tape  
Treasury  
in

# STEREOPHONIC

First in monaural . . . first in stereophonic . . . always the quality leader in recorded tape for home music performance, LIVINGSTON is rapidly adding to its library of new stereophonic releases.

The LIVINGSTON catalogue contains the greatest diversity of recorded works ranging from the monumental classics to Jazz and Dixieland, from Bach's works for the Organ to the folk ballads sung by Josh White. Included in the LIVINGSTON listings is the finest material from such famous independent labels as:

AUDIOSPHERE • BOSTON • ATLANTIC  
EMPIRICAL • ESOTERIC • LIVINGSTON

ALL LIVINGSTON tapes are 1200, splice-free, on 7" reels, fully guaranteed. All tapes come in attractive individual boxes, immediately identifiable and with complete program annotation.

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5" Monaural Dual-Track . . . . . \$6.95  
7" Monaural Dual-Track . . . . . \$11.95  
Stereophonic (Stacked or Staggered) . . . . . \$11.95

# LIVINGSTON

LIVINGSTON AUDIO PRODUCTS CORP. Livingston, N. J.

FLORENCE MAY FESTIVAL ORCHESTRA in ORCHESTRAL GEMS, VOL. 2. Vittorio Gui conducts symphonic selections by Mussorgsky, Borodin, Massenet, Debussy, Dukas and Rossini.  
Audiosphere AUD-2 (7")

MELODY CRUISE TO LATIN AMERICA (OC 5-1); TO ITALY (OC 5-2); TO PARIS (OC 5-6); TO SPAIN AND MEXICO (OC 5-7); TO ISRAEL (OC 5-8). A sparkling tape spotlighting the fabulous fingers of Irving Fields and his trio in many well-known and loved songs of each country.  
Oceanic (all 5")

LIVINGSTON tapes can be auditioned at your High Fidelity—Audio Dealer or Record Shop. Send for our complete catalogue and the name of your nearest dealer.

## RECORDED ★ ||| TAPE

We carry a full line of stereophonic and monaural tapes from over thirty leading tape libraries. For a complete and informative FREE catalog, write—

**MAL'S RECORDING SERVICE**  
Dept. TR, Box 37, Rockaway Park 94, N. Y.



Here is a shorter version of the Strauss waltzes and polkas (Omegatape 3003, August 1956) containing three of the seven selections performed by the same group on the 7-inch reel.

You pay your money and take your choice. The fidelity is fine, the music light and gay and Paulik turns in a commendable performance with this small orchestra.

## POPULAR

### MEMORIES OF SPAIN AND ITALY

Espani Cani  
La Virgen de la Marcarena  
El Relicario—The Breeze and I  
Habenera  
Symphonetta De Madrid  
Italian Street Song  
O Sole Mio—Fincoli Fincola  
Santa Lucia  
Roberto Rossani Orchestra

BEL CANTO . . . #3  
7 1/2" Stereo—\$9.95

What fidelity! From the moment the first flashing, colorful Spanish tune starts you will agree this tape is a "must" for your library. The fine guitar playing of Carlos Baptista in "Espani Cani" is reproduced with unbelievable clarity. In the second number the trumpet solo work will leave you breathless. You might even find yourself wishing for a rose between your teeth and the ability to dance during the "Habenera" from Carmen. The Symphonetta de Madrid does a magnificent job bringing out all the richness and hue of their country's music. A truly spirited recording which will stimulate, excite and entertain.

I only wish we could hear more of Baptista and wonder if we couldn't in the near future. How about it Bel Canto?

The "Italian Street Song" is fast and brief. "O Sole Mio" will transport you right to sunny Italy where you will be serenaded by the strumming mandolin. Here again is live fidelity. Check and see if you don't agree that the piano reproduction in the happy version of "Fincoli Fincola" is superior. At the end of "Santa Lucia" one may well feel they have taken a short, vicarious trip to Italy.

A full, richly recorded tape . . . the utmost in fidelity.

### THE HI-FIMONICS

Chloe  
Pavanne  
Cuban Love Song  
Deep Night  
Orpheus  
You Go To My Head  
Steel Guitar Rag  
Nagasaki  
Prisoner of the Sea  
Cumbanchero  
Turkish March  
Moonlight in Vermont  
Chicque Cha

REPLICA NO. T-1001  
7 1/2" Stereo—\$11.95

This group is made up of the lead harmonica, Lee Jenner officiating; John Thompson, bass harmonica; Earl (Red) Engel, chord harmonica; Casey Duda, bass fiddle, and Bill Garbor, guitar.

Jenner, who along with a partner won the grand final on Horace Heidt's show back in 1950, plays with considerable skill. His harmonica has a range of four octaves and his throat vibrations, which serve to produce different effects much like violin or clarinet, are considered the best in the harmonica field. Thompson was a protege of Lou Zonka; his instrument is actually two harmonicas on a hinge and has the same range as a bass fiddle. Engel's unique style on the chord harmonica (it possesses all the basic chords for accompanying parts) enables him to create sensorially different effects.

Duda sparks the Hi-Fimonics and you will agree he is a thoroughly capable bass fiddler as you hear his dexterity on the instrument displayed in such pieces as "Nagasaki," "Cumbanchero," and "Chicque Cha." Garbor styles after the late Django Reinhardt, famous master of the guitar. These two "Hungarian gypsies" (by way of Cleveland) handle their respective instruments with ability and serve to round out the ensemble.

This is a good tape with music ranging from sweet and mellow such as "Cuban Love Song" to hot rhythms, i.e., "Steel Guitar Rag." Full sound via stereo. These young men are so good you almost have the feeling of listening to a small pop orchestra.

## JAZZ

### THE RED NORVO QUINTETTE

Stella By Starlight  
Spiders' Web  
Funny Valentine  
Lullaby of Birdland  
Tenderly  
I'll Remember April  
Love for Sale

JEMO JJI-5  
7 1/2" Stereo

This is a new label just starting, with a bang, in the stereo field. It gives me pleasure to welcome them with an "excellent" rating.

The quintette features Red Norvo at the vibes, Bob Drasnin performing on flute-alto, Jim Wyble playing guitar, Buddy Clark on bass and Bill Douglass beating the drums. This is an expert, well-coordinated group producing some of the best arrangements and improvisations I have heard in a long time.

From the opening notes of the flute (and what an impact!) to the closing fast rendition given "Love for Sale," this tape will impress you as a recording you will want to own and hear often.

Drasnin shows his versatility on the flute particularly in "Stella by Starlight" and "I'll Remember April." Norvo takes over in the "Spiders' Web" followed by the guitar featured in "Funny Valentine" and Douglass giving out in "Lullaby of Birdland." Clark shows his mastery at bass in "Tenderly" and in this way you get to hear each performer display his talent in the limelight. Throughout you will hear music which, though standard, I guarantee is given a fresh and scintillating touch.

This is an excellent tape, a perfect stereo showpiece, and my suggestion to JEMO is that they rush more releases to the market.

Excerpts from Stereo Albums No. 1 thru 7 and No. 702. An entertaining program of the finest in authentic stereophonic sound by Bel Canto.

(AVAILABLE FOR BOTH  
"INLINE" & "STAGGERED")

ST-DX 15 MIN.

**\$3.95**

(in Calif. add 4% Sales tax)

Featuring the Symphonetta de Madrid and the Rossini Orchestra of Italy. The stirring La Virgen de la Marcarena is an absolute must for the stereo enthusiast.

ST-3  
\$9.95  
23 min.

Memories of Spain and Italy

A thrilling high fidelity adventure in stereo through the brilliant artistry of Monsieur D'Cole and the String Ensemble de Paris.

ST-2  
\$9.95  
23 min.

Rachmaninoff in Stereo

The finest Concert Band Organ in existence today, complete with drums, cymbals, castanets, reeds, glockenspiel, trumpets, bells, and triangle.

ST-1  
\$9.95  
23 min.

Carousel Band Organ

Featuring the Mighty Wurlitzer at CBS with electronic and hammer-struck chimes. A dramatic presentation of 20 traditional Christmas melodies. An absolute must for the stereo enthusiast at Christmas time.

ST-702  
\$11.95  
30 min.

Merry Christmas Carols (Pipe Organ & Dual Chimes) Monaural Album #701

# STEREOPHONIC TAPES

For the first time in stereo. Razzberry Reynolds and the All-Star Polka Band perform: Too Fat Polka, At the Mill, and Helena Polka, recorded at the Capitol Tower in Hollywood.

ST-7  
\$7.95  
15 min.

Polka Party in Stereo

Here is an album devoted to the waltz, featuring the King'sway Strings and Joseph Kohn's arrangements of the Merry Widow and Candlelight Waltzes.

ST-6  
\$11.95  
30 min.

Waltztime in Stereo

The Stockholm String Orchestra under the direction of Hans Holmber, nine immortal tunes of Herbert, such as Indian Summer, Toyland, and Moonbeams.

ST-5  
\$9.95  
23 min.

Tribute to Victor Herbert

Under Paris Skies, Can-Can, and Fete Jacques done by the Paris Theatre Orchestra, arranged and recorded specifically for the Bel Canto stereo library.

ST-4  
\$9.95  
23 min.

Memories of France

# Bel Canto

4856 W. JEFFERSON BLVD., LOS ANGELES 16, CALIF.

write for catalog



# JOIN THE STEREOPHONIC MUSIC SOCIETY and enjoy these benefits:

- SAVINGS ON STEREOPHONIC TAPES  
RCA, HMV, Hi-Fi, AV, Livingston, Concert Hall, Sony Sterecord and others.
- SAVINGS ON MONAURAL TAPES
- FREE MUSIC MAGAZINE SUBSCRIPTION
- NO MINIMUM PURCHASE REQUIREMENT
- ONE CENTRAL SOURCE FOR EVERY RECORDED TAPE; EVERY STEREO TAPE

AVAILABLE IMMEDIATELY

## FREE MEMBERSHIP BONUS TAPE NOW!

Limited Edition Stereotape by CONCERTAPE

containing highlights from every stereophonic tape in the Concertape catalogue along with a short description of the particular aspect of stereo recording best heard in this reel.

**\$6.00—Half year membership**  
**\$9.00—Full year membership**

USE THIS HANDY MEMBERSHIP APPLICATION FORM

TO: STEREOPHONIC MUSIC SOCIETY, Inc.  
303 Grand Avenue, Palisades Park, N. J.  
GENTLEMEN: Please enroll me for a  
 6 month period as a member of the  
 1 year  
Stereophonic Music Society. I understand that I am under no obligation to purchase any specified minimum of tapes under the Society's group purchase plan. As part of my membership I am entitled to a free one-year subscription to Hi-Fi Music at Home magazine, as well as quarterly listings of all recorded stereophonic and monaural tapes currently on the market.

My  Check for  \$6.00 is enclosed herewith (payable to the Stereophonic Music Soc., Inc.)  
 Money Order  \$9.00

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

MAKE OF RECORDER  
 Stereophonic  Staggered  
 Stacked  Monaural

Please send additional information concerning the Society.

## NEW PRODUCTS

### NEW E-V MIKE



Electro-Voice, Inc., Buchanan, Mich., has announced a new model 649 miniature lavalier dynamic microphone. It is omnidirectional; can be hung on a neck cord close to the chest to free hands; can be held in the hand or used on a desk stand; contains the E-V Acoustalloy diaphragm; it is equipped with a pop-proof wire-mesh grille which minimizes wind and breath blasts; frequency response is uniform from 70 to 13,000 cps; and while connected for 50 ohms impedance when shipped, convenient impedance changes can be made in the transformer housing for 150 and 250 ohms. It is supplied with a 30 foot, three-conductor shielded cable, neck cord assembly and belt strain relief clip. Price: \$115. Additional information is available from Electro-Voice.

### BOGEN TUNER PREAMPLIFIER



David Bogen Co., Inc., Paramus, N. J. is marketing the Model R775 FM/AM tuner-preamplifier. The unit contains auto-lock tuning which makes precise adjustments for reception and then locks into position; has extreme sensitivity (2 microvolts for 30 db quieting on FM); flat frequency response, extending into the super-sonic range; and low distortion of 0.4% at rated output. The R775 incorporates a pre-amplifier; complete control is provided with Baxandall-type bass and treble control; and it is available in mahogany or blonde metal enclosure. Price (Audiophile net in the East) \$249.50.

### DEJUR CONSOLETTA



A new consolette containing the DeJur dual professional tape recorder has been announced by the DeJur-Amsco Corp., 4501 Northern Blvd., Long Island City 1, N. Y. The recorder has two electrostatic tweeters, two intermediate speakers and one woofer comprising an exclusive Hi-Five speaker system; compartments are provided for storing tapes, mike and accessories; cover can be closed when in operation; and it is housed in a beautiful walnut finish cabinet. Price: \$499. For additional information, write to DeJur-Amsco Corp.

### WEBCOR EDUCATOR



A new Webcor Educator tape recorder, Model 2640, especially designed for school use, has been introduced. This machine has a frequency response of 50-8,000 cps at 3 3/4 ips and 50-12,000 cps at 7 1/2 ips; a 4-way master control; two Webcor precision-built 4-pole induction type motors, electrically balanced; two recording heads; a recording level indicator; an input and output jack; and a three position output selector switch. For complete details and price of the Educator, write to Webster-Chicago Corp., 5610 W. Bloomingdale Ave., Chicago 39, Ill.

(Continued on page 10)



Revere's exclusive



makes the difference

# Revere TAPE RECORDERS

The incomparable high fidelity and rich tonal quality of Revere Tape Recorders is the direct result of a Revere exclusive, patented feature. "Balanced-Tone" is the control that coordinates amplifier and acoustic system response to emphasize both high and low tones, giving strikingly realistic HIGH FIDELITY sound reproduction, even on low volume. Compare and you'll choose REVERE!



**T-700-D Dual-Speed** — Simplified automatic keyboard controls. Standard tape speed of 3.75 and 7.5 i.p.s. Records up to three hours per seven inch reel with new long-play tape. Exclusive index counter. Complete with microphone, radio attachment cord, two reels (one with tape) and case.....**\$225.00**

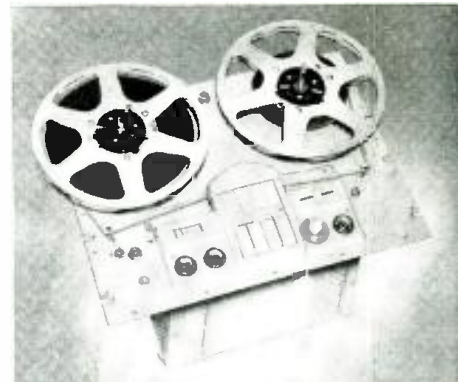
**TR-800-D** — Same with built-in radio, **\$275**

**T-11 Custom Model**—Far easy installation into any high fidelity system. Solenoid operated keyboard, push-button control. Accepts 3, 5, 7 and 10½-inch reels. Records up to 2 hours with 7½ i.p.s. tape speed or 3 hours with long-play tape. With reel adapters, cord assemblies and plugs.....**\$284.50**

**T-1100 Dual-Speed** — Single knob control. Tape speeds of 3.75 and 7.5 i.p.s.; records up to three hours with new long-play tape. Durable fibre-glass case; two acoustically matched excursion speakers. Complete with microphone, radio attachment cord, two reels (one with tape) and case.....**\$169.50**

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*is even better!*

The unidirectional dynamic Unidynes are now more than ever your best choice in those installations where feedback is a problem, and for all fine-quality public address, theatre-stage sound systems, magnetic recording and remote broadcasting—where critical standards call for the finest-quality microphone operation.

*Another example of the continuous creativity of the Shure Research and Development Laboratories.*

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556S Broadcast Unidyne List Price \$120<sup>00</sup>

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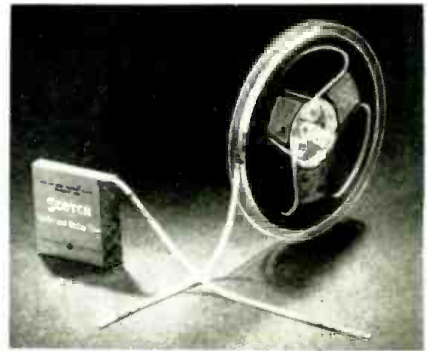
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LEADER AND TIMING TAPE



Minn. Mining and Manufacturing Co., 900 Fauquier St., St. Paul 6, Minn., has introduced a new plastic leader and timing tape. It features a special anti-static coating, which the manufacturer claims reduces noise as the tape passes over the playback head and makes the tape easier to handle; and a 50% increase in strength. It provides a tough protective leader which makes for easier tape thread-up and prevents damage to the recorded material. As a timing tape, it can be inserted between recorded selections to provide a "dead air" space or to facilitate cueing. The tape can also be labeled or identified with either a pencil or ball point pen. It comes in a special self-dispensing box. For additional information and price, contact the manufacturer, or your local dealer.

PENTRON STEREO KIT

The Pentron Corporation, 777 S. Tripp Ave., Chicago 24, Ill. has announced its Stereo-Magic kit which will convert any Pentron recorder made during the last five years to stereo playback except models RWN and CT-1. The kit includes everything needed for conversion and sells for \$16.95.

NOVEL RECORDER LIGHT



Atlas Sound Corporation, 1425-1449 39th Street, Brooklyn 18, N. Y. has announced a very clever combination lamp and mike stand. The lamp may be used with a recorder to give adequate lighting when the recorder is placed in a dimly lit location. It is also useful for workbench, etc. The lamp is removable and what remains is a floor mike stand, adjustable from 3 to six feet.

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**VISCOUNT**  
ONLY  
**\$149<sup>95</sup>**



**This is hot news!** The new Webcor Viscount High Fidelity Tape Recorder has all the wanted features of most top priced sets—yet it retails for only \$149.95!

Check these WEBCOR-quality features!

- Twin track single direction.
- Two speeds— $3\frac{3}{4}$  and  $7\frac{1}{2}$  ips.
- Veeder Root type counter.
- Three-watt amplifier.
- Frequency response—50 to 12,000 cycles.
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- High fidelity recording head.
- Full-range PM speaker.
- Edit switch.
- Safety Record Button.

See your local Webcor dealer soon. He has a full line of 1957 Webcor Tape Recorders from \$149.95 to \$289.95.

#### ROYAL HIGH FIDELITY TAPE RECORDER

Has two motors and two recording heads—also exclusive "no reel turnover" feature. Wide-range 6" speaker—8 watts power output. Automatic shut-off 3 position output selector switch. \$199.95.\*



#### ROYAL CORONET HIGH FIDELITY TAPE RECORDER-RADIO

Has two motors and two recording heads—also exclusive "no reel turnover" feature. Three speakers—8 watts power output. Frequency range 50 to 8,000 at  $3\frac{3}{4}$  ips, 50 to 12,000 at  $7\frac{1}{2}$  ips. Supersensitive AM radio tuner. \$289.95\*



\*Prices slightly higher West and Southwest

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Series 3A/N

audiophile net \$379.50

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Standard equipment with the British Broadcasting Corporation, it is a byword with cultural, educational and scientific users throughout Europe. The FERROGRAPH is unconditionally guaranteed to meet the most critical performance requirements.

Two models of this versatile dual-speed, dual track recorder are now available in LIMITED QUANTITIES, with tape speeds of 3¾" and 7½" or 7½" and 15" per second. Both models feature the employment of a synchronous hysteresis capstan motor providing unparalleled long-term speed stability, thus avoiding pitch errors on playback.



ALL FERROGRAPH RECORDERS AND TAPE DECKS have three motors. Custom installation models with tape speeds of either 7½ and 15 ips or 3¾ and 7½ ips are available. (Custom model 66/H illus. at left).



Write for performance specifications and the name of the franchised dealer in your area.

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44 Danforth Rd., Toronto 13

## TAPE IN EDUCATION

BY JOHN J. GRADY, JR.



IN the June, 1956, issue of TAPE RECORDING, a column of TAPE IN EDUCATION contained the announcement that the Los Angeles City Board of Education had recently issued one requisition for 200 tape recorders—the greatest number ever ordered at one time in educational history. This particular column, a commentary on the usage of tape recording in the Los Angeles City schools, aroused considerable widespread interest. Such interest was entirely logical, for educators everywhere have been wondering—and delaying—about the adoption and installation of tape recording. Now, the decisive action of Los Angeles educators fully confirms the fact that tape recording, as an educational procedure, has passed from the preliminary experimental stage and has entered the accepted functional stage.

In the future, every school with installations of mechanical instructional aids can arrive at a logical decision: Move over—typewriters, computing machines, musical and laboratory equipment—tape recorders, now, will help you to prepare students for the actualities of modern life, particularly, in the arts of communication and interpretation. And it's quite possible TR could become teacher's number one pet, also—a real personal property pet—being such a time-saver, such a voice saver, such a perfect rememberer, and such a homework minimizer.

As a result of the publication of the column mentioned above, a happy situation developed. From Mrs. Margaret W. Divizia, of Audio-Visual Aids Section, Los Angeles City Schools, TAPE IN EDUCATION learns that her busy desk was the recipient of comments and inquiries from interested educators in the United States, Canada, and even from tar-off New Zealand. Such manifested interest, as expressed by other educators, is most complimentary to the school administrators of the city of Los Angeles, where every school in the jurisdiction has tape recording equipment. It is a fine form of recognition due to pioneering school authorities, who conducted exhaustive tests and experiments over a period of years. And the complete approval of tape recording—as a modern educational function—by the school authorities of such an important city as Los Angeles, certainly establishes a very valuable precedent for the guidance of all school districts desiring to be rated as modern and efficient.

The letters mentioned above, together with the comments from educators reaching TAPE IN EDUCATION, supply proof that our magazine TAPE RECORDING gets around, and is dispensing interesting information about the most versatile, practical, entertaining, educational product of modern communication science. That's welcome and cheering knowledge to those of us associated

with TAPE RECORDING, for which we're deeply grateful.

Mrs. Divizia, of Los Angeles, supplies further gratifying information. She answers the question, "How do teachers become proficient in the use of tape recorders?" In Los Angeles, with its hundreds of schools, two technicians are attached to the Audio-Visual Aids Section. It is their duty to instruct teachers how to operate tape recorders. The purpose is to provide each teacher with an operational skill. Teachers, today, have a foundational knowledge of audio-visual appliances, and of their application to teaching various curricular subjects. The technicians, in Los Angeles schools, implement that foundational knowledge—often just theoretical—by instruction in the efficient operation of the equipment available at the school. With the practical training received from the technicians, teachers become equipped to figure out activities for that little old tape recorder. Are they doing it? Who said, "And how."

Teachers, who have ventured beyond mere proficiency in the technical operation of a tape recorder, have developed benefits for themselves and for every member of the teaching profession. For faculty experimenters, after becoming expert at tape recording, are continually devising usages for instructive tapes, which results in advantages for both the teachers and the students in their classes. Modernizing teaching methods is an excellent form of educational advancement.

TAPE IN EDUCATION is on record with a prediction that ULTIMATELY every classroom in the nation will contain some form of tape recording equipment. A playback unit for class auditioning of educational tapes is a certainty. Generation after generation of students remembered a schoolroom as a place where there was a teacher's desk and a blackboard. That same memory may continue for succeeding generations, but this electronic age—and AUDIO—is sure to add another little classroom gadget to aid students to learn their lessons. And this little gadget will be associated in these latterday students' memories of school along with teacher's desk and the blackboard.

So, with every elementary school, every high school, and every junior college in the Los Angeles City Educational System having installations of tape recorders, it seems safe for TAPE IN EDUCATION to make another prediction. It must be conceded that only through the approval and acceptance by teachers and administrators—aware of the demonstrated benefits of tape recording—could such a complete installation be possible in the Los Angeles schools. Therefore, TAPE IN EDUCATION now predicts that every teacher ULTIMATELY will own a tape recorder.





# TEEN TAPERS

BY JERRY HEISLER, National President

**A** NEW YEAR is once again with us and I believe that it will be a very big one in magnetic recording circles. Since resolutions are in order when a new year arrives, permit me to make a few belated ones along with a few predictions.

First the resolutions. In the new year Teen-Tapers will endeavor to provide the greatest possible service to its teen recordists. The bulk of the columns will be devoted to news of equipment and techniques with an eye to informing about our particular interests. An even greater effort will be made to maintain contact with manufacturers so that we may have all the news of new products. The most important element that we need in order to make this year the best for us, is letters from you letting us know what you want. We can supply you with information on any subject you want if you ask. Enough on this.

As I see it, this year will see many improvements in equipment. Stereo will make its big mark. With V-M, Ampex, Pentron and Bell, already out with stereo machines, it seems a fair guess that every major manufacturer will have a stereo machine by next Christmas. We look for great things from the stereo machines that can make, as well as playback stereo.

Recorded tapes, and this should be of special interest to teens, will rise in popularity. The long needed arrival of big names in this field is with us, now that RCA is releasing well known artists. This should produce a boon to this element. We see a rise also, in furniture type recorders due to the rising interest in hi-fidelity and pre-recorded tapes. Bell and Howell, RCA, and Pentron, are but a few companies with nice units available in blonde or Mahogany finishes.

I would like to devote some time now, to an area that I haven't touched upon much in the past. This is the tape recording clubs. If you desire to really put your recorder to work for you and to provide you with a tremendous amount of fun, I'd suggest very strongly that you join one of the clubs this year, and one is all you need join in my opinion. These clubs, dedicated to exchanging tapes, provide members with a list of those participating in the plan. With this entree, you are set to exchange tapes back and forth and make many friends in the attempt. I mention that you need join only one club. By joining a club, and all of the clubs listed in the magazine are very good ones, you will be provided with a list of hundreds, and even thousands of names. I doubt that anyone could correspond with more than 20 people, and thus one membership list is more than adequate. The clubs also provide some news of activities of various members through the club papers.

This activity of exchanging tapes promises many things to teens. You can find out about kids in other lands or exchange ideas with people having similar interests. It's loads of fun setting up your recorder and just chatting with someone for 15 minutes or so. You kids at college will find this a good way to talk to the folks regularly and very inexpensively.

Membership in these clubs averages about \$3 per year and it is certainly worth it. Let me again reiterate though, in all fairness to you, it is most unnecessary to join more than one club. You can get more information on these clubs by writing to their respective secretaries whose addresses all appear in the club section. (See page 31). You might enclose a stamp with your letter since postage makes up their chief expense. This year, if you haven't in the past, make it your business to exchange tapes and to join a club. It is a most broadening experience and one of the most rewarding uses we can think of for a tape recorder.

An incident occurring recently at the campus radio station, brings to mind the topic of the proper way to edit a tape. It seems that some one decided to edit the tape right on the recording machine. This resulted in the head being ruined by a razor blade which cut into it. This may seem very elementary, yet it did happen. Always, always, remove your tape from the machine before doing any work on it. You can really do a lot to your tapes by taking advantage of the few simple editing tools available to you. If you don't already have them in your "kit," I'd suggest you purchase the following things: a splicing block, a razor blade, a pair of sharp scissors, a roll of splicing tape, a roll of leader and timing tape, and a roll of reel labels. The whole works can be purchased for under \$4.

With these tools, you can take your reels of tape and transform them into library pieces. The splicing block enables you to repair and edit your tapes by neatly holding the ends in line. Fluffs in voice, or scratches on recordings can be neatly eliminated. The special splicing tape does a nice job in connection with the block, and you'll hear no indication in the playback that anything was done. Leader tape should be put on the ends of your reels. This allows the magnetic tape to be saved from tears and waste. The leader tape also has an identifying mark every so many inches to permit accurate spacing. The labels should be put onto each reel to identify it and to prevent accidental erasure. If you've never edited a tape, try it on one of your favorite reels and see how much you can do for it. Photographers dress up their movies considerably by taking out bad parts, and recordists can do the same.

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■ Model CA-40 combines the most advanced audio control with a powerful 25-watt amplifier on one compact chassis. Less than 1% distortion at 25 watts! Handles 50 watts peak. **Exclusive FISHER TONESCOPE**—a graphic indicator of control settings. Direct tape-head playback and microphone preamplifier. Six equalization settings. Frequency response +0.5 db. 10 to 90,000 cycles! Hum and noise better than 90 db below full output. Cathode-follower, tape recorder output. 4, 8 and 16-ohm outputs. Ten tubes. **CONTROLS:** Volume/Loudness Balance (4-position), Selector/Equalization, AC On-Off, Bass, Treble, Rumble Filter, Noise Filter, Input Level. **SIZE:** 12 3/4" wide x 10 1/4" deep x 5" high. **WEIGHT:** 24 pounds. **\$139.50**



Model 80-C

### FISHER Master Audio Control WITH DIRECT TAPE-HEAD PLAYBACK

■ "Breathtaking!"—Edward Tatnall Canby. Professional phono and tape-head equalization. Full mixing and fading facilities on 2 to 8 channels, 7 inputs, including two Phono, Mic and Tape. Two cathode follower outputs. Separate equalization and preamplification *directly* from tape head. Inherent hum virtually non-measurable! Frequency response +0.25 db. 20 to 20,000 cycles; +2 db. 10 to 100,000 cycles. **CONTROLS:** Bass, Treble, Master Volume, Two Phono Tape Equalization, Calibrated Loudness Balance, Line Switch, Five Channel Selector Push Buttons, Five Input Mixer/Level. **SIZE:** 12 3/4" wide x 7 3/4" deep x 4 1/4" high. **WEIGHT:** 10 pounds. **\$99.50**  
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## TAPES TO THE EDITOR

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

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

To the Editor:

I was delighted with the December issue, not only because of the information concerning stereo, but because it is the beginning of the monthly issues which really fulfill a long-felt hope.

But by far the most intriguing thing about the December issue is not stereo sound. I am now on the verge of ulcers trying to puzzle out the purpose of the ubiquitous gentleman in satorial elegance wandering through several of the photographs. I first noticed him in the large photo at the bottom of page 31. He is standing almost at attention on the apron directly under the propeller, left of center. I have been unable to figure his function, his under-arm portfolio, and the reason for his semi-rimmed umbrella on an apparently sunny day.

I saw him again on page 32, center photo, again on the left in front of the plane but slightly more relaxed in pose. In the top photo on the same page he is still visible, still with his Chamberlin complex and portfolio but now seemingly wearing a topcoat and standing at the base of the telephone pole in the exact center of the picture. By now, I began to have an active dislike for the old poser.

Upon examining the lower picture on page 32, (the train photo) he can be seen directly behind the last box car on the far right, hotfooting it off the tracks. Clearly he is frightened by an approaching train. Is it possible that the freight train backed up immediately after the picture was taken? Something must have happened to remove him from our mundane plane. Now he becomes an astral body—semi-transparent.

Just give a gander at the big picture at the beginning of the article on page 30. Near the left hand old spooky has intruded his portfolio and umbrella even out in the middle of the woods! This exact photo of Messrs. Cunningham and Jordan appears in the Shure advertisement (small inset) on page 19 but now he has happily vanished.

Is he the "Ghost of Stereo Recording"? If I get a stereo recorder is he likely to appear in my living room, complete with his umbrella and portfolio? I look forward to your explanation and reassurance.—*Paul E. Harris, New Rochelle, N. Y.*

"Old Spooky," as reader Harris has so aptly dubbed him, was a whimsy of the authors. He actually appeared in one photo and, by some sharp retouching, they dubbed him in the others. As to why he is in there, as asked by Adam Gaus of Syracuse, N. Y., and Robert Bruce, Jr. of Fort Worth, Texas, we don't know . . . other than as mentioned above.

To the Editor:

With reference to recording from tele-

vision permit me to note that I find channel 13, WAAM in Baltimore, can be recorded direct from the FM band of a Fisher 50 R tuner to the mike input of a Concertone 20'20 with perfect fidelity. I am using a Telrex TV antenna for both TV and FM and see no reason why such of your readers using a similar hookup should not be able to do the same wherever there is a local channel 13.—*Henry T. Kemp, Baltimore, Md.*

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# QUESTIONS & ANSWERS

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

**Q**—I make tape recordings at home from a Hammond Spinet Organ on a Webcor 2130 recorder. The music sounds good when played back on the Webcor but sounds distorted when played back over the radio station. The station uses Magnecord single track recorders. Would this cause any distortion? How do organists make tape recordings for rebroadcasting? I have a 15-minute program of recorded organ music every Sunday and would appreciate any suggestions.—E. H., Avoca, Pa.

**A**—We would suggest that you talk the matter over with the station engineer. The equalization on earlier models of Magnecorders was different than that of your recorder and would have a tendency to boost the treble. There may be other factors locally about which the engineer can tell you. You are, of course, using only one track on the tape as the use of both tracks would result in mish-mash of the worst sort and could not be broadcast at all.

The fact that the station playback is a single track machine would not have any effect on the distortion.



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If your tape sounds good to you when played back over your recorder it is an indication that you are recording properly and any difficulty must be due to a difference between the machines. Most recordings for radio broadcast are made on single track machines. There is no difference in fidelity between a dual and single track but there is a difference in the program level as the full track tape produces more output than the dual. Check the head alignment also.

**Q**—When custom installing a tape mechanism in a cabinet with the amplifier alongside, are there any precautions necessary in order to protect the tape from the magnetic field of the transformers on the amplifier? Should any particular distance or separation be observed? Should any sort of shield be placed between the tape mechanism and the transformer? With coping saw and screw driver in hand, I await your reply.—W. F. S., Ferguson, Mo.

**A**—There are no special precautions that need be taken in mounting the components as the natural separation enforced by their size should be enough. The only difficulty you might encounter is the pick up of hum through the influence of magnetic fields on the head. However, we would suggest you place the components in their relative positions in mock-up form and make a trial run. We doubt that you will encounter any difficulty. If any sort of shield is needed, soft iron is the best material to use.

**Q**—My recorder seems to run at excessive speed and although I have had it checked and repaired and rechecked I still have trouble with tapes from other recorders and they have trouble with tapes from mine.

In "Tape Recorders and Tape Recording" by Harold D. Weiler he states that 225 feet should pass in 5 minutes or 450 feet in ten minutes. This does not agree with my calculations.

Can you tell me if there is a standard test tape made for checking recorders or a method one could use to check the speed?—L. H. P., Port Arthur, Texas.

**A**—At 7½ inches per second the amount of tape passing the head would be 60 x 7.5 or 450 inches per minute. This would produce a distance between check marks of 187.5 feet for five minutes or 375 feet for 10 minutes. Regarding test tapes, write to Audio Devices, 444 Madison Ave., New York, N. Y.

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NO SCISSORS!  
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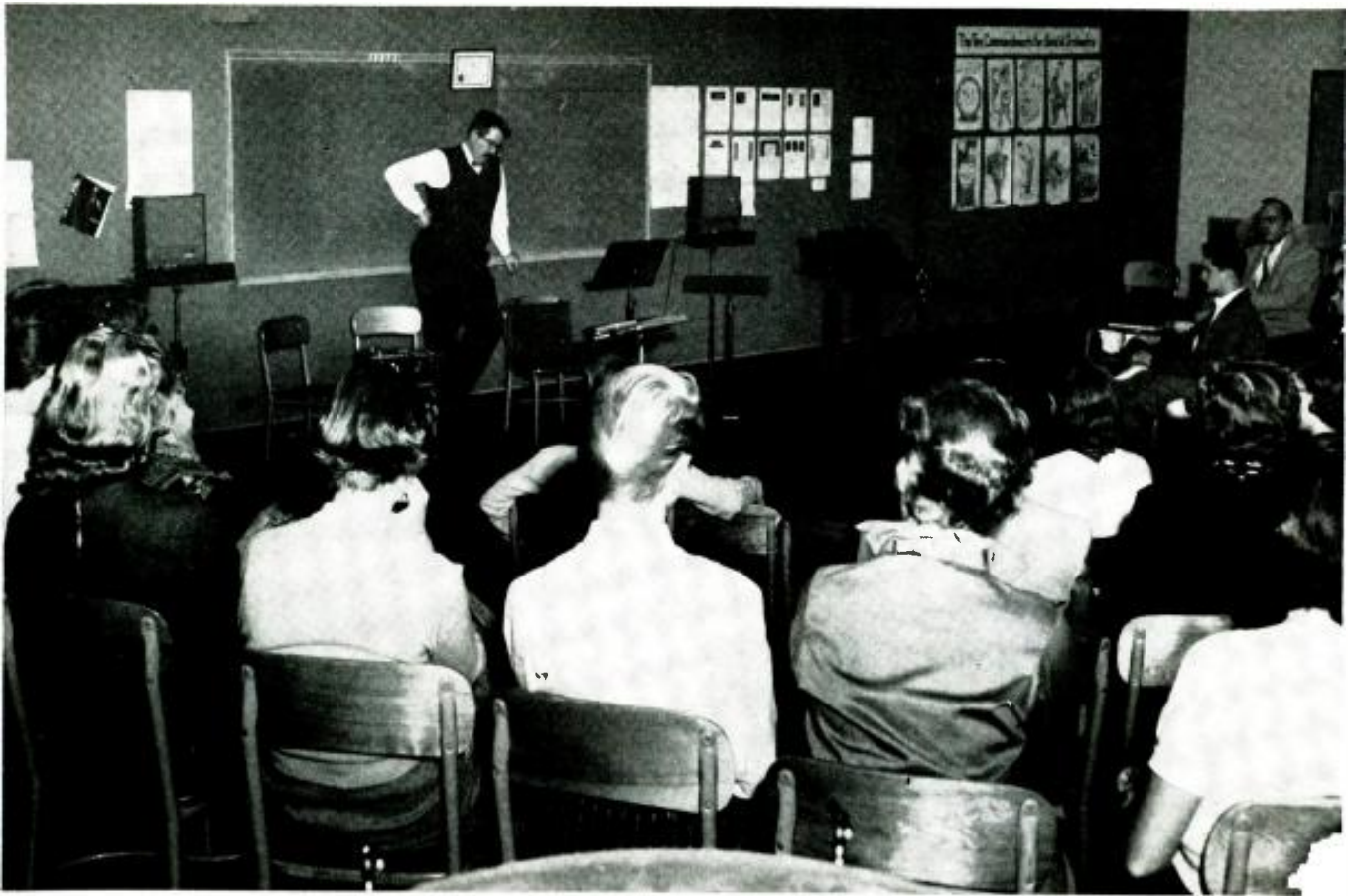


Write for features and Specifications to Dept. WJ-24

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EXPORT: Morlan Exporting Corp. 458 Broadway, New York 13, N. Y.  
IN CANADA: Atlas Radio Corp. 50 Wingham Avenue, Toronto 10, Ontario



Stereo in education. Here Robert Oakes Jordan conducts a high school music appreciation class using Ampex portable stereo playback equipment. Students find more interest in music when it is presented to them stereophonically.

## STEREO UNLIMITED

by Robert Oakes Jordan and James Cunningham

. . . the future of stereo in entertainment, education and perhaps warfare is unlimited.

IN our efforts to get you stirred-up about stereophonic sound and recording we are going to excite your imagination. Of all the types of recording known to us today, stereophonics has horizons we can but speculate. It is not necessary that any of us be experts in recording or even technically inclined for this look into the future. Our interest will open our *school for stereo*.

Let's think of all the areas in which stereophonic sound and recording might be important. Of course, the first would be music, since it is the first. Other audible arts might find great usefulness in stereo, for plays, readings of books and poetry. Both music and dramatics lead naturally to the thought of using stereophonic recording in all phases of education. Education, including the helping of children and adults with hearing and speaking problems. Learning a foreign language by recordings is made far easier if that recording is stereophonic. All of these uses lead to many others but always one path leads back to the exceptional entertainment value in stereophonic sound reproduction. We'll begin our look into the future of stereo with its use in recording music.

We are most familiar with the motion picture's use of stereophonic sound, back as far as the 1930's and Walt Disney's *Fantasia* and with our current productions of *Cinerama* and *Todd-AO*. Even earlier experiments were made at the Bell Telephone Laboratories shortly after World War I. It is even possible to trace the use of "stereophonic" sound to an Italian duke in the 14th century. It is obvious that he had no recording means but he did build two extremely long listening tubes that extended upward from the ceiling of the court room so that he might hold one tube to each ear and thus be able to better understand what was said about and against him during his absence. He found that he could actually place the voices in relative positions and rest assured that punishment met the right man. The duke didn't recognize what he had discovered, he simply put it to good use. All of these uses of stereo were impractical for the home entertainment center.

Magnetic tape brought us our first practical home application of the art. Expensive at first, stereophonic reproduction equipment is now within the financial reach of most high fidelity fans. Recordings of all types of music



were the first to appear on the market. Most of us have heard some of these spectacular recorded tapes. However, there is more of importance to stereophonics in music than it's fine entertainment value.

The fact of the stereophonic recording itself is a world of new employment for the professional American musician. The lot of the performing musician has not always been a happy one. We are all guilty in part for his shabby treatment in the past. Long hours, poor pay, mistreatment by some recording companies; it would seem as though the listening public was content to just absorb the sounds of our musical heritage without a thought to its origin and performance. Stereophonic recordings have gained quick public acceptance, in fact to a point where gimmicked or fake stereo is being rejected by dealer and knowing buyer alike. The importance of this remains in the fact that the public demand for stereophonic tapes will provide jobs for musicians on a long term basis. We mentioned the gimmicked or faked stereo tapes and this remains the only serious threat to a bright future. A fake stereo tape is one where a record company employs an existing monaural (single channel) master tape and some sort of acoustic delay system and electronic filters to produce a two channel "stereophonic" second master. When played back on a stereo system the sounds coming from each channel has a slightly different character due to this filtered delay. However it *does not* provide the illusion of three dimensional sound but rather just mixed up sound to fool the unwary. What it does provide is additional profit for the record company and *no more* earnings for the musician. By this method you could hear Caruso records in "stereo" or at least the advertisements might say so.

In the past few years LP recordings of major Broadway plays and shows have become very popular. The dramatic arts have always had their place in the field of recording. Opera recordings have been primarily concerned with the music rather than the action on the stage. In stereophonic recordings both can play an important part of the presentation on tape. You would be able to feel the grandeur in all the motion and action on the stage. Imagine hearing *South Pacific* in stereophonic sound. Even more exciting would be the plays of Shakespeare. The list of possibilities is end-

less and the beginning of stereo is here today.

As many as the facets of education are the uses of stereophonic recording. For several years magnetic recording has become more and more important in the speech and language departments of schools and colleges here in America. Other departments of music and drama are finding it an excellent tool for self teaching. What ever the use has been, the value of it is multiplied by the addition of stereophonic recording and playback equipment. In normal class work this new 3-D sound provides the listener with a close to natural sound realism, in its playback. Let's take one example, that of student learning to play an instrument. The recording equipment is set up in the auditorium or some room set aside for this purpose. The practice lesson is performed in front of the stereophonic microphone position. After the lesson is recorded it should be taken to a listening room where the effect of double acoustics will not interfere with the quality of the stereophonic sound. To explain *double acoustics* we might say that it is the effect of a room's natural acoustics on a recorded sound recorded in the same room. The liveness or reverberant qualities double up to give an unrealistic sound. We will explain this in a later article on the recording of stereophonic sound. To go back to the learning student, he will be able to listen to an accurate and dimensional presentation of his own skill. Often, where monaural recordings is concerned, the delicate shadings and overtones are lost to the listener. In many cases for student work, earphones might be the wisest course to take in listening to the recordings. In this manner there need be only one recording room and the student need not worry about outside noise or distractions. It is most valuable to record musical groups in order that they might have a chance to hear how they sound in performance. With stereophonic recording they can play one passage live and then listen to that same passage previously recorded. Stereophonic recording and playback provides an accurate standard of comparison. In every school there are interested students who can take over the technical aspects of microphone placement and recording so that the equipment can be kept in constant use without the chance of being mis-handled.

Stereophonic sound can make the music appreciation class



A student string quartet is shown practicing with alternate live and stereo recorded music passages. This gives a liveness to the practice session that cannot be obtained in any other way.

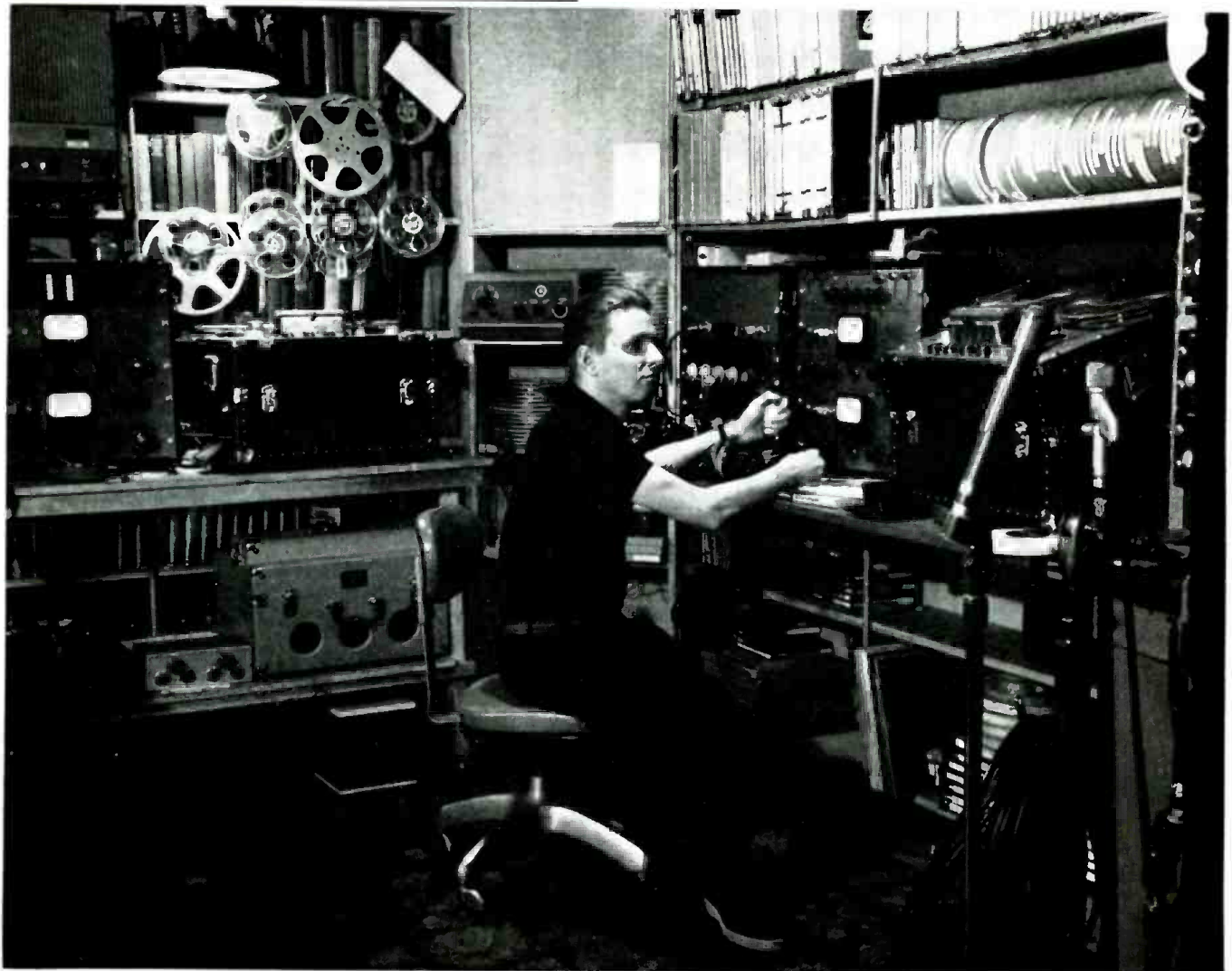


Left: Richard Hilton, a student technician, preparing an assembly program of stereo sound. In every class there are students who show a liking for electronics gear. These can be put to work running the equipment, leaving the teacher free to get the maximum amount of instruction across. Below: James Cunningham times a stereo tape in the lab.

enjoyable to all students because it is able to give stimulus to their aural imagination thus transporting them to the concert hall. Realism in musical reproduction is to be desired at all times.

We mentioned earlier about the use of stereophonic recording in the important work with the handicapped especially those with sight and hearing problems. Disregarding for the moment the entertainment value of stereophonic sound to the blind; how much easier it would be to teach them with this natural form of communication. At this time the cost of equipment is a drawback to a full scale program in education for the blind.

For some time we have been concerned with the prospect of magnetic recording at The Hadley School For The Blind in Winnetka, Illinois. Since the Hadley School instructs its students at no charge through the use of the United States mail service, and has no resident students, it must rely upon either Braille (raised dot printing for the blind) or some form of recording. In the past, and I am sure it will continue for some time, there has been considerable use of embossed dictation disc recordings which can be played on





James Cunningham checks the solidity of a fiber-glass resin applied to a surplus property parabolic radar reflector which will be used in outdoor stereophonic pickups together with a matching parabolic reflector, one for each microphone.



the free Talking Book Machines furnished by our government to all blind in our country. These discs, however fine for voice communication, do not have sufficient quality for music or other presentations. Eventually magnetic recording will come within the reach of most blind students, who will join the many of the Hadley School in Winnetka, Illinois, who now use magnetic recording machines furnished by Mr. Gaarder and Mr. Miller of V-M in Buchanan, Michigan. Think of how important it is to plan now for the future for stereophonic recording in education. The Hadley School has already raised, by public donation and subscription, money enough to pay for the extra concrete and masonry work necessary to include a professional recording studio in their new school building now under construction. Fund raising for the necessary equipment will start by itself.

For us the pursuit of knowledge about stereophonic sound has given us a great deal of information about what the human being hears and how he does it. To be quite honest we have dug up many more questions for ourselves than we have found answers. As research scientists our work has just started. Those of you who have heard our

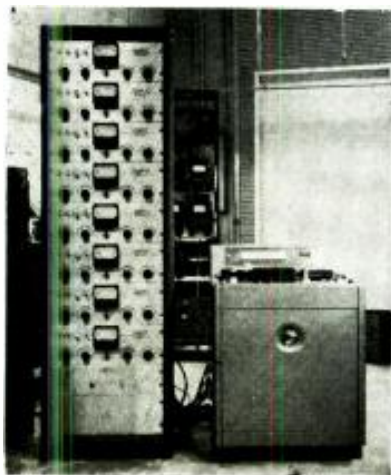
various tapes should know that for the most part these productions are closely coupled with our five year project in psycho-acoustics, or that is: *how we hear*. We have great interest in the effects of noise and strange sounds on the human being, we're deeply interested in finding out just exactly what *dead quiet* is and how it can be accomplished. With our stereophonic parabolic reflectors we have raised many interesting questions most of which are unanswered but are exciting in their newness.

Our government is very interested in the possible use of stereophonic sound as a weapon. Imagine if you take a 5000 watt audio amplifier with multiple loud speakers or transducers on the other side of a hill away from the enemy. You could put on a stereophonic recording of a group of heavy tanks pulling out of position or the division moving, and fool the enemy into revealing his position by cannon fire, or into making a false move. Far fetched? Can't say.

By now you must believe us when we say that with imagination and glimpses into the future at the values of stereophonic sound it promises to become a new art and force for entertainment, education and science.

## LES PAUL AND MARY FORD GET NEW 8 CHANNEL AMPEX

Les Paul and Mary Ford whose unique sound-on-sound recordings have made them famous have just taken delivery of a new eight-channel Ampex which uses one inch tape. Each channel can be erased, recorded and played back separately or in any combination. Previously, two recorders were used, one machine playing into the other while the artists added another part. With this method, the number of recordings which could be made was limited as quality fell off with each additional dub. With the new unit the artist may record the first part on track one and while listening to the playback from track one, play the second part on track two. When all tracks are completed they are played back together to a master tape. The machine may also be used for stereo recording up to eight tracks. Each track has, of course, its own recording and playback amplifiers and meters for recording level control. The control panel is shown at the left of the recording console in the photograph.





# PRINT THROUGH

## —Fact or Fable?

. . . here are authentic facts on a much discussed subject. Does print through affect your recordings?

by  
Geoffrey Grant

Print through, or cross talk, is a transfer of a recorded signal from one tape layer to adjoining layers when wound on a reel. The magnetic surface of one layer of tape tends to magnetize the next adjacent oxide surface. The effect is a weakened image of the original sound. Generally, however, print through is sufficiently below the sound level on the tape so as to cause no trouble.

**T**HERE is no single topic in the field of magnetic recording about which so much unfounded information exists as magnetic tape print through. Only dribbles of sketchy information have been released from time to time concerning this magnetic phenomenon. Just recently has the magnetic recording industry been willing to discuss with frankness and candor magnetic tape print through.

An inherent characteristic of the magnetic recording medium, print through is a transfer of a recorded signal from one tape layer to adjoining layers when wound on a reel. Most frequently print through is sufficiently below the sound level of the tape as to cause no trouble. In home type tape recorders the noise level of the reproducing amplifier and playback head alone is substantially in excess of the print level. Even on the most expensive professional studio recorders, using superior amplifiers with little background noise, print through is rarely a problem.

It is not surprising an entire body of myth and folklore exists regarding magnetic tape print through. Only in a vacuum and a nearly total blackout of factual information could the present print through myths abound.

In research laboratories throughout the world a considerable storehouse of information has been built up during the past several years regarding the print through phenomenon. While scientists still have not discovered the exact nature of magnetic tape print through, enough information is now known to refute many unsubstantiated myths which abound in the recording industry.

Here, then is a collection of the most common print through fables. When brought out into the light of day and

confronted with the most recent scientific findings, it is only natural these myths will wither away like old wives' tales.

*Print through is a serious limitation of the magnetic recording medium.* False. Providing reasonable caution is exercised, print through is not a significant problem. Under normal conditions, print through should not be noticeable. On home type recorders with average amplifier and playback head noise, the print level is substantially below the machine noise level. Even on expensive studio equipment with exceedingly low noise amplifiers, print through is not a problem.

Print through is an inherent characteristic of magnetic tape. While not desirable, print through does not pose a serious problem. In general, we live in an imperfect world in which every man-made object has its advantages and limitations. It is not realistic to single out magnetic tape print through as a significant shortcoming. Magnetic tape has obsoleted older recording methods since it conclusively offers more advantages. For example, magnetic tape print through pales into relative insignificance when compared to disc surface noise problems, record wear, and equalization difficulties with a changing rate of velocity.

*The cause of print through is unknown.* False. Admittedly there is much disagreement among theoretical physicists regarding the finer points of print through origin. Many blanks remain to be filled in. However, most authorities are now agreed that print through occurs through sensitization of magnetic particles in the tape's oxide coating by the A-C bias field.

A-C bias is used to make the tape linear in



order to record. Since magnetic tape is non-linear, without linearization intolerable distortion would result. In front of the record head the strength of the A-C bias field is about ten times that used in the record process. Sensitized by the A-C bias, a remnant magnetization is induced from the recorded signal on one layer of tape to the next adjoining unrecorded tape layers when wound on a reel. Pre-print is when the signal transfer is ahead of the recording and post-print is when the signal transfer is heard behind.

*Print through is progressive when tape is stored for long periods of time.* False. Magnetic recording tape is an ideal medium for storage of recorded information. Magnetic tape recordings are being sealed in time capsules containing a complete record of our civilization. Hundreds of years hence, when the capsules are opened, the magnetic tape should have a fidelity as good as the day it was first stored.

Most print occurs immediately after recording. The magnetic particles on adjacent tape layers, which have been sensitized by A-C bias, are indirectly more susceptible to signal transfer. As time passes, the magnetic particles become less and less susceptible to print through so the rate of print becomes progressively less. Technically, print is occurring at a constant rate exponentially or is increasing at a log rate with log time. In simpler terms, this means that time is divided by equal increments logarithmically: 1 minute, 10 minutes, 100 minutes, 1,000 minutes, 10,000 minutes. Let us assume the print will increase 6 db from the end of the first day to the end of the 10th day. By the end of the 100th day an additional 6 db print will occur and by the end of the 10,000th day another 6 db.

If one were to make a recording, then play it back in a matter of several seconds after it was recorded, we might typically assume a 50 db signal-to-print ratio would be noted. However, if five minutes were allowed to lapse before playing the tape, a 48 db signal-to-print ratio would be present. If one were to wait an hour, the signal-to-print ratio would be 47 db and, after 5 hours, 46 db. Following 8 hours, very little more happens to the signal-to-print ratio. Typically, it would settle down to a value of approximately 45 db and never become worse.

## HOW WOULD YOU ANSWER?

Print through is a serious limitation of the magnetic recording medium. TRUE FALSE

The cause of print through is unknown. TRUE FALSE

Print through is progressive when tape is stored for long periods of time. TRUE FALSE

Nothing can be done to control print through. TRUE FALSE

Print through is most pronounced at high frequencies. TRUE FALSE

Print through is most pronounced in tapes with thin, extra play backings. TRUE FALSE

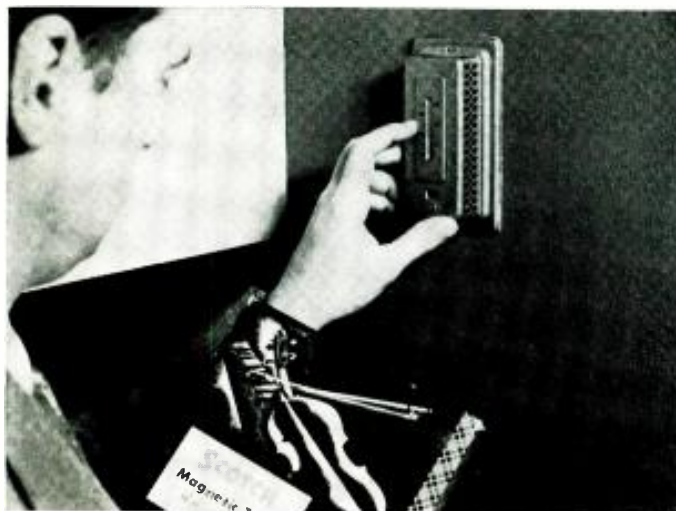
Print through is clearly recognizable and cannot be confused with any other type of recording problem. TRUE FALSE

*Nothing can be done to control print through.* False. Several simple, straight-forward precautions, if conscientiously followed, should guard against audible print through.

The worst possible condition for print through is to store tape on its take-up reel without rewinding. By rewinding the layers of tape, the position of the oxide particles are, of course, changed and a double printing effect takes place, substantially less than if the tape had been left on the take-up reel.

Fortunately, nearly all recordists automatically rewind magnetic tape after recording for replay. In the case of dual track recordings, when the second track has been recorded, the first track is in the "play" position. Time should be taken to run the tape backwards and forwards through the machine in the case of dual track recordings.

Excessive heat accentuates print through, particularly



Excessive heat accentuates print through, particularly during the first few hours after recording. Tape, under no conditions, should be stored in hot attics, closed automobiles, in direct sunlight during the summer, or on top of radiators or heat ducts in winter. Never store tape on its take-up reel without rewinding. By re-winding the layers of tape, the position of the oxide particles is changed and the double printing effect is substantially less than if the tape is left on the take-up reel. Nearly all recordists automatically re-wind single track recordings to replay position. In the case of dual track tape time should be taken to run the tape backwards and forwards through the machine once after recording.

during the first few hours after recording. Tape, under no conditions, should be stored in hot attics, closed automobiles in direct sunlight during summer or in winter on top of radiators or near heating ducts.

Avoid magnetic fields of all types. Keep newly recorded tapes away from all magnetic fields. The field need not have sufficient tendency to erase the tape but it can and does adversely affect the print through level.

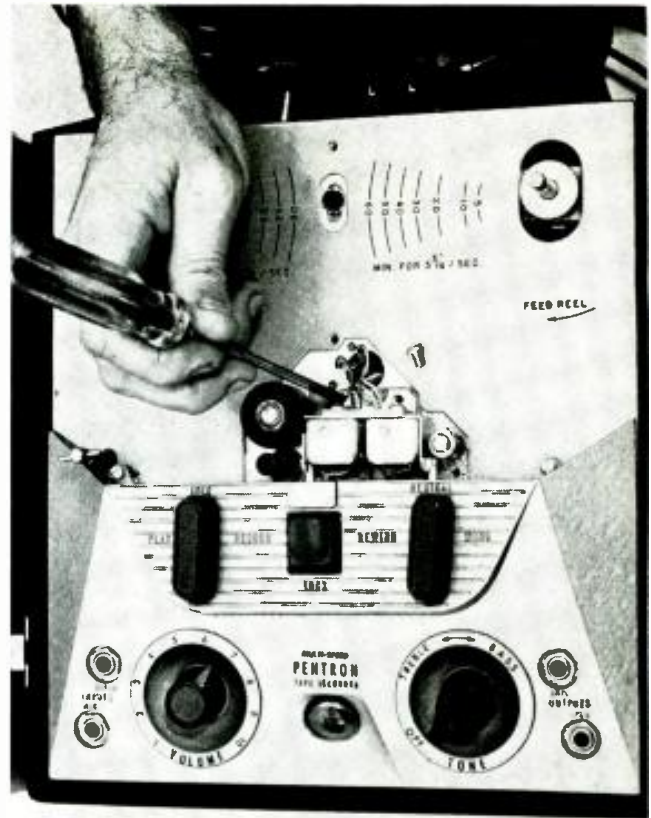
*Print through is most pronounced at high frequencies.* False. Print does have definite frequency response characteristics. Print through is most common in the middle frequencies. Print has a tendency to decrease at both the high frequencies and the low frequencies. Print through decreases most rapidly as the frequency is raised. The reason for this is that high frequencies, recorded on magnetic tape, have short wave lengths. The recorded signal from north pole to south pole to north pole is spaced close together, making it more difficult for flux to extend into the next adjacent layer of tape.

In the lower frequencies, the ear is less able to detect sounds. Ordinarily objectionable recorder noises such as hum and ripple are generally undetected at the lower frequencies. Therefore, print through is no problem in the low frequencies.

*Print through is most pronounced in tapes with thin, extra play backings.* False. It is commonly thought that the thicker the tape backing, the less the print through; the thinner the backing, the greater the print through. Actually, such is not the case. In the low frequencies, there is no change in print level irrespective of backing thickness. In the high frequencies there is a slight increase in print through in the case of thin backed tapes. However, because of short wave lengths at high frequencies, this differential is only slight.

As time goes on, the accumulated knowledge of print through will grow. However, once understood, print through need not be feared by any recordist, amateur or professional.

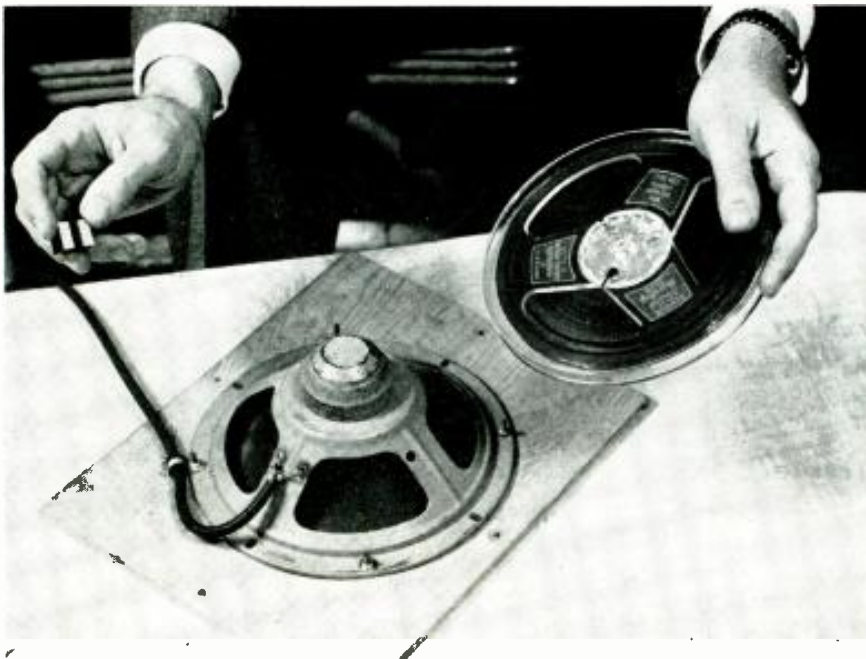
*Print through is clearly recognizable and cannot be confused with any other type of recording problem.* False. Print through sound enthusiasts, who report repeated print



All too often the case of a misaligned head has been incorrectly diagnosed as print through. In all cases, where recordists complain of constant print through, always check the erase head for alignment.

through difficulties, should immediately check their erase head for correct alignment. All too frequently, many cases of alleged print through have been traced to the improperly aligned erase head.

Adjusting the alignment of the erase head of a recorder is generally not a precision job, but cannot be easily accomplished by any home amateur.



Avoid magnetic fields of all types. Keep newly recorded tape away from all magnetic fields. The field need not have sufficient strength to erase the tape but it can, and does, adversely affect the print through level.



# FIRST BOOK ON TAPE MAKES BOW TO PUBLIC

... one hour instructional reel actually demonstrates sounds and recorder faults.

**T**HE first book specifically designed for presentation on tape rather than the printed page will make its bow to the tape recording public about January 15th.

The work, titled "All About Tape—on Tape" was written by Jack Bayha who needs no introduction to regular readers of **HI-FI TAPE RECORDING**.

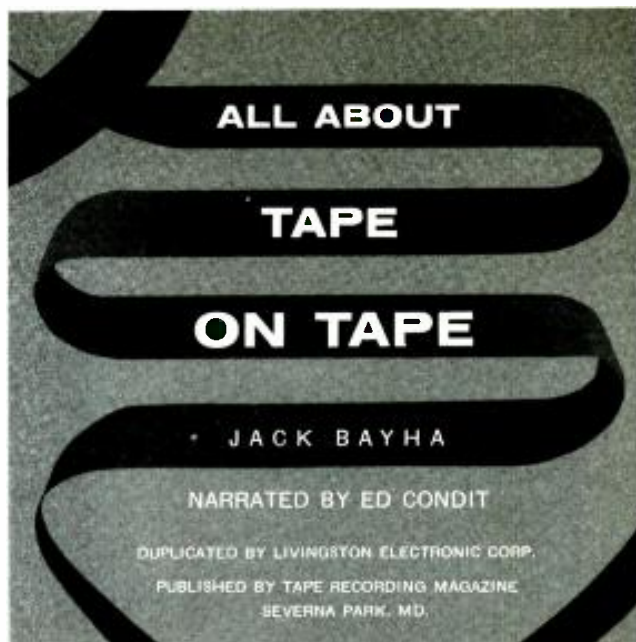
The production of a book on tape involved quite a few departures from the methods usually employed in getting a regular book in print. For one thing, the script had to be written in a different style, so that it would be effective in the spoken word; for another, it was possible, for the first time, to include actual examples of such things as wow, flutter, over-recording, distortion, gagging, frequency response, etc., that in a written book could only have been described.

Once the manuscript and the directions for all the special material were complete, the book was taped by Ed Condit, a radio and TV announcer, in the recording studios of Livingston Electronics Corporation.

The narrated portion of the tape took a good many hours to make for recording engineer Robert Rose, together with Ed Condit and the author, went over the production almost word for word.

When the narration was done, the engineering of the various effects mentioned above had to be accomplished. This proved to be quite a task. In some instances it was necessary to devise special circuits to bring out defects in the most clear fashion. As Bob Rose said, after the effects were completed, "It's a darn sight easier to make good recordings than bad ones."

At this point there were two master tapes, one containing the narration, the other the examples of good and poor re-



ording techniques. Both reels had been recorded at 15 inches per second to secure the utmost in fidelity and also to give engineer Rose elbow room for the next step in the process.

It was then necessary to splice the various demonstration sections into the narration where they belonged and then came the laborious job of going over every inch of the tape to perfect the timing and tighten up the whole into a cohesive unit. This involved hours and hours of splicing, listening and resplicing. In some instances, where two takes had been made, sections were taken from each to make the most perfect whole.

Without tape the book would not have been possible. With the author halfway across the nation from the editor, tape was used for messages and reviewing completed work. In fact, stereo came into play as the book was recorded on one track and the comments concerning particular sections on the other track, a method which has been used in educational circles for language instruction.

When the master was completed, duplicating masters were made from which the copies were run off. The book will be available through recording dealers or from the magazine.



Ed Condit, radio and TV announcer, is the narrator of the first book published on tape.



Robert Rose, recording engineer, working on the master tapes which were recorded at 15 ips.



This teen-age young lady successfully put together a tuner simply by following the printed directions furnished with the kit. She had no previous experience in this kind of work.

## You CAN Build It Yourself

... a wide variety of units is available in kit form which anyone—and we do mean you—can successfully construct.

by Mark Mooney, Jr.

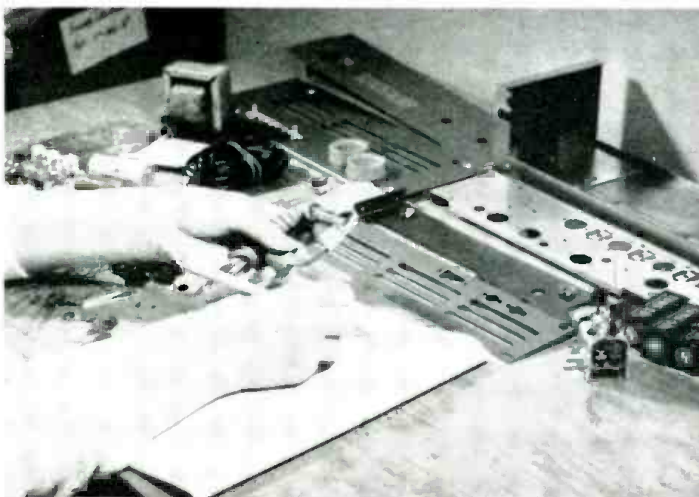
**H**AVE you ever looked inside a radio or TV set, or even a tape recorder and wondered how in the world anyone ever managed to hook them up? Have you ever taken a close look at the array of sockets, resistors, coils and capacitors and mentally said, "I could never do that?"

Then have you looked at the advertisements for kits for tuners, amplifiers, test gear and the like and sadly turned away because you just knew you couldn't put one together—

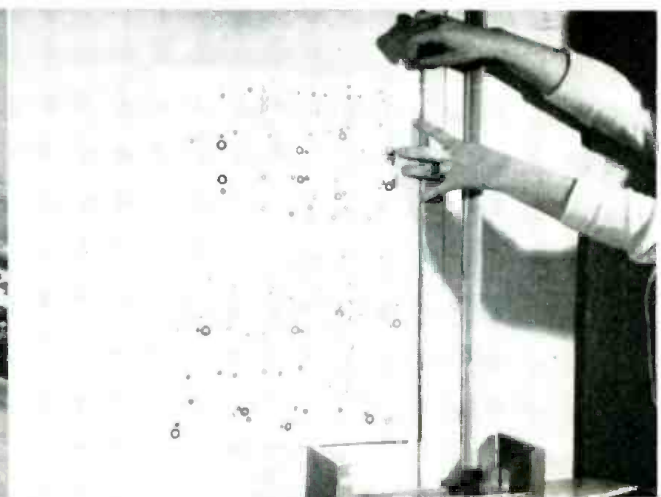
much too technical—much too confusing—much too difficult?

If so we have news for you. You CAN put a kit together, have fun doing it and make it work.

How do we know? Because we set out to see if a person who knew nothing whatever about radio wiring, who never even had changed a fuse, and whose acquaintance with things electrical was limited to plugging in an appliance in

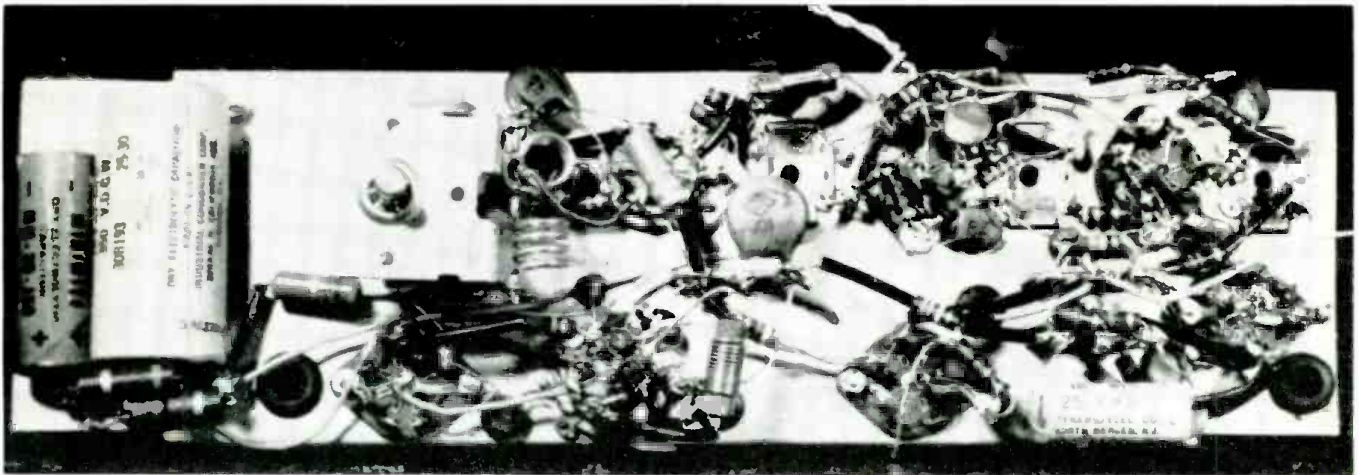
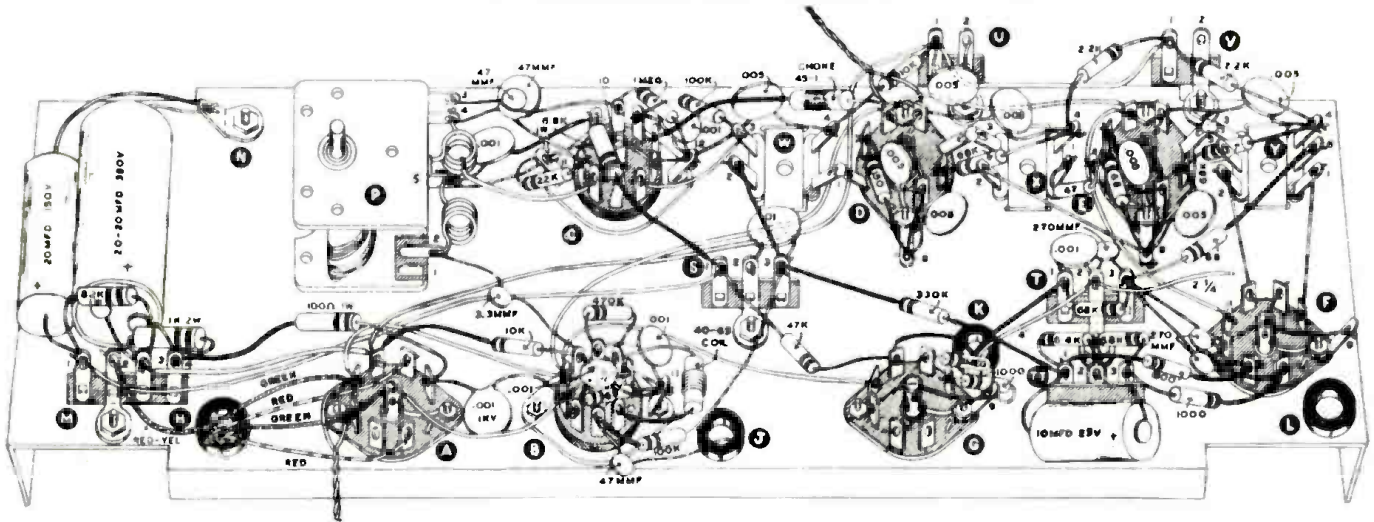
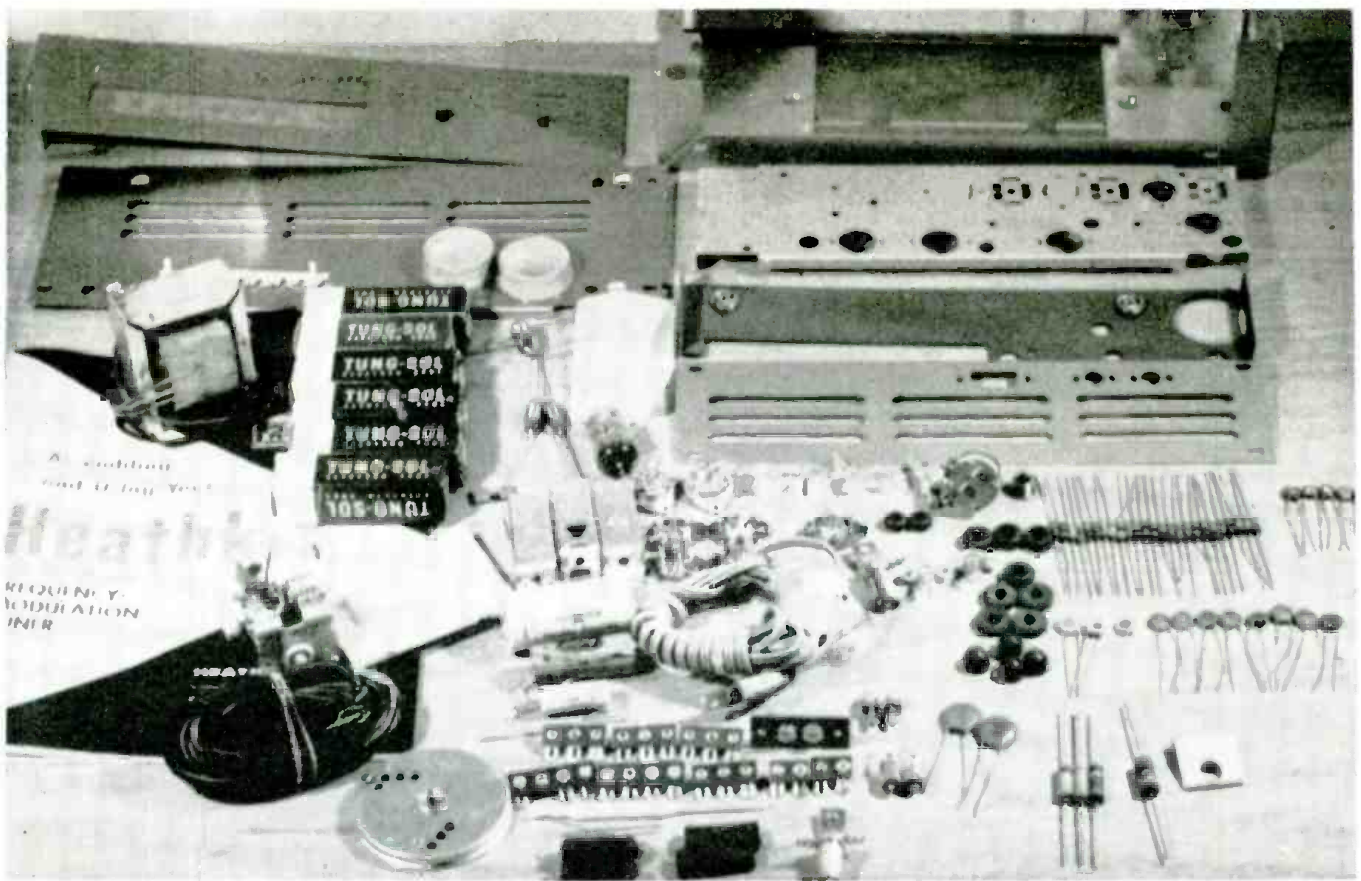


First step is to remove all parts from the box and check against the list to be sure all are present. Do not discard packing material until the list has been fully checked. No shortages were found and work started.



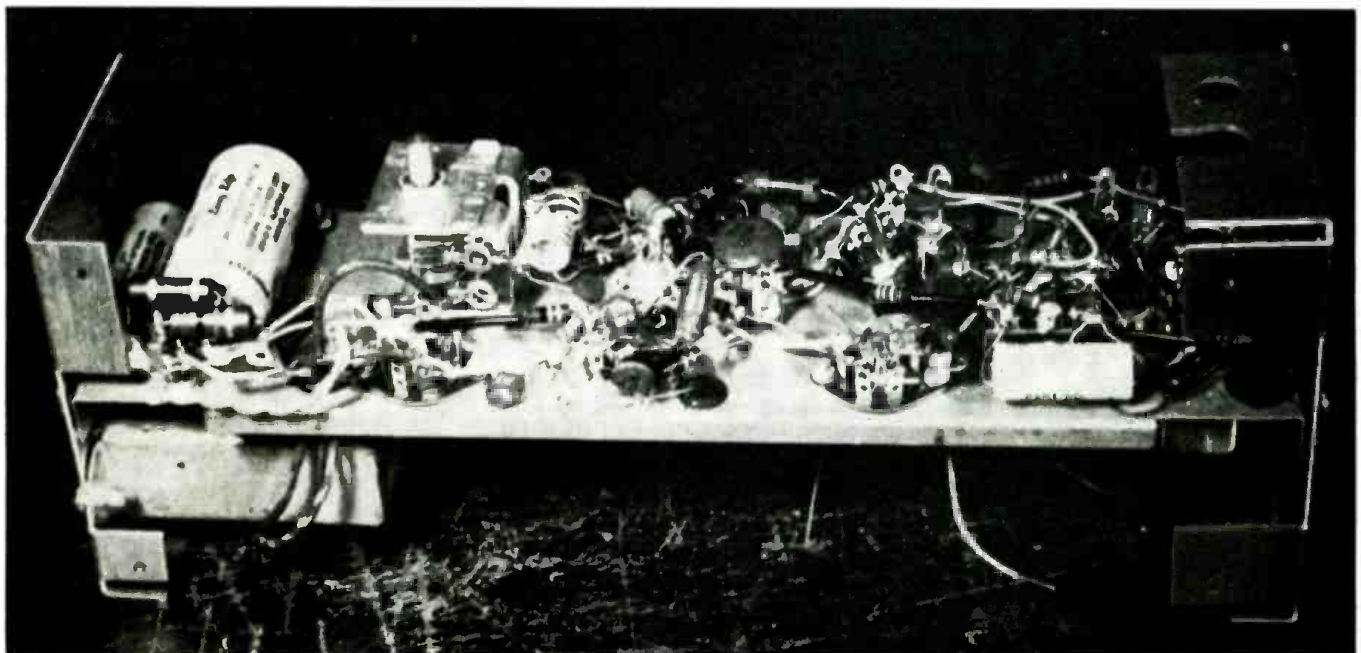
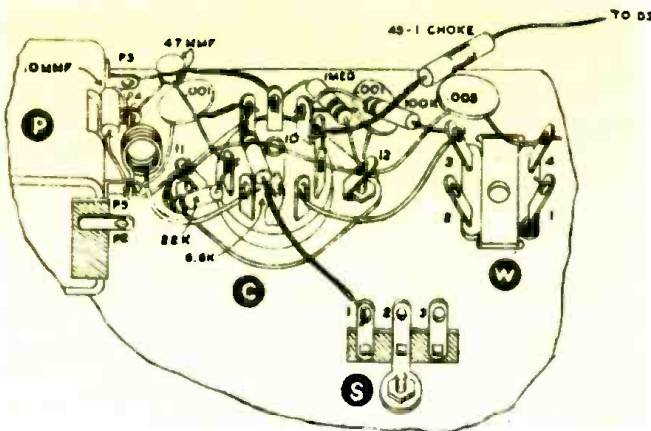
Full size pictorial diagrams are furnished with the Heathkit. Included is a diagram showing the placement of the components and another showing the wiring. A regular schematic is also included for those who can read them.





Top: the parts furnished in the tuner kit. Taken all together the task of putting them in place might seem formidable, but it is not as they are placed one at a time with carefully written directions found in the instruction booklet furnished with the kit. Center: full size pictorial diagrams make placement and checking easy. Care should be the watchword, don't hurry the job. Make sure every connection is correct before going to the next. Lower: the wiring completed. Complicated looking, isn't it? But it isn't complicated to do as our test showed.





the wall socket, could put together a kit with no aid.

For the test we secured a Heathkit tuner. This we turned over in its original carton to a young lady who met the conditions previously listed. We also provided a pair of wire cutters, a pair of long nosed pliers, a screwdriver, a soldering gun and some resin core solder. From there on she was on her own with nothing but the instructions as a guide.

Following the instruction book she first checked off the list of parts to make sure they were all there—which they were. For those who don't know the difference between such things as metal-tapping screws, 6 and 8-32 nuts and screws, grommets, etc., there are full scale drawings of each item. Included also is a color code which permits proper identification of all the resistors.

Once the parts are carefully checked, the actual assembly began by mounting the sockets. This is easy because a full scale pictorial drawing shows not only the placement of the various parts but the way to hook them up as well. These drawings should be attached to the wall over the workbench or table.

Once the components were placed, the wiring began. Despite the apparently complicated appearance of the finished job, the wiring was done without difficulty because only one wire at a time was placed and the instructions are very specific, we quote from the Heathkit manual:

"( ) Run a 10K resistor (brown-black-orange) from socket A5(S) (3) (use sleeving) to socket B6 (NS). The resistor body should be close to B6."

This is the "shorthand" used in the directions and is explained fully in the manual accompanying the parts. However, let's interpret this particular segment. The first ( ) is where you check off the step when it is done. The 10K resistor is identified by the color bands given. It is connected on one side to pin #5 of socket A. The (S) means solder it now. The (3) means there are three wires in that pin hole. If not better check before soldering and see to it that there are. The other end of the resistor lead is connected

Top: with a soldering gun, or a light soldering iron, the already tinned parts go together rapidly. Check each soldered joint to make sure it is smooth and tight. Center: enlarged sections of spots where the wiring is close are shown in the manual. Below: the completed chassis with the end brackets in place ready for assembly with the cabinet.



to pin #6 of socket B and the (NS) indicates that it should not be soldered at this time as one or more other wires will be run to the same point later in the assembly.

And so it goes, step by step. Checkpoint by checkpoint, until the whole wiring is completed and, looking at it you wonder how you did it.

The point is if you proceed step by step, making sure that each step is complete and correct before going on and if, as the manual advises, you thoroughly check the completed wiring, point by point, there isn't a reason in the world why you should not secure a good result.

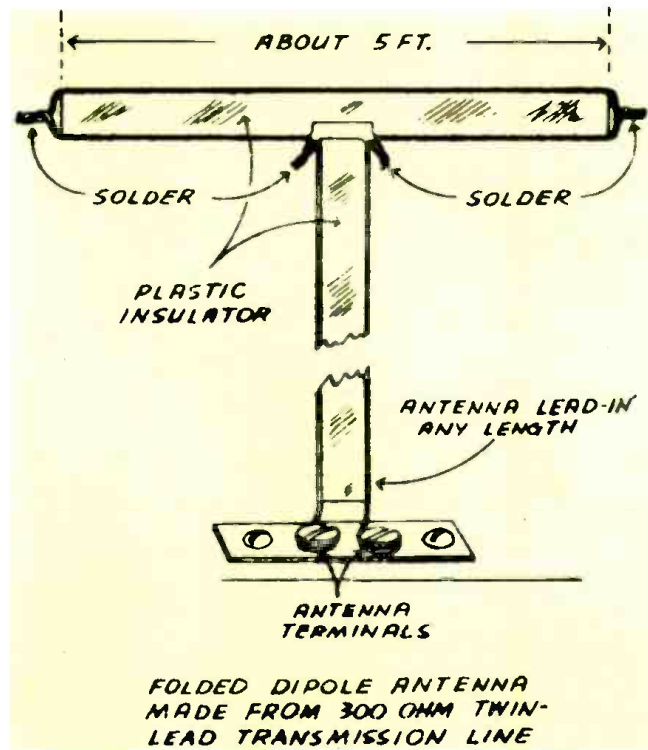
After the wiring is completed the tubes are put in and the current turned on. All should light. In this instance three did not so the plug was pulled and the wiring checked. One wire was misplaced and when soldered to the correct terminal, all tubes were O.K.

The next step was to place the rectifier tube in its socket. It lit and the plates did not glow red so that was O.K. But one resistor got hotter than a two dollar pistol. The plug was pulled and the wiring checked again. A drop of solder had short circuited a connection. When this was corrected the resistor remained as cool as a cucumber.

The tuner was then connected to an amplifier and speaker, and once more the current was turned on. For a "happy ending" we could tell you that magnificent FM sound came forth—but we would be lying. All we got was the quiet of the tomb. Again the wiring was checked and the young lady found one spot where the solder had not adhered to the connection (known technically as a cold solder joint).

This time, when the current was again turned on, the tuner worked and the young lady's countenance lit up with the tubes. A few minutes more and the chassis was in the cabinet and the tuner performing to perfection.

Some folks think that kits are bought to save money. You can save money, we'll not deny that but, on the other hand, we know of one professional man who is quite capable of buying anything he wants—he buys kits for the fun of putting them together. Qualitywise, the Heathkit we had was excellent, not only from the standpoint of individual



The antenna may be made from 300 ohm twin-lead, available at any radio or TV shop. It should be placed as high as possible for best results. A regular FM antenna is still better.

components but from performance as well.

So if you fear that lack of knowledge will prevent you from building a kit unit—forget it and dive right in. You don't need to know how to read an electronic diagram—all you need to know is how to read. If you are capable of following directions with care, step by step, you CAN build with kit parts.

If a teen-age girl with no knowledge of electronics, electricity, things mechanical or soldering, can do it, you can be sure you can too.



The finished tuner. Case is gold, knobs gray and the dial is edge lighted with green figures. All connections are made at the rear of the case. An output is provided which will operate a pre-amplifier and another, higher voltage output for attachment to any unit having a phono input. The connecting cable is furnished as part of the kit.



Grandma records the bedtime story, while a second microphone, visible on the table behind her right shoulder, picks up the reactions of the children. The Bell recorder in this illustration uses two mikes simultaneously; the children may or may not be aware that the second one is "working."

## IMPROVE YOUR AUDIO ALBUM

by  
Jeanne Hickam

... Albums of sound are just as interesting and important as picture albums.  
Here's how to make one.

**M**OST of us have tried recording the kids candidly—ditto the family and friends—but the resulting tapes always seem to indicate that "everyone talks at once or no one talks at all," while, in the few cases where the recordings are worth saving, the voices of one or two individuals invariably predominate. While certain "sneak" tapes, like one of the child who sings himself to sleep, or the young Mozart who counts or comments aloud while he plays his scales are well worth having, generally it seems that there ought to be more satisfactory (and easier) ways to record one's family and friends.

On the other hand, asking the kids to recite adds up to a tape that sounds just exactly like what it is—the youngster standing stiffly, possibly unwillingly, in front of the micro-

phone, showing off. And this attitude, experience will show, is not entirely confined to members of the younger generation. . . . Most of us would like, in addition to a few of the above, some tapes in which Grandma and Susy or Jimmy (as well as the guy next door or the boy from down the street) sound more natural.

The problem, in most instances, can be solved by providing an audible activity which is sufficiently absorbing to arouse and hold the participants' interest. There are a number of possibilities in this connection—games which will serve to give everyone a good time, keep the group in one place, and discourage the players from all talking at once. When the activity is sufficiently absorbing, too, people gradually lose their self-consciousness, even when they know



they are being recorded. The tape, after the first few minutes, will then reflect the "unposed" family or social group you wish to record. An added advantage, which may also be used to distract attention from the recorder, is that a photograph may be made simultaneously with the recording session, and an addition to both the photo and the audio album be completed in one session.

Very small children, of course, are best recorded semi-candidly with the cooperation of an adult. The child playing "This Little Piggy Went to Market" with mother, however, soon outgrows such activity and begins to present recording problems. One way out is to make a record of a parent or grandparent reading the bedtime story, with the children as listeners. In this instance, the adult will usually know of the recording; the children may or may not be so informed, as suits the psychology of the moment. The best strategy is to choose a favorite story to which there is always audible reaction on the part of the listeners, or a brand new one to which similar reaction may be expected; e.g., Grandma's imitation of the "Three Bears" may be counted on to bring forth giggles from the smaller fry, while older boys and girls cannot resist supplying the sound effects when Grandma's pirates board the frigate. This technique can be applied to various members of the family at different times, with good results in recording the storyteller, as well as the listeners.

As the reader must concentrate on his audience, he is forced to forget about the microphone for the most part, although the mike should be positioned properly for the best pick-up of his voice. Often, the children's reactions will be laughter, grunts and groans, squeals, etc., combined with conversation; if this is the case, they can be somewhat "off mike" and still be highly acceptable in the finished recording. Of course, one small child usually sits on the reader's lap or in the big chair beside him, and is thus positioned correctly in relation to the mike anyway; but if there are several small fry listening to the story, and especially if conversation may result, the best solution, whenever possible, is to use two microphones. A lapel-type mike might be clipped to window curtain behind Grandma's big chair for this purpose. If attention is not specifically called to this device, the children may not notice it at all, in any event, they should be encouraged to regard themselves as unimportant accessories to someone else's recording.

Another solution to the microphone situation would be to employ an omnidirectional microphone on a floor stand between the reader and his audience. Lacking this, or not having either a mixer or a recorder which accepts two mikes, the recordist might try laying the regular recorder microphone on its back on an end table by the reader's chair.

Since no music is involved, you can record at a slow ( $3\frac{3}{4}$ ,  $1\frac{7}{8}$  ips) speed. An extra high-fidelity tape is not necessary, either, since human speech is confined to the "middle" cycles; hence it is possible to make a number of such story tapes economically, varying stories and narrators to include as many members of the family as desired.

When the children are of pre-school or primary-school age, getting a good recording is chiefly a matter of capturing them more or less unawares in normal activity; boys and girls of intermediate age, however, present the greatest problem in this respect. Normally inclined to be uncooperative on some occasions, and boisterously show-offish at others, their eagle-sharp eyes and ears discover the hidden recorder or "see through" any adult plans to catch them off guard or enlist cooperation in the usual way. There are ways to get around this, of course (other than bribes). Did you



Children making a recording at a party should be segregated somewhat from the group for best results. Here a junior quizz master shares his microphone with one of his subjects. Other party guests can be seated, audience-fashion, facing them at a typical party.

ever send two or three boys in this age-group to a Saturday-afternoon "western" and commit the "error" of asking them to tell you the story when they returned; Enough said.

Seat the kids in front of the mike and let them tell their tale; boys of this age will cooperate with any project which appeals to them. Indicate firmly at the beginning that the speakers must take turns (you will signal when Tom must stop and Dick or Harry is to "take over.") Remind your actors that those not speaking must pay attention, or they won't know where to begin the tale when it is the next fellow's turn to speak. Then start the recorder. Let the boys talk for varying lengths of time, and don't be surprised when one corrects the other and a healthy dispute over who said what is added to the tape. The sound effects on the finished recording may also be somewhat startling, particularly if the original movie involved a good deal of gunplay.

To make this tape complete, edit it later, cutting out unnecessary speeches, explanations, or repetitions, label it clearly for quick identification when the speakers demand a play back, and add an introduction. One of the boys will probably be happy to announce the date and title of the event for this purpose. If the result sounds pompous, so much the better. Between the introduction and the body of the story itself you might splice a few bars of the overworked *William Tell Overture*, followed by an announcement in your own voice of the names of the participants in the recording. An appropriate fanfare might also be added following the story, possibly between scenes, too, depending upon the train of the plot and the delivery of your narrators. Like a motion picture, you can "make" this one with later editing. (To apply this idea to girls, merely suit the movie, or a TV program, to the participants.)

Somewhat older children, and adults as well, may vary this theme by playing the old parlor game in which the group makes up a story as they go along. The tale, usually a melodrama, is started by an initial speaker and continued by each participant in turn until it is concluded by the last person in the circle. The story can be as nonsensical as the group can make it, the more senseless, the better. One of the original objects of the game is for each player to leave the hero in the worst possible predicament, from which the next speaker must rescue him. Limiting each person to five



Guessing games, quizzes and other party games take on a new dimension with the use of the tape recorder. The narrator here is in the center, left. The recorder mike lies on its back in the center of the circle to pick up the sound from all directions. Right: two boys tell the story of the western they saw yesterday providing a tape worth preserving for the album.



minutes time also improves the game, and allows for some estimate of the amount of tape required.

Record such a group by seating them in a circle around an omnidirectional mike, or lay the recorder mike on its back on a coffee table in the middle, as when recording the bedtime story. The slower recording speeds are fine here, too, and the use of one of the extra-play tapes will allow any number of people to take part in the fun.

Children and adults enjoy quizz games, too. Every adult group includes at least one "natural MC" or quizz master, while among the smaller fry, several children usually vie for the honor. This might well be the best part of the party to record, for boys and girls will use the mike in imitation of their TV experiences; a prize may be offered to the winner of the game, and your own birthday-child quizz master will be more than happy to enter into the spirit of the thing by helping to prepare the quizz questions in advance. Don't be surprised if your neighbors want tape or disc copies of this one!

Here again, a slow recording speed will suffice. See that the children being recorded are a bit segregated from the rest, and place the mike as the quizz master himself has seen it on TV; his victim, of course, will share it, and the "audience reaction" (of which there will be plenty) is perfectly natural "off mike." The same procedure works equally well with teen-agers, their parents, or their younger brothers and sisters.

Older boys and girls, and young adults as well, enjoy quizzing the grown-ups in the family in imitation of "stump the experts" programs, and many other adaptations of the quizz idea are possible, depending upon the size and make-up of your family or social group.

Skits for recording have been suggested many times, but one group of amateur actors recently found a variation on that theme. Thinking of the old parlor-story game, the thespians collected the published scripts of a number of modern plays with short, snappy lines, such as *The Moon is Blue*, *Stalag 17*, *Philadelphia Story*, *I Am a Camera*, *Private Lives*. Each actor armed with a different drama, they seated themselves around the microphone, and opened their books to whatever page fate decreed. Someone announced the date and the hour, and the man on his left read the first line which came to his eye in the script before him. The girl at the left did likewise, taking up the cue as if they were reading something which made sense, with the person at her left following suit. The reading progressed thus around the circle, with no speeches juggled or deleted from the scripts and no holds barred, until everyone's sides ached and the recorder was out of tape. Copied and recopied, the master tape of this session is priceless. Any one of this group could have adequately played a stage part, but in this recording they are themselves, perhaps the hardest thing for an actor—amateur or professional—to be.



## NEW AUDIOMATIC MUSIC SYSTEM PROVIDES UNINTERRUPTED MUSIC

An automatic tape reproducing and music programming system especially designed for wired music services, on-premise background music installations and FM multiplex licensees has been jointly developed by Audiomatic Laboratories, Upper Darby 2, Pa. and Magne-Tronics, 122 E. 42nd Street, New York City.

The Audiomatic Varytape system performs two functions for programming long playing tapes. It up-dates the music content of any 8 hour tape inserting current tunes and seasonal selections and also permits in-

termixing the musical content of any two tapes.

Two heavy-duty Fidelivox 8-hour tape reproducers are interconnected with a specially designed electronism. This electronism automatically stops one reproducer and starts the other whenever 30 seconds of silence occur. Interchange takes place every 12 minutes as Magne-Tronics tapes are specially programmed with a 30 second silent interval between each 12 minute music segment. Currently available from Magne-Tronics are 30 eight hour tapes giving 870 different combinations equivalent to 6960 hours of programming without repeating the same sequence of segments. The units are rack mounted as shown at left. Operation is automatic after starting.



# TAPE CLUB NEWS

The Voicеспондence Club has established a tape library and appointed a librarian to handle same. As a beginning, the library will contain only seven selections, with additions being made as rapidly as possible. Voicеспондence does *not* want any commercial recordings, either music or speech, but it welcomes contributions of a large variety of other material, such as trick or humorous recordings made by members, how-to-do-it recordings, on the spot descriptions of important events, performances of cleared music, etc. All such recordings will be copied for the library and the original returned, unless the donor wishes to contribute the entire tape.

Appointed librarian is club member, Don Latulippe, an announcer and technical assistant at Radio Station WJDA in Quincy, Mass. Don is also a partner in a commercial motion picture production organization, and he has access to a quantity of professional recording equipment, the use of which has been offered the library.

Any member wishing to obtain copies of material from the library should send a tape of the proper length to: Donald J. Latulippe, Voicеспондence Tape Library, Building 55, Hingham Industrial Center, 349 Lincoln St., Hingham, Mass. Enclose with this return postage, plus 10 cents for packing materials, and record on the tape the number of the tape you want copied and the speed at which you wish it recorded.

When World Tape Pal, Robert Grieve, of Hawick, Scotland, set out to record some on-the-spot organ selections, played by a friend of his, in a small village church, he was not prepared for what happened. It seems that electricity was unavailable in the small church and Bob wound up pumping the organ with an old bellows for his friend. Ignoring the squeaks and groans, the people went right on singing the hymns.

Harry Matthews, President of World Tape Pals, has been appointed as Chairman of the Tape Recording Exchange Field on the White House Conference Program for People-to-People Partnership. Congratulations to Harry on this appointment.

## JOIN A CLUB

### TAPE RESPONDENTS INTERNATIONAL

Jim Greene, Secretary  
P. O. Box 125, Dept. T., Little Rock, Ark.

### THE VOICESPONDENCE CLUB

Charles Owen, Secretary  
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### WORLD TAPE PALS, INC.

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

### INTERNATIONAL TAPE WORMS

Art Rubin, National Chairman  
P. O. Box 215, Cedarhurst, L. I., N. Y.

### AUSTRALIAN TAPE RECORDISTS

ASSOC.  
Jack A. Ferry, Federal President  
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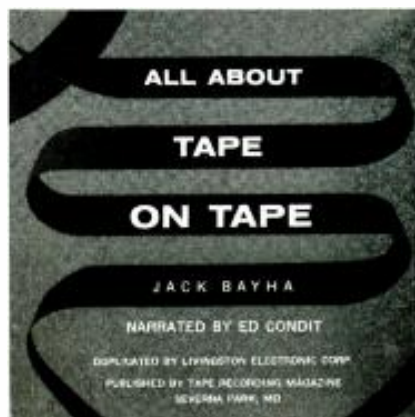
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# NOW HEAR THIS...

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... authored by Jack Bayha ... a book to which you listen ... the first book specifically designed and produced on tape instead of the printed page ... Now you can actually HEAR what good recording, over-recording, wow, flutter, distortion, wrong mike placement, etc, sound like. A test section allows you to adjust the head of your recorder for best results. Chapters include: How a Tape Recorder Works, A Demonstrated Glossary, Recorder Operation, Home Recording, Field Recording, Low Impedance, Microphones, Recorder Maintenance and Testing.

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# NEW PRODUCT REPORT

STA **OK** STED



## DeJUR GRUNDIG EMBASSY RECORDER

*... push button input selection, stop switch, two speeds, automatic stop, metal case*

**T**HE DeJur PTR-90 is an attractively designed machine, simple and easy to operate and mechanically of excellent quality.

The controls are easily operated and complete in their operational coverage. The recorder has such worthwhile features as speaker cut-out, monitor output control, footage indicator, and a pause and lockout which cuts off the drive without cutting off the amplifiers.

Reel sizes up to 7 inches may be accommodated and left in position on the machine when the case is closed.

Standard accessories consist of a microphone, which has its own built-in legs so that it will stand by itself, a pickup and output cord and plug. A reel of tape and a spare reel are also provided. The reel has a section prepared to actuate the automatic stop mechanism.

The push-button keys on the machine do not operate the functions of the machine but instead control the inputs. There is a key for the microphone, one for a tuner and one for radio. The inputs are on the back of the case and may be left connected permanently and controlled by the keys

Product: DeJur-Grundig  
Embassy Recorder, Model PTR-90  
Price: \$299.50

Distributor: DeJur Amsco,  
4501 Northern Parkway  
Long Island City 1, N. Y.

on the recorder.

The heads in the machine consist of a Ferrite core erase head and a "Golden Shim" record and playback head. The gap in the latter is .0002369 of an inch. Equalization is to the NARTB curve, which is the standard used by the broadcast industry.

The operational control is divided between two levers, one centered above the keys and the other at the right of the case (the function selector switch). For fast forward or rewind, the selector switch is placed in the REW position. The operation is then controlled by the lever over the buttons. The machine should not be left in the fast forward or rewind position for a long period of time as the 30:1 speed is obtained by applying additional voltage to the motors.

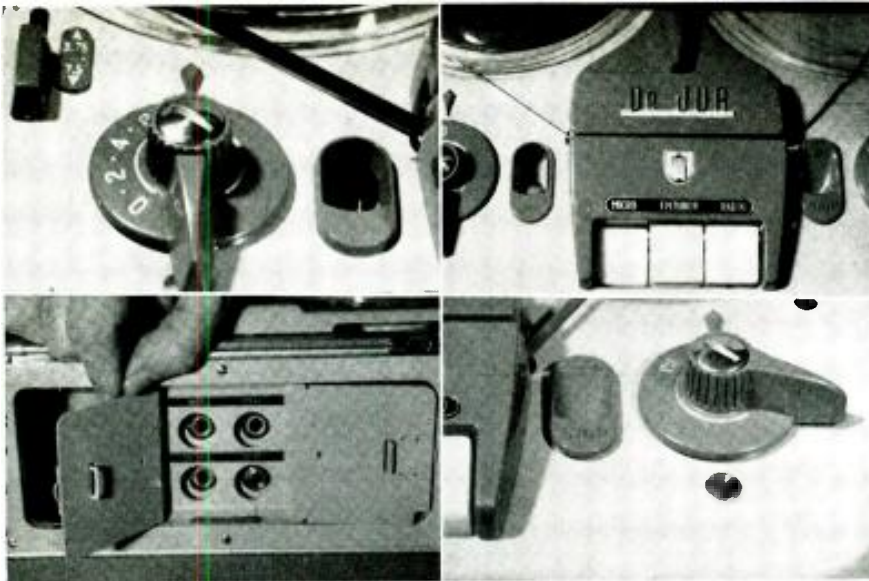
To record, the knob of the selector switch is raised and turned to the record position, a safety feature to prevent accidental erasure of recordings.

Also of unusual note is the switch which permits the recorder to be used on 115 volt, 220 volt, 60 cycle or 50 cycle current. This switch is located under the cover of the machine. When operating on 50 cycle current, it is necessary to put a bushing over the main capstan. This bushing is available as an optional accessory.



The recorder with the case closed. The lid is detachable and the handle is pulled in to the case by spring action.



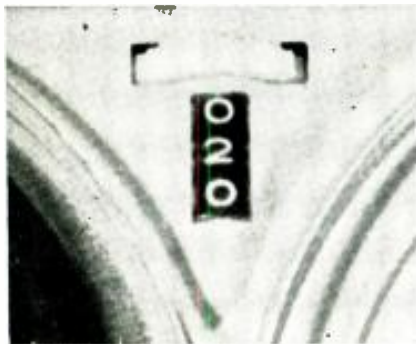


Upper left: this photo shows the speed change lever, tone and level control and magic eye. Upper right: center of recorder showing input control keys. Lower left: rear of recorder showing compartments for storage of mike and accessory cords. Lower right: right side of recorder showing function control and stop button.

The volume control and on-off switch is on the left side and functions both as a recording and playback level control. When recording, this control is used to determine the level of the monitor output. When playing back it functions as a tone control. When pulled up it cuts off the internal loudspeakers.

Recording level is indicated by a Magic Eye tube set in a recess to shield it from room light. The temporary stop may be used when setting the recording level to prevent the tape from running and may also be used at any time to stop the tape motion without cutting off the amplifiers.

The automatic stop is actuated by a coating of silver paint (General Cement Silver Print) which is painted on the dull side of the tape about six feet from the end of the reel. This conductive paint operates a circuit breaker which stops the recorder. The



An index counter is centered at top of recorder between reels. Covered by a magnifying lens it is easily read. Counter may be reset.

reel furnished has the painted strip. other reels may be prepared by the recorder owner.

The footage counter is covered with a magnifying lens which makes the figures readily visible. A table furnished in the instruction book gives times for various meter readings so footage may be converted into minutes.

On the rear of the case are the inputs previously mentioned and also two compartments closed by small metal doors with catches on them. The microphone and connecting cords are kept in these compartments when not in use.

The drive motor is a heavy duty hysteresis-synchronous "inside out" motor and there are three speakers for sound distribution through the perforated metal case.

The carrying case is attractively and tastefully finished and shaped and provides adequate ventilation and rigidity for the mechanical components.

The recorder provides speeds of  $3\frac{3}{4}$  ips and  $7\frac{1}{2}$  ips, dual track with reel turnover. The signal to noise ratio, under our tests was better than 55 db down.

The power output is 6 watts with a distortion level of 2.5% at five watts.

Electronically, the amplifier is excellent, running within the plus or minus 3 db limit from 30 to 20,000 cycles. The unit exceeded the AA program requirements regarding over-all frequency response.

This is a well built and attractive machine with many unusual features.

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## SHOP OR SWAP

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

RATES: Commercial ads, \$.30 per word. Individual ads, non-commercial, \$.05 a word.

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

**WOULD LIKE TO TAPESOND** with anyone who likes Old Time Music, Fiddle, Banjo, Mandolin, Guitar and good Country and Western. Send tape 3 3/4 or 7 1/2, or write. Howard Cumby, 1308—1st St., Belview Heights, Birmingham 8, Ala

**PICTAPE:** "a true picture fidelity" recording tape. Pictape Products Corporation, 152 West 42nd St., New York 36.

**CHARLIE CHAN** and Sherlock Holmes fans: wish to correspond by tape or letter. Contact: Jimmer Leonard, 17 Flower Hill, Poughkeepsie, N. Y.

**RECORDS FROM YOUR TAPES.** All speeds, top quality, lowest prices. Patmor Sound Systems, 92 Pinehurst Ave. 3K, New York 33, N. Y.

**WANTED**—for established routes, distributors for monthly record release and album series. Memory Records, 28170 Inkster Road, Farmington, Mich.

**SYNCHRONIZER HOOKUP:** Make sound movies with your tape recorder. \$10.00, Anderson, 2124 Phelps Street, Stockton, Calif.

**LEARN HYPNOTISM** from tape. Complete course. \$4.00. Free information, Drawer 697, Ruidoso, New Mexico.

**HI-FI Recording Tape, 1800', 7" Reels**—\$1.95 each, 3 for \$5.59. 1200', 7" Reels—\$1.69 each, 3 for \$4.95. Cousins Tape Splicer—\$1.50. Money back refund guaranteed. Include sufficient postage. Florman & Babb, 68 W. 45th St., N. Y. C.

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**WOULD LIKE TO TAPERESPOND** with people anywhere, especially in southern states. All tapes answered promptly. R. R. Karr, Route #4, Box 86, Crown Point, Indiana.

**FOR SALE:** Ampex 600, perfect condition. Craftsman Model 900 FM tuner, good condition. Sacrifice—must sell—best offer. Elliott Adler, 1 Adams Street, East Rockaway, L. I., N. Y.

**WOULD LIKE TO EXCHANGE** tape transfers of "Golden Age" operatic shellacs with similarly inclined collector. Frederick Branch, 28 Forest Drive, Bloomfield, New Jersey.

**WANTED:** To loan or buy any 7 1/2 taped speech of Michael Quill (Labor Leader). P. Johnsume, 88 Hartford Ave., Staten Island 10, N. Y.

**WEBSTER-CHICAGO WIRE RECORDER.** Electro-Voice 911 mike, desk and floor stands, \$50. Like new, 4 spools wire. John Satterlee, Box 372, Cambridge, Wisconsin.

**FOR SALE.** Magnecordette portable. Used twice. Needs one speaker cone, otherwise brand new. \$400. I'll pay shipping charges anywhere USA. Ernie Neath, Box 345, Bozeman, Mont.

**HIGH QUALITY RECORDING TAPE—1800', 7" reels,** precision slit, abrasive free, excellent frequency response. \$1.89 each in lots of three or more. Sample \$2.49. Money back guarantee. Used 1200' reels of tape 99¢ each. New Penron "Emperor" tape recorders plus 12 1800' reels of tape. \$199. \$402 value. Used tape recorders. Include sufficient postage. Recording Services, P.O. Box 231, Wallingford, Conn.

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