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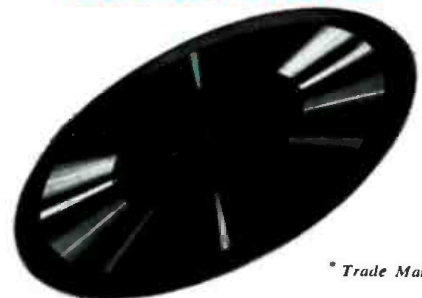
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IN THIS ISSUE

USING A SOUND SCREENSheldon O'Connell 20

THEATER SOUND ON TAPEMildred Stagg 24

SOUND IN A NEW PACKAGEMort Goldberg 28

USING LOW IMPEDANCE MICROPHONESJack Bayha 32

CAN YOU SELL OFF-THE-AIR RECORDINGS?George Chernoff 40

NEW TAPESCharles D. Sigsbee 6

TEEN TAPERSJerry L. Heisler 14

TAPE IN EDUCATIONJohn J. Grady, Jr. 16

NEW PRODUCTS 17

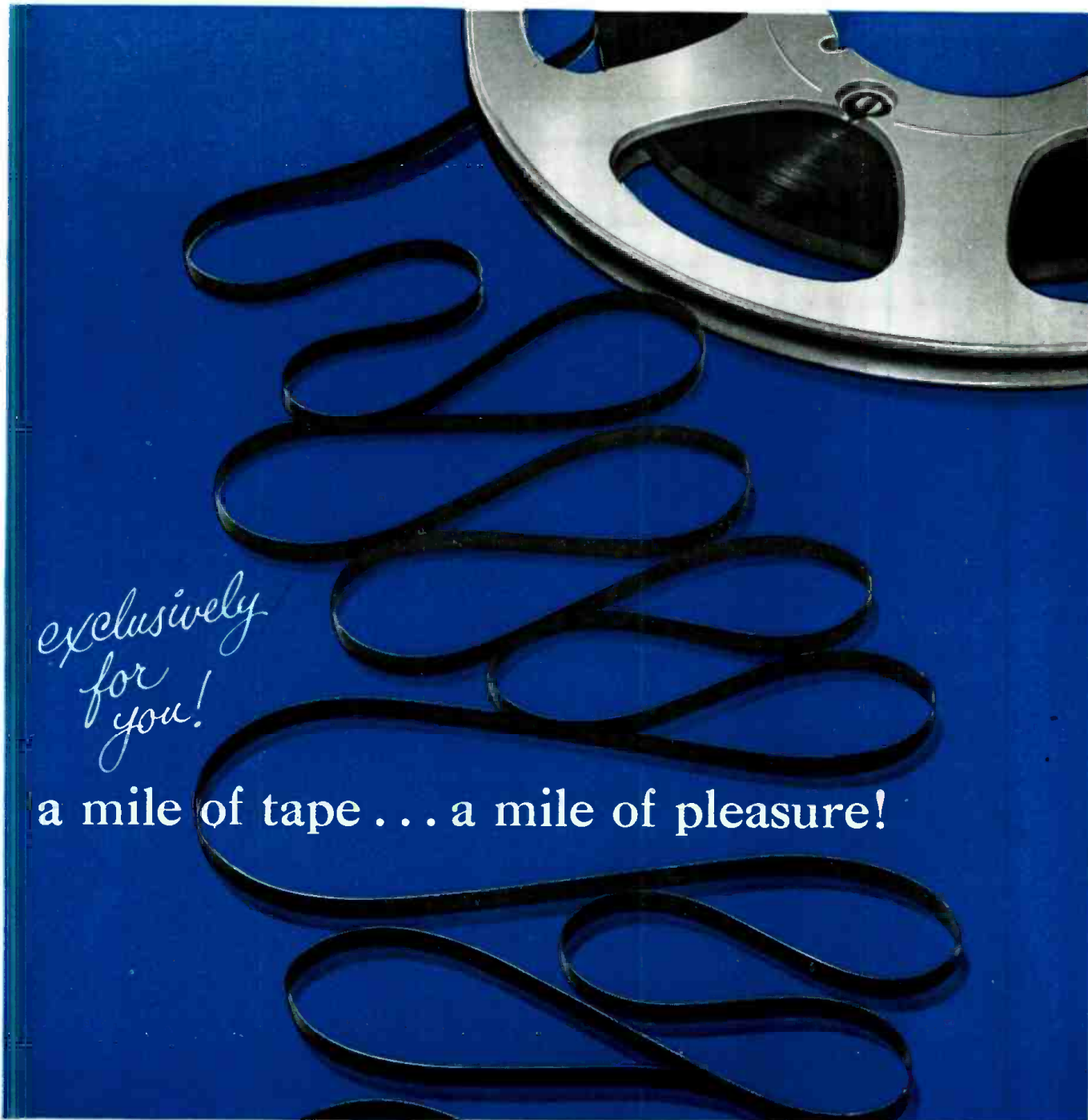
QUESTIONS AND ANSWERS 18

TAPES TO THE EDITOR 19

Cover: Mark Dawson and Chorus Making Recording



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NEW TAPES

By Charles D. Sigsbee

ALL of the tapes in this issue were reviewed on a Viking stereophonic-monaural playback unit (Questionable were reference-checked on Ampex equipment).

The Viking seems to be the poor man's answer to the current stereophonic cost problem. Playing, as it does, in-line and staggered stereo tapes, as well as monaural half track and full track tapes, it can well be considered universal. And this for less than \$100 for the basic deck and heads.

It is an amazingly simple yet stable unit that can easily be installed and main-

tained by anyone who can put together an amplifier and/or speaker kit. Of course, packaged units are available for those who don't care to put together or maintain anything.

Please understand, I am not comparing it to the more expensive units but, rather as an interim rig at low cost for those who would like stereophonic sound right now.

Speaking of cost, did you know that stereophonic sound can actually be cheaper than monaural sound of comparable, or better, quality? You no longer need those

powerhouse amplifiers and garage-sized speaker housings. I have heard two small, inexpensive amplifiers driving two eight-inch speakers in small housings turn out two-channel sound far superior to the best monaural sound reproduced on rigs costing three times as much!

The idea is that you aren't trying to ream out that hole in the wall anymore; with stereo you just remove the wall. Drop into a local sound emporium and listen to a demonstration: It'll open your mouth!

CLASSICAL

THE BALLET

Delibes: Sylvia

Strauss, Johann: Le Beau Danube

Gounod: Faust Ballet Music

Weber: Spectre de la Rose (sic)

London Pro Musica Orchestra

Sheldon Burton, Conductor

OMEGATAPE #8002 (SERIE ELAN)

First off, a note about the titling above. Between the Faust music and the Weber should be inserted, Debussy: *Prelude to the Afternoon of a Faun*. It appears there, surprising but welcome, on my copy.

Following that is listed, *Spectre de la Rose*, which is actually *Invitation to the Dance*, which is the music for the ballet sequence, *Spectre de la Rose*, in the movie *The Red Shoes*. Just wanted to clear this up before starting the review.

The tape, as the title implies, is a delightful hour-plus of music for classical dancing, and I defy you to keep your own feet still when listening to it. Here the accent is on dance rather than musical interpretation, although both are well represented.

Sheldon Burton appears to be a capable conductor for this type of music and the Pro Musica orchestra seems to be larger on this recording than it has on others in the past. Most notable is the almost luminescent quality attained in *Afternoon of a Faun*.

The tape itself, although well recorded, could have been reproduced at a higher level to preclude the possibility of equipment noise brought about by the necessity of cranking up the volume control. As the print is on the new thin tape, I imagine it was reproduced at a lower level rather than risk the danger of print-through.

A decidedly noticeable flaw exists at the end of the reel, and track one, on the review copy. The music begins to go faster and faster like a turntable that has been switched suddenly from 33 1/3 to 78 rpm. I trust that the Company has caught the error by this time and recalled the faulty copies. Hope so, a thing like that could injure a dancer for life . . . Remember what happened to Karen in Anderson's fairy tale, *The Red Shoes* (unrelated to the second paragraph)?

BRAHMS

Concerto #1, in D minor for Piano and Orchestra

Artur Rubinstein, Pianist

Chicago Symphony Orchestra

Fritz Reiner, Conductor

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More than half a century ago Rubenstein performed this work at his first concert appearance. That was in 1898, and was successful enough to launch him on a long and brilliant career.

This recording, coming in his seventieth year, could stand for all time as a legacy. It is well nigh perfect in every respect; we only hope that RCA recorded the master stereophonically.

The composer, soloist and conductor are here so much in rapport as at times to seem empathic, particularly in the *adagio* which is almost overwhelming in the sheer force of its beauty. Truly a remarkable performance in every respect.

The care lavished on this recording by the RCA engineers makes it not only a must today but a collector's item of the future. It is also gratifying to note that RCA is releasing tapes that represent the most current, and best recordings in their catalogue.

GREGORIAN CHANTS AND INTROITS

Roger Wagner Chorale

OMEGATAPE 8003

Pure Gregorian without embellishment of any kind, sung by the male section of the famous Wagner Chorale.

I feel that this, as well as it is done, will have an interest limited to teachers, students and a few collectors. Music in this ancient mode loses much for modern ears without the important accompanying ritual of the Church.

However, for those interested in music of the Gregorian period, this is as well done as any. There is a slight residual noise, but not enough to be bothersome at the levels the tape will be played.

RAVEL

Bolero

Alborado del Gracioso

Pavane for a Dead Princess

La Valse

Rapsodie Espagnole

Orchestre Radio—Symphonique de Paris

Rene Leibowitz, Conductor

PHONOTAPES—SONORE PM 107

A highly satisfactory package of the most popular Ravel pieces presented in an authoritative and vigorous manner by Leibowitz. Except for *Pavane* and *La Valse*, the music is Spanish in flavor with certain highly percussive sections that should please the hi-fi people no end.

Bolero, as here presented, is not the supercharged, juke box version so popular some 25 years ago (has it been that long?), but the original 17 minute score.

All of it is dramatic music, dramatically presented by both the orchestra and Phonotapes.

JANOS STARKER, Cello

Spanish Album

Leon Pommers at the piano

LIVINGSTON "CONNOISSEUR" D-5-108

A recording by the young first cellist of the Chicago Orchestra of pieces by de Falla, Torroba, Granados, Albeniz, and Cassado.

Starker was a concert artist before he took up a chair position. If there is a flaw in his technique, it is not in evidence here. The performance is vigorous and

STEREO!



mozart

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STEREO!

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and his hammond

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exciting throughout, the Latin idiom seeming to come naturally to this Hungarian-born artist.

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LIVINGSTON "CONNOISSEUR" D-106

Musically this is a quietly beautiful recording played by a man who has a great deal of mastery over the instrument. Vito was soloist with the Toscanini, NBC Orchestra during its entire existence.

Although you have no doubt as to Vito's virtuosity throughout the tape, this is largely music of substance seriously presented, not showy music flamboyantly presented, generally the plague of recording harpists.

Livingston has done a good job of reproduction.

HIGH FIDELITY SHOWPIECES FOR ORCHESTRA (Volume one)

Gershwin: Rhapsody In Blue

Liszt: Hungarian Rhapsody #2

Offenbach: Can Can

Rimsky-Korsakov: Hymn To The Sun

London Pro Musica Orchestra

Sheldon Burton, Conductor

OMEGATAPE 5011

A collection of short and somewhat unrelated pieces that are just about what the title implies. The *Rhapsody In Blue* is a shortened version that is very reminiscent of the original Whiteman recording.

Hymn To The Sun is now known more familiarly as *Song Of India*. No Junior, this is a concert version.

The second side, containing the *Hungarian Rhapsody* and *Can Can* comes off better as a high fidelity showpiece. Although Omega lavished their usually careful recording techniques on the tape, I feel that the musical content is a trifle too pedestrian to arouse much cheering. Of course, I could be wrong.

HIGH FIDELITY SHOWPIECES FOR ORCHESTRA (Volume two)

Polla: Dancing Tambourine

Grieg: Arabian Dance

Dargamysky: Cossack Dance

Khachaturian: Sabre Dance

Brahms: Hungarian Dances #5 and 6

Gangelberger: Teddy Bear Dance

Tchaikowsky: Dance Of The Flutes

London Pro Musica Orchestra

Sheldon Burton, Conductor

OMEGATAPE 5012

This is more like it. These are high fidelity showpieces designed to exercise most any rig. It contains all of the elements for hi-fi showing; much percussion of various kinds, as well as unusual instrumentation and more than enough orchestral tutti.

My musical favorite on this tape is the *Teddy Bear Dance*, a whimsical, infectious

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little bit for bass clarinet and orchestra, performed here with an obvious sense of humor.

Engineered to perfection, the tape is highly recommended for those who feel that their collection is in need of some of the music "in between," and whose isn't?

VERDI

La Traviata

Margit Opawsky, soprano
 Leo Larsen, tenor
 Hank Driessen, bass
 Jan Vroons, baritone
 Catharina Hessels, Mezzo-soprano
 Siemen Jorgama, bass
 Netherlands Philharmonic Orchestra
 Walter Goehr, Conductor
RECORDED TAPE-OF-THE-MONTH CLUB SELECTION #111

This is not the complete opera. It is a carefully edited version, designed to retain the essential parts without destroying the whole. It succeeds rather well in its purpose, although there are some parts removed that I would rather hear than some parts that were included.

The singing, for the most part is quite satisfactory, in one case brilliant. The soprano, Margit Opawsky, when she is in control, makes an acceptable Violetta, sounding appropriately healthy during her third act death spasms. I get the impression that she gets better as the opera proceeds, as if warming up to the demands of that last act.

Larsen is an able tenor, at his best during the duets. Come to think of it, he too is at his best during the third act, which would suggest that this portion of the tape was recorded at a separate session when everybody was feeling just right.

High spot of the entire presentation is the magnificent, expressive voice of the basso, Hank Driessen. The dramatic qualities of his delivery in the two second act arias tingle the spine. What a Mephistopheles he would make!

The whole presentation is beautifully paced by the conducting of Walter Goehr. As in the case of the *Eroica* mentioned earlier, this is a bargain tape, cost and performance considered. The fidelity, while not as good as it might have been, is still of sufficient quality to maintain the standards set by this company.

STRAUSS, RICHARD

Also Sprach Zarathustra
 Chicago Symphony Orchestra
 Fritz Reiner, Conductor
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JAY WHITE

"The miracle of a dream" (#103)

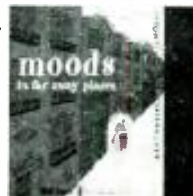
- Laura—part I
- Laura—part II
- Tosselli's Serenade
- Claire de Lune
- Deep Purple
- Harlem Nocturne
- Estrellita
- Over the Rainbow
- Paris in the Spring
- Sleepy Lagoon



RAY CHARLES CHORUS

"Moods in far away places" (#102)

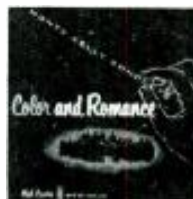
- Far Away Places
- Slow Boat to China
- Foggy Day in London
- It Happened in Monterey
- Moon Over Manakoora
- How High the Moon
- April in Paris
- Bewitched
- Long Ago and Far Away



MONTY KELLY

"Color and Romance" (#101)

- Granada
- Tropicana
- Cubamba
- Neopolitan Nites Mambo
- Under Paris Skies
- Three D'clock in the Morning
- Glocca Moria
- Bali Hai
- Monte Carlo
- Shangri La



The best of **BILLY BUTTERFIELD** (#501)

- Bernie's Tune
- The Saints Come Marching In
- Douglas Hop
- Deed I Do
- West End Blues



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RCA recommends that the speakers be placed in corners of the room so that their axes intersect at a point about three-quarters of the room length. However, listener tests over a considerable period of time have caused us to adopt another rule-of-thumb standard for optimum reproduction.

We have found that placing each speaker one-third of the total room width away from the corner, and flat against the wall, results in the most lifelike reproduction under almost all conditions. We even tried this system on a theater stage with impressive results.

RCA now has issued several new stereophonic tapes and I hope to be able to review them for you in the next issue.

SIBELIUS

The Origin of Fire
Song of My Heart
Finlandia
Pohjola's Daughter
Helsinki University Chorus
Sulo Saarits, Baritone
Cincinnati Symphony Orchestra
Thor Johnson, Conductor
AV-1508 (Binaural)

This tape is getting to be a hardy perennial in these pages. This is the third time in as many years that we have had the opportunity to review it; first as a full track, monaural recording, then as a dual track, monaural, and now as a binaural offering.

It is at its best binaurally. In fact, it is one of the more outstanding stereophonic recordings reviewed this far. (We shall use the terms "binaural" and "stereophonic" interchangeably here as there is no appreciable difference when played back through an optimum living-room speaker arrangement.)

The first selection, *The Origin of Fire*, is a short, but dramatic, tone poem for orchestra, baritone soloist and chorus. If the two-channel system reproducing it is well balanced, the baritone's voice will seem to be coming from a point midway between the two speakers. A slight imbalance, however, will tend to move the voice toward the speaker with the more volume. It is well to note that even this is not a detriment to the enjoyment of the music because of the obvious superiority of the two-channel reproduction.

Pohjola's Daughter is the most impressive selection to demonstrate the dimensional characteristics of stereophony because of Sibelius' use of the various orchestral sections to build his mood, and this is the Sibelius of the First and Second Symphonies. The music is at times moody and brooding, at times beautiful and sensuous, but always dramatic and intense, hair-raising in its emotional impact when heard stereophonically.

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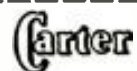
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Erie Canal, the wagon trains, the Indian wars, the westward movement of the railroad, the fun, the sorrow, the accomplishment, the religious fervor. And to fill in the spaces, a thirty-page booklet is included with the tape to explain the historical background of the songs and decorated with many woodcuts of the period.

Like the **BALLADS OF THE CIVIL WAR** album reviewed in a previous issue, this album was taped by special arrangement with Folkways Records.

A better singer could not be found for this monumental collection than Pete Seeger. He sings in spirited, infectious style that leaves not one shred of doubt as to authenticity. He is a folk singer's folk singer, having learned his repertoire the hard way, walking through rural America and living with the direct descendants of the people who created them. Singing for eats, he would swap ballad for ballad until he built his vast collection. His banjo playing he learned the same way; from the people who played it in the evening for their own entertainment.

This is a collection that cannot be ignored by collectors of folk music, historians, or people just interested in a doggedly entertaining hour.

It is not high fidelity but then, why should it be?

POPULAR AND JAZZ

**BILLY BUTTERFIELD (THE BEST OF)
BEL CANTO #501**

Like the Dave Brubeck tapes reviewed in the last issue, these selections were recorded on location at various colleges in the East.

Backing Billy are Cliff Leeman on drums, Jerry Bruno on Bass, Mickey Crane at piano, Nick Caiazza on tenor, and Al Casamenti on guitar.

The jazz has plenty of drive and spontaneity even though it is not the best on tape. Billy gets closest to his best on "Deed I Do," and "West End Blues," but even this is not his *very* best. As personal taste and mood are always involved in close decisions like this, I would advise you to listen first.

Interesting social note: The crowds are more noticeable at NYU and Princeton than they are at Amherst and Rutgers.

COLOR AND ROMANCE

**Monty Kelly Conducts
BEL CANTO 101**

Try this on your hi-fi set. A collection of mostly Latin-flavored mood pieces by an orchestra that could, at times, be mistaken for Mantovani.

The tape on the whole seems to be better engineered than any Mantovani recordings we have yet heard. Take the upper register string technique, add the percussive attraction of a Latin-American rhythm section, and a careful engineering job and you have a recording that can't help but be an instant hit.

Special note to hi-fi-fans: This has everything on it but an organ. Try it.

THE MIRACLE OF A DREAM


**Jay White
BEL CANTO #103**

If you see this album displayed in your favorite emporium, I think it is only fair to tell you that Jay White is not the very


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A slender, uni-directional microphone of amazing ruggedness and striking design. It reduces random noise pickup by 73%, almost completely eliminating the distracting background noises so frequently encountered in making recordings outside a controlled studio. The "333" provides a readily accessible multi-impedance switch that permits its use with all types of amplifiers and varying lengths of cable. Other features include a Voice-Music Switch, anti-"Pff" filter screen, and a vibration-isolation unit mounted in live rubber. The "333" provides high-output and a smooth frequency response, with a production uniformity guaranteed to $\pm 2\frac{1}{2}$ db, 30 to 15,000 cps.



Model "525"
An exceptionally fine probe microphone of broadcast quality. The "525" is an omni-directional microphone with a frequency response of 40 to 15,000 cps. production uniformity guaranteed to $\pm 2\frac{1}{2}$ db. Other features include multi-impedance switch . . . high output . . . and "Duracoustic" diaphragm, specially designed to withstand moisture, heat, cold, and physical shock. The "525" is furnished with a swivel adaptor and a neck lavalier cord and belt clip assembly.



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A bi-directional gradient microphone that reduces reverberation and the pickup of random noise energy by 66%! The "300" can be placed at a 73% greater distance from the performer than is possible with omni-directional microphones, providing greater freedom and allowing group recording. This high fidelity microphone also features a readily accessible Voice-Music Switch, multi-impedance switch, anti-"Pff" filter screen, vibration-isolation unit mounted in live rubber . . . frequency response with a production uniformity guaranteed to $\pm 2\frac{1}{2}$ db, 40 to 15,000 cps.

NOTE: Models "333" and "525" multi-impedance switch is for 50-150-250 ohms impedance. Model "300" multi-impedance switch is for 50-250 ohms and high impedance.

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pretty blonde displayed on the cover. He is the very fine alto saxophonist heard on the tape inside.

This is music that sets a mood, the kind that you like to hear on that late night radio program when you are wooing that currently favorite miss. Maybe that's why the blonde!

Suffice it to say that White blows a mean reed and the engineers have captured it well. The selection "Laura" as presented here would draw quite a few nickels into the juke boxes, if it hasn't already in the original record release.

MOODS IN FAR AWAY PLACES

Ray Charles Chorus

BEL CANTO #102

A well-trained chorus sets a mighty dreamy mood on this tape. The group you have seen and heard many times on television, radio and Perry Como recordings.

The recording is excellent, as are all of the current Bel Canto offerings, and listens well at any level. Unlike some of the recent choral efforts, this one includes

an instrumental background that enhances the production.

PIANO HAVANA

Marco Rizo and His Rhythm

OMEGATAPE 5006

Another of the excellent Latin-American tapes being turned out by Omega. This one consists entirely of piano and rhythm section in a cleanly balanced recording.

Have you heard *Parade Of The Wooden Soldiers*, *Manhattan* and *By Heck* given a Cuban beat? Here you will.

WILBUR DE PARIS and his

"NEW" NEW ORLEANS JAZZ

Are You From Dixie

Yama, Yama

Madagascar

March of the Charcoal Grey

Mardi Gras Rag

Hot Lips

ATLANTIC TAPE LIBRARY AT 7-9 BN
(BINAURAL)

This stereophonic gem takes off on the first note and doesn't come back down again until it runs off the reel at the end. It is as commercial as can be, but so well recorded, so enthusiastically presented that you can't help but go right along with it, commercial or not.

This is the most clearly defined of the binaural tapes reviewed this month. There is no doubt, at any time, who is on the left, the right, or in the middle. The recording is clear and sharp, recorded at a high level, thereby reducing any hiss or noise to inaudibility.

THIS IS OUR COUNTRY

121 Color Slides plus 32 minute reel of taped commentary.

MESTON'S TRAVELS

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This is quite an unusual combination for a commercial product and from the review reaction gained from this one, we know we will be seeing more of them.

The set "This is Our Country" consists of 121 color slides suitable for the regular 2 x 2 slide projectors. In addition there is a reel of tape which describes the slides. A "bong" from a small gong is recorded at each spot on the tape where a slide should be changed.

We tried this one on a small home audience where it met with enthusiastic reaction. We also tried it out at the local school where the fourth, fifth and sixth grades saw and heard it. The teachers were very enthusiastic and are purchasing the set for the school!

The 121 slides cover all parts of the nation and the lucid and listenable commentary and background music are pleasant and instructive. This wedding of slides and tape will be of great value to the audio-visual field.

NEW "Magi-Clip" for RECORDING TAPES

Securely keeps end of recording tape from unwinding in mailing, storing, handling. Eliminates tape damage. Snaps on and off any size reel. Four for \$1. ten \$2. thirty \$5. Money back satisfaction guarantee. (Pat. pend. reg.)

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4001 PATTERNS FOR TROMBONE — Joe Howard and his Orchestra —

(Instrumental DANCE SERIES Volume 4) — My Man's Gone Now, I'll Be Around, Lindy Lou, I Cover the Waterfront, Speak Low, Take Me in Your Arms, Tenderly, Study War No More (Arrangements by Jerry Fielding)

4004 JAZZ LAB — Frank Comstock and his Orchestra featuring Tony Rizzi and Ted Nash

South of Brazil, Passion Girl, Taylor Talks, Languid Latin, The Grabber, Frantica, Laurel, Footloose, Starlight, Less Sand and More Cement

4007 BOB KEENE and his Orchestra (Instrumental DANCE SERIES Volume 1)

Isn't It Romantic, Mimi, The Lady Is a Tramp, They Didn't Believe Me, Dancing Tambourine, Flyin' Home, Jug Stop, It Ain't Necessarily So, Easy to Remember, Dancing on the Ceiling (Arrangements by Billy May, Shorty Rogers, Bill Holman, Johnny Thompson)

4008 NEW ORLEANS — Kid Ory's Band with Lizzie Miles

Ace in the Hole, I Cried for You, Careless Love, Basin Street, Dippermouth Blues, High Society, Savoy Blues, Ballin' the Jack

4009 THE SEXTET FROM HUNGER — Darktown Strutter's Ball, That's A Plenty, Royal

Garden Blues, Harmony Rag, Everybody Loves My Baby, At the Jazz Band Ball, Fidgety Feet, Original Dixieland One-Step, Bye Bye Blues, When You Were a Tulip

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Du Pont manufactures the base material "Mylar"—not finished magnetic recording tape



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TEEN TAPERS

By JERRY HEISLER, National President



SUMMERTIME will be upon us very shortly and within several weeks the schools will be out. This will afford many of us the opportunity to devote more time to our recorders, and charters. The club members also will be able to subscribe to TAPE RECORDING magazine at a special group rate. The charters and cards haven't come from the printer yet but will be mailed when they arrive. You may obtain a booklet and form by writing to me, c/o Teen-Tapers, TAPE RECORDING magazine, Severna Park, Maryland. All of your letters receive a personal reply from me via tape or a letter, depending upon my time. Don't send me a tape first, however, make it a letter but tell me all of the facts about your recording work.

My Booklet, "How to Organize a School Tape Club," is now ready along with the order forms for group subscriptions, membership cards, and charters. The club members also will be able to subscribe to TAPE RECORDING magazine at a special group rate. The charters and cards haven't come from the printer yet but will be mailed when they arrive. You may obtain a booklet and form by writing to me, c/o Teen-Tapers, TAPE RECORDING magazine, Severna Park, Maryland. All of your letters receive a personal reply from me via tape or a letter, depending upon my time. Don't send me a tape first, however, make it a letter but tell me all of the facts about your recording work.

Gloria Bush, of Indianapolis, Indiana, wrote in telling of some of her work. She and her dad ran a display at the Hobby Show in Indianapolis not too long ago and were written up in *Tape Topics*, the World Tape Pal newspaper. Harry Matthews, head of WTP, gave us a plug for which we are grateful. Jim Greene of Tape Respondents International sent us a copy of his new directory which gives us a lot of names of teens who might want to join us. Jim has been most gracious in offering to help get us on our feet. Thanks to all of you for your help.

Raymond W. Townsend of St. Albans, New York, wants to start a club. He and his friend, Gene Reilly, operate a company known as Imperial Sound Service in which they rent out their recorder and supply sound for parties, etc. If any of you have any similar business, let me know. With summer coming up there should be a great need for sound services. You might check into the possibilities of recording the many June weddings sure to be coming up. A friend and I are thinking of this. A good thing to do would be to start clipping the wedding announcements from the local paper and get in touch with the prospective brides.

I have just come in contact with two very excellent books on our favorite subject and highly recommend them to you who want to find out more about recording. "Tape Recorders—How They Work" by C. G. Westcott of the Minnesota Mining and Manufacturing Company, and a very good friend of Teen-Tapers, is a good book on what's under the cover of your recorder. Robert and Mary Marshall have written a

book called, "Your Tape Recorder," which tells about the operations and uses of the tape recorder. The Marshalls have done extensive research with many recorders and have come up with some very good information. Neither of these books is technically difficult—both are excellent.

Getting back to the early mention of Summer almost being with us, we have the chance to get our recorders out of doors to capture some of the wonderful sounds of nature and the many other sounds to be found in abundance. Mobile recording offers a challenge to those of you who have an inverter in your car. I am going to make arrangements to obtain one in the near future and conduct a project in which I'll try and gather as many different sounds as possible and also see how many uses the recorder can be put to when used from a car. I may report on this in the next issue if possible. I would like suggestions and reports from any of you who have done anything unusual outdoors with your recorder.

Over the summer too, it might be fun to do some tape responding if you've never done any before. The tape clubs have huge lists of members willing to exchange tapes. Their names may be found on the tape club page of this issue. When our own club gets fully organized we will have a directory of our own for the benefit of clubs who want to exchange tapes with one another.

We are planning on quite a program for next year and you'll all want to be a part of it. Start now to get a Teen-Tapers club organized or at least plan on starting in the fall. We will offer charters, cards, and information on all phases of recording, our own column, and other services to our members. Most important is the fact that we are interested in teen-age recordists and will do all we can to help them. Anything that you want to know we will find out for you. We will have the help of the Magnetic Recording Industry Association, which is composed of all of the recording equipment manufacturers, and when things really start buzzing we hope to have thousands of clubs all over the country and perhaps the world. It all depends on you, so let's have your name and some information about yourself. Write to me at Teen-Tapers, TAPE RECORDING Magazine, Severna Park, Maryland, and keep 'em spinning.

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Symphony



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West of Rockies, prices slightly higher.



TAPE IN EDUCATION

BY JOHN J. GRADY, JR.



THE Los Angeles City Board of Education recently issued one requisition for the greatest number of tape recorders ever ordered in educational history. Two hundred portable magnetic recorders were ordered as a single purchase item for use in the elementary schools of the metropolis.

Ordinarily, such an extensive purchase of equipment might be considered to be the result of an exhaustive survey by a master sales engineer with a complete knowledge of electronic audio installations. But it wasn't. In this case, as in most other cases of lesser educational tape recording installations, practical administrators and progressive faculty members were entirely responsible for the adaptation of modern instructional methods to the classroom needs of today.

Most of the 200 new tape recorders will replace well-worked older models, which have served the schools for a considerable period. The remainder of the big order will be allotted to the numerous newly-erected elementary schools in the fast-growing Southern California city. TAPE IN EDUCATION is advised that the chief usage of the TR's will not be in music, but will be for the development and correction of the reading technique of elementary students. It has been fully proved in Los Angeles that PROSE RECORDING is the finest method of teaching students the most important fundamental of American education—reading and speaking our language. In fact, the audio-visual division of the Los Angeles City Board of Education derives revenue for the general fund from royalties on recorded lessons in reading supplied to other schools throughout the United States.

Of course, tape recorders have a wide variety of uses in Los Angeles schools. And in many of the city's larger schools a battery of magnetics are in operation. A quota system governs installations, and a staff of technicians maintain all audio-visual equipment in excellent condition. As educators expand usage of the versatile tape recorder, the inventory of many hundreds of instruments will be increased. Experiments in various curricular subjects—even arithmetic—are in the *on trial* category. And right now, parents in Los Angeles can have a demonstration of the progress of their children, particularly in the important subject of reading. This is due to the functioning installations of tape recorders in the 372 elementary schools, 83 high schools, and 7 junior colleges in the Los Angeles City educational system. The 25 adult education units in the city jurisdiction also have the advantage of tape recording as an instructional procedure. TAPE IN EDUCATION salutes Los Angeles educators for their pioneer achievements in magnetic tape recording.

It is a rare pleasure for TAPE IN EDUCATION to relay information to readers of TAPE RECORDING, that one of the most famous institutions in our country has adopted magnetic tape recording as an educational function.

Revered Cooper Union, of New York City, through its Library, is in the process of fulfilling a prediction of ours made early in 1952. The prediction, verbatim, which follows, is an explanatory prelude to addenda we feel honored to present to other educators.

UNDYING WORDS

After thousands of years, ELOCUTION, which predates written history and is the first and greatest of the arts of civilization, is receiving modern scientific treatment. From now on, students of speech have the opportunity—because of practical inexpensive tape recording—to secure, to possess, to have available for perpetuity, the exact reproductions of the voices of the greatest orators, the greatest statesmen, and the most famous men and women on earth. There will be a library for UNDYING WORDS. Never again, will momentous speeches pass into mute oblivion—just printed words on a page of paper.

Cooper Union, founded in 1859, is congratulated for the wisdom of age, in initiating a library of UNDYING WORDS. Now, the voices of the many distinguished persons—authorities on the subjects they discuss—who are sponsored by The Cooper Union Forum, have attained permanence. Each voice, which has been, or will be, heard on Forum programs over WNYC, the New York City Municipal Radio Station, and is transmitted throughout America by the network of the National Association of Educational Broadcasters, will be known to posterity. For, at Cooper Union Library, tape recorders are utilized to preserve the living words of great people—that they may be undying.

The purpose of the Cooper Union Library is best explained by Mr. Lawrence J. Pauline, of the Audio-Visual staff of the Library. "These tape recorded programs are used by the instructors of our institution as an aid to their teaching and also by the general public who come to our library to hear them. Recently we sent out approximately 150 letters to Cooper Union Forum lecturers asking their permission to make available their recorded lectures for non-commercial purposes. It is our hope to issue a catalog of Cooper Union tapes so that educational and other groups may hear these distinguished speakers."

NEW PRODUCTS

IRISH TAPE



ORRadio Industries, Inc., 120 Marvyn Road, Opelika, Alabama, has announced that "Green Band," the popularly priced tape in the Irish line, is now made by their Ferro-Sheen process. This process, according to the manufacturer, gives the tape the smoothest, most firmly anchored and most homogeneously bonded layer of magnetic oxide ever produced on recording tape. It is designed to end the danger of wearing out or gumming up costly tape recorder heads with the abrasive, easily shed oxide coating of conventional tape, and it is claimed that the oxide minimizes the possibility of high frequency losses in recording and of print-through on the recorded reel during storage. This upgrading in quality has been accomplished without any increase of price to the consumer. Write to ORRadio for additional information.

MEC NOISERASER



Minnesota Electronics Corporation, 133 East Santa Anita Ave., Burbank, Calif., is marketing a device known as the MEC Magnetic Noiseraser, which operates through a carefully engineered magnetic circuit, eliminates all signals and background noise, restores tape to a completely erased condition, and permits indefinite useful life with minimum background noise. Operation of the Noiseraser is very simple—an entire reel is placed on a spindle, a switch is turned on, and the reel is slowly rotated manually through slightly more than one complete revolution. The spindle is then removed and the reel slowly drawn off the top surface of the instrument. This gadget is fast becoming very popular in radio stations, recording studios and motion picture studios. Write to manufacturer for complete details.

(Continued on page 41)

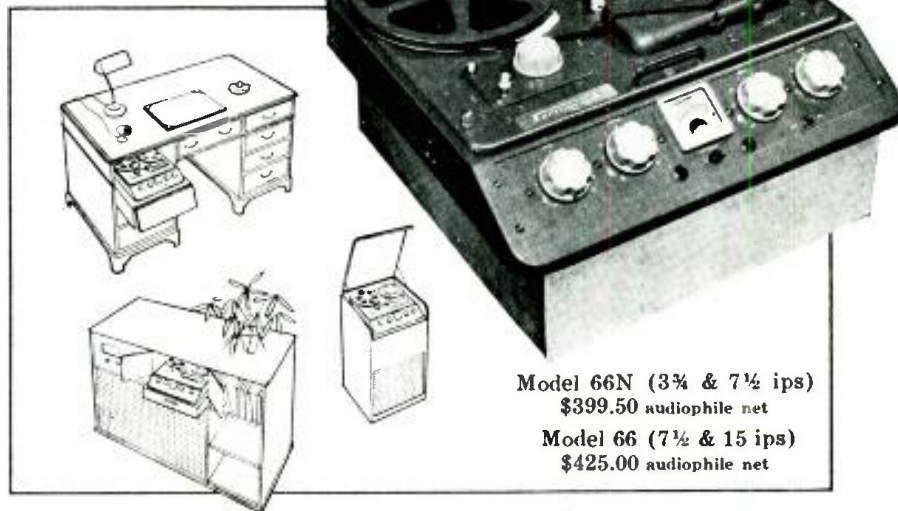
Doin' what comes naturally..

The amazing new Ferrograph "66" Series is the answer to the demand of discriminating music-lovers and audiophiles who seek professional results from an instrument that can easily be housed in an existing piece of furniture, or which can form part of a custom Hi-Fi installation.

This unique design includes a self-contained amplification system, so that — without sacrificing even one of the many outstanding features of the Ferrograph — sound can be fed directly into your own speaker. Or, the playback portion of the built-in amplifier may be by-passed, and sound can be fed through your own high fidelity system. The Ferrograph "66" will easily fit into a desk, a console, a bookcase, or any piece of contemporary or period furniture. All that is necessary is to cut out an opening 15 $\frac{3}{4}$ " x 16 $\frac{1}{2}$ "; if a drawer is used, it should be at least 10" deep, or a pair of shallower drawers may be converted for this purpose.

Most attractively finished in golden bronze with ivory knobs and accessories, the entire ensemble will readily harmonize with the most decorous or luxurious surroundings.

Ferrograph "66"



Model 66N (3 $\frac{3}{4}$ & 7 $\frac{1}{2}$ ips)
\$399.50 audiophile net
Model 66 (7 $\frac{1}{2}$ & 15 ips)
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Other Ferrograph Professional Models



PORTABLE MODELS

Model 3A/N, 3 $\frac{3}{4}$ -7 $\frac{1}{2}$ ips, built-in speaker \$379.50
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WEARITE TAPE DECKS

3 $\frac{3}{4}$ -7 $\frac{1}{2}$ ips: "A", 2 heads . . . \$195.00;
"B", 3 heads . . . \$225.00; "C", for
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In Canada, write Astral Electric Company Limited, 44 Danforth Road, Toronto 13.

Small
in size and cost
Big
in performance



American's NEW TAPE RECORDER MICROPHONE

Here's a new standard for high fidelity convenience . . . for the home or small studio. Attractively styled, and available in matching colors, this sensational new lightweight champ delivers a heavyweight performance throughout the entire tone range. Omni-directional pick-up pattern provides uniform fidelity when more than one performer or participant is being recorded at one time.

Versatility underscores the modern functionalism of this new design. It weighs only 2 ounces, only $3\frac{3}{4}$ x $2\frac{1}{2}$ x $\frac{3}{4}$ inches in size . . . can be easily handled and used by standing persons, or it can be rested on a flat surface for conference type pick-up such as conference recording.

Quality in construction means quality in tonal reproduction. The microphone element is shielded, with very low hum pick-up. Model B-203, ceramic type, and Model X-203, crystal type are both available with RCA type or miniature phone plugs.

For high fidelity sound that is reproduced to last, use American tape recorder microphones.



ELECTRONICS DIVISION
ELGIN NATIONAL WATCH CO.
370 South Fair Oaks, Pasadena, California

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—When I connect my radio to the input of my recorder and connect the output of the recorder to an external 12" coaxial speaker both speakers, the coax and the radio speaker, interact to produce a much richer tone. This is apart from the stereophonic effect. Is this a matter of impedance? If I added another speaker to the coax and connected both to my recorder would it be any advantage? In that case would they both have the same impedance or would a matching transformer for the coax give better results?
—R.A.W., Brewley, Cal.

A—We feel that the effect you are getting from the additional speakers is due to the fact that three speakers cover the output frequency ranges more effectively than a single speaker could.

Some care must be exercised in connecting speakers in multiple, although a slight mismatch will cause little distortion. Roughly, the output of most speaker arrangements from three to eight ohms impedance terminations. Just remember that three speakers of four ohms impedance connected in parallel will provide only one and one-third ohms termination causing compression of the low frequencies. Three four ohm speakers in series provide a sum termination of 12 ohms, causing some compression of the high frequencies.

Q—When playing back a program that I have recorded I get a terrible distortion at full bass tone, otherwise it plays good. Also, when recording from the radio I get a wow or flutter—in other words, it sounds sour. I hope you can help me out.—E. W., Passaic, N. J.

A—It is quite possible to overload both the amplifier and/or speaker by maximum bass emphasis. If you will avoid over-emphasis of the bass you will not have this difficulty.

Wow or flutter is caused by faults in the mechanical part of the recorder. We would suggest that you check and clean the tape transport mechanism, including the capstan, pressure roller. Check the pressure roller tension and also check for excessive takeup reel drive or a dragging feed reel. Check the pressure pads and renew if necessary and examine drive rollers for worn spots or flats.

Q—When using my recorder at a speed of $3\frac{3}{4}$ ips I find that the reproduction has far more bass or lower tone effect than the actual voice. This is not so at the $7\frac{1}{2}$ ips speed. I cannot correct this by raising the bass-treble control as I always have this set at maximum treble when recording or playing back at $3\frac{3}{4}$. Could you tell me if this is a fault with my tape recorder or with all tape recorders?—P. J. T., Toronto, Canada.

A—The difficulty is not a common one and from your description we would say that

the trouble lies in your equalization switch which is an integral part of your speed changing switch. It is failing to put in the necessary equalization at the low speed. It would be well to have a competent technician check the switch. Your treble control has no effect when recording, it is only on playback that it is effective.

Q—I have purchased a 5" speaker and a 500 ohm voice coil transformer to be used as an extension speaker for my recorder. I am using 20 feet of wire for the speaker. However, I receive very little volume from the speaker when the volume control is turned all the way up. I also get distortion from the speaker. The speaker in my recorder is a 5-inch. Is there any remedy for this trouble?—W. B., Bronx, N. Y.

A—The model of recorder which you have does not contain an output designed to drive a loudspeaker out of the 500 ohm or high impedance output. This output is designed to drive an external amplifier and speaker. The level at which the current leaves the machine to the amplifier that should be used with it is in the neighborhood of 5 volts and would only produce about 10 milliwatts. This is not enough to drive a loudspeaker directly without an amplifier. The distortion you are getting from making a direct connection without the use of an amplifier is due to over-driving the amplifier to try to get enough volume in the present system. Perhaps you would be interested in getting an amplifier kit, such as the Heathkit or a Tech-Master, and assemble it. The output of these units is about 10 watts and would have more than enough power to work your speaker, or an extended range or coaxial speaker which would give you very fine results.

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TAPE RENTALS

—now, at last, you can enjoy a wide variety of recordings for the cost of one purchase!
—send us your requests, or write for free price list:

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P. O. Drawer 1, Winnetka, Illinois

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:

This letter is for informative purposes especially in connection with the article in the April issue on "Tape Splicing and Splicers" by Sam Chambliss.

Ordinarily we pay little attention to write-ups of other splicers but since this article purports to show all those now available, we feel that we should point out that our splicer, the Carson Tape Splicer, was the first low cost splicer in the field. We started operation over six years ago and our splicer has been a leading seller ever since.

The caption of the main photograph states that "shown are all the splicers available today." This will, of course cause many of our previous customers to think we are not now in business.

We would appreciate very much some sort of correction. — Robert H. Carson, Magnecessories, Washington 20, D. C.

Herewith our apologies to Mr. Carson for the oversight on our part.

To the Editor:

Was sorry to see that in your picture and discussion of all the tape splicers currently available you left out the "Edi-Tall" which is made by Tech Laboratories, Palisades Park, N. Y.—Wall Heider, Sheridan, Oregon.

Our apologies also to Tech Laboratories, and thanks to Mr. Heider.

To the Editor:

I am interested in your recommendation to send tapes to shut-ins and blind people. I am ships radio officer of a passenger ship ferryboating between N.Y.C., Panama Canal, Colombia, Ecuador, Peru and Chile, and can give data on ship life, especially on radio work. Anyone who wishes to start taping with me would sometimes have to wait as

much as six weeks for my return; but, after we get started, I can give specific dates so they can get a tape to me in plenty of time. I use 3 3/4 ips for tape letters, and a 3" reel. I would like to receive cheerful letters or letters about technical subjects. My hobbies are taping, 16mm movies, and slides, but I can converse on many other topics.—Roy E. Madden, Lodi, N. J.

To the Editor:

I bought the second edition of your magazine over two years ago. I had a mild interest in tape recording at that time, but reading your magazine increased that interest tenfold. Six months ago I purchased my first tape recorder and your magazine was the help I needed in selecting the machine I felt was best suited for my needs. — R. Locock, Ontario, Canada.

To the Editor:

Believe it or not, your TAPE RECORDING magazine was a hobby, but today it has led me to a very good and sound business in tape recording.—J. Hassan, Accra, Gold Coast, Africa.

To the Editor:

I consider it a lucky day when I picked up my first copy of TAPE RECORDING magazine. My main dislike of most "audio" magazines is they all seem to ignore the persons in the \$300 class. I can understand your text, and most problems seem to be with people like myself.

I work in a hospital, and I taped my record library. I then jacked the recorder into the hospital P.A. system and played them two hours each week for a period of two years. This was all voluntary. I plan to do some classical "airchecks" with a new machine I am getting.—John Crockett, Bedford Hills, N. Y.

To the Editor:

My husband and I were in Yuba City Christmas when it was flooded. My husband had every issue of TAPE RECORDING magazine, but he is lost now, as the flood took everything. He is starting over again, but the back issues are hard to get. If you know of anyone who has any back issues, please have them send them to me if they can spare them. Thank you. — Mrs. Michael Golden, 760 1/2 Turk St., San Francisco, Calif.

We have forwarded Mr. Golden all available issues, but our supply of Vol. 1, Nos. 2, 3, 4, 5 and 6 was exhausted. Any readers who have "spares" of these issues can contact Mr. Golden.

To the Editor:

I sure do like your magazine. I'd like to hear from anyone interested in good old country music.—Fred Goldrup, Lisbon Falls, Maine.



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Pentron's new Unimagic feather-light selector lever does everything. The Pacemaker's 2 hi fi speakers, automatic index counter, instantaneous braking, brilliant functional styling, and other features add up to the recorder you've dreamed of . . . See it today!



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NOTICE

New price reductions on plastic tapes in regular and long play have been announced. Also new thinner 1 mil and 1/2 mil "super" mylar tapes are now available. For full information send for our 1956 price sheet.

★ USED TAPE, plastic and mylar bought and sold.



New empty plastic reels in boxes, 3" 10c; 4" 22c; 5" 24c; 7" 27c ea. 10 1/2" fiberglass Reel \$1.49. EMPTY BOXES: 3" 3c; 4" 5", 7" 5c ea.; 10 1/2" 25c ea.

"Tape Recording" magazine, 35c (back issues available). Audio Devices 1956 TAPE RECORDING DIRECTORY free.

Please Include Sufficient Postage.

COMMISSIONED ELECTRONICS, INC.

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Members of the original chorus from Rodgers and Hammerstein's Broadway show, *Me And Juliet*, record for RCA Victor. Note the sound-screens placed directly around the group to maintain balance. Screens in the background are covered with sound absorbing materials.

Using A Sound Screen

by Sheldon O'Connell

... with an easily-made sound screen you can control the amount of "liveness" of your surroundings when recording.

UNTIL recently, studio acoustics have been of interest to broadcast stations only. They are vitally important when striving for realism in dramatic shows or compelling informal radio talks.

Now that intimate quality can be duplicated by the tape recordist without upending the furniture or draping blankets from lamp to lamp.

How? By making yourself an inexpensive sound screen such as the stations use. A visit to your local used furni-

ture dealer will likely turn up a faded but serviceable dressing screen, the kind mid-Victorian dandies would take refuge behind on the approach of a rival. Even if the screen itself is broken, a sturdy framework is all you will need as it will be covered by other material.

A sound screen can be used either as a reflector or an absorber of sound. As you probably know, sound waves behave much as do light waves in regard to reflections. They will reflect from hard, glossy surfaces and soft, pour-

ous surfaces absorb them. In much the same fashion, a mirror will reflect light rays full strength but a dull black surface will absorb them completely.

Because sound reflects differently from various surfaces you can have a variety of sound patterns from your sound-screen, depending upon the angle of the wings from the sound source and, of course, the placement of the microphone.

If you are recording a dramatic skit with from one to three performers, or a feature singer who will effect a subdued, intimate quality, the screen can be used to advantage. In this case it should be placed as a wide "V" and the sound directed into it from the baseline of the triangle thus formed.

Ideally, your screen should be made reversible, with live, reflective material on one side and dead, absorbing material on the other. With either side at your disposal you will be able to compensate for adverse recording conditions in the home or average hall.

The modern broadcast studio, designed to handle any number of shows, from audience participation and concert to a single talk or newscast, has long employed the screen to minimize the chance of echo and create for one or two speakers a realistic personal quality. They are also used to highlight a soloist singing with an orchestra. By screening off the soloist the subtle overtones of the voice aren't lost in the cacophony of sound but are harbored by the semi-enclosure of the sound-screen and record much better. Many of the "washboard weepers" or "soap operas" make use of an acoustically treated screen, usually a three wing affair, so that not a tear drop escapes.

In the ordinary room, rugs, drapes, overstuffed furniture, etc., are all sound absorbing. If you are recording in a "dead" room and want to have a "live" effect you can compensate for the room's deadness by using the "live" sound reflecting surfaces of your screen.

If the room is "live"—caused by sound reflecting surfaces such as enameled walls, polished floors and mirrors, the sound will be bounced around like a pre-game warm-up in baseball, from the mound to first, to third and home.

To compensate for this use the "dead" side of the screen.

There are times when you'll want either effect or a blending of the two, depending upon the material you are recording, the voices or instruments and the characteristics of the location. You can have fun and win practical knowledge as well by experimenting with screen and microphone placement under your own recording conditions.

Now to the details on how to make your own screen. You can choose any of the following materials for sound absorbency or deadening—Celotex squares, acoustical tiles, Fiberglas, or colored felt underpadding. The "live" side of your screen can be covered with laminated plastic, Arborite, plywood or similar materials with high sound reflective qualities. Using an adhesive backing, these can be applied directly to the original material of your screen.

A reconverted dressing screen, or hospital isolation screen will fill the bill admirably; the latter, because of its skeletal frame, will require a few fittings to secure the material to the frame.

If you're not on speaking terms with a used furniture dealer or hospital outfitter you can build your own screen from scratch. The only materials needed for building your own are: a screwdriver, four chrome-plated free-play hinges and three firm sheets of plywood. If the plywood is heavy enough you will not need an outside frame, which can be made of 1 x 2 pine strips if light plywood is used.

The lumber dealer can cut any of these materials to size for you, thus saving you the bother of sawing through a long sheet. Three pieces, three feet wide and six feet long should give you ample space for the professional-looking sound screen of your own.

When mounting the hinges, be sure to mount them in such a way that the three panels will fold flat, one against the other for convenient storage.

A "Standby" and "Record" green and red light might be added as an optional accessory. Available in handsome chrome mountings they lend a studio effect for those special recording sessions.



Abbreviated screening is used in back of the vocalists, during rehearsal of CBC's musical, "Chanson de l'Escadrille," which originates in Montreal and is featured on the French network.

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**TWO MOTORS!
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HEADS!**

**NEW TAPE COUNTER!
THREE SPEAKERS!
NO REEL TURNOVER!**

For matchless, professional-type performance at moderate price, the Webcor ROYAL Coronet is the finest value on the market today! Actually, it offers you features no other tape recorder of comparable or even higher price has!

Balanced sound system with three speakers and omni-directional sound reproduce music with the thrilling effect of stereofonic dimensions.

Two motors maintain constant speeds at $7\frac{1}{2}$ and $3\frac{3}{4}$ ips. Two recording heads eliminate the nuisance of reel turnover . . . permit instant change from one track to the other.

Easiest operation with one-knob controls. Input, output jacks. New Veedor Root Tape Counter. Switch permits monitoring with or without recording. Tone control. Fast forward and rewind. Super-sensitive system. Multiple negative feedback circuits assume minimum distortion.

See your Webcor dealer soon for a demonstration of the Webcor ROYAL Coronet. Ask him too, about the Webcor Library of pre-recorded tapes, with their fine musical selections.

***All music sounds better on a* WEBCOR**

tape recorders

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The ROYAL is the most popular tape recorder in the world today.

The ideal tape recorder for all-purpose recording. High fidelity reproduction. Two recording heads, two motors for constant speed. No reel turnover. Input, output jacks. Monitor switch. New Veedor Root Tape Counter. Dual speeds at $7\frac{1}{2}$ and $3\frac{3}{4}$ ips. Automatic stops at end of tape. Easy one-knob controls. Safety button to prevent accidental erasure. Multiple negative feedback circuits for minimum distortion. Top quality construction for years of trouble-free service.

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Push-Button Tape Recorder Table Model

(Also available in portable model)

Without doubt, the world's best value push-button tape recorder. Easiest operation. Editing switch. Fast forward and rewind. Two speeds: $7\frac{1}{2}$ and $3\frac{3}{4}$ ips. Monitor control. High fidelity sound system.





Sheila Bond and Buddy Hackett kibitz in a scene from the stage show, *Lunatics and Lovers*, directed by Sidney Kingsley. Musical and sound effects for this Broadway show were supplied on tape by the Masque Sound & Recording Corp.

THEATER SOUND ON TAPE

by Mildred Stagg

... music and effects on tape are used by some of the biggest Broadway shows—here's how.

Tape has revolutionized musical and sound effects in the theater just as effectively as it has changed the recording industry. The authority for this statement is Sam Saltzman of the Masque Sound & Recording Corp. "Masque" is the concern that supplies a producing technician, a tape technician and special recording apparatus for practically every show on Broadway including *Midsummer Night's Dream* when it played the Metropolitan Opera House and *Silk Stockings*, the latest Cole Porter musical hit.

The revolution has brought forth a new type of highly-trained, well-remunerated sound technician. This tape engineer replaces the harassed prop man of other days who used to run wildly about backstage shooting off cap pistols on cue, and producing other not necessarily authentic sound effects to harmonize with the action of the play. In those days, (BT, before tape,) a war play would have required about thirty men, supplied with enough equipment to fill cases to the ceiling in order to equal the sound effects that a single trained technician has at his fingertips when he

uses a Masque tape outfit.

To simulate the noise of a plane, for instance, it required a drum with two leather straps run by a motor to slap the drum in even tempo. Compare the space and equipment this apparatus occupied with the few inches of tape that can do the same job better, and more reliably.

The tape machines that perform backstage, however, are not the same that music lovers and tape fans are accustomed to seeing. They're Presto machines but they're especially constructed for the job they have to do. Each machine has two tapes running simultaneously and the tapes themselves are duplicates. Although both are going at the same time #1 will have the volume turned up while #2 runs without volume. Just in case anything should happen to #1, #2 will be ready to take up the sound at the right place. To guard against the awful possibility of wiping a tape clean by mistake, these Prestos have only the playback equipment.

The entire machine is portable although it's about the

size of a small organ when it is set up. The tape machine must go along on the road tour that usually readies a show for its Broadway presentation so it can be dismantled in a matter of minutes. When the show moves out of a theater on tour the machine is packed up and goes with the technician who handles it, just as the personal baggage of the actors accompanies them. It does go with the scenery but the technician keeps it in his personal care. He superintends its placing in the car, and its removal to the theater at the next stop.

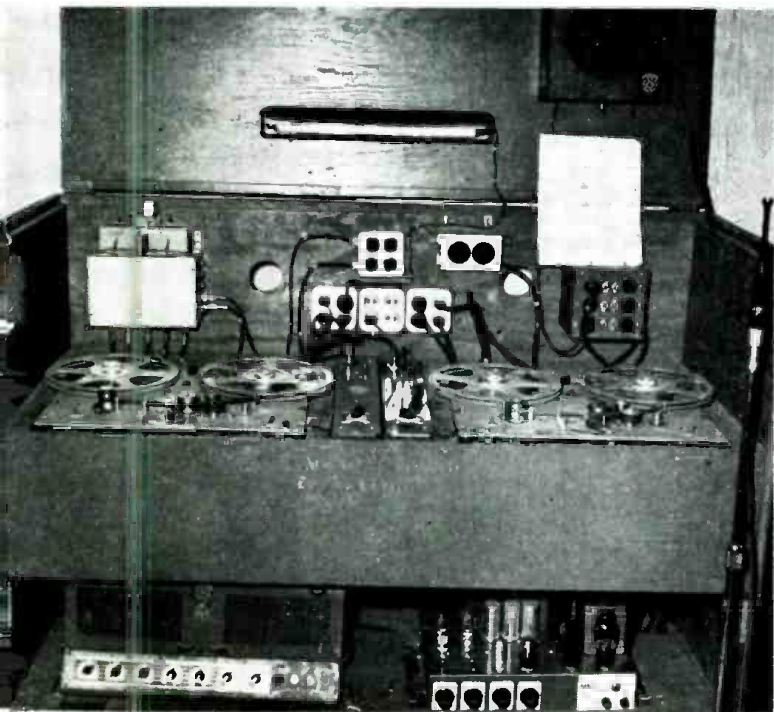
The machine itself is almost self-contained. It holds the cue sheets and has a dim light that can illuminate the shelf even when the play's action demands a blackout behind the scenes. The input is at the left, the output at the right, and every part of the instrument is interchangeable with parts on its sister machines so it can always be kept running. Under the tape reels there is an RCA amplifier on a shelf. In front of the main working surface is a little shelf with splicing equipment for an emergency. Another important bit of equipment on the tape machine is a lead tape. From the center of the black to the center of the next black part requires 1 second of running time. From the center of the red takes a $\frac{1}{2}$ second. All this information helps the technician to time the sound effects for the show.

Sam Saltzman smiles happily when he recalls that before tape a record lasted for exactly 14 playings in a Broadway Show before it had to be replaced because of surface noises—if it hadn't been broken by accident before then. Tape seldom requires replacement.

The actual work on a show starts long before the technician takes over and the tape machine is dismantled to go on tour. Work usually begins almost as soon as a production has been cast. The producer and director, one or both, come to Masque to work out the needed sound effects.



Dancer Sara Aman draws the attention of actors and audiences alike in a scene from *Plain and Fancy*, hit musical comedy, set in a small Amish community in Pennsylvania. Each show presents its own special problems for the tape technicians.



View of upper shelf of Presto tape machines, which perform backstage. Duplicate tapes are kept spinning all the time, with the volume of only one turned up. In the event of a mishap with one machine, the other is ready for immediate use.

They can choose from thousands of tapes made by Masque itself, or that the company can secure from one of about four firms with whom they deal.

The producer has probably made his business arrangements with the business man (Mac Landsman), of the trio that makes up the Masque Sound & Recording Corp. John Shearing is the partner whose job it is to put the producer's theories into practice. He devises ways to disguise the speakers and other necessary sound equipment so the audience isn't visually aware of the source of the sound. Sam Saltzman goes on the road with the show. He breaks in the technician who will handle the show after it has been set up by a producing technician. He superintends and sparks the necessary improvisation while the show is being beaten into shape. New sound effects and music are brought in constantly while others are eliminated. The tapes are cut. New pieces are inserted. Tapes are spliced again—and again—and again.

The volume is set, changed, reset, and changed back again. The cue sheets grow longer and longer and more and more confusing until only a trained technician could possibly handle the tapes on cue without suffering a nervous breakdown.

When the show is practically in its final form, Mr. Saltzman leaves for New York to work on the next show that Masque is preparing. One of his great assets is an ability to remember exactly where every show on the road is playing at a given date. He also knows where every trained technician is working. Producers turn to him to learn if a technician is available to take on a new show, and he



Sam Saltzman of the Masque Sound & Recording Corp. keeps notes on the time of tape sequence in the company lab where tapes are made. He is surrounded by a Presto recorder, two playback machines, and two turntables for records that are to be incorporated in the tape being made.

usually responds with information about a show that is due to wind up its tour or Broadway run leaving a man free to accept a new assignment. He is known by and knows every producing technician in the business.

This group is almost as rare as a snow covered jungle. There are probably no more than five in the entire industry. A producing technician never has to leave home because there is more than enough work to keep him permanently in New York. He works on the show from its inception. He helps to prepare the tapes and the cue sheets. But when the show is ready to roll out of town, the producing technician turns to another show. He leaves the one that is already in form to a regular technician who then remains with the play during its tryout period and Broadway run.

Technicians, both producing and regular, usually start out as assistant electricians with a travelling show, not as tape or Hi Fi fans. They often become interested in the sound effects machines because of the music and gadgets. If an assistant electrician starts spending his free time watching the technician, the technical man may give him a chance to watch him work the tapes, and even help. If an assistant appears to be good material for the job he may be sent out on a show, as assistant to the technician. When he is thoroughly trained he will belong to an exclusive class known as tape technicians. If he should then show talent for producing he may break into that handful of virtuosos known as producing technicians. A regular technician commands a salary of \$250.00 a week while a producing technician ups that to \$300.00.

The producing technician is usually glad to turn the show over to a regular technician because the producer gets his pleasure out of solving new problems and working on new shows. However a trained technician can hardly become bored during the run of a play, regardless of how

long the run may extend.

Certainly he couldn't become bored with a play that requires a maximum of sound effects. "The Fragile Fox," starring Dane Clark was produced during the past season and it boasted as complicated a routine of sound effects as any play technician could ask. John H. Tolbutt, the technician in charge, first worked on taped sound effects while he was with "This Is The Army."

Before the performance of "The Fragile Fox" began, he explained that working a show with tape on the specially built Masque machine was like driving a new car in comparison to the old gearshift type. With records he was always on the alert. He worried about leaning on a record and breaking it, about the needle's sharpness, etc.

The show started and Tolbutt proved that what may look easy to a technician is incomprehensible to an onlooker. He worked the machine with the skill of a Toscanini conducting a symphony orchestra. Both his hands were working at once while his head was turned away so he couldn't even watch what he was doing. This was necessary in order for him to take the cues that were being given by a flashlight waving up and down in the hands of the assistant stage manager. John Tolbutt made the proverbial one-armed paper hanger with the hives look like a statue titled "Repose."

He started and stopped both tapes on cue, then immediately turned the tapes to the spot where they were ready for the next cue. He said that each sound effect runs longer than is actually required because an actor might speak more slowly or applause may be unduly prolonged. In addition to starting and stopping both tapes and advancing them to the next cue, he fed the sound into five loud speakers in the theatre, placed at right and left of stage and in the rear of the stage.

During the show he played about 5000 feet of tape in



A closeup of the tape machines used at a performance, showing lead tape for next cue. The machine holds cue sheets and has a dim light that can illuminate the shelf even when the play's action demands a blackout behind the scenes.

all. All the tape used in theatrical productions is made and run at 15" per second. He was also constantly adjusting the volume, trying to match it as closely as possible with the volume suggested on the cue sheet.

Even the tape serves as a cue to the technician. It repeats for his benefit, "Curtain going up, going up, going up." The assistant stage manager was perched on a high stool within sight of the technician; and while he necessarily has his back to the stage, the stage manager watches the onstage action closely. He waves a flashlight up and down to indicate when a cue is coming up, then he whispers "Go Sound" when it's time to start.

It's fairly quiet backstage. The lights are dim and everyone is so busy doing his job in split second timing that little conversation takes place. At one point in the action, the technician warned this reporter to step aside so a hand grenade could be thrown where she was standing. The hand grenade was a flashbulb and the sound came from the tape machine.

The realistic way that the sound of rifle fire, for instance, was switched from a loud speaker at rear to one at left to indicate a change of direction in the action, was made even more genuine by the choice of a smaller speaker for the sound of rifle fire than for the lower register, louder sound of artillery.

Not all tape for theatre involves sound effects. Music is also important. The current hit, "Silk Stockings," employs a full orchestra and you might wonder why tape should play a vital part in a production like this. The entire orchestra appeared at a recording session at the RCA studios in order to work out taped effects! The overture appears to start backstage and to move forward gradually, increasing in volume as it nears the orchestra pit.

This effect is possible only through the use of tape. The music actually does start backstage—on the Presto ma-

chine manned by a Masque technician. The sound comes from a speaker backstage, and the music of the full orchestra, on tape, is moved forward via a series of speakers until it reaches the proscenium where the orchestra picks up the music at the identical note and carries on while the tape fades out.

| new sheet | | Act # 3 | 3/15 Sec. | Speaker |
|------------|---|---------|-----------|--|
| Cue # 26 | Tape # 2 - Level - 40 1st fade - 30 2nd " - 20 | | | Right |
| Cue # 26 7 | Screen - Level - 40 2 - 5 kots | | | Right |
| Cue # 27 | Tape # 1 Level - 25 1st fade - 20 2nd fade - 25 3rd fade - 20 4th " - 18 | | | Right |
| Cue # 27 R | Screen - Level - 40 1.5 kot | | | Right |
| Cue # 28 | Screen - Level - 40 1 - Shot | | | Right |
| Cue # 30 | Tape # 1 Level - 40 Tape # 2 - Level - 50 Tape # 1 - Level - 30 Tape # 2 - Level build to 50 also fade into Phone # 1 Amp to - 50 Ov Cue fade # 3 - # 2 Tapes out " " # 1 Tape slow | | | Play - Left Spk # 2 Amp Right - # 1 - Amp Center |
| Cue # 30 R | Sound Screen - Level - 40 30 1 - 5 kot | | | Center |

chine manned by a Masque technician. The sound comes from a speaker backstage, and the music of the full orchestra, on tape, is moved forward via a series of speakers until it reaches the proscenium where the orchestra picks up the music at the identical note and carries on while the tape fades out.

Practically all the sound effects that Masque has in its library were made from life, just like the music from "Silk Stockings." When the sound of a plane taking off was needed, a man took a portable Presto recorder to Mitchel Field and recorded an actual take-off. And all the library effects are for sale to professional theatrical producers or amateur tape fans. A master and two copies on tape are made of every effect. The master is filed permanently.

It's the lack of permanence however that whets the interest of these theatre-wise tape specialists. The men of Masque Sound & Recording Corp know that they will get a good share of the crop of new Broadway shows, and that no show will be a routine affair. Each will have its special problems that must be solved, and nothing makes these technicians happier than to figure out the solutions—and tape them!

Sound In A New Package

By Mort Goldberg, CBS Radio

. . . the author, in collaboration with Jim Fassett, was responsible for the unusual recordings heard on "Strange to Your Ears" over CBS. Here is how they tinkered with sound.

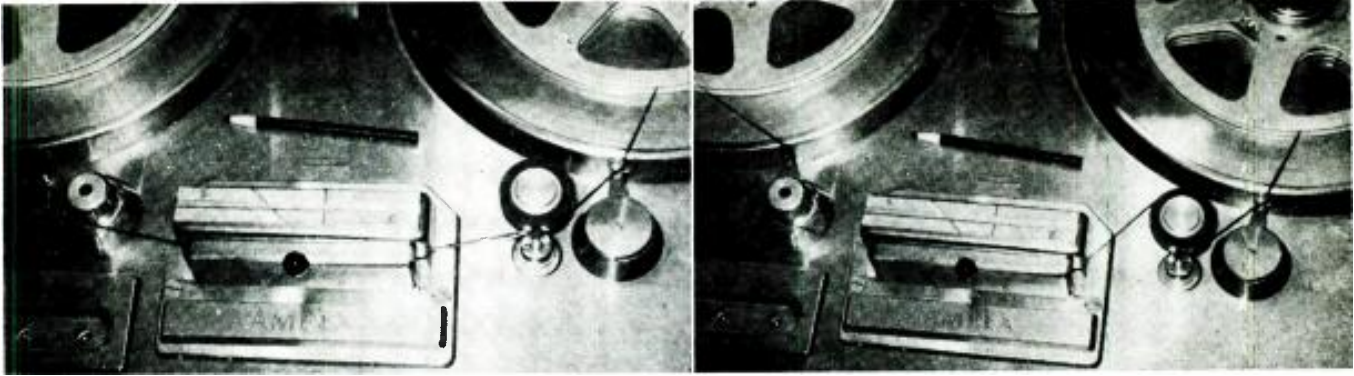
"DON'T worry about making a mistake, we're taking it on tape." "Erase that false start and we'll try again." These and similar expressions constantly spoken in broadcasting and recording studios is indicative of the way tape recording has streamlined the process of sound reproduction. The ability to edit for the correction of mistakes, to re-record over existing material, plus the ease of handling and the economy of use, all contribute to its success as a recording medium. These facts are commonly known and accepted, but there are additional features inherent in the tape recorder, which are not as apparent, but whose appli-

cation when combined with the other advantages, results in a different and fascinating treatment of sound.

The diversified use of the tape recorder led to two specific projects, which the author recorded and edited in collaboration with Jim Fassett, CBS Radio Director of Music. The first was a series of experiments in altering the tonal structure of familiar sounds, which was broadcast by Jim Fassett as intermission features on New York Philharmonic-Symphony Orchestra Sunday concerts. This series was released on Columbia LP under the title, "Strange To Your Ears." The second and most recent project was the "Sym-



Lily Pons, noted operatic star, assists Jim Fassett, CBS Radio Director of Music, during the recording of baby chicks for the "Strange To Your Ears" series. By altering tonal structure, the chicks' small peeps sound like a lion's roar. Author is operating tape machines in the background.



Left, Fig. 1: Normal threading position on Ampex Model 200 recorder, with tape placement between capstan and rubber idler wheel. Right, Fig. 2: Mort Goldberg's method of tape threading on the same machine, with tape wrapped around rubber idler wheel before passing capstan, to accomplish unison backtiming.

phony of the Birds." This is a complete musical composition consisting of nothing but bird calls.

It is the author's intention in this article to review the techniques involved in achieving these sound creations, so that owners of tape recorders can be further enlightened to *sound in a new package*—all wrapped up in tape—.

How many times have you heard a sound which was unfamiliar, and in attempting to identify it you said, "It sounds like —"! The pitch of that unfamiliar sound was a leading factor in making the analogy to something familiar in an attempt at identification. Frequency range, upon which pitch is dependent, helps us to categorize what we hear. Pitch changes were the basis of our experiments in the "Strange To Your Ears" series, and these changes were achieved by using a playback speed on the tape machine other than the one used for recording. Before detailing the specific operations involved, there is a significant fact about the operating speed of tape recorders to which you may or may not have paid particular attention, and that namely is that they are equal multiples of each other, ($3\frac{3}{4}$, $7\frac{1}{2}$, 15, 30 inches per second). In music, notes can also progress in equal multiples of each other, and when they do, these multiples are "octaves." A musical note is made up of a certain number of vibrations per second and these vibrations are termed, "frequency." The frequency of vibrations is measured in cycles per second, (c.p.s.). The fundamental frequency of the note middle C is 256 c.p.s. If middle C was recorded at $7\frac{1}{2}$ inches per second, (i.p.s.), and played back at 15 i.p.s., the frequency would then be 512 c.p.s. or one octave higher. In contrast, middle C played back at $3\frac{3}{4}$ i.p.s. would be 128 c.p.s., or one octave lower. By this very simple means, the recording of a single musical note on tape, resulted in creating the fundamental note, the note an octave higher, and an octave lower, expressly by changing the playback speeds of the tape recorder. Consequently, the tones, pitches, timbres of countless every day sounds can be transformed to something completely new and apart from what we're ordinarily accustomed to hearing.

In the "Strange To Your Ears" series, a number of common sounds were transformed from the real and familiar, to the unreal and strange. A roar common to the depths of the jungle was uttered from the throat of a baby chick. A ruba and flute exchanged their playing ranges, and performed a duet in their inverted state. Vocal chords of a baby emitted the sound of a woman sobbing. One of the

many experiments involved, was the conversion of the piano sound to that of an organ. This was achieved as a result of the tape and the musical scoring being reversed. Our first step in this process, was to choose a musical selection to be scored backwards. This meant that the last chord would be played first, and continue in this fashion, until the first chord was played last. The music chosen was the well known melody, "America." We recorded this selection as the pianist performed this upside down version. After completing the recording, the tape was reversed and played backwards. It is apparent that if the music was played by reversing the musical sequence of notes, and then the tape played backwards, the end result would be the music sounding as originally composed. The melody "America" was immediately recognized, but the piano characteristic sound was transformed to that of a small organ. The reason is that when a piano is played, the initial note or chord is struck, and the decay time or reverberation of that note is momentarily sustained and superimposed by the succeeding note. This sequence of events is recognizable to the ear as the sound of a piano. However, in the reverse playing of the tape, the reverberation of each chord is heard before it is initially played, hence the characteristic staccato sound of a piano is converted to the more gliding quality of an organ. The song "America" appeared to be performed on two different instruments, only through the miracle of tape.

Also as part of the "Strange To Your Ears" series, we did extensive experimenting with bird calls. All of us are naturally familiar with the beautiful and intricate sounds of these calls. One section which I found extremely intriguing,

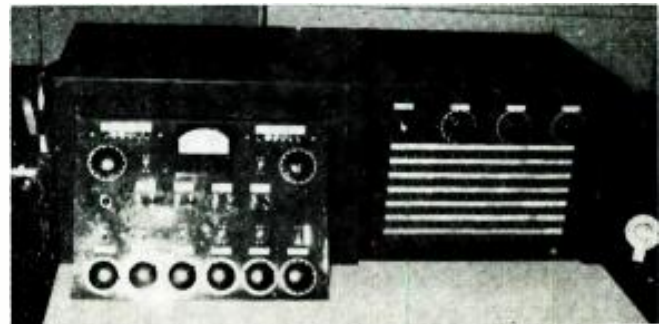
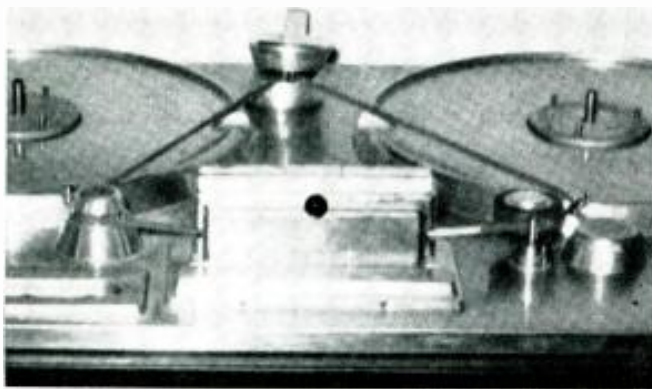


Figure 3: Mixing panel which accommodates four tape machines, two turntables (record), and one microphone, with associated jack field on right for the interconnection of equipment.



Top, Figure 4: Variable speed machine, with control panel on left. A switch mounted on top of the box enables normal use of the machine, which is a converted Ampex 300, or variable speed use. Bottom, Figure 5: A closed loop for playback of a continuous sequence of sound.

was the work we did with the singing household canary. We set up a tape recorder and microphone next to a canary cage, and recorded every sound uttered by the bird over a given period of time. We discovered that the repertoire of a canary is rather limited. It consists of the trill, two successive notes in an octave jump, and a peeping sound, which turned out not to be a *peep* at all. Taking a particular part of the call, the trill, we reduced the speed three times, and were able to discern the individual notes comprising the trill. In its original state, the trill is a rapid blur of high frequency tones, but reduced in pitch three octaves, it became a series of individual tones in the middle whistling range. By the same process, the "peep" became "owoo," with an upward inflection at the end.

Did you ever hear a canary sing a duet with a flute? I doubt whether there is a canary alive, or a flutist for that matter, who could be so compatible as to accomplish this. Nevertheless, it was done by the following means. You recall one of the sounds of the canary mentioned was the two notes comprising an octave jump. This octave jump, along with the trill, was played for a flutist in its lowered range. After listening, our flutist simulated these sounds in harmony, in the same overall tonal range as the altered canary call. These flute sounds were recorded, synchronized, and mixed with the canary call. After this combination was accomplished, the composite was re-recorded with a triple increase in speed. This resulted in the restoration of the original canary sound, along with the flute accompaniment.

The successful completion of the canary and flute experiments gave impetus to the next project, "The Symphony of the Birds." All the experiments conducted prior to this were performed exclusively with the use of equal multiple speed changes, which resulted in only octave variations. In the composition of music, numerous tonal variations are required to accomplish melody, harmony and other accompanying sounds. The initial source of our notes came from the Albert R. Brandt Bird Song Foundation of Cornell University, and through the cooperation of Professors Kellogg and Allen, we were given access to copies of over fifty different recorded bird calls. Many hours were spent just monitoring the bird calls, in search of selected ones which rendered the nearest semblance to a sustained note. We mentioned earlier in the case of the canary, how intricate the sound pattern of a bird song can be, and so with the goal of composing music from these sound patterns, the task resulted in the use of eleven birds out of the more than fifty that met our demands. Specific sections of the calls were chosen to form background accompaniment, i.e. choral effects, while others were selected for melody, solos, etc.

The key factor in obtaining intermediate pitches to harmonize with existing notes of the calls was the use of the "Variable Speed Machine," pictured in Figure 4. This is a standard Ampex Model 300, with the addition of a power amplifier and oscillator connected to the capstan motor. The capstan motor, being of the synchronous variety, is dependent on frequency for its speed regulation and in normal use, the frequency is that of the line, sixty cycles. By varying the frequency fed to the motor, we therefore vary its speed, and so the oscillator supplies this frequency variation, and the amplifier the necessary power requirements. This combination then results in a continuous speed variation in terms of tape speed of from approximately 4 to 10 i.p.s. when set at $7\frac{1}{2}$ i.p.s., or from about 9 to 21 ips, when set at 15 i.p.s. A switch mounted on the top of the control box in the illustration in Fig. 4 enables normal use of the machine in the position to the right and in "variable," when switched to the left. The meter on the left is a vibrating reed frequency meter, which indicates the operating frequency in use, (Approximately 56 to 66 cycles per second). The meter on the right is a voltmeter indicating the line voltage. The use of this device made possible the separation of selected pitches to harmonize with each other, and hence form musical accompaniment to chosen extracted sections of the bird calls.

The first movement of the "symphony" contained five birds, the Wilson Thrush, Baltimore Oriole, Field Sparrow, Harris Sparrow, and the Winter Wren. The entire introduction to the movement consisted of a portion extracted from the call of the Wilson Thrush. The musical pitch of this section was chosen to be the result of the original recording played back at half speed. The fact that our standard recording and playback speed is 15 i.p.s., and all our original recordings were at this speed, it was necessary to re-dub the material used at half speed ($7\frac{1}{2}$ ips) back to 15 ips. To accomplish harmony between two pitches, the notes must be one third apart. Therefore, the tape speed must also be one-third apart. By use of the "variable speed machine," the pattern of notes of the Wilson Thrush call was re-dubbed at 10 and 20 ips respectively, (one-third above and below 15 ips) and formed into loops as pictured in Figure 5, (one loop per machine). In this manner each specific section was blended by mixing the output of two loop loaded machines, (background accompaniment), with the main theme from the third machine and recorded on

the fourth. This loop combination resulted in the main theme being accompanied by two part harmony. As the tonal structure of the first movement resolved from one section to the next with excerpts from the calls of other birds, the operation was repeated by constructing new loops and then blending and editing the individual sections together. The panel shown in Figure 3, accommodates four tape machines, two record turntables, and a microphone, with the associated jackfield on the right used to connect different combinations of inputs and outputs to the equipment to complete the blending operations.

The problem of synchronizing solo parts to perform at specific points through the composition is more easily explained by describing the compilation of the second movement, whose only performer was the Trumpeter Swan. The call consists of three notes with an unmistakable resemblance to the sound of a trumpet, which obviously doesn't render the title Trumpeter Swan a misnomer.

Utilizing the Variable Speed Machine, a complete scale of different pitches was compiled from the three basic notes of the Trumpeter Swan to form an original tune. The fact that the pitches varied, caused a variance in the length of each note, with the result that each had to be cut to size to form a musical pattern. Blank tape was inserted between each note to act as rests in establishing a specific tempo. The next step was to muster a tuba accompaniment for our newly formed trumpet solo. The bass tuba is about two octaves lower than the trumpet in playing range. By a double reduction in speed of the trumpet tones, we were able to assemble a group of notes resembling those of the bass tuba. Once again the "variable speed machine" came into play to compile the desired pitches. The double reduction in speed also quadrupled the length of each note. Each note had to be cut down to comply with the length of the particular note of the trumpet solo to which it was to accompany. These notes came at different locations throughout the melody, and paper leader was edited into the bass note tape at points of exact length to the portions of the trumpet solo where no accompaniment was used. For example, the third, fifth and ninth notes among others in the

trumpet solo were bass accompaniment points. After setting up the first bass note, (on a separate reel) to the exact length of the *third* trumpet note, paper leader of lengths corresponding to the fourth, sixth, seventh, eighth, etc. trumpet notes, (where no accompaniment was required) was edited into this bass reel. The bass notes were inserted at intermediate points where accompaniment was required.

To insure accurate blending of the bass and trumpet notes, a unison backtiming method was employed. In Figure 1 is shown the normal threading of the tape on the Ampex machine. You will note the manner of threading the tape in Figure 2. The difference is that the tape is wrapped around the rubber idler wheel before passing the capstan en route to the take-up reel. The capstan drive determines the direction of the tape, and by wrapping the tape around in the manner shown, the tape will play backwards at its prescribed speed by operating the machine in the normal playback way. The feed and take-up reels comply with this procedure because either will absorb the tape in its direction at any time. Returning to the task of synchronizing our "Bird" trumpet and "Bird" bass tuba, the two reels were set on their respective machines. The trumpet solo was set at the playback head at the start of the *third* note, the point, you will remember, where the first bass note was to hit. On the bass reel, the *first* note was set at the playback head, and then both tapes reversed around the capstan in the manner described. Both machines were then started simultaneously and backed up in unison to the starting point preceding the first three trumpet notes and then stopped. Restoring the tape to the proper threading position and recording on a third machine, when started together again, the bass notes blended perfectly at the prescribed notes of the trumpet solo. There were about four different trumpet and bass tuba tunes in the second movement. All of the preceding methods were applied to the third movement called "mysterioso," containing the calls of four different type thrushes.

A whole new world of sound has been opened to us via this amazing recording medium, and this world of sound definitely has been delivered to us in a new package,—all wrapped up in tape.

NEW SOUNDRAFT TAPE TIMING CHART

A new accessory item has been added to the line of products of Reeves Soundcraft Corp., 10 East 52nd Street, New York. It is a useful timing chart, which enables the user to determine at a glance the time and length factors used in tape recording. When preparing to record, a recordist can now tell how much tape he will need to record for a certain period of time, or how long a certain tape will last him at any recording speed. The Soundcraft Timing Chart will save him time, tape and trouble, by enabling him to plan his tape requirements ahead.

This handy, easy to use chart has two separate working areas. The left side is used when recordings are single track, and the right side when double track. Tape length from 1-800 feet is determined on the front side of the chart, and from 800-3000 feet on the back.

To determine how long a certain length of tape will play, you simply set the length where indicated, and the playing time can



The Reeves Soundcraft Timing Chart gives the lengths of tape needed for any time and covers all thicknesses of tape. It works like a slide rule.

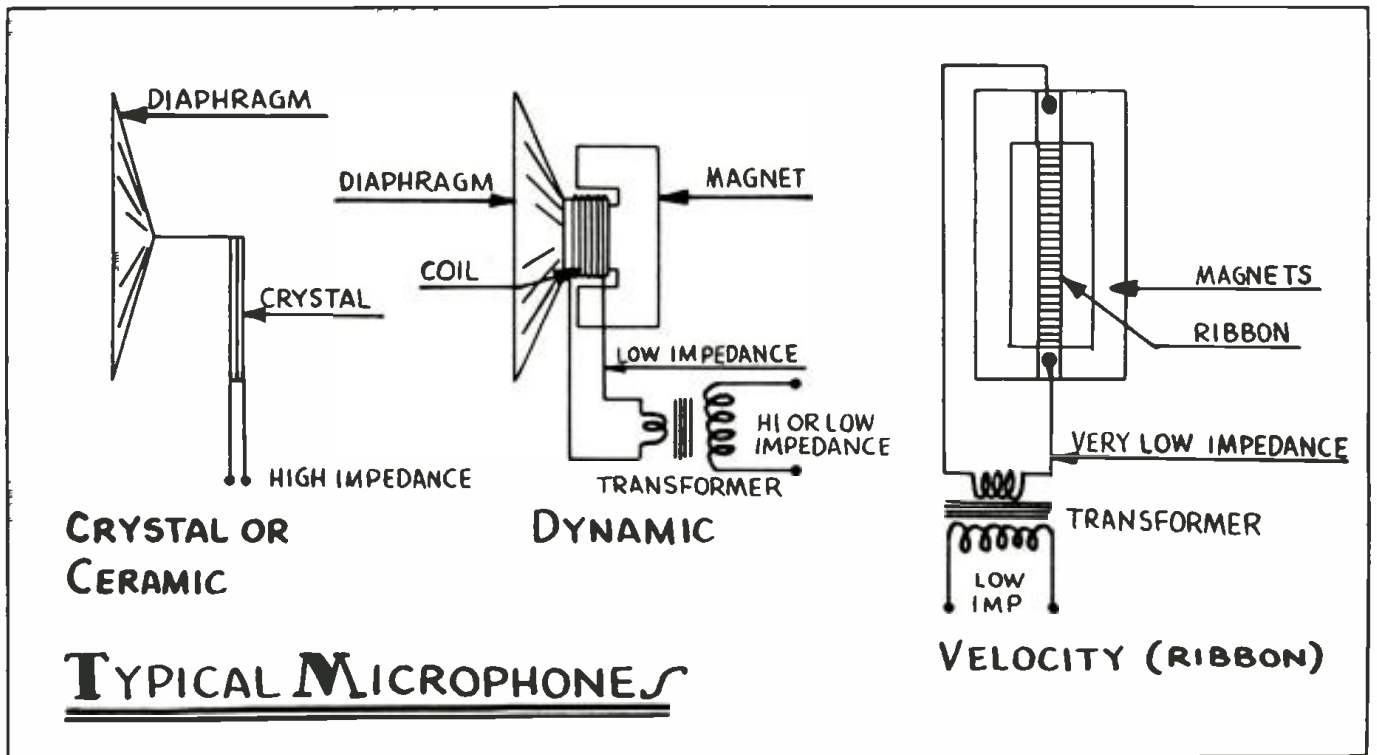
be read opposite the four standard recording speeds listed. Also, to figure how much tape you need to record for a certain time, you set the time opposite the speed at which you are recording, and the

required number of feet of tape can be read immediately.

Being semi-logarithmic, the chart is exceedingly accurate in determining the length and time factors for short commercial and spot announcements. Professionals will find these advantages most helpful in planning and programming recorded broadcasts.

One side of the chart also lists the average playing time for standard size records, which will be helpful in "records-to-tape" recording.

Confusion which developed through the introduction of long play and extra long play recording tapes has made the need for a chart such as this increasingly apparent. We believe all recorder owners will find this gadget eliminates all the guess work connected with how much you can get on one tape, when to change reels and other similar problems. It can be purchased at all Soundcraft dealers, and is priced at \$1.20.



The crystal mike is so-called because it contains an actual crystal, usually of Rochelle salt. The flexing of the crystal produces a voltage. The dynamic mike generates its current because a coil is moved in a magnetic field and the velocity or ribbon mike generates current through the movement of a metallic ribbon within the magnet. The crystal is high impedance, the dynamic low and the ribbon very low. Transformers are usually used with the dynamic and ribbon types and these are built right into the microphones.

Using Low Impedance Microphones

by
Jack Bayha

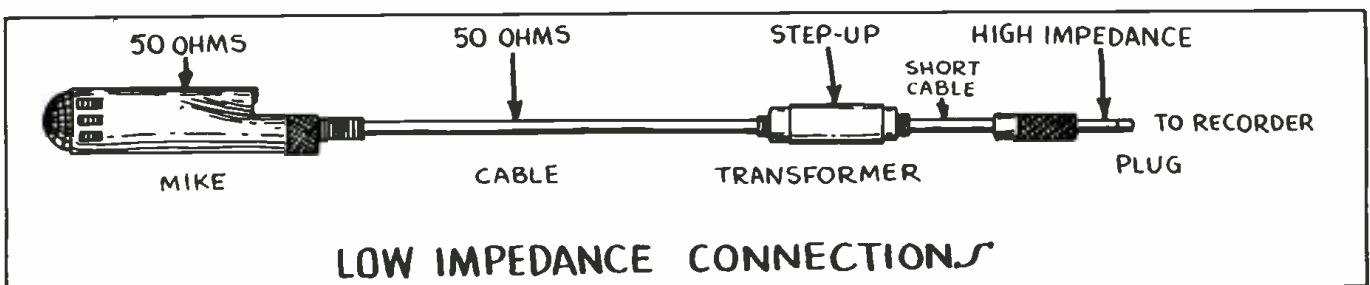
... why use a low impedance mike? What will it do? How is it connected to a tape recorder? Here are the answers —

ALL of us hear people talk about low-impedance microphones, and most of us wonder just what they are talking about, and why we should be concerned about the matter. We hope in this article to answer both questions, as well as give some of the more pertinent aspects of the low-impedance mike as applied to tape recording, and particularly to your tape recorder.

Most tape recorders which are equipped by the manufacturer with a microphone, are provided with a high-im-

pedance unit. This may be of crystal, ceramic, or dynamic type. The crystal microphone and the ceramic microphone are always of high-impedance type; dynamics of the type supplied with tape recorders are also usually of high-impedance variety, although they could be of low-impedance type.

Knowing how a microphone works may help us to understand our microphone better. A crystal microphone develops its signal by the flexing of a slice, or two, of Rochelle,



A low impedance microphone is best where the cable has to be run a long distance to the recorder. Most recorders, however, have a high impedance input for the microphone. To raise the impedance level a step-up transformer is used in the line before it reaches the recorder.

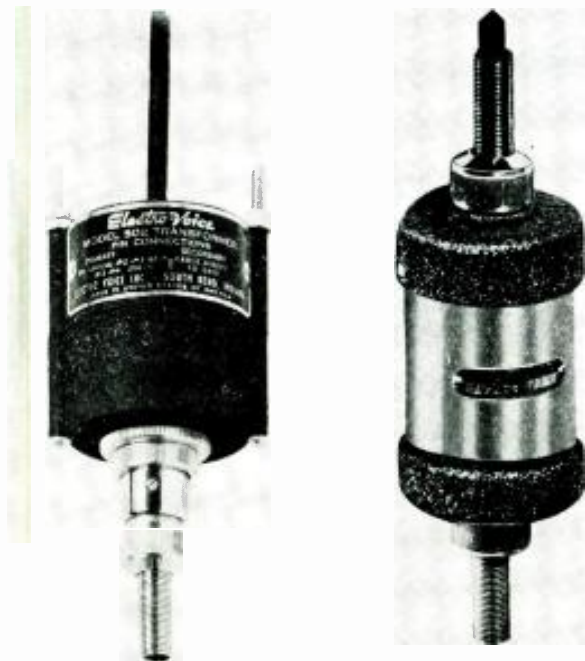
or Epsom Salt crystal. This flexing in the case of the common crystal microphone is caused by the motion of a diaphragm which is coupled to the crystal element. This type of electric generator is called a piezo-electric element, a substance generating electricity when flexed mechanically. The ceramic microphone uses the same system, except the element which is flexed is of Barium Titanate, converted into a piezo-electric form by special curing, under high voltage and pressure during its manufacture. It has the advantage of being less subject to damage by heat and moisture than the Rochelle Salt units.

The true dynamic microphone develops its voltage due to the motion of a coil of wire, which is suspended from a cone, in the middle of a strong magnetic field. It is by nature a low-impedance device, since the area for wire is quite small, and to develop a high-impedance in a dynamic microphone requires considerable wire. The dynamic mike is often provided with a built-in transformer, the output of which may be high-impedance, as well as low, being controlled by a built-in switch.

Our high-impedance tape recorder microphone generally serves us quite well, until we feel we want better fidelity, and someone tells us we need a better microphone. We are also apt to leave the high-impedance field because we want to use long microphone cables, something not advisable with high-impedance mikes, due to hum and signal loss. One way or another, we may find we want to go to low impedance mikes.

Just what is a low-impedance mike, and how is it better, or is it? How do we go about adapting it to the high-impedance input circuit in our tape recorder?

The low-impedance microphone is usually of dynamic or ribbon type, as applicable to the amateur field, the capacitor or condenser mikes being rather expensive. Having two types to select from, how do we make a selection? Understanding how each works will be a help.



Left: The Electro-Voice 502, a well shielded line transformer with wide frequency response. Right: The Shure A-86-A line transformer, which matches low impedances to high impedance inputs.

WHAT IS IMPEDANCE AS APPLIED TO MICROPHONES?

In the science of Electronics, Impedance is defined as resistance to the flow of alternating current. In the case of a microphone, the term might best be explained by the use of the following analogy which will serve to explain both impedance as applied to microphones and the action of a transformer with a microphone.

First, let us consider our microphone as the motor in our auto, and the transformer as the transmission in the car. It steps the motor speed up or down. In low gear we have less speed, but more power available. Let us consider our selected gear as impedance, our speed as voltage. As we move to high gear, or high impedance, we have more speed or voltage, but less power available. We can, of course, step our speed down, and regain our power, the same applies to impedance.

For the relative freedom of low impedance lines from hum, etc., consider this to be similar to the effect of a slight braking action when a lot of power is present, or the same braking with little power present. The effect of the brake would be much less with high power, just as external influences affect low impedances only slightly.

The low-impedance dynamic mike quite often contains a transformer, just as the high-impedance type does since so little space is available for wire, but it only steps the impedance up to 50 or 150 ohms in the low-impedance type. The initial coil impedance of many dynamic units is too low to be practical to transmit, since the voltage output is so small. This is a good place to point out that our low-impedance microphones develop very little voltage as a rule. To step the voltage up to useful levels, transformers are used. These transformers raise impedance, which raises voltage output. A low-impedance mike will generally not work with a high-impedance input because the output is too low. How we step it up to useful levels will be explained later.

The output of our dynamic low-impedance mike goes directly into our microphone cable at, say 50 ohms. It is carried at this level until it reaches the tape recorder input. This low-impedance line is very free from hum disturbances and long lines may be run. Here it must either go into the low-impedance input, available in a few tape recorders as a stock item, or it must be stepped-up to high impedance for the conventional high impedance input. This requires a line transformer. The Shure folks make the Shure A-86-A which will change 35, 50, 150, 250 ohms inputs to high-impedance. Electro-Voice makes the EV-502, which will change 50, 250, or 500 ohm levels to high-impedance. These transformers are so-called "line transformers," in that they form a part of the cable or line going to the tape recorder. The output end, the high-impedance end, is always kept quite short, to avoid hum troubles.

Dynamic microphones are available in the full price bracket, going from \$20.00 to \$250.00, the higher the price the better the usual response and quality. The dynamic mike is capable of excellent performance, and is very often used for radio and TV broadcast work, not to mention high-fidelity recording. All dynamic microphones come equipped with literature advising output impedance, and both the Shure and EV units give full directions for matching the low-impedance to the tape recorder inputs.

The ribbon microphone is always of extremely low-impedance at the source even lower than dynamic mikes, a



Left: Fentone Blue Ribbon mike, a 50 ohm velocity unit, made by Band and Olufsen in Denmark. Notice the tiny transformer below the magnet, which raises the ribbon impedance to 50 ohms. Right: Shure 333 velocity microphone, a ribbon mike with uni-directional pick-up pattern. This unit features three impedances, controlled by built-in switch.

tissue thin ribbon of aluminum, which flexes with air velocity in a strong magnetic field, being all the wire for the coil. It is also called "velocity" mike since it is controlled by air velocity, not pressure. To the writer's knowledge, all contain a transformer, needed to raise the level up to even the common low-impedance levels of 50 or 150 ohms. The ribbon mike has an impedance at the source, of a fraction of an ohm. Most ribbon microphones are bi-directional, that is they pick up sound from both sides of the mike, often an advantage, but sometimes a disadvantage; it depends on the particular recording situation. An exception to this rule is the ingenious Shure 333, a professional ribbon mike featuring a uni-directional, or one-way pickup. Like many oth-

er professional mikes, this unit has a switch, making selection of several low-impedances possible.

Both the ribbon and dynamic mike of high quality exhibit most excellent frequency response, many being flat within the customary few db from 30 to 15,000 cycles. There are claims that the ribbon is apt to be of somewhat higher sensitivity than the dynamic, due to its inherent low mass of moving parts, but good quality dynamics are most amazing in their sensitivity. In general, the ribbon and dynamic low-impedance microphones exhibit vastly improved response over the crystal microphone, or ceramic unit, although we hasten to advise, that some forms of crystal microphone can be made into strong competitors. The objection to hum, and line loss with crystal mikes, is handled by built-in impedance step-down transformers, which convert the high-impedance output to low-impedance for the cables, the reverse being used to step it back up to a useful impedance for our tape recorder input.

An examination of the instruction book for your tape unit will show if you have a low-impedance input available, or if you must use an input transformer.

Another significant consideration in selecting a microphone is pick-up pattern. Generally mikes fall into three groups, uni-directional, picking up sound from one direction only, bi-directional, from two directions, and omni-directional, from all directions. There are variations of shape of pattern, such as the "cardioid," etc., but these are of little consequence.

What pattern is best for you depends on what type of recording you will be doing. If you record at concerts, etc., where a crowd is present, and usually noisy, avoid the omni-directional mike like the plague, and look twice before going for a bi-directional type. If this is your meat, stick to the uni-directional mike, or the omni-directional capable of



The Electro-Voice 664, a quality dynamic microphone. The author's experience shows this microphone to come close in performance to the best broadcast dynamics.

being used uni-directionally. This will help keep the crowd noise to a usable level.

If you do home recording where you want to pick up voices from all directions, the omni is fine. The bi-directional will also do a good job. For studio recording where control can be had of the ambient noise level, use any type you want, the type which does the best job for you is the best one to use. We have six microphones in our "stable." Each has its particular advantage. Since we do a lot of bi-aural recording, we have a pair of excellent dynamics, a pair of ribbons, a uni-directional ribbon, and a low-impedance crystal with built-in transformer. Each type, we find, does a specific job best. When the noise is bad, we shy away from our ribbons, bi-directional type, and rely on the dynamics (uni-directional). For studio recording, we find our ribbons most adequate.

We are able to use our uni-directional ribbon for most every type of pick-up, finding its performance most adequate. Whether one prefers this type of unit to a good dynamic is a matter of personal preference, since both have the response, both the pattern. Our crystal unit makes a good emergency mike, and is usually carried for just that purpose.



Exploded view of Shure "Concert-Line" 333 broadcast unidirectional microphone. The transformer for changing ribbon to line impedance is located in the base of the microphone, the switch is at the back, and is labeled "electrical wiring."



FIDELIPAC TAPE CARTRIDGE

. . . new unit will be available for quarter hour, half-hour, and full hour playing time.

Fidelipac tape cartridges shown in the foreground play 15, 30 and 60 minutes at 7½ ips.

A new long-playing tape cartridge designed for economical mass production, has been developed by Sound Electronics Laboratories, a division of G. H. Poulsen & Co., under the direction of George H. Eash, Chief Engineer.

Named the Fidelipac, this cartridge will play a full hour at a speed of 7½ inches per second. It is just slightly larger than a standard 1200 foot reel. Similarly, half-hour and 15 minute cartridges of this design are comparable to 600 and 300 foot reels. These cartridges store more easily than reels.

The device uses a simple drive system, standard ¼" tape, and the conventional continuous loop. It features a patented method of reducing tape friction and static by its design. Tape tension is constant at all times, and pressure pads are not required to assure good tape to head contact.

Due to minimum exposure of tape to dust and dirt, and because static charges

which ordinarily attract these elements are neutralized, the tape and head are virtually free of these particles, thereby assuring finer reproduction of sound.

The Fidelipac will be produced in an attractively designed, modern plastic case. To operate, it is simply inserted into a playing device and automatically locked in proper position. A push of the play button and the machine is running. The tape itself is never touched or handled.

The tape cartridges are not adapted to play on present day recorders which use reels. Recorders and playbacks which will accept the new cartridge will be designed, however. A prototype of a tape player is shown in the illustration above.

At the present time, it is anticipated that the price of the player unit will be less than \$40, with player-recorder units running somewhat higher. The cartridges will be priced from 75 cents to a dollar higher than comparable size open reels

of pre-recorded tape.

While the pre-recorded tape field is anticipated as the chief market for Fidelipac, home users are expected to push immediate sales when it is released.

Other uses too, such as factory-installed or custom models in automobiles, suitable for both pleasure and business; station identification and commercials in radio and television; applications relating to automation equipment; and the sounding of alerts or warnings, are foreseen by Mr. Eash for this unique product. The playing time of one hour can be increased for special applications. Mr. Eash believes that this type of cartridge will eventually replace records in the field of talking books and music.

These cartridges will be manufactured by Sound Electronics Laboratories, 1702 Wayne Street, Toledo, Ohio. Complete information may be obtained by writing to them at this address.

NEW PRODUCT REPORT



BELL THREE-SPEED RECORDER

... features speeds of 1-7/8, 3-3/4 and 7-1/2 inches per second. Simple controls, mixer built-in.

THE Bell RT-75 is a surprisingly versatile machine in the medium price class but without an imposing amount of gadgets and an extra-fancy finish. It simply has enough controls to do the job and the case is pleasingly finished.

This is a dual-track, three-speed machine with the second track made available through reel-turnover, as with most recorders. The controls for the three speeds, 1 $\frac{7}{8}$, 3 $\frac{3}{4}$ and 7 $\frac{1}{2}$ inches per second are straightforward and require little effort to operate.

The amplifier, which we tested separately, as well as in combination with the rest of the recorder, shows excellent response characteristics from 75 to 15,000 cycles with an apparent rise of about 1 db in the 1000-2000 range. Otherwise the response is flat.

The record-playback characteristics of the unit we had for test at the 7 $\frac{1}{2}$ ips speed indicated less than 3 db variation from the 1000 cps response from 70 to 8000 cps in a fairly linear pat-

tern with a top of 11,000. The signal to noise ratio at -20 db input was in excess of 30 db.

At the 3 $\frac{3}{4}$ ips speed the response from 70 to 5000 cycles met the same requirements and had a cutoff between 6000 and 7000 cps. At the 1 $\frac{7}{8}$ ips speed the response was good from 200 to 2000 cycles with a cutoff below 100 and beyond 3000 cycles.

The slowest speed is more than adequate for voice reproduction and with the long recording time at this speed (2 hours on one track of a 1200 foot reel) should prove of value for long conference recording and similar activities.

The output through the 6 x 9 speaker with which the unit is provided was about 4 watts at less than 5% distortion and the wow and flutter was less than 0.3% at the 7 $\frac{1}{2}$ ips speed.

The forward and rewind speeds are approximately 1 $\frac{1}{2}$ minutes for a 1200 foot reel with the rewind slightly faster of the two.

ST A **F** K S T E D

Product: Bell RT-75
Three Speed Recorder

Manufacturer: Bell Sound Systems,
Inc., 555 Marion Road, Columbus,
7, Ohio.

Price: \$219.95

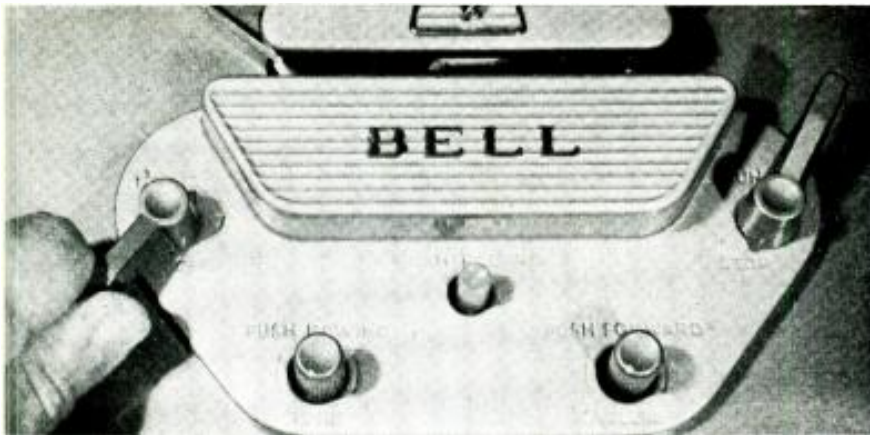
Unique on this recorder is the signal input which has an arrangement of three jacks providing for one microphone or a mixed microphone and phono-input in a separate balanced arrangement. For measured mixing, an external control should be used but mixing can be done just by using the two jacks provided on the recorder.

The outputs are found on the back of the case, one for an external speaker, with a rating of 3.2 ohms (any speaker up to 16 ohms may be used) and the second a high impedance output for an external amplifier. A terminal strip provided inside the case gives a 500 ohm output for long line transmission.

The modulation, or recording level indicator, is the conventional neon type and in addition there is an on-off pilot



With the lid in place the recorder presents this attractive appearance. The case is beige with a gold grille and green trim.



The controls are all conveniently grouped in one place. At left is the speed change lever and power on-off control. At right is the run-stop control. The record button is at upper center. At lower left is the tone control which also serves for fast rewind and right, volume control and fast wind.

light and a signal which goes on when recording is being done. All controls are interlocked so that accidental operation or erasure is not possible.

Monitoring of recordings may be done by using high impedance headphones plugged into the high impedance output jack on the rear of the recorder or using low impedance phones plugged into the external speaker jack. If the impedance of the phones is over 8 ohms, a 2-watt 3-ohm resistor should be bridged across the phones.

To use the recorder as a PA system, an external speaker is plugged in and the recorder put in "record" position with the reels removed.

The tone control operates on playback and when placed in the center of its range the response is essentially flat. As the control is rotated toward the high position the emphasis is placed

on the high frequency range. When turned to the left the emphasis is on the low frequency range. In the center of the range the bass rise is about 7 db along with a drop of 6 db in the highs to balance the acoustical response of the loudspeaker and cabinet.

This recorder is one of the best ventilated machines we have seen. The bottom plate is large and may be removed to get at tubes or motor. There is additional ventilation through the back of the case and also in the wells at the side of the top panel.

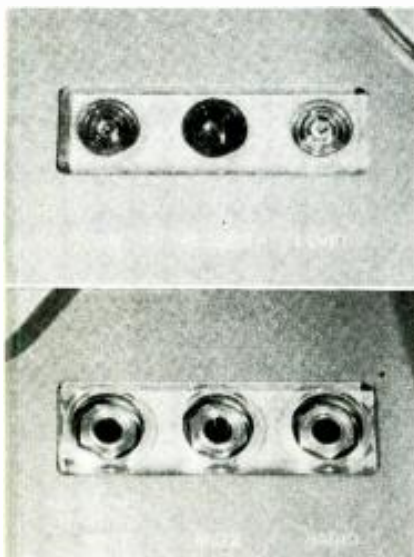
The bottom plate also provides access to the 500 ohm connection for long lines. This is marked on the terminal strip with yellow paint.

The erase and bias is high frequency AC (60,000 cycles).

While not a part of the recorder we feel that Bell deserves a commendation for the instruction brochure that is supplied with the machine. It is very lucidly presented and detailed. Drawings of the possible connections to the various inputs and outputs will enable even the newest novice to make the proper connections to achieve the results he wants.

To use fast forward or rewind the stop-run switch is thrown to the stop position and the proper button depressed. When the rewind button is pressed, the control locks in and it will continue to rewind. To stop it, the fast forward button is depressed until the reel comes to a stop. The fast forward button must be held in manually until the desired spot on the reel is reached.

We feel that the Bell RT-75 has much to recommend it and is worthy of your consideration if you are thinking of buying a recorder in the medium price range.



Top: panel lights are on left side of recorder: left, power on light, center, recording light, right, recording level neon light. Lower: input jacks for two microphones and a radio or phono which may be mixed with voice.

A new thrill in tape recording



with TURNER 95D Dynamic Microphone

Remember how your first tape recording sounded? Remember the thrill of hearing your own voice played back for the first time? You may even have thought, "Is that my voice?" As time passed, you began making better tapes. You learned the many techniques that make tape recording so much fun.

Now you're ready for another thrill . . . The Turner 95D dynamic microphone. The Turner 95D makes sure you'll get all the quality your playback equipment can give, because the Turner 95D puts more quality on tape.

If you're at the point where true fidelity tape recordings are what you want—you want a Turner 95D microphone. A top performer for either voice or music reproduction—priced for practical use on all your tape recordings.

CONDENSED SPECIFICATIONS

Frequency Response: 70 to 10,000 cps.

Output Level: 58 db below 1 volt/dyne/sq. cm.

Impedances: Available in 50, 200, 500 ohms or high impedance.

Turner 95D, List Price \$37.50

Turner 95D with slide switch \$41.00



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PORTABLE TAPE RECORDER
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AT 1 7/8 inches/sec.
with ABSOLUTELY
NO AUDIBLE WOW
or FLUTTER.

The quality of performance contradicts the entire concept that slow speed machines can only be used for voice recordings.



HEAR IT . . . BELIEVE IT

Two speed • dual track • 1 7/8 inches/sec. • 3 3/4 inches/sec. Response 60 to 7500 cycles \pm 2 db • Flutter and Wow less than .2% at 1 7/8 inches/sec. • Signal to Noise ratio: greater than 50 db • Magic Eye level indicator • Radio or Phono input • Monitor output for head phone • Low level output to amplifier system.

OTHER FEATURES INCLUDE:

Radio or phono input can be mixed with microphone input . . . a three position switch for playback thru its own speaker or hi-fi speaker, or both . . . playback amplifier has 5 watts audio output . . . use as public address amplifier system . . . crystal mike with response of 50 to 10,000 cycles flat . . . 25 feet mike cable . . . fully shielded heads . . . interlocked record switch prevents unwanted erasure . . . 4 hours playing time with 1200 ft. reel of tape . . . instantaneous speed change while recording . . . tape retracts from heads in fast forward or rewind position . . . single lever control for start, stop, forward or rewind.

AN EXCEPTIONAL TAPE RECORDER HOUSED IN A FINE GRAIN WOOD CABINET AND SUPPLIED WITH A LUGGAGE TYPE LOCKING LEATHER CASE FOR EASY PORTABILITY. COMPLETE UNIT WEIGHS 27 LBS.

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BOOK REVIEW

Tape Recorders and Tape Recording by Harold D. Welier. 5 1/2" x 8 1/2". 190 pages, index, illustrated with drawings and photographs. Published by Radio Magazines, Inc., Mineola, N. Y. Paperbound, \$2.95. Cloth-bound, \$3.95.

This is the second volume to appear by this author, the first being "High Fidelity Simplified." It is written in the same easy to read style and is aimed primarily at the layman with little or no knowledge of tape recording. However, it does assume that the reader has had at least a nodding acquaintance with recorders.

Its chapters include: Sound, Sound and the Human Ear, Microphones and Tape Recording, Tape Recording and Room Acoustics, Recording with a Microphone, Microphone Techniques, Recording from Records, Radio and TV, Tape Recorders—Theory and Practice, Editing and Splicing, Sound Effects, Tape Recorder Maintenance, Adding Sound to Slides and Home Movies.

The greater part of the book is concerned with actual recording, as can be seen from the list of chapter titles. The information contained in the volume is good, as are a number of kinks and tricks for recording from cracked records, making sound effects, etc.

The book concerns itself solely with the tape recording and does not go into such subjects as connections to a hi-fi system, etc. which were covered in the former book mentioned above. We believe that the tape recordist will find this book of interest.

AMPEX VIDEO TAPE RECORDER STUNS TV INDUSTRY

The announcement of a video tape recorder with the speed of only 15 inches per second has set the TV world on its ear.

The Ampex Corporation developed the new device and kept it as secret as the atomic bomb project until it was unveiled to CBS officials (who purchased three machines for \$225,000) and the rest of the TV world at the national convention of the National Association of Radio and Television Broadcasters in Chicago.

The first recorders will be in service by August on CBS. \$4,000,000 worth of orders from nets and stations were written for the new recorders at the show.

First use for the recorder will be to overcome the three-hour time differential between New York and the West Coast. Programs will be recorded as they come over the transmission lines and retelecast in a comparative time slot for West Coast audiences.

The new Ampex VTR system records both picture and sound on a single magnetic tape two inches wide. Picture quality is considerably better than present day techniques employing photographic film. The resolution—the measure of clarity of a picture—is far beyond the capability of the average TV receiver. Thus when a tape is telecast the signal will be better than the home set can receive.

Programs can be recorded directly from a TV camera, from a TV receiver, from television transmission lines or from micro-

wave relay systems. Just as with the Ampex audio tape recorders, the program can be immediately replayed with no further processing. Tape can also be reused time and again.

Recording and playback is done merely by pushing a button. The recorder must record up to 4,000,000 cycles per second (regular audio recorders have a top of about 15,000 cps at 7 1/2 inches per second). The Ampex system runs at only 15 inches per second permitting recording of a full hour of material on a 1 1/4 inch reel. Other methods still in development by other firms have speeds up to 200 inches per second. In the Ampex system a magnetic head assembly

rotates at high speed putting the signal on the tape transversely instead of longitudinally as in audio recorders. The sound is recorded in the regular manner along one edge of the tape.

The appearance of the VTR in commercial form is expected to raise some issues among the various unions covering players, technicians, etc. as film gradually disappears from the TV picture. While this may not happen overnight, it is quite probable that future pictures for TV will be shot on tape rather than film. This will greatly facilitate the gathering of news pictures which can be shown as soon as the camera crew returns to the station.

Charles P. Ginsburg, senior project engineer in charge of video development, and Phillip L. Gundy, manager of the audio division, responsible for the project, inspect the magnetic head assembly in Ampex Corporation's new television tape recorder.



TAPE CLUB NEWS



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

Tape-Respondents, International recently welcomed its 1,000th member. The lucky entrant is Miss Madelyn K. Skarnes of Minneapolis, who has received a free lifetime membership in T-R-I, along with congratulatory tapes from fellow members throughout the country.

Formerly, a radio operator with Northwest Airlines, Madelyn now teaches airline communication procedures at the Gale Institute, Inc., in Minneapolis.

Also a composer of sorts, Madelyn has just finished her sixth popular number. She says the main reason she joined T-R-I was to find a good combo or quartette that would like to experiment with a new song.

Voicespender Albert Van Vliet of Amsterdam, New York, who is a buoy light tender along 8 miles of the canalized Mohawk River, is preparing a tape history of the old Erie Canal. He has recorded passages by his father, who used to be a canaller in his youth, as well as interviews with old residents along the Mohawk. Albert is collecting a running history of the operation of the old canal and a discussion of the traditions and folklore that have grown up along its banks. He is also investigating old canal songs to include in the tape. When completed, the tape is to be used to arouse interest in a museum now in process of being completed, which deals with the Erie Canal, and will be located not far from Van Vliet's home.

Conceived as an integral part of World Tape Pals, World Tapes for Education is embarking upon a comprehensive program of collecting existing recordings and

developing new recordings based upon suggestions and requests of classroom teachers and other professional personnel. Designed to stimulate and maintain interest in classroom studies, these tapes include such things as a recording of the eerie music of Africa, sound pictures of Australian life, and tapes dealing with citizenship in a democracy. Tapes are being formulated and developed which will be of value to classes in music, science, literature, and social studies. Members of the WTE committee are in the process of compiling an extensive collection, from which portions are being carefully selected and brought together with appropriate commentary. A fuller understanding of other cultures can be achieved through use of these recordings.

WTE committee members include James H. Boren, Chairman, Richard W. Morton, George Pappas, Kenneth De Courcy Low, James Buchanan, Roy E. Wenger, Lance Randall, Arend Westerveld, Vernon W. Smith, Dr. Finley Carpenter, Prof. Fernand L. Marty, Dr. Matthias Schmitz, and Dr. James Faulkner. The efforts of these members, together with the assistance of the parent organization, World Tape Pals, and its other subsidiary, Sound Library, have combined to make the WTE program the success that it is.

Clarence B. Jeffries of 3105 Duke Street, Houston 5, Texas, would like to start a tape club in Houston. Interested parties may contact Clarence at the above address.

The United Recording Club is offering a special service to families living in the Chicago area who have someone in the Armed Forces. It will arrange to record correspondence, and playback replies for the families, to and from the serviceman or woman. Members of the club who know of anyone in the service who has access to a tape recorder may inform them of this arrangement. Recordings are to be made at 3¾ or 7½ ips.

JOIN A CLUB

TAPE RESPONDENTS INTERNATIONAL

Jim Greene, Secretary
P. O. Box 21, Dept. T., Little Rock, Ark.

THE VOICESPONDENCE CLUB

Charles Owen, Secretary
Noel, Virginia

WORLD TAPE PALS

Harry Matthews, Secretary
P. O. Box 9211, Dallas, Texas

INTERNATIONAL TAPE WORMS

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

AUSTRALIAN TAPE RECORDISTS ASSOC.

Arthur W. Merriman, Federal President
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HERE, THEN, ARE YOUR ORCHESTRAL AND OPERATIC FAVORITES IN SUFFICIENT VARIETY TO ALLOW YOU TO CHOOSE THE MUSIC YOU PREFER. Once you have heard these exquisite hi-fi reproductions, you will want to obtain several complete 7" reel selections. (Priced as low as \$6.95!!!) ANYONE WHO HAS BOUGHT TAPE WILL REALIZE THAT THE PRICE OF "BERKSHIRE HIGHLIGHTS," \$1.50, POSTPAID, IS SO LOW, THAT IT COMES TO YOU ALMOST AS A GIFT.

You can take advantage of this gateway to musical pleasure by sending this coupon at once. Remember—good music, well reproduced on tape, is music that cannot grow old.

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Please rush my reel of "BERKSHIRE HIGHLIGHTS." I enclose \$1.50.

Please send free catalog, and the name of my local dealer. TF-5

GIBSON GIRL TAPE SPLICERS



Can You Sell Off-The-Air Recordings?

By George Chernoff

Attorney

YOU'VE taken recordings off the air with your nice new tape recorder. You've invested a considerable sum of money in that recorder and would like to have it start paying you back.

If that is in your mind, you'd better read this carefully. It may keep you out of trouble.

Naturally, no one is going to stop you from sitting in the privacy of your home and taking recordings off the air. There's nothing illegal about that just as there's nothing wrong with taking pictures of a program on your television screen. But, the use you make of the recording is another story. The courts have held squarely that a program is valuable property and that when you sell a recording taken off the air you are appropriating and exploiting for your own benefit the result of the expenditures, labor and skill of another and interfering with valuable rights of the owner of the program.

In a monumental decision several years ago, the Supreme Court of the State of New York decided that it was illegal for a recording company to sell recordings of opera performances which it took off the air without permission.

The Metropolitan Opera Association had sold the exclusive right to make and sell records of its operatic performances to Columbia Records. In payment for these exclusive rights the Metropolitan Opera Association was to receive royalties on records sold. In addition, the Opera Association had sold the exclusive right to broadcast the operas for a limited period to the American Broadcasting Company.

The defendant recorded these broadcast performances of the operas and advertised and sold the recordings as records of broadcasts of the Metropolitan Opera performances.

The Court noted that the quality of the defendant's records was inferior to that of Columbia Records and was so low that Metropolitan Opera would not have approved the release of the records as it had a right to do under its contract with Columbia. The Court also noted that by reason of the negligible costs to defendant in producing its records it was able to sell at a considerably lower price than those of Columbia Records.

With this as the background of the case, the Court then proceeded to brand the defendant's conduct as illegal, saying:

"That defendants' piratical conduct and practice have injured and will continue to injure plaintiffs admits of no serious challenge, and possible money damages furnished no adequate remedy. That such practices constitute unfair competition both with Metropolitan Opera and Columbia Records is made abundantly clear by the record. Plaintiff Metropolitan Opera derives income from the performance of its operatic productions in the presence of an audience, from the broadcasting of those productions over the radio, and from the licensing to Columbia Records of the exclusive privilege of making and selling records of its own performances. Columbia Rec-

ords derives income from the sale of the records which it makes pursuant to the license granted to it by Metropolitan Opera. Without any payment to Metropolitan Opera for the benefit of its extremely expensive performances, and without any cost comparable to that incurred by Columbia Records in making its records, defendants offer to the public recordings of Metropolitan Opera's broadcast performances. This constitutes unfair competition."

The New York Court in reaching this decision followed the principles established by previous cases.

In a case arising many years ago in the Federal Court the plaintiff had engaged artists and made records of their musical performances for sale to the public. The defendant obtained some of these records, mechanically reproduced them and sold copies in competition with the original records at much lower prices. The Court held that the sale of such reproductions was illegal since the commercial value of the imitation lies in the fact that it takes advantage of and appropriates to itself the commercial qualities, reputation and salable properties of the original.

In another case the United States Supreme Court held that one news service could not copy its news from bulletin boards put out by another news service. Recognizing the right of a purchaser of a newspaper to spread knowledge of its contents gratuitously for any legitimate purpose, it said that copying the news for transmission for commercial use was an entirely different matter. The Court said:

"In doing this, defendant by its very act admits that it is taking material that has been acquired by complainant as a result of organization and the expenditure of labor, skill and money, and which is salable by complainant for money, and that defendant in appropriating it and selling it as its own is endeavoring to reap where it has not sown, and by disposing of it to newspapers that are competitors of complainant's members is appropriating to itself the harvest of those who have sown."

Further analogy may be made to the cases involving photography. For example, the Courts have enjoined the sale of motion pictures of athletic events taken by spectators. In one of such cases Madison Square Garden was held entitled to stop the sale of motion pictures of a boxing match where exclusive rights to take such motion pictures had been granted to another.

And, in another case, the Mutual Broadcasting System was granted an injunction against Muzak against unauthorized broadcast of the World Series.

The Court in the Metropolitan Opera case made the following interesting comment about artistic performances:

"To refuse to the groups who expend time, effort, money and great skill in producing these artistic performances the protection of giving them a 'property right' in the

(Continued on page 38)

(Continued from page 36)

resulting artistic creation would be contrary to existing law, inequitable, and repugnant to the public interest."

Remember that the protection given by the court against the sale of unauthorized recordings of the opera is separate and apart from the protection given under the copyright law. That will be a subject for a future article.

However, it should be apparent to our readers that there are very definite legal restrictions against what one can do with his tape recorder and the sale of recordings taken off the air is clearly taboo.

The Metropolitan Opera case was cited as the basis for a similar injunction in February 1956 by a United States District Court. In that case, WGMS, the Good Music Station Incorporated, was awarded an injunction against a person who had made and sold recordings of a broadcast of a National Symphony concert. In granting a preliminary injunction restraining defendant from the further manufacture and distribution of unauthorized records of "Carmina Burana" the Court said that WGMS would suffer irreparable damage if the circulation of the discs were permitted to continue. The defendant argued that he intended to sell the records only to members of the Howard University Chorus who participated in the performance, but said he didn't know how the discs came to be sold in a Washington record shop. The Court held that the Metropolitan Opera case is controlling in the matter of unauthorized records made from broadcasts.

It should, therefore, be apparent to our readers that there are very definite legal restrictions against what one can do with his tape recorder and the sale of recordings taken off the air is clearly taboo.

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(Continued from page 17) PORTABLE DISC RECORDER

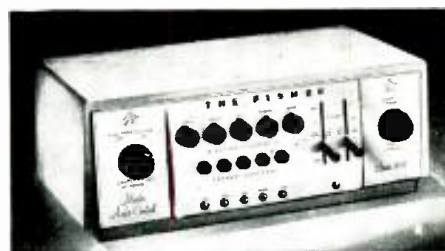


Rek-O-Kut Company has announced the availability of the Imperial, a new portable disc recorder and playback reproducer. It features a newly designed overhead cutting lathe with interchangeable leadscrews, and with provision for making run-in and run-off grooves; new cutting head with a recording range from 50 to 10,000 cycles; Rek-O-Kut 160 Tone Arm (for records up to 16") is included; and the entire recorder and playback unit is contained in a single carrying case measuring 25" x 22" x 12", weighing 80 lbs. Recordings can be made on discs up to 13 1/4" at 33 1/3 and 78 rpm with optional provision for 45 rpm. Price of the new Imperial including the cutting head, 120-line leadscrew and timing chart is \$599.50. For additional information, write to Rek-O-Kut Company, 38-01 Queens Blvd., Long Island City 1, N. Y.

TANDBERG RECORDER



The Tandberg tape recorder 2, made in Norway, is being distributed in this country by Reeves Equipment Corp., 10 E. 52nd Street, New York 22, N. Y. This machine has tape speeds of 3 3/4 and 1 7/8 i.p.s.; frequency response plus or minus 2 db from 60 to 7500 cps, and 60 to 4000 cps for the high and low tape speeds respectively; and noise level 50 db below highest recording level. It features separate erase and playback heads; the tape is completely retracted away from the heads for fast forward and fast rewind; microphone, and radio or phono can be mixed. A switch on top of deck operates either its own speaker, or external hi fi amplifier only, or both. Change of tape speed can take place while the recorder is running. The entire mechanism is housed in a beautifully grained walnut wood case that rests in a portable carrying case. For additional information and price, contact Reeves Equipment Corp., above address.



COMPLETE Control Facilities! FISHER Master Audio Control SERIES 80-C

■ Complete mixing and fading of any two, three, or four channels! *A FISHER exclusive!* ■ Separate tape-head playback preamplifier-equalizer. *A FISHER exclusive!* ■ Seven inputs, including 2 Phono, Mio and Tape. ■ Full record equalization facilities ■ Variable-crossover feedback-type Bass and Treble Tone Controls. ■ Two cathode-follower outputs. ■ Self-powered, with DC on all filaments; achieves a hum level that is inaudible under any conditions. ■ Inherent hum: *non-measurable!* On Phono 72 db below output on 10mv input signal, on high-level channels: better than 85 db below 2v output. ■ IM and harmonic distortion: *non-measurable!* ■ Frequency response: uniform, 10 to 100,000 cycles. ■ Chassis Size: 12 3/4 x 7 3/4 x 4 1/4" high. Weight, 10 lbs. Chassis, \$99.50 • Mahog. or Blonde Cab., \$9.95



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

RATES: Commercial ads, \$30 per word. Individual ads, non-commercial, \$0.05 a word.

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

DO YOU BELIEVE in the future of tape recording? Leading, established manufacturer in magnetic recording industry needs a man who does—an experienced, enthusiastic salesman to cover the Washington-Philadelphia territory. Excellent opportunity. All replies confidential. Box B, Tape Recording Magazine, Severna Park, Md.

NOW YOU can make \$100 weekly spare time with your tape recorder. Send 25¢ refundable. LP discs made from tapes. 24 hour service guaranteed. 10 inch-30 minutes, \$4.25; 12 inch-45 minutes, \$5.75. Write for other speeds. Artistic Sound, 24110 Rensselaer, Oak Park, Michigan.

RADIO ANNOUNCING! Complete course on tape, \$10! Free details. Stone, Lunenburg 21, Mass.

FOR SALE: B-16H Rek-O-Kut professional, 3 speed 16" transcription turntable mounted on Rek-O-Kut C-7 console cabinet, \$180. 30 w. Brociner 4L-1 amplifier, \$70. Brociner pre-amp-equalizer A-100 and control amplifier CA-2 in cabinet, \$65. All equipment excellent. Dr. Sid Saltzman, 228 So. Quince Street, Philadelphia 7, Pa.

WANTED: Walkie-Recordall, Model CC or CCB. Also Magnemite 310 series. State price, age, condition. R. Seckel, 2101 North Point, San Francisco.

10 1/2" REEL adapter, for any horizontal recorder. Cost \$30. First \$12.50 gets equipment. Lange, 235 Joy, Los Angeles 42, Calif.

FOR SALE: Magnecord PT6-M auxiliary spooling unit, new condition—\$80. Charles C. Vandervort, Laceyville, Pa.

VM-700 Hi-fi recorder, one year old. Cost, \$179.50; Sell, \$119.50; completely checked by factory dealer. Guaranteed perfect condition. Bob Roach, Box 528, Oklahoma City, Okla.



EDUCATORS GUIDE TO FREE TAPES, SCRIPTS AND TRANSCRIPTIONS
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Second Annual Edition

This 161 page edition lists, classifies and provides complete information on sources, availability and contents of 58 free tapes, 181 free scripts and 19 free transcriptions, a total of 258 items of value to educators and librarians.

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

FOR SALE: Webcor 2030, 3 speaker recorder, excellent condition. Plus Grundig Majestic radio, Model 2035, 4 speakers—walnut cabinet, 2 months old. Plus 10 reels of tape, used. Must sell. \$300 complete. Sidney Kaplan, 1771 Fulton Ave., Bronx 57, N. Y.

TWO MAGNECORDERS, Model 814, continuous playing, 3.75 or 7.5, 8 hour reels, with amplifier, time clock, practically new. Will sacrifice below wholesale. Caraway, 1455 Meadowbrook, Jackson, Mississippi.

RECORDS FROM your tapes. Professional quality tape or disc transfers and reproductions. All speeds. Lowest prices. Patmor Sound Systems, 92 Pinehurst Ave., 3K, New York 33, N. Y.

PT900A PRESTO tape recorder and amplifier for sale. Some modifications. Electronically perfect. mechanism fair condition. In daily use in broadcast station. Highest check over \$300 takes FOB. WKDN, Camden 4, N. J.

WANTED: Used recording tape, any amount, any condition, give full details and price. Write: R. Lackner, 2029 Bradley, Chicago 18, Illinois.

FOR SALE: Grommes 10 watt hi-fi amplifier, \$20. Meissner 8CC FM tuner, \$25. University 4401 tweeter with 4405 hi-pass filter, \$11. Pickering record compensator, \$6. All units used, but in A-1 condition. Roland F. Harriston, 1210 Warren St., Roselle, New Jersey.

Hi-Fi equipment: Fisher FM80 tuner, cannot be told from new, \$98.00; Karlson enclosure with G.E. speaker, \$50.00; Atlas tweeter, horn and crossover, \$12.00; Altec 604C speaker, \$119.50; Fisher 80AZ amplifier, hardly used, \$79.00; Concertone 20/20 tape recorder, spotless condition, \$350.00; G.E. "Golden Treasure" diamond pickup, \$14.00. Philip Lance, Greenwich, N. J.

FOR SALE: New "Heathkit-FM-Tuner," Model FM-3, already built, works excellent. List, \$24.50. Yours, \$20.00. Mr. Lawrence Levy, 191 Broome St., New York, N. Y., Spring 7-7515.

WANTED: Ex Los Angeles resident wants good tape recordings of KMA 367. Please contact Earl W. Magoun, 320 Park Ave., Arlington 74, Mass.

PRESS CAMERA. New B. & J. 4" x 5" with used prewar Kodak 4.5 lens. Trade for tape recorder with or without playback amplifier. Purchase, 24 Wellesley, Montclair, N. J.

D42 CONDENSER microphone ±1 db 0-10 KC. Lo distortion, Hi sensitivity, rugged, \$20. Write for data, C. Tendick, 900 Glenway Dr., Inglewood, Calif.

FOR SALE: Hi-fi phono network—Components. 120 classical 12" LP's, 20 jazz 12" LP's. Everything like new—Best offer over \$600. Call KEarny 2-0434 or Write Rocco Femano, 372 Davis Ave., Kearny, N. J.

FIVE 7" reels of Scotch recording tape, new condition, \$10.00 postpaid; Timex Magnetic disk recorder, \$30.00. Marilyn Phillips, 311 Penfield, Rockford, Ill.

Hi-Fi recording tape. Impanti brand. State make of your recorder—receive free sample. Bob Freund, 56-D Bennett Avenue, New York 33, N. Y.

G-I RECORDER—phono assembly for cutting and playing discs. Use with any amplifier or radio. Like new. Instructions included. \$15.00 F.O.B. Clifton Droke, 637 Alabama Street, Bristol, Tenn.

RADIO ANNOUNCING—Writing Professional guidance in home-study course. Finest instruction in spoken English obtainable. Placement service for all competent graduates. Diploma. Special introductory offer. Pathfinder Radio Services, 737 11 St. N.W., Washington, D. C., Dept. T.

WANTED: Used Tapesonic 70B tape recorder. State price, condition, etc. H. O. Brickson, Apt. 50, 2000 16 St., N.W., Washington, D. C.

PICTAPE: "A true picture fidelity" recording tape. Broadcast-Telemetering-Computer quality. Sample 1800 ft. reel \$5.75. Guaranteed. Pictape Products Corporation, 152 West 42nd St., New York 36.

RECORDS FROM your tapes. Finest professional equipment. Low prices. Free information. Valentine Sound, 4253 Farmdale, North Hollywood 2, California.

LARGEST SELECTION. Tape recorders, accessories, tapes. Free price list. Hi-Fi Hobbies, 975T East 178 St., New York 60, N. Y.

DISC RECORDINGS from your tape. Write for details and price. Sterling Records, 27 Beacon Bldg., Boston, Mass.

BRAND NEW 1956 Model Hi-Fi VM-700 tape recorder, never used. Cost \$179.95, yours for \$138.00. Jack Fives, 2916 Rockrose Avenue, Baltimore 15, Maryland.

SPARE TIME earnings with your tape recorder. Make \$100 weekly. Instructions 25¢, refundable. Valentine Sound, 4253 Farmdale, North Hollywood 2, California.

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

PRECISION MAGNETIC heads, Erase-Record-Playback. Stencil-Hoffman Corporation, Hollywood 38, California.

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

TAPE RECORDERS, tapes and accessories, nationally advertised brands. Free catalog upon request. Satisfaction guaranteed. Dressner, 69-02 A, 174 St., Flushing 65, New York.

"END-OF-REEL" automatic shutoff control, only \$4.95 postpaid USA. Money back guarantee. Designed and produced by Le Roi Engineering, Box 251, Elmhurst, Illinois.

WANTED: Bing Crosby material: transcription, V discs, sound track, broadcasts, telecasts, guest shots, promotion discs, publicity discs, unissued songs, anything unusual by Bing Crosby on pressings, disc or tape. Also want old records. Harold Sunners, Box 13, Brooklyn 4, N. Y.

DISCS FROM your tapes. Write for prices. H. A. Stenberg, Rt. 1, Box 55, Audubon, Iowa.

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You can thank the critical judgment of the five men pictured above for the wonderful tone and fidelity of the Capitol records you buy. They have the responsibility of listening to *every* Capitol Classical LP master recording before it is released to the public . . . appraising each disc's dynamic range, performance, background noise—in fact, judging it on *eight* critical points. Only the recordings which meet all of this Committee's rigid standards receive Capitol Record's famous gold stamp-of-quality . . . the Full Dimensional Sound Seal.

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