

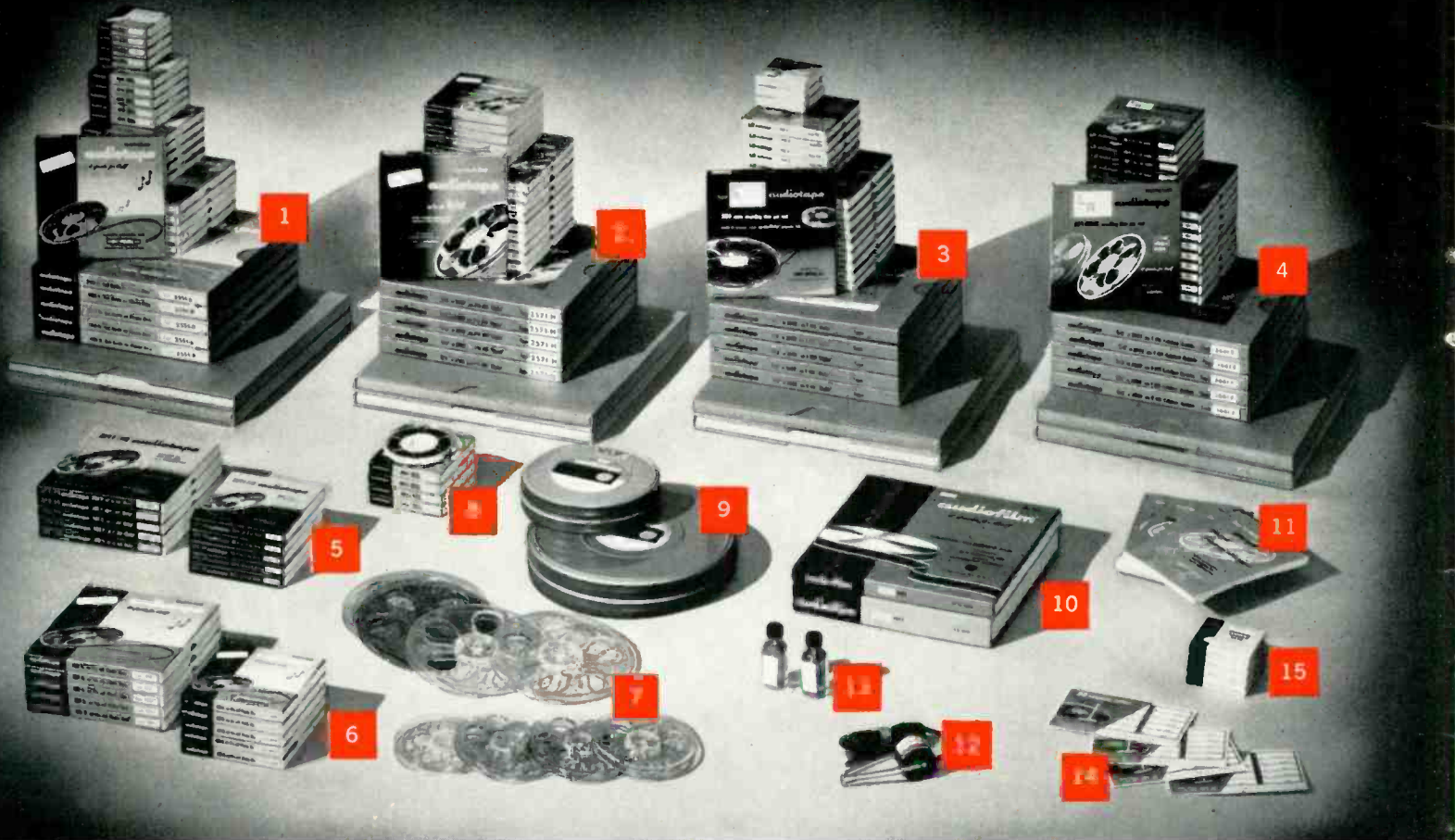
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HI-FI

TAPE RECORDING

VOL. 4 No. 2

JANUARY, 1957

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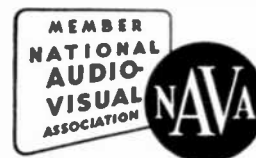
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Cover by Jason Hailey

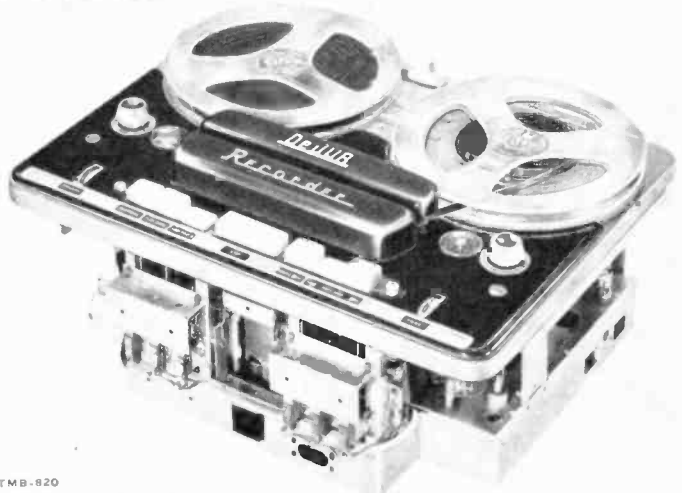


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NEW TAPES

By Georgia Sigsbee

CLASSICAL

MOZART:

Concerto No. 15 in B Flat Major, K. 450

Concerto No. 18 in B Flat Major, K. 456

Ingrid Haebler, piano

Pro Musica Symphony, Vienna

Heinrich Hollreiser, Conductor

PHONOTAPES-SONORE PM 129

7 1/2, Dual: ... \$8.95

3 3/4, Dual: ... \$6.95

Now that this Mozart Bicentennial Anniversary Year is drawing to a close, we can look back (and happily ahead) to a prolific output of releases of the works by this master of music. This veritable avalanche of recordings has brought forth much of his music which has long gone without due recognition and record publication. As a result, we are gaining more knowledge of his works, plus the complete delight derived from hearing them.

The Concerto No. 15 is scored for large orchestra and, as Mozart put it, is "bound to make the performer perspire." I do not feel Miss Haebler does this, but she renders a graceful, yet strong interpretation. The andante movement is intrinsic beauty in itself.

In the No. 18 the revelation of his creative genius is brought out in all its beauty. The interplay of the instruments, tonal colours, the poignancy and intimacy of his music are all here. Miss Haebler performs

it with great delicacy and ease and the sparkling finale is well done.

Hollreiser and the Pro Musica Symphony give a neat, well-balanced performance and the piano tones are clean. The only distraction on my copy is a slight sibilation noticeable at the beginning of No. 15 and during the andante movement of No. 18. However, this is a highly satisfactory recording of both concertos.

We have on hand two other Mozart piano concertos; No. 21 by Vicars with the London Mozart Ensemble (Omegatape 5007) which is excellent (reviewed June 1955) and No. 20 with Hans Jurgen-Walther and the Pro Musica Chamber Orchestra of Hamburg (Phonotapes-Sonore PM 5003) reviewed in February 1956.

ORGAN

THE CADET CHAPEL ORGAN

WEST POINT

MUSIC OF BACH

Toccata and Fugue, D Minor

Prelude and Fugue, A Minor

Passacaglia and Fugue, C Minor

"Come, Savior of the Gentiles"

Claire Coci, Organ

PHONOTAPES-SONORE PM 140

7 1/2, Dual: ... \$8.95

3 3/4, Dual: ... \$6.95

Another interesting aural experience in organ reproduction comes with hearing this instrument, located at West Point Military Academy; "the largest church organ in the

Western Hemisphere and fourth largest of any type in the world." Annotations are included as to the technical makeup of the instrument.

Miss Coci, organist for the New York Philharmonic Symphony Orchestra, gives a resolute reading to the Toccata and Fugue, giving emphasis to phrasings. The Prelude and Fugue she presents with vivid feeling and skill, achieving a rich full sound. My personal feeling was that this number was, of the four, outstanding and I couldn't help but comment aloud, "Well done."

It is difficult, at best, to attempt comparisons as to an artist's particular touch. Schweitzer gives a close, spiritual feeling to the work of Bach, while Walcha produces the height of grandeur and emotion. Miss Coci gives a fine performance and, I reiterate, shows her virtuosity at the organ in the A Minor.

I fully expected hearing this instrument would be an overwhelming, impressive experience, being the fourth largest in the world. However, I can only honestly advise you not to anticipate a deep, room-filling sensation. This is probably a result of the engineering. At times you feel you are listening from the back of the Chapel, at times you are much closer. On my copy there is some residual noise which is not too distracting on the whole and on the second track two brief, but distinct, fluctuations.

If you listen to the Audiosphere (Organ Recital, 711-BN) with Kurt Rapf playing Vienna's old Piaristenkirche organ (includes the Toccata and Fugue) you will hear produced the desired effect in reproduction. (Reviewed April 1956).

I would label the PM 140 a good tape with the sincere wish it had been even better.

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CLASSICAL

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CHORAL

STRAUSS, JOHANN: Voices from Vienna, Vol. 1, incl. Blue Danube, Sweets 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

JAZZ

RAMPART STREET RAMBLERS with Wilbur de Paris, a Sensational Hi Fi recording of Dixieland tunes. Atlantic 7-5 BN

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.

JAZZ

CARL PERKINS AT THE PIANO

Just Friends

It Could Happen to You

Lilacs in the Rain

Carl's Blues

Way Cross Town

You Don't Know What Love Is

The Lady Is a Tramp

Woodyn You

BEL CANTO #502

A lively jazz session featuring Carl Perkins at piano, Leroy Vinnegar on bass and Lawrence Marable presiding over the drums. Perkins has good technique; the notes state he employs his left hand in backward position and uses the left elbow to play additional bass notes, but no matter... the results are fine. "Carl's Blues" and "Lilacs in the Rain" are outstanding examples of the spirited sound this combo produces.

The fidelity is tops.

POPULAR

IT MIGHT AS WELL BE SWING

Sol Yaged, his clarinet and quintet

A-V 755 J

A lively swing tape with inspired playing and good arrangements. Sol Yaged studied clarinet under Bellison of the New York

Philharmonic and still works perfecting techniques and tonal quality . . . the results show in his playing of the instrument.

Excellent pop tape, fidelity at its finest.

STEPPING OUT

Herb Jeffries sings, Richard Hazard conducts

STEREOTAPE ST 2

Jeffries sings "The Conqueror" and "The Heart of a Woman" in a smooth, easy style.

Two instrumentals, "Night Song" and "Passing Strange" from the Emmy Award-winning NBC-TV Matinee Theatre, go to make up this tape.

The fidelity is excellent. Jeffries has a nice voice and the background music is good.

MUSIC IN MOTION (Volume 1)

Lenny Herman and the Mightiest Little Band in the Land

LIVINGSTON TAPE LIBRARY T-1099-8N

Lenny Herman and his band have worked a completely new type of musical arrangement written and recorded specifically for stereophonic performances. This new style is called "Music in Motion" and this tape shows exciting results insofar as small band arranging for stereo sound. The tape contains familiar melodies; i.e., "Tea for Two" and "Lover Come Back to Me."

Fidelity is excellent.

SHIGENORI OHARA AND HIS BLUE COATS ORCHESTRA

Moonlight Sonata

Carmen

Villia

You Are My Heart's Delight

Boogie Woogie in Arabian Dance (Grieg) I Look at Heaven

SONY STERECORD D-3

I can't give any information about the Japanese-Irish named orchestra as we have yet to receive background on the Sony Stereocord releases. I can say this is a good orchestra playing classics in popular vein. There are many who, being complete and true classic lovers, cannot swallow the masters done in modern style; but for those who don't care or can put their tongue in cheek and enjoy it, this is a good tape.

Stereo definitely adds to the effect, from the beginning theme and throughout the drummer is outstanding; during "Carmen" he really shows his stuff. Several of the arrangements are a la Glenn Miller, particularly the "Moonlight Sonata" and "Little Brown Jug" (which isn't listed as one of the selections nor is "Clair de Lune" . . . this is #7 and "Brown Jug" is #8, so you get two thrown in extra!). "You Are My Heart's Delight" is actually Romberg's "Yours Is My Heart Alone" from the Student Prince.

After the "Boogie Woogie in Arabian Dance" they have also added Grieg's Piano Concerto. You will recognize "I Look at Heaven" as Chopin's Etude in E Flat.

Good fidelity, good dance or "just listening" music.

CHORAL

CULO COSTELLO MALE CHORUS

Loch Lomond

Blauer Montag (Blue Monday)

"O Isis" aus "Zauberflote"

Slavim Platovo

Volga Boatman Song SONY STERECORD #R-5

A quiet rendition of "Loch Lomond" followed by a lively German song so don't let the title "Blue Monday" fool you. "Blue" in Germany is to take a day off from work and this song depicts the light, airy feeling one has when they have done just that.

"O Isis" from the Magic Flute by Mozart is a quiet, religious melody well sung by this chorus.

The last two numbers are a fast and spirited tune plus the familiar "Volga Boatman," both being good interpretations of Russia's folk songs.

CHORAL SELECTIONS

Serenade

Battle of Jericho

There's a Church in the Valley

Studio auf einer Reis

Krasnui Sarafan

Stenla Razin

SONY STERECORD #R-6

This is a pleasant and unusual tape. The "Serenade" is sung in a Slavish language (cannot make it out) and is a quiet number followed by "Jericho" sung in English, short and lively. The accordion is used as accompaniment in the next two numbers; the first sung in English I have always remembered as "The Church in the Wildwood." The "Studio auf . . ." is a gay German folk song. This group reminds me of a very small Don Cossack variety; note the falsetto solo in the Russian folk song, "Krasnui Sarafan." In the last song, also Russian, the gentleman who does the solo work has a good, strong voice with clear tonal quality.

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- #5. Masquerade Suite, Khachaturian (Conducted by Khachaturian)
- #6. Tchaikowsky Violin Concerto (David Oistrakh)
- #7. Kahlersky Violin Concerto (Conducted by Kahlersky)
- #8. Masterpieces of Russian Opera (Bolshoi Theatre Orch.)

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- #2. 18 Country and Western Hits (I Want You, Searching & 16 more)
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- #4. 18 Morales Mambos (Mambo Lindo, Isalverde & 16 more)
- #5. 18 Honky Tonk Tunes (Oh By Jingo, Can Can, & 16 more)
- #6. I Believe & The Lord's Prayer (I Believe, Lord's Prayer and 16 more)

Christmas & Children's Selections

- #1. Day at the Circus
- #2. Happy Birthday to You (Happy Birthday & 17 more)
- #3. 32 Children's Christmas Songs & Carols (I Saw Mommy
- #4. Home for Christmas (White Christmas, Winter Wonder-
- #5. Cathedral Chimes at Christmas (Silent Night & 17 more)
- #6. 18 Christmas Carols (Little Town of Bethlehem & 17 more)

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2 reels) \$13.90

ORGAN MUSIC, VOL. 1 (Bach)
Viderø on the organ
at Sorø, Denmark
BH-1019 \$6.95

SYMPHONY #5 IN E MINOR,
"NEW WORLD" (Dvorak)
Oberammergau Festival
Orch., Schwertfeger
B-2118 \$6.95

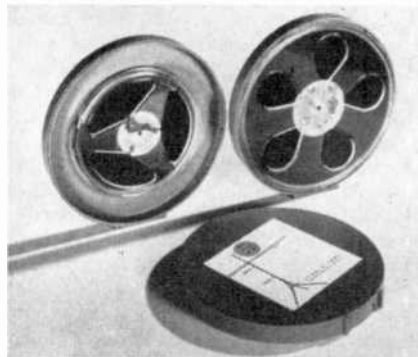
HIGHLIGHTS Volume 2 now available (as well as Volume 1). Through your dealer or direct for only \$1.50 each 7½ ips, 5" reel.

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150 West 90th Street, New York 24, N. Y.

NEW PRODUCTS

TAPE CONTAINER



A new tape storage and shipping container, called the STOR-A-TAPE, has been announced by Concertapes, Inc., 522 Green Bay Rd., Winnetka, Ill. This trim container is made of tough, high-impact plastic material, and it has a center-pin design which suspends the tape reel solidly. It accommodates reel sizes up to and including 7", and it has a feature which enables it to stand evenly and neatly on a shelf. One large front-label and two edge-labels, with spaces for titling information are provided, and replacement labels are available at nominal cost. STOR-A-TAPE is excellent for shipping. Simply address the mailing-label supplied with the container, seal it across the face and edges of the package (self-adhesive), and it is ready for mailing. For additional information and price, contact Concertapes, Inc., above address.

NEW AMPLIFIER



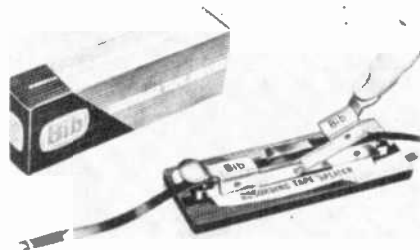
Amplifier Corporation of America, 398 Broadway, New York, N. Y., has developed and put into production an automatic volume control amplifier. It maintains a constant output within plus or minus 1 db with input changes of 30 db. This amplifier basically consists of a two stage push-pull circuit. The operating conditions of the input stage have been carefully determined so as to provide optimum limiter action with minimum distortion. An On-Off switch, a Meter Transfer switch and an attenuator are its only controls. Frequency response is rated at plus or minus 1 db from 20 to 20,000 cps; it has an overall gain of 35 to 38 db with a signal-to-noise ratio of 60 db; maximum distortion is less than 5 per cent under conditions of full 30 db compression; and it is equipped with a self-contained power supply which is designed for 110/220 volts, 50/60 cycles with a power consumption of 30 watts. The net price is \$195. Complete information is available from the manufacturer.

AUDIOTAPE EXPANDS



Audio Devices, Inc., 444 Madison Avenue, New York, N. Y., has expanded their line of professional quality Audiotape to include two new types: the super-thin Audiotape, on ½-mil Mylar polyester film; and the super-thin, suitable for extended play applications where tape tension is not excessive. Also new is the longer recording Audiotape, on 1-mil acetate, which provides 50 per cent more recording and playback time per reel. There are also the longer recording Audiotape, on 1-mil Mylar plastic base and the high-strength, super-durable Audiotape made on a base of 1½-mil Mylar. These tapes are now packaged in colorful new boxes, with a colored end tab for each type, which corresponds to the color of its box. For detailed information and price of these tapes, contact Audio Devices.

BIB SPLICER



A new British-made splicer, obtainable from Ercona Corporation, Electronic Division, 551 Fifth Avenue, New York 17, N. Y., has been announced. It is known as the Bib splicer. Mounted on a flock-sprayed base, this gadget is made of nickel-plated brass, and it can be mounted directly on any tape deck. The body of the splicer has two pivoted clamps which lock into position to hold the sections firmly in a channel. Vertical and diagonal mitres are provided for either editing or mending; horizontal mitres are also provided for use in trimming off surplus mending tape. A razor-type cutter, which conveniently fits under the splicer body, is included. This splicer is supplied complete

with simple operating instructions, which include hints for splicing dual-track tapes. It retails for \$3.95. Further information is available from Ercona.

4-SPEED MAGNEMITE



Amplifier Corporation of America, 398 Broadway, New York 13, N. Y., is now marketing two models of the new 4-speed Magnemite, battery-operated, spring-motor recorder. Tape speeds of 15, 7½, 3¼, and 1⅞ ips may be obtained from model 610 EM, meeting primary and secondary NARTB standards, whereas model 610 DM, meeting secondary NARTB standards, is adaptable for tape speeds of 7½, 3¼, 1⅞, and 15/16 ips. This recorder weighs only 15 lbs., complete with flashlight-type batteries which have an operating life of 100 hours, and it features a fly-ball governor controlled motor assuring constant speed, precision-made tape transport mechanism and removable dynamically balanced fly-wheel for realistic recording and playback of music. For full details and prices, write to Magnemite Division of Amplifier Corporation of America.

NO-SPILL REEL



ORRadio Industries, Inc., Shamrock Circle, Opelika, Alabama, has introduced the new Irish "No-Spill Reel." This convenient reel contains two notches on opposite sides of the reel. A rubber band is slipped over the notches, holding the tape securely in place. The "No-Spill Reel" offers easier access to the threading eye, and also features 28 square inches of indexing space on the four large flange areas, two on each side. All Irish brand tape on 7" reels is now being delivered on this unique reel at no extra cost. When previewed at recent Hi Fi shows, the public's reaction to this reel was "It's so simple, it's amazing!" It promises to eliminate any messy tangle of tape.

INTRODUCTORY OFFER LOCKLIN TAPE CLIP

SAMPLE SENT UPON RECEIPT
OF 15¢ IN STAMPS
NATIONAL AND DISTRICT
REPRESENTATIVES WANTED
LOCKLIN TAPE CLIP CO.
1036 Monterey Blvd., St. Petersburg, Fla.

GIBSON GIRL TAPE SPICERS

splices in a wink!
NO SCISSORS!
NO RAZOR BLADES!
Diagonal cuts tape ends
and trims splice edges
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WE BUY-SELL-TRADE

NEW AND USED

TAPE RECORDERS

MOST ALL MAKES

Also Hi-Fi Equipment

HIGHEST TRADE-IN ALLOWANCES

SAMPSON ELECTRONICS
Central City, Nebr.

YOUR INVITATION TO JOIN THE STEREOPHONIC MUSIC SOCIETY

Here's the most exciting news since you first discovered the listening pleasures of recorded tape!

AT LAST . . . you can stop wearisome shopping tours hunting for the recorded tapes you want. The Stereophonic Music Society has been created to serve the needs of every music lover who appreciates the true fidelity and convenience of this ultimate music medium. This unique plan offers you one central source for every fine recorded tape on the market, and—through its large volume purchases—passes on tremendous savings to you!

MEMBERSHIP RATES

Your entire cost for participation in the Society Purchase Plan and all the privileges described for a period of
6 Months \$6.00 1 Full Year \$9.00

The Stereophonic Music Society opens the door to you to the finest recorded tapes in the world—offered to you as soon as they are made available by all labels—at prices you can't beat anywhere. Send in this application blank today, and enjoy the benefits of membership immediately!

HERE ARE A FEW MEMBERSHIP BENEFITS

SAVINGS ON STEREOPHONIC TAPE

RCA, HMV, Hi-Fi, Livingston, AV, Concert Hall.

SAVINGS ON MONAURAL TAPE

(Complete listings in "Harrison Catalogue of Recorded Tapes" or "Tape Reel." You receive a copy of one upon receipt of membership application.)

SAVINGS ON RECORDING TAPE

All first grade, professional quality, recording tape!

FREE HI-FI MUSIC AT HOME MAGAZINE SUBSCRIPTION

You get 1 year subscription (regular value \$3.00) contains complete coverage of tape, records and FM, reviews, articles, etc.

FREE CATALOGUE OF RECORDED TAPES

Complete up-to-date tally distributed quarterly.

NO MINIMUM PURCHASE REQUIREMENT

Order as few or as many tapes you wish.

MEMBERSHIP APPLICATION FORM

TO: STEREOPHONIC MUSIC SOCIETY, Inc.
305 Grand Avenue, Palisades Park, N. J.

GENTLEMEN: Please enroll me for a 6 month period as a member in the Stereophonic Music Society. I understand that I am under no obligation to purchase any specified minimum of stereophonic, monaural or recording tapes under the Society's member purchase plan. As part of my membership I am entitled to a free one-year subscription to Hi-Fi Music Magazine, as well as the quarterly listings of all recorded stereophonic and monaural tapes available.

My Check \$6.00 is enclosed herewith (payable to Stereophonic Music Society, Inc.)
My Money order \$9.00 to Stereophonic Music Society, Inc.)

NAME
Address Zone . . . City . . . State . . .

MAKE OF TAPE RECORDER
 Stereophonic Stacked Staggered Monaural





TEEN TAPERS

BY JERRY HEISLER, National President

It's really swell to be coming your way a bit more regularly now that TAPE RECORDING has become a monthly magazine. With Christmas in the air, many of you may be in line for a new recorder, or some of you may be getting your first machine. The Christmas season provides a natural setting for using your machine. If you have little brothers and sisters, a hidden microphone near the tree on Christmas morning might provide some interesting results.

Christmas is the time for parties too, and there are many games that can be played with a tape machine. This is also a good chance for you to add to your equipment collection. You might sneak a hint in if anyone is wondering what to get you for a present. Microphone stands, a high quality microphone, spare reels of tape, a tape splicing kit, are just a few of the natural items for gifts. A gift item for the whole family to enjoy would be a reel or two of recorded tapes.

I hope my last column may have interested some of you enough so that you'll hear stereo tape soon. Great things are coming along this line. Christmastime should find

many dealers displaying this medium.

As a result of my stereo column, Mr. C. Arthur Foy of the Ampex Corporation has been gracious enough to loan me an Ampex Stereo Tape Player. This machine plays back the stereo tapes in true high fidelity. In cooperation with Ampex, I will do much research with stereo tapes and will endeavor to tell you more and more about it.

Had a chance to look over the new book being distributed by Audio Devices entitled, "How to Make Good Tape Recordings." The book, written by C. J. LeBel, Veep of Audio Devices, is a most interesting one. It is a handbook containing much information in a very un-technical manner. The chapter on splicing leaves a bit to be desired, but all in all it is an excellent manual and I highly recommend it to you.

We understand that Linda Babits, who made her debut as the first teenager to appear on pre-recorded tape via Tape of the Month Club, is reaping a very nice response. Best of luck to Linda.

I have word from the Irish Tape people that they have developed a new reel which

seems to be the answer to the problem of spilling tape. The reel has slits at opposite sides, enabling a rubber band to be placed around the reel, thus preventing tape spillage. A very simple innovation but one that serves a long needed purpose.

Audio Devices Incorporated is now in the midst of a very big contest involving high schools and universities. The contest involves entering a blank showing what choice of equipment and tape you would make if given \$2000, and what you would do with this equipment. The entries and prizes are on the basis of schools, not individuals, but this is a fine chance for a group to do something wonderful for their school. The judging is based on the most effective use of the equipment. The first prize winner will see his dream come true. Other prizes will be equipment of lesser value. Write to the company for entry blanks and details. Our hats off to Audio Devices for creating interest in the use of recording in schools.

I have just completed building a high fidelity amplifier which I have installed at home. I find that playing my tape recorder through the system improves the quality of my tapes considerably. Due to the small size of recorders (some may disagree that they are small) manufacturers are forced to keep the size of speakers small along with the size of the amplifiers. 6" x 9" is about the largest speaker size to be found in a portable home machine, and few machines exceed 8 watts of output. A home high fidelity set with an output of about 15 or 20 watts, plus a properly baffled 12" or 15" speaker, can do wonders for a tape machine. If you have a high fidelity set at home, by all means connect up your recorder to it. This isn't just restricted to the built-in installations. Most ready-made console radio-phonographs will accommodate your recorder. Take a peek behind the set and see if there aren't several jacks, one of which will take your tape output. It improves things tremendously, believe me.

The world really isn't as big as we think. This was well borne out recently when Paul Seaburn, Jr., from California dropped me a line. Among other things, Paul mentioned that he had a friend by the name of Dick Munson who was attending Northwestern University, where I go to school. Name sounded awfully familiar to me, but I couldn't place it. Turned out that Dick Munson was the engineer on a radio show I direct for WNUR, the campus station. It's interesting to note how this column comes back to me in round-about ways.

Talking about radio stations, we are making extensive use of recording equipment here at the campus station. It's really remarkable the number of things we can do. One of our shows involves recording a half-hour program at a different fraternity or sorority each week. We do this at our convenience and play it on the radio on Friday evening. Dating being what it is, we couldn't do the show live on Friday. My ever faithful splicing block has also proved to be of considerable service in narrowing down long shows to a half hour.

All evidence of the rapidly expanding use of tape recorders and accessories. It'll be just four weeks till we meet again this time, so until then, have a very merry Christmas and a "Tapey" Good New Year.

NEW

A much needed auditory means of learning how to use your tape recorder properly.

Available on one 12" LP High Fidelity record. Prepared by the engineering staff of Crest Records under the supervision of Mr. Hal Michael. Narrated by Dr. Miller McClintock of Sound Book Press.

The record consists of examples of both the correct and incorrect ways of making tape recordings done with full explanation.

A must for the tape recorder enthusiast.

Now available at your dealer or send \$4.98 direct to

Please no COD Records will be sent prepaid.

CREST RECORDS, INC.
220 Broadway, Huntington Station 25, N. Y.

TAKE 1

by the Editors

A short while ago we sent out five hundred questionnaires to subscribers, whose names were picked at random from the file, perhaps you were one of those who received one. We received approximately three hundred replies and they were mighty interesting to us.

One of the things which was noted on a good percentage of the replies was the intended purchase of auxiliary hi-fi gear, tuners, amplifiers, speakers, etc., to extend the range of the tape recorder.

You can be assured that we'll be paying more attention to those facets of interest. For instance, one of the most logical additions to a recorder is a tuner. In the next issue you will find an article telling how to put one together from a Heathkit. The chap who will do it has *never* done this type of work. We're giving him the pieces, a few tools and a soldering iron. . . . and believe you us—if he can do it *anyone* can!

There will be another story by Oakes and Cunningham in the series on stereo. In another article we'll have authentic answers to a question that has some folks bothered and about which practically no information has ever been published—"Is Print-through Fact or Fable?" Don't miss it.

To those who have asked for kits to start tape recording clubs in schools we must apologize for the delay. Our supplies were exhausted and we had to get more materials printed. They will be in your hands very soon.

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233) SHOWING THE OWNERSHIP, MANAGEMENT AND CIRCULATION OF Magnetic Film and Tape Recording published bi-monthly at Severna Park, Md.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:
 Publisher Mark Mooney, Jr., Severna Park, Md.
 Editor Mark Mooney, Jr., Severna Park, Md.
 Managing editor none
 Business manager none

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

Mooney-Rowan Publications, Inc., Severna Park, Md.; Col. Chas. E. Emery, 7 Wardour Drive, Annapolis, Md.; Robert W. Lapham, 925 N. Charles Street, Baltimore, Md.; Thomas Grogan, Jr., Baltimore Life Building, Baltimore 1, Md.; A. J. Morin, 274 Madison Ave., New York 16, N. Y.; Mark Mooney, Jr., Severna Park, Md.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and tri-weekly newspapers only.)

MARK MOONEY, JR., Publisher
 Sworn to and subscribed before me this 11th day of October, 1956.

JEAN MARIE COVER, Notary Public
 (My commission expires May 6, 1957)

PENTRON STEREO- MAGIC!

MONAURAL
RECORDING
and
PLAYBACK

STEREO-
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PLAYBACK

● STEREO-MAGIC CONVERSION KIT ●

Adapts any Pentron tape recorder sold in the past 5 years for stereophonic tape playback.

List: **\$16⁹⁵**

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These regular in-stock models offer stereophonic playback plus monaural recording and playback.

T-90S: \$219.95, list

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 Send details on Stereo-Magic . . .

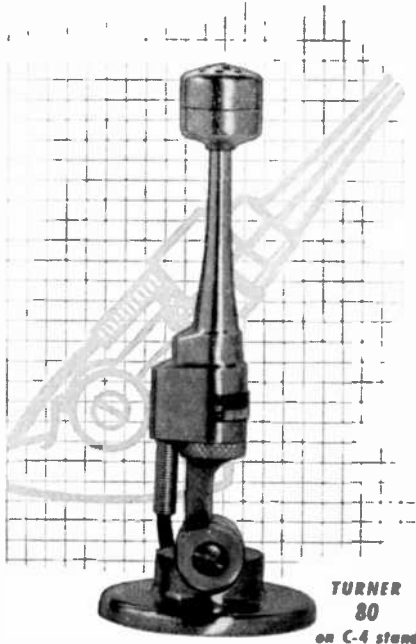
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the importance of design

in buying a microphone
...when performance
is guaranteed



You put performance first, naturally. No matter how convenient, compact, slim, trim or handsome a mike may be... its first job is to perform. The Turner Model 80 gives you a guarantee of superior performance.

In design, there is no comparable microphone that equals Turner Model 80 styling and compactness. Styling that pleases the eye and fits in with modern surroundings. Compactness that makes this microphone convenient and easy to use. You can cradle it in the palm of your hand.

Yes, the Turner 80 gives you performance *plus* modern, functional design. Only the price is old-fashioned. *Low*.

Sensitivity: Approx. 54 db below
1 volt/dyne/sq. cm.
Response: 80 to 7000 cps.
Weight: 5 oz. less cable.
Cable: 7-foot attached single conductor shielded cable.

List Price: \$15.95
C-4 stand: \$5.75



EXPORT: Ad Auriema Inc.,
89 Broad St., New York 4
CANADA: Canadian Marconi Co.
Toronto, Ont., and branches.

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 would be very interested in the why and how record and playback heads become magnetized. What precautions can be taken to prevent heads from becoming magnetized? I have owned an Ampex 600 for a year and use it on the average for about five hours a week. I want to keep my recorder at peak performance. Do you think my recorder heads could be magnetized after such use?—J. S. Giffard, P. Q., Canada.

A—Over a period of time recorder heads do tend to become magnetized. This results in a loss of the high frequencies and increase of hiss level. The only preventative is regular demagnetization.

The partial magnetization of the heads is most often caused by surges of current when the recorder is on or off, especially if in the record position. These electrical surges will impart a steadily increasing amount of permanent magnetism to the heads. The amount picked up will vary from machine to machine.

The total elimination of the magnetism is very simply done. Audio Devices and International Pacific Recording Corp. both market head demagnetizers which are coils of wire wound around an iron core. When connected to the regular house current an alternating magnetic field is set up in the demagnetizer. The prongs are held against the head for a few seconds and then the unit is gradually withdrawn. When it is about three feet from the machine the demagnetizer is disconnected from the power source. The slow withdrawal of the unit from the head is of the utmost importance for the field created by the demagnetizer is gradually diminished, leaving the head without residual magnetism. Some recorder manufacturers recommend that the heads be demagnetized once every ten hours of use.

Q—My problem: When I record on one side of the tape (my recorder is dual track) leaving the other side blank it plays back all right but the blank side gets a distorted sound which has to be erased in order to record on that side. Then when I record on the second side I get a distorted sound on top of the first recording. Is there some simple adjustment I can make to correct this or do I need to take the recorder to an experienced service man?—P.C.H., Bedford, Va.

A—From your letter it would seem that your heads or tape guides have somehow gotten out of line. In a dual track recorder there is a space about 1/32 inch wide left in the middle of the tape as a clear space with no recording on it. This prevents cross-talk between the two channels. If the tape shifts either upward or downward then one channel or the other will be heard. We would suggest that you take a pencil and press on the edges of the tape, with the recorder running in order to determine which way the shift must be made to clear the diffi-

culty. It is possible that either your record head or the playback head has shifted position.

Q—I have become a tape recording bug during the past year and I find your magazine both interesting and helpful. It seems that your magazine is not only the best of its kind but also the most instructive and up to date.

I have been wondering what information you can give me on taking tapes off the air. By this I mean, if I record something from the radio, is it legal for me to sell the tape? Also do I have to have any type of license to sell these tapes?—S.C., Boise, Idaho.

A—There are quite definite limits as to what you may do with recordings taken off the air. There is nothing to prevent you from making any recording for your own use and enjoyment, just as you may take pictures of the TV screen if you wish.

However, the courts have in a number of separate decisions firmly established the fact that a radio or TV broadcast is a definite property and the sole rights to its use for commercial purposes belong to the copyright owners or to the station or net transmitting it. It would therefore be illegal to make recordings off the air and sell them for gain.

Our June 1956 issue contained a complete run-down on this topic and copies are still available from our back issue department at the regular price.

TEST TAPE EXCLUSIVE

Encore Treasure Tape (Excerpts from Dubbings D-110 Test Tape) 4" reel, 99¢ ea. (plus postage)

BLANK RECORDING TAPE—3" REELS

Ideal for tape letters—Pop tunes etc. Encore Brand. 3 reels for \$1.00 (plus postage)

Q'tys. limited. Send for free catalog of interesting new products.

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BOBBIE KAY

Recording Exclusively on Tape Toons

Organ—Novachord—Solovox—Piano

PRE-RECORDED TAPE FOR
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SAMPLE 3" REEL \$1.00

TAPE TOONS

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Smitttown, N. Y.

Special Christmas Reel

½ Hour — 7½ IPS Dual Track

\$5.75 Postage Paid

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:

Help! In response to my note in a recent issue of TAPE RECORDING I received a note from a fellow in Brooklyn, N. Y. I have since misplaced his letter. He was a DJ once at Mars Hill, Maine, I believe. Please help me find him.—Fred Goldrup, Lisbob Falls, Maine.

Best we can do is publish this plea. Our stencils are filed by city and state and without knowing his name we don't stand a chance of finding him among our thousands of subscribers.

To the Editor:

I am a young Canadian, twenty-two years old, and I am just starting in the tape recording field. I have a two-speed 3 3/4 and 7 1/2 ips recorder. What I am interested in is tape correspondence with someone my age, male or female. May I ask you if you have any names and addresses you can give me or can you give my name and address to someone who wishes to tapespond also. I will be very delighted indeed and very enthusiastic to hear from my next door neighbors, so to speak, in the United States.—Gerry Spurell, 125 Mackenzie King Street, St. John's, Quebec, Canada.

We advise Mr. Spurell, and any others who wish to tapespond around the world that they join a tape club (see page 30). For the cost of small yearly dues the clubs will furnish rosters of their members with ages and interests indicated. Tapespondence is a fascinating hobby, a real thrill.

To the Editor:

Would it be possible, through the good offices of your magazine, to locate the Han-

dling agents for the Grundig Tape Recorders? I would like to compliment you on the fine magazine you are putting out and the quality of the articles therein. It might be of interest to you that Peter Harry and myself, both members of the Voicespondence Club, are currently voicesponding from inside the Arctic Circle.—T. P. Hill, Canada.

Write to DeJur Amsco, 4501 Northern Pkwy., Long Island City 1, N. Y.

To the Editor:

I noticed in the October issue that A.W.H. of Ann Arbor, Michigan, would like to know how he can get a reverse play from any tape he records. I have a dual track recorder and on my machine it is very simple. Remove the two brass tape guides and capstan rubber roller. Insert a small washer of 1/8" thickness—no more—no less. Cut circles of cardboard or wood of the same thickness and place under reels. Record as usual—and this will record on the bottom track. Remove washers from tape guides and roller, also reels, and place in original position. Turn over recorded tape which brings sound track on top and the reproduction, of course, is backward and will be clean and undistorted.

Now someone please—help, aid, assistance. My machine is push-button type, solenoid controlled. When pressing on the recording key there comes from the playback a terrible snapping sound. I have tried turning down the volume control completely when pressing the record key, however, there is still a perceptible click. Somewhere among the thousands of Hi-Fi TAPE RECORDING readers there must be someone who knows how to eliminate this tape-worm nightmare.—Bert De Gooyer, Route 4, Box 274, Yakima, Washington.

You might try putting a spark suppressor across the make contacts of the switch which actuates the solenoid. This consists of a 1/2 mfd., 400 volt condenser and a 200 ohm resistor connected in series across the switch. Also check the switch for bad contact. Anyone else with suggestions?

To the Editor:

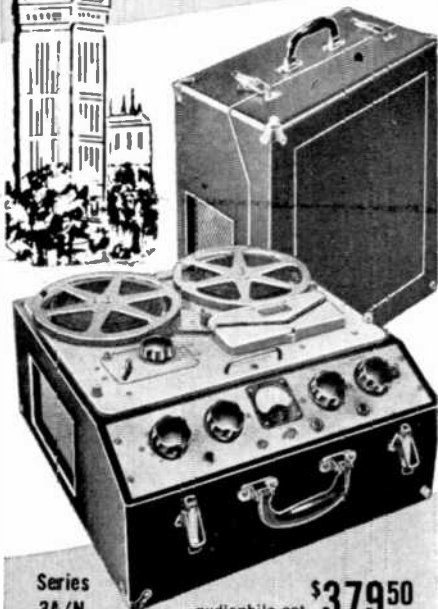
Would you please ask the readers of this column if any of them have a recording, tape, disc or wire of Orson Welles' "Invasion From Mars" radio show of the 30's. Ask them to contact me.

I appreciate very much your decision to go on a monthly basis. Enclosed is my check for two more years of pleasurable reading.—Richard C. Randt, 308 N. Main Street, Pearl River, N. Y.

CORRECTION: The prices of Omega-tape's stereo tapes were incorrectly listed in the last issue. All 7" reels are \$10.95, and all 5" reels are \$7.95.

the Magnificent Ferrograph

The world's finest hi-fi tape recorder



Series 3A/N

audiophile net \$379.50

professional quality at nominal cost

The world-famous FERROGRAPH magnetic tape recorder, designed and developed primarily for professional use, has been re-styled for YOU — the discriminating audiophile, the progressive educator, the efficient businessman, the music lover.

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 3 3/4" and 7 1/2" or 7 1/2" 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 7 1/2 and 15 ips or 3 3/4 and 7 1/2 ips are available. (Custom model 56/H illus. at left).

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

ERCONA CORPORATION

(Electronic Division)

551 Fifth Ave., Dept. 38 New York, N. Y.

In Canada: Astral Electric Co., Ltd., 44 Danforth Rd., Toronto 13

RECORDS FROM YOUR TAPES

Meetings, concerts, training aids, etc. economically re-recorded on permanent hi-fidelity discs. Professional quality —overnight service—all speeds—any quantity. Write for Free Folder and Prices

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FREE! 10-Reels of tape with famous-make **TAPE RECORDER**

Special sale price. Push button controls. Excellent tone quality. Sturdy plastic leatherette case. **\$89**

*1800 ft. of recording tape on 7-inch reel **\$2.49**

Largest stock of pre-recorded STEREO and REGULAR TAPES

THE HI-FI SHOP
2 N. Howard St. Baltimore 1, Md.

Beat The Horses

by Al Stone and Don MacRae

(Photos by the authors)

.. this tape game is perfect for parties or an enjoyable evening at home.



ALL BETS IN—

YES, you *can* beat the horses with your tape recorder—or at least some of your friends can. No, this is not a "system" guaranteed to make you a fortune over night. However, you'll reap a fortune in fun with this recorded parlor game, especially if friends drop by and the ice box is empty. You need no tails to pin on donkeys. You don't even need the donkey—he couldn't run in this class. This exciting game has all the thrills of the "Sport of Kings" and is as difficult to beat as the "hay-burners" themselves. Here's the way to make and play it.

One person in the crowd is appointed the "bookie" (the normal hazards of his profession are eliminated in *this* game). He may also have an "operator" assistant, preferably a non-player, to run the tape recorder for him. The duties of the "bookie" are many and the "operator" will relieve him of the extra trouble of running the recorder and thereby speed up the game. "Bookies" may be changed after a certain number of races, after a definite elapsed time, or at any other predetermined interval during the game.

The medium of exchange used is optional. You may wager buttons, matchsticks or wampum. WE much prefer jelly beans. In games of this kind, the odds are always in favor of the "bookie"—though they have been known to be upset. This is the reason for the medium of exchange that WE choose—our "bookie" doesn't like jelly beans!

You can record any number of "races" on a tape but the more the better. The more races you have on the tape, the more difficult and interesting the game becomes. Starting odds of all horses are recorded first. Following this is the actual race and then the finishing odds. The number of horses used in a race is also optional but should be consistent throughout the tape. Use the same names for the horses and always state their odds in the same order. In this way the "operator" can listen for the horse he knows will be named last in the starting odds and turn off the recorder. There's a reason for turning off the recorder at this point. Time will be saved if sheets of paper are prepared in advance listing the horses in the order given on



THEY'RE OFF!

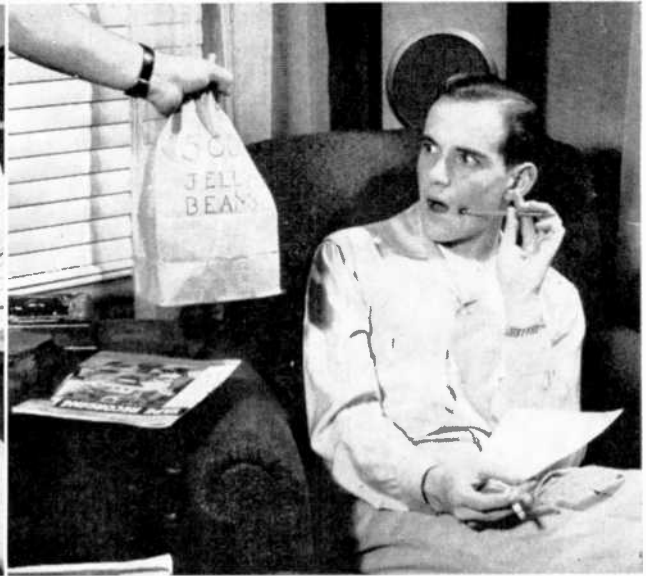


GUESS WHO WON . . .

the tape. When the "starting odds" are announced, each player can write the odds beside the proper name on his sheet. After the odds are given for the last horse, the recorder is stopped and the players are allowed time to study the odds of all the entries and write their betting slip. The players then make their bets with the "bookie." Right here is where you part company with some of your cherished jelly beans

Any confirmed horse player will consider this next paragraph entirely superfluous. Read on—or not—depending upon your qualifications. Bets are placed on individual slips of paper. At the top of the slip, the player writes the name of the horse he wishes to bet on. Directly under this, he writes his own name. Under his name he writes the amount of his bet and the positions he is betting the horse to finish. This is done in the usual familiar code. For example, if the player wishes to bet two jelly beans that the horse will "place" (come in first or second), he writes his bet thusly: 0-2-0. The first figure shows the amount bet to win; the second figure, the amount bet to "place"; the third figure, the amount bet to "show" (finish in the first three places). If a player wishes to bet a horse on all three places, he writes his bet thusly: 1-1-1. This is known as betting "across the board." If the horse wins, he pays on all three places. A "straight" (or "win") bet is paid only if the horse finishes first. A "place" bet is paid if the horse comes in either first or second. A "show" bet is paid if the horse finishes in any of the first three places. Naturally the odds are higher to win than to place and higher (as a rule) to "place" than to "show." Odds must be stated at the end of each race for the first three horses. The winner's odds are announced for "straight," "place" and "show." The second horse's odds are given to "place" and "show." The third horse has only "show" odds. The player's original bet is returned to him plus his winnings. At this stage of the game, the "bookie" collects the betting slips (and the jelly beans) and the race is on!

Right here you have a chance to show a little ingenuity. You, as the announcer, must record numerous "races" (using the same horses) without revealing the winner to persons who have heard the race before! After the running description of the race, the "finish" odds are announced. The odds quoted for "straight" position at the finish *must*



THE PAY-OFF!

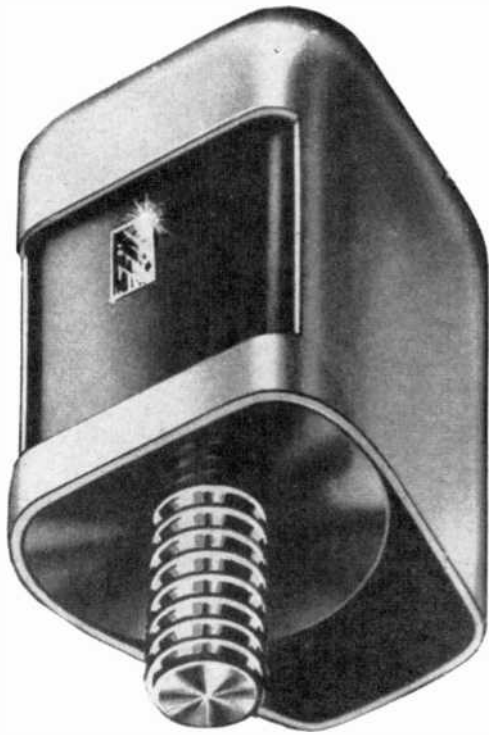
be the same as those quoted for the same horse as "starting" odds. His "place" and "show" odds should be in proportion. The same is true of the horses who finish second and third. These should be worked out mathematically before making the recording to give the "bookie" a slight percentage advantage. "ODDS" bodkins! Take heart. It's really not as complicated as it sounds.

The "bookie" takes down the names and positions of the three winners and the odds they pay for each place. He pays off the lucky players and the rest of you sit around and watch the winners eat *your* jelly beans! Another race is selected and the entire thing repeated. Some sort of signal should be placed on the tape between races. In this way, the operator can easily identify the beginning of the race and by using his fast-forward and reverse controls, or "flipping" the tape, the races can be scrambled to prevent memorizing. For the same reason, voicing of the starting odds should be monotonously similar from race to race.

If you don't care to record your own version, a pre-recorded tape of this game (plug) complete with starting signals, race descriptions, predetermined odds and playing instructions is available commercially at \$1.95 (less jelly beans) from your dealer or the House of Stone, a manufacturer of novelty tapes. There are eight races on the tape with eight horses in each race ("BEAT THE HORSES," Betatape #401). Whether you make this tape yourself or buy one, it is sure to provide plenty of thrills, fun and excitement at your next party or social gathering—and that's straight from the horse's mouth!



Left: Starting odds are written down for advance study. Right: Betting slips are prepared in the usual familiar code.



Record-reproduce head manufactured by Dynamu Magnetronics Corporation.

What You Can Do About Magnetic Head Wear

by Charles G. Westcott,

Author of *Tape Recorders—How They Work*

... proper head maintenance will assure peak performance from your recorder.

THE magnetic recording head of your tape machine is built to an almost fantastic tolerance. The utmost in skill and precision has gone into its construction. Today's magnetic recording head is built to a tolerance as close as ten-thousandths of an inch. The magnetic head is, in fact, the most critical and precision device in the tape recorder.

Magnetic heads not only determine the frequency response, both low and high, but also help establish signal-to-noise ratio. In magnetic head construction the pole pieces must be long enough to reproduce low frequencies and the gap sufficiently short to reproduce high frequencies.

In playback, the high frequencies on the tape are generally limited in reproduction by the length of the gap. As the recorded wave lengths on the tape approach the physical size of the head gap, the signal becomes greatly attenuated. Therefore, to properly reproduce a signal of 7,500 cps at 7½ ips, the recording gap must not be any larger than 5 ten-thousandths of an inch or the signal will be greatly reduced.

It is not uncommon for home-type recorders, as well as professional units, to go up to 15,000 cycles at 7½ ips. This means that the gap length must not be longer than 2.5 ten-thousandths of an inch long.

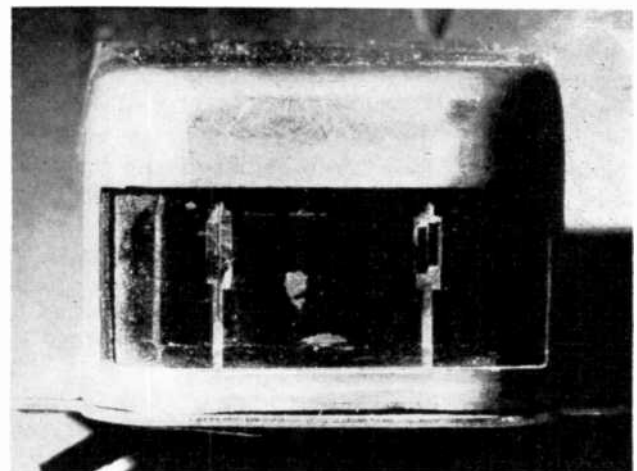
Yet, paradoxically, despite the marvel of precision engineering that the magnetic head is, little or no attention is paid to it by most recorder owners. Month after month recordings of the highest quality are obtained without the slightest regard being given to head maintenance. Of all the systems of recording and reproducing sound now in use, magnetic tape is unquestionably the least difficult to maintain.

Amazingly, this is a real disadvantage. Owners of home tape recorders and technicians in professional studios alike tend to become careless in head maintenance. All too often, not the slightest thought is given to proper head care. Yet,

when trouble starts, it is generally too late. The damage is irreparable and the worn head must be replaced.

Many misconceptions surround the problem of head wear. It is generally felt that head wear is due to the fact that the iron oxide particles coated on the tape backing are extremely hard and mu-metal, of which recorder heads are constructed, is, by contrast, relatively soft. The slipping friction of the tape coating against the soft mu-metal head may, at first glance, appear to be abrasive. The iron oxide coating of the tape is, in fact, more than two times as hard as mu-metal. However, the contact of the hard tape against the soft head is analogous to the action of a bearing.

In bearing construction, the shaft is hard and the bearing material itself is soft. The shaft rotating within the bearing



This is an enlargement of a badly worn and pitted head. Such abrasive wear is caused primarily by dirt and grime. Heads in this condition cause losses in high frequency response.

runs smooth and free. It is the dirt that works into the bearing that causes wear, necessitating replacement. A fundamental law of physics, this is just as true for recorder head wear. It is the dirt that collects on the tape which scours and abrades the head, not the iron oxide tape coating.

To prevent head wear, guides, capstans, pressure rollers and, of course, the heads of the recorder must be kept clean and free from contamination. As tape passes through the machine, minute quantities of dirt, grease, dust, as well as magnetic oxide and binder, are rubbed off the tape and deposited on the heads and guides of the recorder.

These extraneous deposits have immediate adverse effects, although the magnitude of the effect may not become large enough to be serious for some time. Although gradual, there is an inevitable loss whenever a recording is made or reproduced.

The accumulation of fine dust and binding materials gradually causes losses in high frequency response due to poor tape and head conformity. Intimate head contact is essential in attaining high frequency response. The thinnest deposit is sufficient to cause a measurable high frequency loss. Long-time accumulation of contaminating matter on the head can ultimately result in complete loss of high frequency signal. Changes in level independent of frequency can also occur when severe buildups have been allowed to accumulate.

All magnetic tapes transfer small amounts of coating and backing dust to the machine. Most of this accumulation comes from the slit edge of the tape and has a definite resinous nature. This gives the "dust" a tacky nature, assuring its adhesion to the exposed parts of the recorder. Moreover, the dust, like a fine rouge abrasive, gradually wears away the laminated metal of the head.

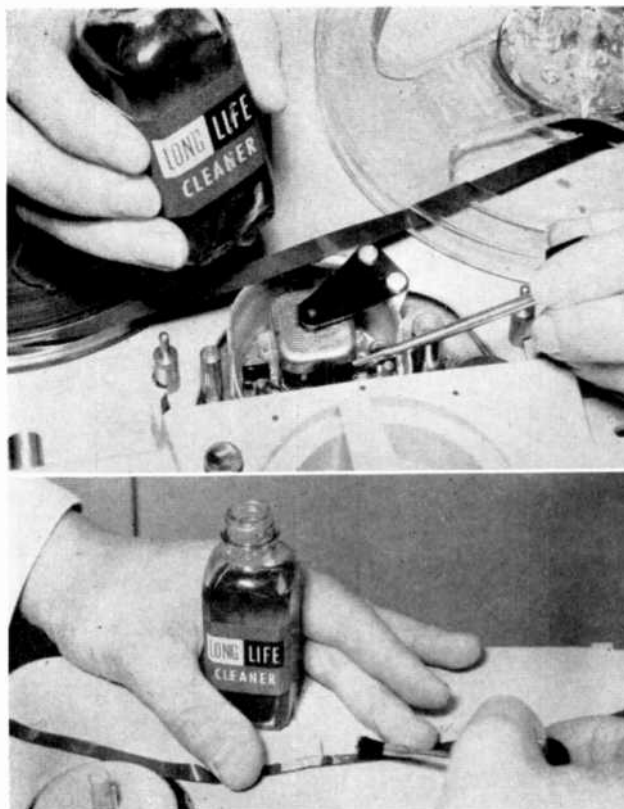
Carbon tetrachloride has been commonly used as a solvent in the past to remove these accumulations. While carbon tetrachloride is satisfactory in removing grease and oil deposited on the capstan and pressure roller (which introduce wow and flutter into the recording system) it is dangerous to use this fluid as a cleaning solvent on head assemblies.

In the construction of most magnetic heads, thin laminations are stamped to give the desired gap profile and core structure. The laminations are then stacked and cemented together to form a magnetic head. In other constructions, a single lamination is butted and cemented against the end of another lamination to form a gap. The resin used to cement these laminations and encapsulate many head assemblies is dissolved by carbon tetrachloride. Carbon tetrachloride also corrodes the mu-metal head surface.

The common alcohols (wood, isopropyl, etc.) are completely useless. They are poor solvents, having no action at all on any binder or resinous component that might be present.

Long recognizing this problem, recorder manufacturers in maintenance guides have warned against the excessive use of carbon tetrachloride: "use sparingly when cleaning heads, slightly moistening only a pipe cleaner or the tip of a soft cloth."

Until recent months there has been no alternative other than to expose precision heads to the hazards of using carbon tetrachloride. The problem of safely keeping heads and guides clean has been solved by a special solvent combination, recently marketed, ideally suited for this purpose. Called "Long Life Cleaner," this product is a blend of sev-



Top: Special head cleaners, such as Long Life, are a blend of several solvents, each chosen for its specific action on one or another of the contaminants commonly deposited on tape machines. Bottom: A silicone lubricant neutralizes any sticky adhesive not removed from a tape, and remains on the tape as a safeguard against tackiness.

eral solvents, each chosen for its specific action on one or another of the contaminants commonly deposited on tape machines.

This cleaner can be used with no fear of damage to any recording head now on the market, and is absolutely harmless to machine parts. Continued use, once or twice a week, will prevent harmful, long-term accumulations.

As we have seen in the case of a shaft and bearing, abrasive wear is caused primarily by dirt and grime. However, in any bearing, to prevent wear, a lubricant must also be present. With the introduction of lubricated magnetic tape, head wear has been definitely reduced.

In the construction of magnetic tape, a silicone lubricant is actually impregnated throughout the tape. Lying in the spaces between the oxide particles and the resin, the silicone continually re-lubricates the tape surface. The lubricant will generally last the life of the tape.

However, head wear is most effectively reduced if the head itself is also protected by a lubricant. Known as a synergistic action, a silicone lubricant coated on the head "works together" with the silicone lubricant in the tape to produce the lowest possible friction. This means that the combination of silicone in both places is more effective as a lubricant than would be expected from the action of the silicone on either head or tape alone.

Now, also available to the recordist is "Long Life Lubricant." When this lubricant is applied to the guides and heads of the machine, the solvent flashes off. Left behind is a deposit of an extremely thin layer of silicone, having no effect on the frequency response. The layer is so thin that its presence is virtually unmeasurable.



Left: Shown is a standard head alignment technique. Most head adjustments involve simply turning a screw which shifts the head from side to side. Only a very slight adjustment is generally required.



Above: When adjusting an alignment tape in a machine, care should be taken to reach the point of maximum output for the reproduce head, since a lesser peak will occur on each side of the maximum output position.

However, the elimination of excessive friction has other positive advantages to the recorder owner besides reduced head wear. The silicone lubricant, in addition, eliminates squeal caused by the intermittent sticking and seizing of magnetic tape to the head, a feature vitally important in high temperature and humidities. Even though the tape does not squeal audibly, tape modulation often introduces distortion products into the recording, particularly in the middle and higher frequencies.

Here is still another preventive maintenance tip: Never use any type of transparent cellophane tape for splicing magnetic tape. All major magnetic tape manufacturers offer specially designed splicing tapes containing thermosetting adhesive. This type adhesive resists oozing and will not gum up the recording head and tape guides.

However, splices made with even the best splicing tape in time become sticky, and small particles of the adhesive spread from the splice to the surrounding layers of tape. This causes unevenness during recording and dropouts in the sound at the point of contamination. Here again, a silicone lubricant can be used to clean away the sticky area and return the tape to its original condition. The silicone lubricant completely neutralizes any adhesive not removed by the solvent, remaining on the tape as a safeguard against tackiness.

As we have already seen, intimate head contact with magnetic tape is essential in attaining high frequency response. Professional recorders use a high tape back tension that figuratively stretches the tape across the head, holding it constant by tension.

In most home machines very little, if any, back tension is applied. Pressure pads are used to hold the tape against the head. The pressure pad is generally a good device to assure intimate tape contact with the head. However, incorrect and unevenly distributed pressure against the pads tends to wear the head somewhat unevenly, developing pits and craters.

This will eventually lead to poor tape conformity to the head and loss of high frequencies. Pitting is caused primarily by worn pressure pads. It is important to check pressure pads at frequent intervals for wearing or unevenness. Keep extra pressure pads on hand for occasional replacement.

When the heads are once worn, the frequency of any recorder will suffer drastically. There is no alternative but to replace the head. Generally, this necessitates the replacement of the entire head and coil assembly. (In a burtted lamination head, however, the worn pole pieces can be removed and a new gap inserted without the purchase of an entire new head. This is, however, generally a factory replacement job.)

There is not a sound enthusiast that breathes who is not eager to "soup" up the performance of his recorder. "Why not," he might reason, "increase the frequency response of my recorder by a new and better head? After all, a new head represents a fairly modest investment. Didn't you say earlier that it was the head that helped establish frequency response and the signal-to-noise ratio?"

Regretably, however, there is no simple and easy answer. Whether or not a worn head can be replaced by an improved and more expensive head produced by another manufacturer or a different type of head produced by the same manufacturer depends in large measure upon the recorder itself.

Each type of recorder head demands a different amount of bias for maximum performance. In the recorder factory, during manufacture, the bias is either adjusted or permanently set to fall within a region of proper operation when used with a certain type of head.

If a recorder has an adjustable bias, when replacing a head, the bias should be always readjusted to give optimum performance. It is vital that the necessary time be taken to be sure the bias be properly adjusted. If the bias is too low, serious distortion will result. If it is too high, the high frequencies will be lost.

Heads also vary as to the amount of equalization neces-

sary, especially at high frequencies. Consequently, not only the bias but also the equalization will need readjustment if changing heads to another manufacturer. Sometimes an adjustment or compensation in the circuitry is also necessary.

In general, here is a fairly simple rule to follow when considering switching to a different type of head: Do not change heads to another manufacturer or change to a different type of head produced by the same manufacturer unless you are prepared to adjust both the bias and the equalization of your recorder. On most home-type recorders, the head can be replaced with the head of the same manufacturer without difficulty.

Caution should be exercised by the uninitiated before attempting to adjust bias and equalization or alter the circuitry of the recorder. If a service repair shop is used, convince yourself the technician in charge is thoroughly acquainted with the operation of your recorder.

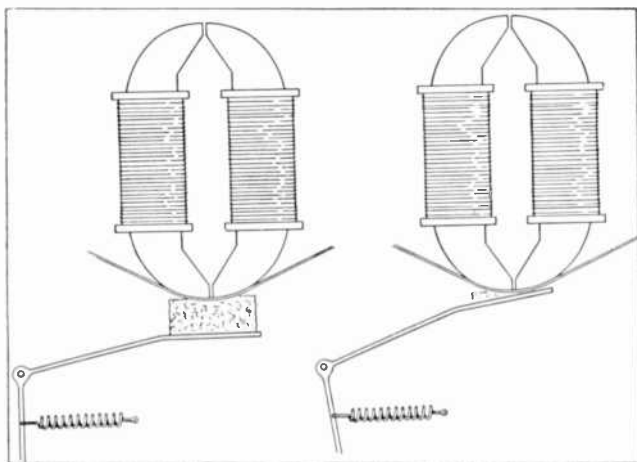
Dynamu Magnatronics Corporation, a division of the Maico Company, furnishes a complete head-replacement kit for most makes and types of recorders containing complete instructions for adjusting the bias. The instructions are clear and simple and, if followed, no difficulty should be encountered in making a bias change.

Most present day recorders are excellent mechanisms. It is possible that the results you seek can be achieved by an external speaker system or even a more expensive, professional-type machine as opposed to switching to a different type head.

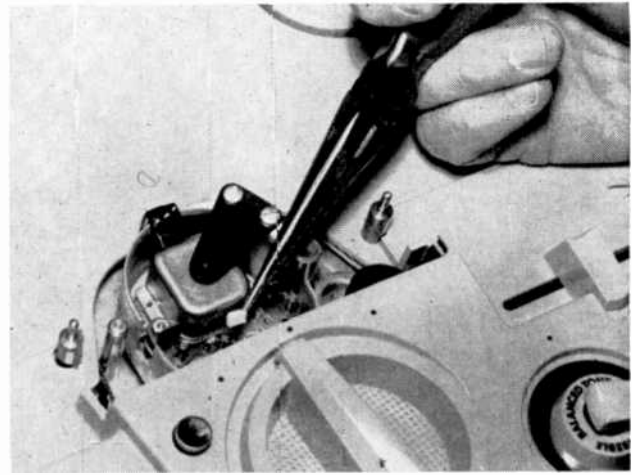
One additional precaution must also be observed in changing heads: Be certain that the head is properly aligned in respect to azimuth. If the head is in correct azimuth alignment, the gap in the head is exactly perpendicular to the tape. This means that tapes recorded on one machine will reproduce properly when played on another.

Of course, when the same head is used for both record and playback, the azimuth can be out of perpendicular alignment and the tape can still be reproduced satisfactorily since both heads will have the same angle. However, few recordists would be content only to play back on their machines tapes they recorded themselves. This is, in effect, closing the door to the increasing number of exciting recorded tapes now commercially available. For interchangeability of tapes, the azimuth must be correctly set.

Azimuth alignment tapes can be obtained from the L. S.



At left is typical record head. Note narrow gap. At right is same head when badly worn. Note that constant wear and abrasion has worn away the narrow gap, destroying high frequency response and increasing signal-to-noise ratio.



Check pressure pads at frequent intervals for wearing or unevenness. Changing them is a simple procedure. Simply pry off the worn pads, and replace, sealing with a strong-grip adhesive.

Toogood Company, Audio Devices, the Dubbings Company and others. These tapes have a high frequency signal at a short wave length recorded on the tape at a very precise 90-degree angle from the edge.

When adjusting an alignment tape on a machine, the normal procedure is to play the tape, then to adjust the reproduce head for maximum output. Care should be taken to reach the point of maximum output, since a lesser peak will occur on each side of the maximum output position. Simply connect an A-C voltmeter or volume indicator meter to the output or approximate by ear.

If a separate record head is used, it can be adjusted by recording a high frequency tone of approximately $\frac{3}{4}$ mil wave length. At $3\frac{3}{4}$ ips, 5 kc is required and at $7\frac{1}{2}$ ips, 10 kc will produce a $\frac{3}{4}$ mil wave length. A sine-wave oscillator should be used.

Since the playback head has been set to an accurate azimuth, the tape should be played back while recording, adjusting the record head until maximum output has been obtained.

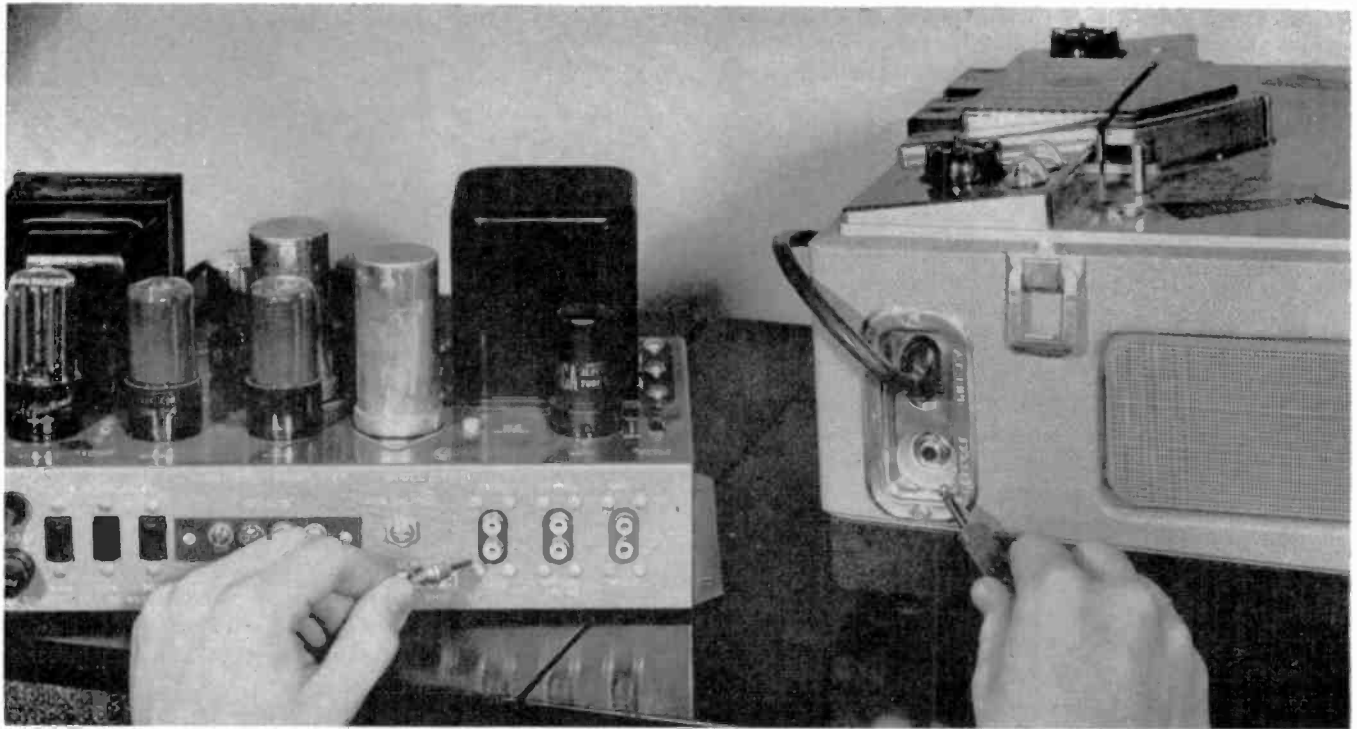
A simpler method—effective, although less accurate—is to record music with as many highs as possible. Feed the recorded tape, playing from one machine into the phonoplug, recording and playing back the music simultaneously. Both machines must, of course, be run at the same speed. By adjusting the record head, it is possible to set it at a fairly accurate azimuth by the judgment of one's ear.

It is also important that the erase head be in correct alignment. Many cases of alleged "print through" or signal transfer have, in reality, been traced to an erase head which was improperly aligned. The adjustment of the erase head is not critical. Simply be certain by visual inspection and testing that the erase head is in the right track position.

When adjusting the head alignment, also check the tape guides. The tape must be guided across the head in a perfectly straight manner. Close tolerances must be maintained so the tape will follow the same path on each playback. Poorly guided tapes tend to weave back and forth across the head. The head is likely to be thrown out of alignment, reducing high frequencies or causing severe amplitude variation.

If proper maintenance is followed, most heads will assure thousands of hours of trouble-free performance.

(Ed note: The head cleaner and lubricant mentioned can be obtained from recorder dealers or from EMC Recordings Co., 806 E. 7th Street, St. Paul 6, Minn.)

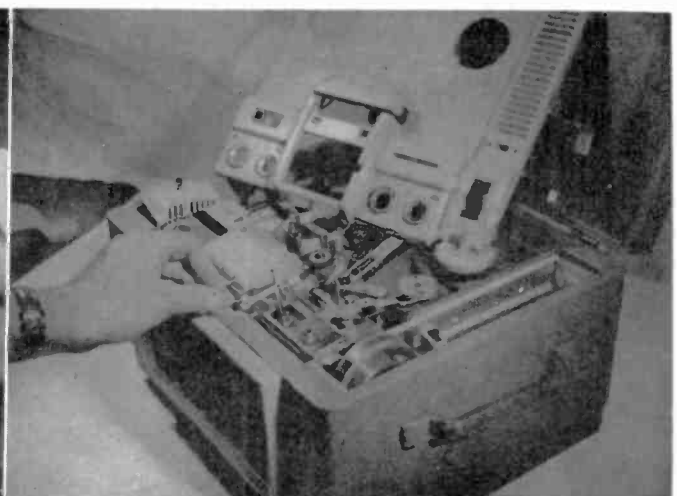


Your Resistance Is Low! When you plug into the extension speaker output of your home recorder, its speaker is disconnected, thereby removing the normal 3-4 ohm load and causing distortion if it is not replaced. This is usually a problem when copying tapes from one machine to another. Although a 4 ohm resistor wired into your patch cord will do the trick, an easier method—especially in an emergency—is to insert the plug into the extension speaker jack only part way so that it feeds the signal out, yet does not disconnect the speaker. A piece of cellophane or plastic tape will help hold the plug in position so that its tip just barely makes contact.

Six Tricks for the Tape Fan

by Ronald Anderson

HERE are six "tricks" for the tape fan—individual ideas which you can use or adapt to make tape recording more fun. What's more, you'll be able to make better recordings as well.

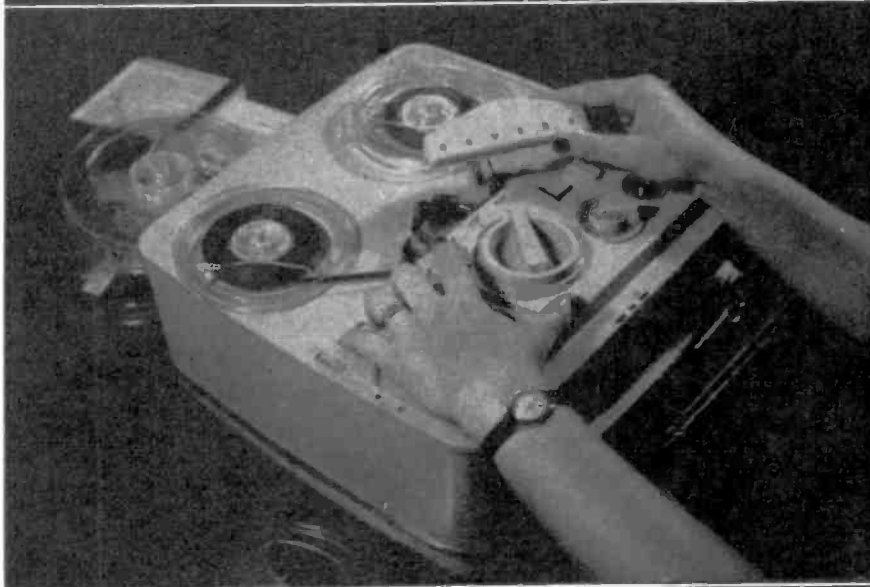


Left: Just Pull the Tab! If you are faced with the task of making a number of splices in a tape, you can save yourself time and frustration by tearing off several 2" to 3" tabs of splicing tape in advance and lining them up in a convenient row on your machine. But don't press them down too tight, and don't leave any on when you are through. Splicing tape sticks right! Right: Here's One That Will Stop You! If your tape recorder lacks a "quick stop" or "pause" control you may find it difficult for cueing, editing, or dictation. But on many machines, you can add such a device by bending a piece of stiff wire into the shape of a question mark and hooking it around the shaft of the rubber pressure roller. When you pull the wire, the roller is moved away from the capstan and the tape stops. Replace the top plate and you're in business.

Look, Ma, No Hands! If you're tired of trying to make like an octopus and are constantly running out of hands during many of your recording jobs, just take a wire coat hanger and bend it into a handy mike holder that you can slip over your head and down on your shoulders. Bend the hook of the hanger so that it clamps around the microphone. If necessary, secure the mike with a little cellophane tape.



You Can Edit Better Bare-headed! If you're doing any tight editing and must make some close cuts, you'll find your task many times easier if you remove the head cover first. Head cover plates on most recorders simply pull off, while it may be necessary to remove a screw or two on others. This enables you to locate precisely the gap of the playback head so you can stop and cut the tape in the exact spot desired. This technique is especially valuable in editing tapes recorded at slower speeds where the space between words may be practically nil.



Reverse Reels Can Ride Piggy Back! If you own a Revere T-11 or any other machine where only the take-up reel can be left on when the lid is closed, you've been faced with the problem of carrying the other reel. But if you simply slip the feed reel on the same shaft as the take-up reel, the lid will close comfortably. And you don't even have to unthread the tape.





Photo by Glenview Studio

The authors stereo recording the Rockefeller Memorial Carillon in a basement room at the University of Chicago Memorial Chapel.

How You Hear Audio Perspective

by Robert Oakes Jordan and
James G. Cunningham

. . . nature equipped us with two ears for safety and utility—here's why.

It all began a long time ago and lies deep in the origin of man as an evolved animal. This may sound somewhat academic and scholarly in describing the "new" sound. Since this sound will be with us the rest of our days it might be wise to dispel some of the misconceptions about stereophonic sound. To begin with, let's think about the dictionary definition of stereophonic: ". . . pertaining to a three dimensional effect of auditory perspective . . ." The key words to remember are *three dimensional effect* and *auditory perspective*. Actually what you hear, that is the characteristics of stereophonic sound, is an *effect* with an auditory illusion of depth and perspective. You might if you wish call stereophonic sound an *auditory illusion*, with all the effects of the familiar *optical illusion*. In essence your hearing system is being fooled . . . no matter how pleasant the effect, stereophonic sound is an illusion. Now we can go back into man's early progress to see how this illusion can take place in our time.

There was a time when man walked small upon the earth primordial. He had no natural elements of protection like those of the pre-historic animals but he had the use of five senses and the ability to reason and take profit from his

experience. In the beginning ancient man more than likely relied largely upon his hearing than upon any of his other innate senses. His eyes either clouded by physical ailments or obscured by the heavy undergrowth of his natural environment, were only of short range help in warding off danger. However, his hearing system, protected by nature's "choice" of location and, chances are, overhanging long hair provided him with a fine "early warning" acoustical radar system. His *binaural*, i.e., two channel, hearing system functioning in cases of danger not unlike the acoustical aircraft spotting devices used by the army before World War II.

The way we hear sounds within their natural context allows us to place them in relationship to our own position. In the dawn of civilization man never heard sounds that were not within their context of naturalness. All sounds came from their source, and that source whether an animal in the forest, or a child's cry in the cave, had made these sounds as a part of its existence. It was thus that man was instinctively aware of his surroundings, its sounds and their instantaneous location. His life often depended upon his hearing ability.

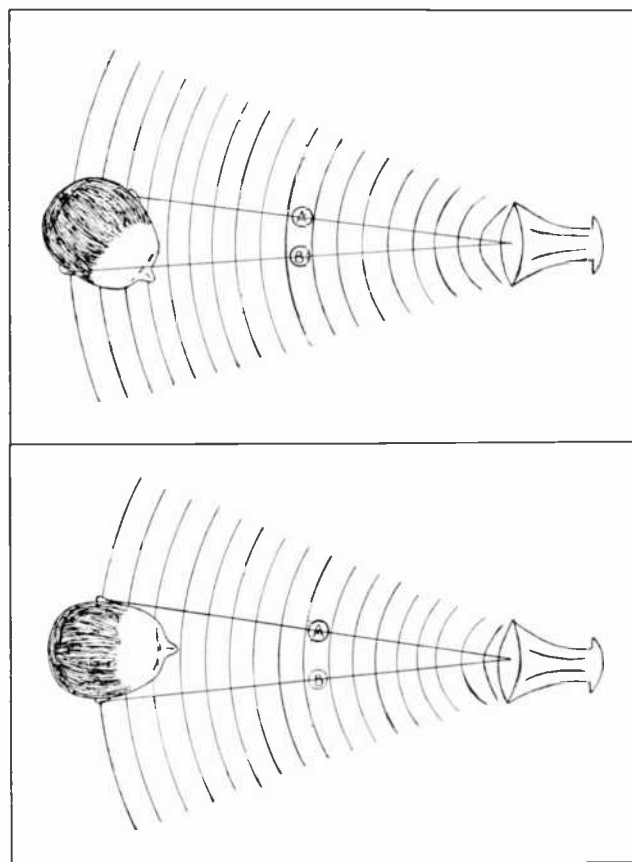
Even the first manmade instruments, like log drums or reed flutes, were natural sounds. Only these instruments could make their own sounds, of course, mechanical or electronic sound reproduction was unknown.

Whenever a sound was made our pre-historic man instinctively turned his head in the direction of that sound. There was an inner compulsion in the hearing system of man that made him seek to equalize the volume of sounds reaching either ear. In doing this his head turned toward the sound just as his eyes sought to focus on one object; his "ears" sought to do the same thing. In a manner of speaking, man makes an effort to hear in one plane or dimension just as he seeks to see in only one dimension. Our world of sight and sound becomes three dimensional only as we move to refocus our eyes and ears. When the musical instrument was developed within our knowledge of history, the concert hall with large groups of musicians became part of our lives. Here was a stage filled with a hundred or more sound sources, that is instruments . . . each a separate sound source in itself. As you and I sit in front of this complex group of sounds our instinct tries to control our head movements in listening. It is easy to see that no matter how quick our reaction time none of us could "center" our ears on each instrument as it made a sound. The side to side motion of our heads would be quite rapid, and impossible to do. If during the concert there is an outstanding solo sound like the cymbals, or the trumpet our head will turn toward it centering both our eyes and ears on it. During the performance of these many integrated sound sources our mind is at work trying to make our head track these sounds. At the same time our conditioning as evolved human beings "tells" us we need have no fear in the concert hall surroundings and our automatic and instinctive head movement, for the placement of sounds, is partially overcome. This "tension," as it were, of instinct versus evolvement in our hearing system has become a natural part of our hearing ability. It is this "tension" and its effects on our mental "ear" that makes it impossible to gain any spatial realism and definition out of monaural high fidelity sound. No matter how good the frequency response, how wide the dynamic range, or how many speakers you have hooked to your single high fidelity amplifier, the resulting sound can not satisfy all the natural requirements for hearing. To be sure the developments in the stereophonic art would never have been possible but for the past improvements in the audio field. It is well to remember that this "tension" we spoke of is not something you can notice as it happens but rather it is a natural part of hearing come about through mankind's time on earth.

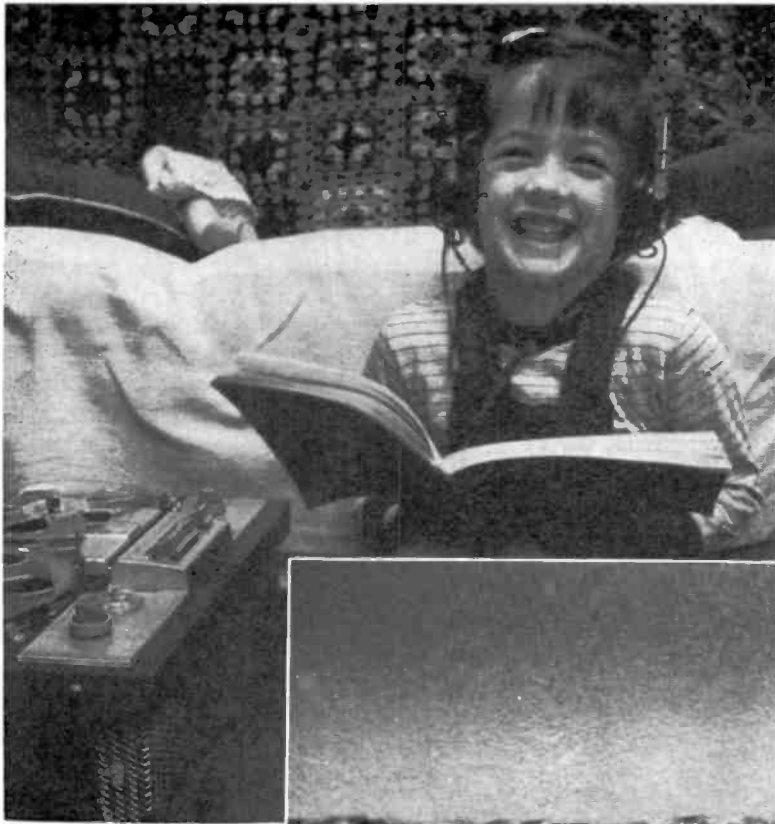
It is plain to see that to be at ease while listening to any moderate sound, that sound must fill the natural requirements present in the human hearing system. Let's go back to the words we were to remember from the first part of this article: *three dimensional effect* and *auditory perspective* or better still an *auditory illusion*. For the most part these words may only be applied to sounds mechanically and electronically reproduced out of their natural aspect. In nature all sounds heard are weighed by our hearing intellect. For instance, we hear the sound of an elevated train approaching. It can hardly mean any thing to us by way of a warning unless we are on the tracks. The sound is heard, its location noted but before we turn toward it our intellect breaks the "circuit" and stops our head move-

ment by saying in effect: "This train is an elevated train, it is on tracks twenty feet above me and cannot cause me harm . . . I am safe." However, if at the time you were crossing the street, this sound appeared, your intellect gave you this same message, and you took no warning; there might be a new type of street car which made a very similar sound and in the next few seconds you could have a fatal accident. This side note is simply to point out that we can make hearing mistakes, with natural sounds in their own locale. If you ask your hearing system to make a conscious "mistake;" that is to listen to monaurally reproduced music or sounds lacking the elements for *auditory illusion*, but to pretend to hear-between-the-lines those missing elements of spatiality, and dimensional definition . . . it cannot and will not do this. Thus far no amount of gimmicked and "doctored" monaural sound has provided these special requirements for natural hearing. While not perfect stereophonically reproduced sound provides an *auditory illusion* which the human hearing system accepts without the usual listening fatigue of monaural sound. We have not made an effort to cast aside present day monaural high fidelity equipment. It is our contention rather that the single system is a perfect starting place for the sound in your future . . .

In our next article we will explain further about the nature of stereophonic sound, and those aspects involved in both the recording and playback of the unique means of audio reproduction.



In order to locate the source of a sound it is necessary to have "binaural" or two-eared hearing, just as you must have two-eyed sight in order to perceive depth. In the upper drawing, sound path "A" is shorter than path "B." While the difference in the arrival of the sound at each ear is measured in microseconds, the brain detects it and orients the source. Lower: the simultaneous arrival of the sound in both ears indicates its source as dead ahead.



Viny, Twisty —



A recording session of the children's stories can be a regular reading session. Here the author's wife reads to their daughter as the mike picks up the session. Pictures should be described and when to turn the pages indicated as part of the reading. Above: listening to the tape through headphones is a pleasurable experience for the youngsters and saves hours for the parents.

As the father of a five-year-old, I have been forced to adapt myself to all kinds of noises, songs, and stories. Like me, you will no doubt agree that your own adaptation, if you are a father, has been stretched occasionally to an ungodly extent. Kids are kids and the things they like are not always what the parents like.

The other night as the good wife was reading our loud

to the young one, I was pushed as far as I could be pushed, loving-father role notwithstanding. I was trying to concentrate on something ticklish; the concentration went by the wayside as the following words floated gently (?) to my ears: ". . . V was once a little vine, viny, winy, twiny, viny, twisty-twiny, little vine! . . ."

Mr. Edward Lear wrote those words; he's supposed to be

Twiny Oh Nuts!

by Sam Chambliss

good at children's stuff like the "Owl and the Pussy Cat" (which I happen to like), but the "Nonsense A B C" was not meant for me (my daughter thinks it's great). As a matter of fact, I put the old foot down evermore on reading the alphabet a la Lear.

Which made me a dictator. The daughter's lower lip was stuck out far enough to go skating on.

Then came the inspiration. Quick like a bunny, I set up the tape recorder and started my wife recording the "Nonsense A B C" while I went to the store for a pair of headphones. When I returned, the recording had been completed of the viny, winy, twiny, twisty-twiny plus some other selections.

We re-wound the tape, plugged in the earphone jack, adjusted the phones for the daughter's ears, and sat her down to that delightful book with the agonized alphabet.

Smiles were on her face. She turned the pages and traced the pictures out the same way as she did with her mother reading to her.

She was still enthralled when the tape ran off, an hour later. The experiment was a complete success.

There's one thing to watch for; the original narrator

must record "Now turn the page;" or words to that effect, especially with new books.

In all fairness, I should say I do not approve of this sort of thing night after night. We are old-fashioned enough in our family to want to talk with each other, rather than sending the youngster, as many parents do, to the television set. However, there are times when people drop in around bedtime, just when the child wants the traditional bedtime story. Our daughter can be satisfied with the taped version, for one or two evenings. The narrators are *us*, not some strange announcer.

And my wife tells me that when I'm gone overnight, our youngster wants taped stories that I have narrated, in preference to being read a story "live." The reverse is true when the wife is gone, which is seldom.

Better yet, I don't have to listen anymore to "viny, winy, twiny . . ." when I'm up to my neck in engineering data.

If you're in a similar situation we'd strongly suggest you put the kiddies' stories and rhymes on tape. You'll save hours of your time, a shattered intellect and won't cut into the children's enjoyment in the least. It's one of those rare combinations where everyone wins and no one loses.



Today's tape recorders are so easy to operate that even a five year-old can be entrusted with the machine. Here daughter Marty adjusts the volume to suit herself.



Bill Putnam in control booth at his Universal Recording Corp. studios in Chicago, operates complex console while recording new stereo tape by Concertapes, Inc.

Stereo Recording Session

by Thomas S. Watts

. . . here's how "The Sound of Christmas" was recorded in the modern Universal Recording Studio in Chicago.

The John Haltoran Chorus wears choir robes while recording. Two mikes shown were used with three others covering the orchestra on the other side of the studio, preserving stereo's spatial effect.



NEW ideas—musically and technically—were used by Concertapes, in producing "The Sound of Christmas," newest stereo recorded tape release by this pioneer in binaural tape recording.

Arrangers, conductors, musicians and recording engineers worked as a team to create and execute techniques devised especially to exploit the spatial qualities of stereo. From its inception this summer, "The Sound of Christmas" was a stereo project, though its producers also are marketing a 15-minute monaural version.

"The Sound of Christmas" was recorded Sept. 30 in a special stereo studio at Chicago's Universal Recording Corp. It features the Concertapes Orchestra directed by Leonard Sorkin, noted classical violinist, and the John Halloran Chorus in a collection of traditional Christmas hymns and carols.

It all began when arrangers Bill McRae and Wayne Robinson met with Conductor Sorkin and his associates, Irving Illmer, George Sopkin and Abram Loft to devise arrangements calculated to take fullest advantage of the qualities of depth and "presence" which characterize stereophonic recorded tapes and make listening to stereo such a satisfying musical experience. Every passage was designed to take advantage of the special characteristics of stereo.

Next, this group met with young John Halloran, who worked out arrangements and effects for his 18-member John Halloran Chorus. It was decided to keep orchestra and chorus widely separated and to dramatize the "movement" effect of stereo by having the chorus sing while in motion during the recording of "Adeste Fidelis," often used as a church processional. There were other special placements and devices too—such as having the orchestra's percussionist make a semi-circle around the musicians while jingling sleighbells for a version of "Jingle Bells" which give a variety of new interpretations to this old favorite.

Then came sessions with Engineer Bill Putnam, operator of Universal Recording Corp., whose task was to devise recording techniques to carry out the ambitious plans of the arrangers. In the first place, there was a delicate problem of balance to be solved. Normally, balance is the concern of the recording engineer. But in this case, in order to preserve the clarity of the chorus without sacrificing

Leonard Sorkin conducts in two directions. John Halloran Chorus in foreground and Concertapes orchestra in background join to record stereo tape.



The Concertapes Orchestra plays for stereo recording of "The Sound of Christmas." Unusual miking was one of several innovations employed to exploit the special characteristics of this holiday release.

clarity and definition of the orchestral arrangements, the balances were effected by the musicians on the floor under Sorkin's baton.

Putnam rigged a special microphone system for "The Sound of Christmas," employing five microphones but coupling them in such a way that the five functioned as two.

As seen from the control booth, the orchestra was at right, facing the chorus at left, with Sorkin on the podium between the widely-separated musical groups. Three microphones were in front of the orchestra. Two were tied together to make a single mike, in effect. Two microphones were spaced in front of the chorus. In recording, Putnam coupled the right-hand orchestra mikes with the right-hand chorus microphone and the left-hand orchestra mike with the left-hand chorus mike. In this way, two separate sound tracks were made as in every stereo tape recording. The monaural tape was recorded at the same time.

Putnam's intricate 12-channel control console made all this possible. It was designed for stereo recording, in that two isolated program channels are available from any or all of the 12 positions on the board, at the same time feeding a channel for monaural recording. Completely isolated amounts of reverberation are available to right or left channels in controlled degrees. This can be accomplished, when desired, by feeding the right and left channels to separate echo chambers, used only to a degree to reinforce the direct sound.

Putnam's stereo studio is equally unique. It's huge—100,000 square feet. Only Hollywood sound stages are bigger, Putnam says. Large reversible splays line the walls. They're curved, smooth on one side, covered with pegboard on the other. These provide for varying the acoustics over a reverberation time from that of a room of 20,000 cubic feet to that of a room of 125,000 cubic feet. They also vary the absorption coefficient from approximately 10% to roughly 80% over a wide range of frequencies.

In spite of all the special techniques, "The Sound of Christmas" isn't a "gimmicky" record or a so-called stereo showcase. Each departure from usual practice contributed to the end effect—the creation of a stereo tape recording which captures the very spirit of Christmas in beautiful music with a rare quality of warmth and presence.

1956 Roundup

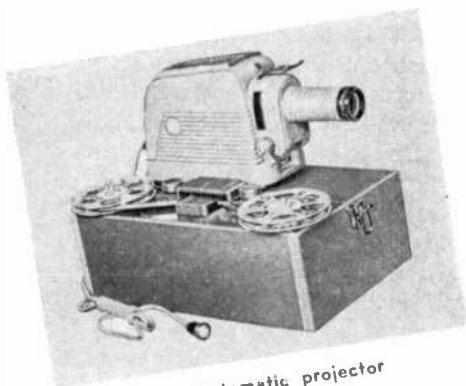
... the year 1956 was a swiftly moving one for magnetic recording. Here are some of the highlights:



Echomatic Tape Cartridge



Ampex Stereo



Benz Automatic projector



Bell Stereo

A SNOWBALL rolling downhill and the tape recording industry both showed the same characteristics over the past few years. The farther they went, the bigger they became and the faster they traveled.

From a standing start in 1950, the industry has grown until there are an estimated million and a half tape recorders now in use. Each successive year has seen more recorders and more tape sold. 1956 kept the accelerating pace—in improvements, new products and general expansion.

During the year the Magnetic Recording Industry Association under the presidency of Joseph F. Hards has made strides toward standardization. C. J. LeBel, Chairman of the Standards Committee, has guided the work of members from various firms toward the establishment of definite standards in such things as reel dimensions, playback and recording characteristics, head alignment, etc. More progress was made in 1956 than at any time previously toward these goals.

1956 also saw the inception of Mylar tapes which enabled the tape manufacturers to use thinner base stock and thus get more tape on a standard reel. Mylar, a DuPont product, is unaffected by extremes of temperature or humidity and provides the recordist with an imperishable tape.

The bombshell of the year was the introduction of the Ampex Videotape Recorder for recording TV pictures and sound on 2" wide tape at a speed of only 15 inches per second. Its release was unexpected and TV stations were quick to sign up for the new recorders at \$45,000 each.

In many cities the music loving public was treated to stereo Soundoramas which consisted of recording a symphony orchestra on the spot and playing it back stereophonically. The Philadelphia orchestra held the first one.

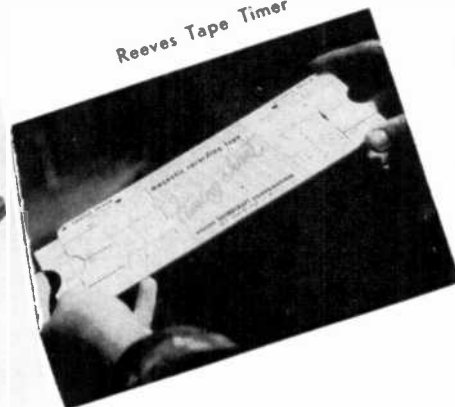
The year was also marked by the swift rise of stereo. Pioneered as early as 1952 by Livingston Electronics, 1956 saw Ampex introduce its home units followed by V-M with its adapter kits and stereo playbacks, Bell Sound with the same and a stereo amplifier, RCA with its playback and Pentron with both conversion kits and ready-to-play machines in its line. Berlant Concertone and Viking, Amplifier Corporation of America, Ferrograph, Magnecord, EMC, and others were also active on the stereo front.

The output of recorded tapes continued to grow with such firms as Bel Canto, Audio Arts, High Fidelity Recordings, Concert Hall Society, RCA, Sonotape and others entering the field. Almost all of the new output was

Fidelipac Tape Cartridge



Reeves Tape Timer



stereo tape and some firms issued stereo tapes only.

Further indications of the growth of the field was that Tape Recording magazine switched from bi-monthly to monthly publication to be able to keep up with the industry. Four books on recording appeared during the year.

In 1955, 360,000 tape recorders were sold. The 1956 figure is still higher. Tape sales were measured in millions of feet, in fact, enough to make more than four complete round trips to the moon.

One sad note marked the year, the death in an auto accident of Charles Sigsbee who was the first music reviewer to devote his entire attention to tape.

The uses of tape continued to broaden: the political convention was covered on tape, Westinghouse introduced "talking elevators." Mestons Travels combined a slide and tape to make "This is America." The Mid-West Broadcasting School made practical use of tape in their home study announcing course, the stock exchange switched to tape for its lectures to visitors and the music and sound effects of Disneyland were likewise played from tape. The Benz Aud-o-scope combined a recorder and projector for automatic operation. Tape cartridges, the Echomatic and Fidelipac, emerged from the lab. United Air Lines took tape music aloft using a Presto reproducer and General Sarnoff repeated his prophecy of home movies on tape.

Growth caused several shifts in the industry too. Shure Brothers moved to a larger plant. ORRadio Industries, Webcor, Electro-Voice and Telectro also suffered growing pains and had to acquire larger space.

Imports of foreign made equipment increased during the year. Intersearch began to market a Japanese microphone, stereo heads, and stereo tapes. The Ercona Corporation brought in new Ferrograph models and Tandberg imported the Norwegian Tandberg recorders.

Minnesota Mining and Manufacturing purchased the video tape division of Bing Crosby Enterprises and Bel Canto. Afton Industries, St. Cecelia Co., Concert-Hall Society, Intersearch, Nortronics and Wheeler Studios were among the new faces to appear in the industry.

The tape correspondence clubs grew too, with Tape Respondents International, founded by the late Fred Goetz, welcoming its 1000th member.

New equipment continued to pour out. Electro-Voice introduced its slim mikes, Stancil-Hoffman developed selectivity of taped music for juke boxes. Magnecord unveiled its new Citation and the P63A-X. The Dictaphone Company brought out the Dictet pocket recorder, Audio Devices, Reeves, Irish and Scotch brought out the new thin tapes. Federal introduced its model 47-A recorder. Fenton brought out the stereo Brennell tape deck. Ampro and Pentron marketed console type recorders.

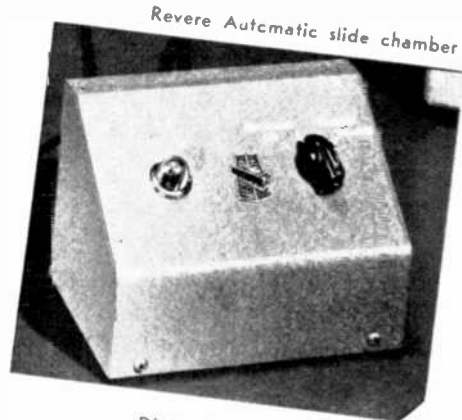
Industrial uses, electronic brains, movie sound tracks and similar uses also moved forward during the year. For magnetic recording as a hobby, industry and business, 1956 was the most active year so far.



Ampex video recorder



Madelyn K. Skarnes, T.R-I's 1000th member.



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TAPE CLUB NEWS

Arrangements for a Pacific District and western states get-together of Voicesspondence members, non-members, and their friends, are now underway. Directing this affair is Voicesspondent Roy W. Howard, 3113 So. Center Ave., Arcadia, Calif. The date set for the affair is Sunday, February 17, 1957, from 11:00 A.M. to 6:00 P.M., at Garvey Memorial Park Gymnasium, Garvey, Calif.

Roy asserts that there will be tables available indoors or out, according to the weather, so bring a picnic lunch if you desire; there will be playgrounds for the kiddies; free parking; tapes and tapes with colored slides and movies will be run; electronics experts will be present to answer technical questions about recording; and high on the list of special events is a performance by Larry Friel, who played piano for and toured with the late Eva Tangway, the "I Don't Care Girl." All in all, it promises to be a most pleasant and enjoyable gathering.

Those planning to attend should write to Roy and let him know how many will be in each party. Anyone wishing directions to the Gymnasium may request same in their letters. Also, Roy is footing all costs, and any donations to help this along will be appreciated. Any money not used will go into the Voicesspondence Special Services Committee Fund.

World Tape Pals has gained so many teachers desirous of exchanging classroom tapes that a special list of their names will be distributed to the group before January 1. The importance of tapes, direct from foreign countries, in education is becoming more and more apparent, and the teachers are finding it a great aid in many subjects such as social studies, geography, foreign languages, etc. World Tape Pals urges its teacher members to contact each other and plan their school exchanges. Also, The WTE Tape Bank will appreciate hearing any interesting tapes received by the individual teachers, for possible inclusion in its library.

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TAPE IN EDUCATION

BY JOHN J. GRADY, JR.



At various times, TAPE IN EDUCATION has referred in a complimentary way to the research and experimentation, which has been performed by educators, in the application of tape recording to approved instructional routines. Throughout the nation, numerous earnest teachers are improvising uses for tape instruction, and are definitely establishing magnetic recording as a most versatile aid in lessening the mental, manual and vocal work load of instructors in many curricular subjects. And these pioneers of better teaching methods are doing a more effective job of imparting knowledge to students, also.

In the Green Mountains of old Vermont, at Middlebury College, a marvelous task—from experimental stage to final installation—has been accomplished at the Language Laboratory there. Stereotyped old methods of instruction in the languages have been abandoned or revised. Thorough experimentation, over many months, caused the elimination of procedures that had been common practice for many generations. Innovations of later days were weighed and tested, too, in the search for the best method of language instruction. The result was the adoption of an efficient modern procedure in which magnetic tape recorders and playback units have a very important part.

Ambition for excellence spurred the development of the modern Language Laboratory at Middlebury College—minds reaching for superior techniques far beyond the old orthodox measures of earlier days. That's the spirit of PROGRESS. So, as a result of that spirit, Dr. Stephen A. Freeman, Director of the Language Schools and Vice President of the College, together with Professor Fernand Marty, Director of the Language Laboratory, produced for an old and revered institution a modern scientifically equipped department for the teaching of languages. And in the process, Professor Marty authored a number of textbooks and tape recordings to aid students in the mastery of the French language.

The most important basic unit of the Middlebury College Language Laboratory is the glass-paneled, soundproofed recording studio. And within this studio, there is a vital instrument in operation—a short-wave radio set—which provides students with a direct contact with actual communication technique in various foreign countries. As always, text and theory have their important place in language study, but communications direct from the country of origin—the voices, the accents, the national mannerisms in delivery—that's the ultimate in language instruction. And the recordings of these live broadcasts, translated, analyzed

and discussed in class, surely will help students to speak and to understand aurally a language being studied, as well as to read and to write it. For it is proficiency in speech and in aural understanding that modern language instructors aim to develop in their students. And it is recognized that a tape recording of any utterance, which can be repeated time after time, is far better for study purposes than any single utterance by a speaker.

Other equipment in the studio of the Language Laboratory at Middlebury College consists of a sound amplifier, a disc recorder, a turntable for transcribing disc material to magnetic tape, and the very necessary tape recorders. It is in this studio that instructors prepare master recordings of texts and laboratory exercises, and from these master recordings the copies for the students.

In addition to the two classrooms in the Language Laboratory, there are numerous individual listening rooms available for the students. Each one of these rooms is equipped with a tape recorder or a playback unit. Some of the listening rooms have both instruments. This double installation serves two purposes. It permits a student to listen to questions or other instructive material on the playback unit, then to record his answers or observations on the other unit. At Middlebury College it has been found that the installation of both the playback unit and the tape recorder in the individual listening rooms makes a sound contribution to the study of languages. The double installation assures responsive activity to instruction on the part of the student. It's not a one-way effort—just listening. For after listening, action is expected. The presence of the tape recorder will help a student to prove that he listens well—and learns. The taped answers will tell.

Extensive experimentation by Professor Marty proved the value of the individual listening rooms. Because of them the student has an environment facility available which will help him to concentrate on factors he needs to study most. In the listening room he may repeat and repeat particular passages as often and as long as he desires. Then without distractions, he can demonstrate in his own voice that he has absorbed the necessary instruction. Boy, what satisfaction.

TAPE IN EDUCATION is deeply grateful to Professor Marty for the information which permits this digest narrative of the years of experimentation and the final accomplishment of a modern Language Laboratory at Middlebury College. CONGRATULATIONS.

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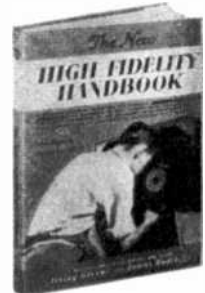
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NEW PRODUCT REPORT



BELL & HOWELL MIRACLE 2000

... features four speakers, including two electrostatics. Three motors, push-button operation.

THE unit shown above is the new portable version of the Bell & Howell Miracle 2000 tape recorder. Until this model was announced, the recorder was only available in a furniture type instrument, shown below and designed especially for home use.

The physical and electrical characteristics of the two machines are identical. Our tests were made on the model 300 M.

The ease of operation, with the drop-in-the-slot threading and the push button controls, will make the non-technical operator happy. The multiplicity of outputs and inputs found on some recorders are not present on these models.

One unusual feature is the presence of four speakers, two 8" woofers and two electrostatic tweeters which adequately handle the 8 watts of output.

The tape transport is easily threaded and the three motor arrangement eliminates the old belt hazards giving extremely low wow and flutter. Mechanically the machine is substantial and well laid out. Neon indicators are used for modulation control.

Electronically the response meets the

manufacturer's specifications of less than 3% distortion at four watts, frequency response better than AA program requirements (50 to 10,000 cps) and although no specifications are given, the bias-erase arrangement gives better than a 35 db signal to noise ratio. All measurements were made from record to playback.

The machine is dual track, two speed ($3\frac{3}{4}$ and $7\frac{1}{2}$ ips) and is equipped with a Shure Controlled Reluctance Microphone and an alligator clip cord and plug for pickups from radio and TV. The input arrangement requires the use of a ring and tip plug and the output may be connected to an external low impedance loudspeaker.

The pushbuttons adequately control the functions of the recorder and the reels are braked electrically. When pushing the stop button, it is wise to hold it down until the reels come to a complete stop, which occurs in a second or less.

On top of the recorder is a selector switch which permits use of various speaker combinations. When turned to the "all" position, all speakers are brought into play except when an ex-

STAFKSTED

Product: Bell & Howell
Miracle 2000 Recorder

Manufactured by: Bell and Howell,
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Ill.

Price: \$299.95

ternal speaker has been plugged in, in which case the electrostatic speakers and the external speaker will both play. At left or right position, either the left or right 8" woofer will be in use. When switched to the external speaker position, all the four internal speakers are shut off and only the external speaker will be operative.

Both versions of the recorder are very attractive. The home model (300 M) is a beautiful piece of furniture that would grace any living room. The portable is housed in a fawn and brown, scuff-proof case. The workmanship is excellent and worthy of the Bell & Howell tradition.



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RE-RECORDINGS FOR SALE. Early Concert Bands and Soloists. Americana Singers, etc. On Tape and Disc. Write G. D. Bridges, 2199 Lakeview Ave., Detroit 15, Mich.

JAZZ COLLECTION for sale. 78 RPM records from 1936-1942 period. List 10 cents. R. Bintliff, 516 Salisbury Road, Haddonfield, N. J.

WANTED—Two or three speed tape recorder. Have varied items to trade—recorder, microphones, phono-radio-recorder, sporting goods, guns, lenses, etc. Send for list. Erwin, Box 149, Durant, Iowa.

SALE OR TRADE: Craftsman acetylene burning and welding outfit complete with hose gauges and assorted tips; also, tool post grinder to fit 8" lathe. Will trade for tape recorder or sell all for \$110. Mr. Andrew Murray, 60 G Street, Keyser, W. Va.

MATCHED PAIR RCA Jr. Ribbon microphones, 125, 250 ohm, plus matched input to grid transformers. Ideal for stereophonic recording or broadcast; also, Penton tape transport and preamplifier in case. All for \$100, or trade for Viking transport and PR61 preamplifier or older Magnecord in good condition. Write Art Mitchell, Box 235, Thompson, Iowa.

SELF-IMPROVEMENT—Body Building Course on tape. Amazing results! Complete course now only \$10. Nothing else to buy. Send to Jacks Recording Service, Box 6273, Asheville, North Carolina.

CHALLENGER MIXER-PREAMPLIFIER, MX6. 4 microphone inputs, 2 phono/radio, 50 to 15 KC

plus or minus 2 db. Microphone gain 59 db, phono 30 db, cathode follower output. Cost was \$36, used once! In factory carton, will sell \$30. Donald Ely, 521 Murdock Road, Baltimore 12, Maryland, VA. 3-8962.

CONCERTONE RECORDER TWR-1 with MCM-2C mil mixer, complete in cases, 7½ and 15 i.p.s. Used for 6 months, full track heads, \$475. Magne-cord M-30, used, \$95. Fisher amplifier, 50 watts, 50AZ 2nd Master Audio Control 80-C, new condition, \$135. D. S. Versaggi, 313 E. 15th Street, Wildwood, N. J.

NEEDED IMMEDIATELY! Readers for the blind on tape. Readers in England needed. If interested, write Vic Torrey, P.O. Box 136, Phoenix, Arizona.

RECORD for cash! Announcing course, \$9.00. Free brochure. Stone, Lunenburg 23, Mass.

SWAP—Ikkoflex reflex camera, new condition, imported from Germany, for good FM tuner or what have you. Anthony Baratta, 2536 So. 15th Street, Philadelphia, Pa.

AN OLD NORWEGIAN tape fan wants to taperecord with someone from the state of Maryland in USA. If you like good music and song, or almost any other subject, you are invited to write to Rolf Strom, Oscarsgate 7, Oslo, Norway.

HIGH QUALITY RECORDING TAPE—1800' 7" reels, precise 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 99c each. New Pentron "Emperor" tape recorders plus 12 1800' reels of tape, \$199-\$302 value. Used tape recorders. Include sufficient postage. Recording Services, P.O. Box 231, Wallingford, Conn.

WANT TO BUY used Magnemite recorder Model 610-SD with P.M. erase. L. V. Towt, Blackstone Apts., Baltimore, Md.

WANTED ENGINEER with background in tape recording, ME or EE degree desirable. Progressive Co. in university town, with many benefits. Write or call collect John S. Boyer, Manager Engineering Bell Sound Systems, 555 Marion Road, Columbus, Ohio. Hickory 4-1193.



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The 7 Old-Fashioned Villains of Tape Recording

...and How

irish FERRO-SHEEN
BRAND


Foiled Them All

Once upon a time, 7 Old-Fashioned Villains like this  were wreaking endless woe on Decent People with Tape Recorders. The 1st Villain was Oxenscheid the Oxide Shedder.

He scraped away at the crumbly oxide coating of old-fashioned tape and gummed up tape recorders with the shedding particles. The 2nd Villain was Wearhead the Head Wearer.


He filed down the magnetic heads with the abrasive coating of old-fashioned tape. The 3rd Villain was Frickenshaw the Frequency Discriminator.

He dragged down the high-frequency response of old-fashioned tape through inadequate contact between the "grainy" coating and the head. The 4th Villain was Noysenhiss the Noise Generator.

He generated tape hiss and modulation noise  as a result of the random vibrations and irregular flux variations caused by the uneven magnetic coating of old-fashioned tape. The 5th and 6th Villains were Dropofsky the Drop-Out Artist and Pringlethorpe the Print-Through Bug.

They put nodules and agglomerates into the oxide emulsion of old-fashioned coated tape, causing "drop-outs" whenever these trouble spots lost contact with the record or playback head, and inducing "print-through" on the recorded tape when the extra flux at the trouble spots cut through adjacent layers on the reel. The 7th Villain was Brattleby the Embrittler.

He dried out the plasticizers in old-fashioned coated tape and embrittled irreplaceable recordings. Then: OCTOBER, 1954! That's when a very un-old-fashioned little man by the name of F. R. O'Sheen

 announced that he had developed the revolutionary new **irish FERRO-SHEEN** process of tape manufacture and presto!

 the 7 Old-Fashioned Villains were sent a-scurrying with cries of "Confound it - Foiled again!" Yes, F. R. O'Sheen had made the new magnetic oxide lamination of **irish FERRO-SHEEN** tape so smooth-surfaced and non-abrasive, so firmly anchored and homogeneously bonded to the base, so free from nodules and agglomerates, that the

7 Villains were evicted - for good! **Moral:** Don't let Old-Fashioned Villains do you out of your hi-fi rights!

Just say "No, thanks" to ordinary coated tape and ask for F. R. O'Sheen 

irish FERRO-SHEEN, that is! ORRadio Industries, Inc., Opelika, Alabama.



Only "Scotch" Magnetic Tape was sensitive enough to capture

a madman's madrigals



Don Carlo Gesualdo

In 1613 the psychotic Italian nobleman and composer Don Carlo Gesualdo died.

To us he leaves a magnificent bequest—the brilliant Gesualdo madrigals. "A collection of marvels," Igor Stravinsky describes these musical masterpieces.

Many of these ingenious *a cappella* compositions are now superbly recorded in the highly acclaimed new Sunset Records album, "Aldous Huxley Presents the Madrigals of Gesualdo."

To reproduce the mad composer's subtle dynamic changes and harmonic progressions, Sunset Records made its original master recording on a magnetic tape with an international reputation for highest fidelity. Their choice—"Scotch" Magnetic Tape—because it "assured us perfect reproduction in recording our album."

"Scotch" Magnetic Tape is *always* first choice where superior sound reproduction is essential. Try it on your machine and you'll hear why.



ALDOUS HUXLEY AND IGOR STRAVINSKY at the Gesualdo madrigals recording session.



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