



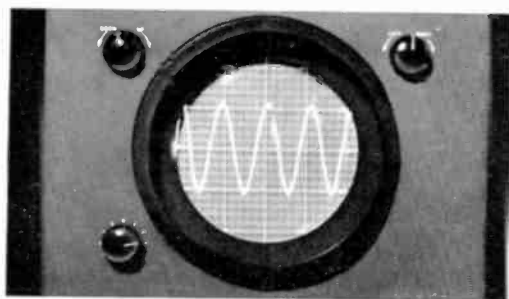
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Mr. Roy Perrin
231 Wildland Ave.
Rutherford, N.J.



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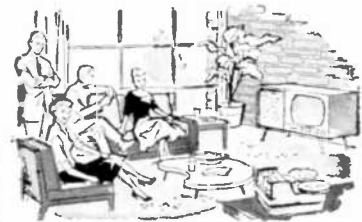
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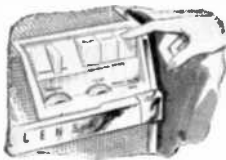
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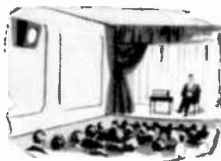


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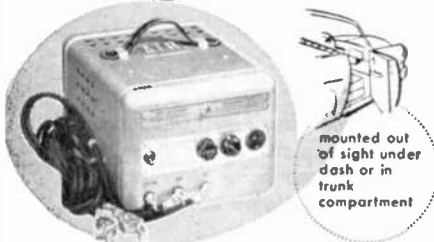


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HI-FI

TAPE RECORDING

VOL. 6 NO. 4

MARCH 1959

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NEW TAPES

By Georgie Sigsbee

CLASSICAL ORCHESTRAL

STRINGS OF THE BOSTON SYMPHONY

Barber: Adagio for Strings, Op. 11
Elgar: Introduction and Allegro for Strings, Op. 47
Boston Symphony Strings
Charles Munch, Conductor
RCA BCS-139
\$6.95...21:50 mins.

Here again is the lovely and popular "Adagio for Strings" by Barber performed by a very excellent string aggregation. Ormandy, Stokowski and now Munch have taped this piece of lyrical beauty, all three bringing forth highly successful, sensitive readings.

Elgar's "Introduction and Allegro" is given a magnificent performance. The chamber-music aspect of a solo string quartet coupled with the string orchestra is woven in vivid sonorities; undulating strings, rich, deep basses, etc.

The sound is the finest.

POPULAR

FOR ME AND MY GAL

Lenny Herman Quintet
LIVINGSTON 1103 F
\$11.95...28:42 mins.

Lenny Herman provides more foot-tapping rhythms. On this release he has chosen to swing some classics; i.e., "Anitra's Dance" as well as to pep up some songs of long ago... "Swanee," "Ain't She Sweet," "For Me and My Gal," etc.

Livingston's "living sound" all the way.

UNDER WESTERN SKIES

Home On The Range
Wagon Wheels
Riders In The Sky
The Last Round-up
Colorado River
Cool Water
San Francisco

Tumbling Tumbleweeds
The One-Armed Bandit
George Melachrino and His Orchestra
RCA CPS124
\$8.95...25:45 mins.

If you are fond of western melodies, I am sure you will find Melachrino's polished renditions of these selections quite irresistible. This master of the soft, romantic background style has thrown a musical lariat most effectively around not only a half dozen standard tunes but has managed in the process to put his brand on a couple of picturesque compositions which are thoroughly enjoyable. His "One-Armed Bandit" with its jazzy texture and simulated slot machines is a clever bit. In contrast you will hear his fellow countryman's musical impression of the West, "Colorado River" by Lad Busby, both interesting and pleasing to the ear.

The reproduction is balanced and clear.

LET'S DANCE WITH THE THREE SUNS

This Can't Be Love
There's A Great Day Coming Manana
Ridin' High
Johnny One Note
I Love You
They Can't Take That Away From Me
Ten Pretty Girls
I've Got You Under My Skin
Wunderbar
The Cafe Mozart Waltz
Oh, What a Beautiful Mornin'
Hello, Young Lovers
The Three Suns
Al Nevins, Conductor
RCA APS-101
\$4.95...15 mins.

The beat supplied is quick-paced; the tunes are standard and presented in medley fashion. You'll hear the Three Suns plus the piano work of Cy Mann and Andy Ackers. Guitar, organ, drums, bass, piano and accordion work abound throughout.

The fidelity is good, as is the stereo effect.

VELVET BRASS

You're Driving Me Crazy
Am I Blue?
Skyliner
What's New?
I Can't Believe That You're in Love With Me
But Not For Me
Girl of My Dreams
Out of Nowhere
Take the "A" Train
Chinatown, My Chinatown
By the Beautiful Sea
My Buddy
Jackie Gleason Orchestra
CAPITOL ZD-19
\$12.95...26 mins.

Considering the very popular demand for good dance music, this recording should really sell. Bass and drums give out with a steady dance beat while the brass sparkles forth in these urbane arrangements. The nod is given toward unruffled dance music.

When they catch the uptempo beat, this group performs with alacrity and they really go-go in "By the Beautiful Sea." Toots Mondello is featured on alto sax and puts in some good solo action. An oddity for me was the slow arrangement of "Chinatown." A fine recording.

JUST ONE OF THOSE THINGS

When Your Lover Has Gone
Who's Sorry Now?
Once In A While
These Foolish Things
Just For the Fun of It
Don't Get Around Much Anymore
I Understand
Just One of Those Things
The Song Is Ended
I Should Care
The Party's Over
Nat "King" Cole
Billy May Orchestra
CAPITOL ZD-28
\$12.95...30:30 mins.

Cole sings familiar ballads of heartbreak spiced with some foot-tapping arrangements by Billy May. All but three of the tunes are delivered in low gear with bright spots furnished by glossy brass and sleek sax work.

Cole is placed back from the mike and seems to be standing in the center of the stage. The balance between Cole and orchestra is better than in the ZD-11 release.

ON THE BANDSTAND

It's Delovely
Hindustan
My Blue Heaven
Man on the Street
Dodging a Divorcee
A Study in Moe's Art
The Continental
Nostalgia
Japanese Sandman
Chicago
Skitch Henderson and His Orchestra
RCA CPS-111
\$8.95...26:27 mins.

These peppey arrangements with keen instrumental displays are designed to make the enthusiastic dancer really kick up his heels.

This is a well-defined, close-in recording, highlighting such various solo instrumentation as piano, sax, bass, etc. The loud, splashing sound of the brass choir is recorded just this side of being raspy. A job well accomplished by the RCA engineers.

DANCING WITH THE SMART SET

"Can-Can" Medley: "It's All Right With Me, C'est magnifique, I Love Paris."
Sunny Medley: Sunny, Where on When, Who Cares, A Fine Romance, Sunshine Girl.
Waltz At Maxim's
Honey Bun Medley: Honey Bun, Around the World, She Didn't Say Yes, A Foggy Day, How High the Moon.
Country Medley: Oh Susannah, Oh Dem Golden Slippers, Arkansas Traveler, Turkey in the Straw, Camptown Races,

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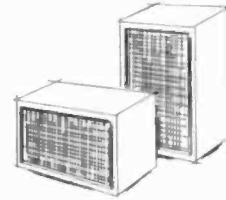
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- specially designed 4-track record-playback head and 4-track erase head which can erase one track or two tracks at a time
- three operating speeds—1 $\frac{7}{8}$, 3 $\frac{3}{4}$, and 7 $\frac{1}{2}$ I.P.S.
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Dixie.
The Carioca
Bojangles Medley: Bojangles, Ca c'est l'amour, Have You Met Miss Jones?, Who, From This Moment On.
"Oklahoma" Medley: Oklahoma, Oh What a Beautiful Mornin', Surrey With the Fringe on Top, People Will Say We're in Love.

Meyer Davis and His Orchestra
RCA CPS-191
\$8.95...26 mins.

This tape keeps rollin' along at a rather fast pace. The constant, speedy clip establishes a monotonous flow of sameness throughout many of the medleys.

Mr. Davis has established a style and a tempo all his own, and he has gathered a worthy aggregation to follow his direction, but I feel the individual arranging of the tunes on this recording certainly leaves much to be desired. I know this orchestra is capable of displaying much better sound. While the music is danceable, it is also very tiring, and those dancers following the tempo must keep on the move to keep up with it. I would like to hear more of this orchestra on tape, but with an entirely different selection of music and arrangers. It appears that in several instances one instrument is favored over the others and is brought to the forefront for a brief fling and then gradually returns to the fold to blend in with his fellow music makers.

As is generally the case, RCA has faithfully reproduced this tape with a true fidelity typical of its releases.

HUGO WINTERHALTER GOES LATIN

Granada
Ecstasy Tango
Delicado
Isabel's Dream
La Muneca Espanola
Valencia
Come Closer To Me
The Peanut Vendor
La Macarena

Hugo Winterhalter and His Orchestra
RCA CPS-156
\$8.95...26 mins.

Seldom have I listened to Hugo Winterhalter's music and not been thoroughly entertained. This tape of Latin rhythms leaves me with a feeling of satisfaction at having heard what I consider to be one of the finest arrays of this type music possible.

The music is thoroughly danceable (mostly rhumbas and tangos), or if you prefer, just pure listening pleasure. Orchestration is well balanced, with full, rich sound emanating from everywhere. You are transported South of the border and don't mind being so in the least. "The Peanut Vendor" has a bit of vocalization which lends a touch more Latin color to the selection.

Performers, selections and fidelity are tops.

INTRODUCING SI ZENTNER AND HIS DANCE BAND

I Start to Miss You
The Nearness of You
Hollywood Freeway
Little Boy Blues
Love Is the Thing
Back in Your Own Backyard

Turnaround

Everything I've Got Belongs to You
Si Zentner and His Dance Band
Vocals by Lynn Franklin
BEL CANTO STB/43
\$7.95...25 mins.

Si Zentner and his band remind one of having the same polish which shown from some of the old dance bands such as Goodman and Dorsey. Si plays a mellow trombone with a velvety touch. He at one time played lead trombone with Dorsey, Harry James and Les Brown.

This tape is a natural for dancing. The tempos are varied, and the arrangements are well done. "I Start to Miss You" has a Latin beat. "Little Boy Blues" really swings, and then you drift back to a dreamy smoothness in "Love Is the Thing." The pace is quickened on "Everything I've Got Belongs to You" and you really have to step to keep up with this one.

It appears to me that the brass and drums are too prominent in some spots and really blare forth.

Lynn Franklin's voice is average with sultry toning. She seems to be straining to reach the high notes.

Excellent fidelity and recording engineering.

AS LONG AS THERE'S MUSIC

I'll Buy You a Star
You Are Too Beautiful
I Am in Love
The Best Thing for You
Time on My Hands
As Long As There's Music
Eddie Fisher With Hugo Winterhalter and His Orchestra
RCA APS-188
\$4.95...18 mins.

Attention Eddie Fisher fans! This tape should be on your shopping list. It's a dandy and Eddie was never better. I was impressed by the clear pronunciation this entertainer maintains while giving out with a song, and that's just what Eddie does—"gives" a song. He appears to love singing and wishes to make a gift of his voice to any audience. The half dozen selections on this tape are well chosen and are performed with equal dexterity.

Hugo Winterhalter provides perfect backing. This orchestra has steadily been climbing the popularity ladder.

RCA's recording engineers have once again exerted their talents in producing a tape of excellent fidelity.

JAZZ

TAKE 5

Yes, We Have No Bananas
Oh!
Goodbye Blues
Rink Tink Piano Man
Old Time Movies
Take Five
Mama's Gone Goodbye
Slow Freight
Fascination Rag
Larry Fotine and the Beale Street Buskers
BEL CANTO STB/45
\$9.95...23:30 mins.

Bel Canto presents Dixieland jazz with an added touch. Rink-Tink piano and banjo

are prominently brought into focus throughout the recording. The effect is well arranged and presented. The banjo is especially notable in "Oh."

"Take 5" commences with hand-clapping, and this selection reminds one very much of "When the Saints Go Marching In," a great favorite of the jazz world.

This tape should certainly prove popular with jazz fans. Larry and the Buskers keep swinging right to the finish.

Reproduction is faultless, thanks to the excellent engineering of Bel Canto's staff.

SPIRITUALS

DIDN'T IT RAIN

Ol' Arks A-Moverin'
Let Us Break Bread Together
Steal Away
Didn't It Rain
Deep River
Go Down Moses
All God's Chillun
Lord, I Want To Be A Christian
Well, I Couldn't Hear Nobody Pray
Evelyn Freeman conducts The Exciting Voices
BEL CANTO STB/46
\$9.95 ... 24 mins.

A terrific inspirational tape of spirituals. I have listened to this tape many times in the last week and I'm not one bit tired of it. If it were on a disc it would probably be worn out by now.

The Exciting Voices is a fairly new singing organization which is fast becoming recognized for their versatility and the depth of feeling they put into each song they sing. While they can rant and whoop it up on some selections such as "Didn't It Rain" (just try to keep still while listening to this), they can also render others such as "Let Us Break Bread Together" with a great deal of reverence. This group sings "together" and they blend smoothly.

This album is a realization of a long-time dream for one of the newest successful writer-producer teams, Evelyn Freeman and Tommy Roberts. Tommy was born in Georgia and he has been hearing spirituals most of his life. He was soloist with the Wings Over Jordan Choir. Evelyn later joined this same choir at which time Tommy was arranger-conductor. Since then they joined forces and have been concentrating a great deal on spirituals.

The musicians at the Bel Canto studios must have also been inspired by this different kind of music, for they afford excellent accompaniment. Together, with the voices, they turn in a fascinating performance.

All this, and fine reproduction too, make this tape one of the best in Bel Canto's well stocked library.

DEMONSTRATION

LIVING STEREO POP PREVIEW

Way Down Yonder in New Orleans—Dick Schory's New Percussion Ensemble
"South Pacific" Reprise and Finale—George Feyer, Pianist
That Old Black Magic—Esquivel and His Orchestra
Destination Moon—Ames Brothers with Sid Ramin and His Orchestra
Anitra's Last Dance—Skitch Henderson and His Orchestre

The Rooster and the Chickens—The Belafonte Singers
Country Medley—Meyer Davis and His Orchestra
Valencia—Hugo Winterhalter and His Orchestra
RCA XPS-3
\$3.95 ... 17 mins.

Talk about variety — this demonstration tape has got it. I won't beat around the bush—I like demonstration tapes and thoroughly recommend them to everyone. There are many who purchase sight-unseen, or as in this case, recording-unheard. Chances are the item is returned—if not a "Sales Final."

Demonstration tapes give you value galore: the cost is nominal, the variation is such that at least some portion of it is sure to please; you do not tire of too much of one type of music, and most important of all you have a chance to hear and scrutinize before buying a complete tape of a particular liking.

RCA has a large repertoire of recorded tapes and this demo release gives you a look-see (hear) into seven of them—all different. Fidelity is top-drawer.

MISCELLANEOUS

MUSIC FOR BANG BARROOM AND HARP

National Emblem March
Baia
Way Down Yonder in New Orleans
Ding Dong Polka
April in Paris
Holiday in a Hurry
Buck Dance
Duel on the Skins
Typee
Dick Schory's New Percussion Ensemble
RCA CPS-203
\$8.95 ... 26 mins.

Look out—a dozen virtuoso percussionists were turned loose on a conglomeration of instruments the like of which we never heard before on this tape. It is a most unusual, but listenable, release, skillfully executed. Not only were instruments such as piano, guitars, banjo, harp, xylophones, marimbas, tom-toms and tambourines used, but also a variety of odd gadgets. These included blocks, horns, slapsticks, whistles, poppers, tuned automobile brake drums, antique finger cymbals, musical logs, and (believe it or not) a manifold from a '46 Chevy. Orchestra Hall in Chicago, where this recording was made, was already equipped with a regular complement of timpani, chimes, gongs, etc.

The music is gay and bouncy. "Way Down Yonder in New Orleans" is a real thigh slapper.

It was impossible to distinguish which piece of equipment was used, but in the "Buck Dance" selection there was a sound similar to that of one or two people tap-dancing.

A different mike setup and balance was required for each number. This, I do not dispute one iota.

Although the final resounding "baarroom" at the ending left my eardrums vibrating violently, this tape is an engineering masterpiece which tends to make the walls rock when played. I'm still listening for the Chevy manifold.



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tapes her own
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It's the best-engineered tape in the world ... gives you better highs ... better lows ... better sound all around! Saves your tape recorder, too — because the **IRISH FERRO-SHEEN** process results in smoother tape ... tape that can't sand down your magnetic heads or shed oxide powder into your machine. Price? Same as ordinary tape!



Available wherever quality tape is sold.
ORRradio Industries, Inc., Opelika, Alabama
Metropolitan Opera star Roberta Peters is under the
exclusive management of Hurok Attractions, Inc.

CROSSTALK

from the Editors

QUANTITY OR QUALITY? That is question facing stereo today. No one questions superiority of tape over disc, even those who make both, but bigger advertising budgets by phono firms has temporarily snowed tape under. Tape and machines are rugged, no delicate grooves or fragile needles to wear or break. Sound on tape is superior, no ticks, scratches or pops. Some feel stereo disc record only interlude. Will help popularize stereo but tape will ultimately take over. Very likely to happen.

* * * * *

HIGH FIDELITY Institute has issued booklet "Standard Methods of Measurement for Tuners" the first in a program of measurement standards for high fidelity equipment. The booklet defines AM and FM terms, operating conditions, requirements and characteristics of testing apparatus, FM and AM test procedures and test procedures for AM-FM tuners. Booklet was work of Institute Standards committee lead by Daniel Von Recklinhausen of H. H. Scott, Inc. Copies may be obtained from the Institute of High Fidelity Manufacturers, 125 E. 23rd Street, New York, N. Y., for \$1.00 each.

* * * * *

LARGEST ORDER for videotape equipment was received recently by Ampex. The order totaled \$862,560 and was from NBC. Order includes 12 videotape recorders (\$62,480 each), 4 color accessory kits at \$19,500 and 24 videotape head assemblies at \$1,450. This will bring the total owned by NBC to 27 recorders. CBS is operating 22 recorders and ABC 17.

* * * * *

INCREASED INTEREST by major companies in stereo broadcasting augurs well for future of stereo recorders. Both Philco and RCA have petitioned Federal Communications Commission for permission to make experimental broadcasts of new systems of AM stereo. FM multiplexing of two stereo channels is also a reality.

* * * * *

TAPE RECORDER industry's preoccupation with music has overshadowed the use of the tape recorder as a prime educational tool. This facet of tape recorder use could be greatly expanded. Some serious thought deserves to be put on it.

* * * * *

1959 market for tape should hit \$35,000,000 according to J. Herbert Orr, prexy of firm that makes Irish tape. By 1963 sales should top \$115,000,000. Thomas H. Moss has been named new vice president of Turner Company, manufacturer of microphones. He has been with the company since 1952. . . . William C. Speed, president of Audio Devices says tape sales were up 30% last year and company is looking for a similar increase this year. . . . New firm, Stereophonic Automation Corporation will produce new stereo machine using Fidelipac cartridge. Machine starts when cartridge is plugged in, stops when it is pulled out. Will be used for background music applications.

* * * * *

HIGH PRECISION uses of tape, such as telemetering, machine control, video taping, etc. will overtake the amount of tape used by recording companies, home recordists and radio stations this year according to William C. Speed, President of Audio Devices. Applications in the sound field presently account for about 60% of raw tape sales with instrumentation taking the remaining 40%. The ever increasing use of tape in industry and science has caused the picture to change. Interesting parallel might be drawn with photo field where 66% of film and photo materials made are used by industry despite huge number of cameras in use by public.

TAPE CLUB NEWS

Debbie Reynolds Tapes Message

"Tape messages of World Tape Pals give the feeling of holding hands around the world with distant neighbors," said American film star Debbie Reynolds recently in a taped message for the Auckland (New Zealand) carnival to benefit intellectually handicapped children.

The tape with Miss Reynolds' greetings to the carnival was recorded by Sy and Jill Miller, authors of WTP's official song, "Let There Be Peace," which was also used at the carnival, sung by film-TV star Eddie Albert.

Grey Walker of Auckland arranged for use of this tape at the carnival, and he informed World Tape Pals that he has had "Let There Be Peace" translated into the Maori language and recorded it as sung by a New Zealand native choir.

Recording Contest

Members of Tape-Respondents, International are participating in a "Sounds of Our World" recording contest, sponsored by the T-R-I Tape Library. The winner, to be announced shortly after the competition closes next June 30, will receive a new tape recorder, a supply of tape and a two-year subscription to Hi-Fi Tape Recording Magazine. Second and third prize winners will receive an assortment of tape plus magazine subscriptions. Prizes will be awarded for the best recordings depicting the theme of an audio travelogue around the world.

JOIN A CLUB

TAPE RESPONDENTS INTERNATIONAL

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

THE VOICESPONDENCE CLUB

Charles Owen, Secretary
Noel, Virginia

WORLD TAPE PALS, Inc.

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

AUSTRALIAN TAPE RECORDISTS ASSOC.

Jack A. Ferry, Federal President
Springbank Rd., Clapham, S. Australia

UNITED RECORDING CLUB

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

BRITISH TAPE RECORDING SOCIETY

Peter M. Bardack, New York Representative
210-16 Grand Central Parkway
Queens Village 27, N. Y.

AMERICAN TAPE EXCHANGE

Stuart Crouner, Secretary
181 E. Main St.
Gouverneur, N. Y.

BILINGUAL RECORDING CLUB OF CANADA

J. P. Paquette, Recruiter
1993 Morgan Boulevard
Montreal, Quebec, Canada

CLUB DU RUBAN SONORE

John-Paul Barabe, Publicity
1274 St. Elizabeth St.
Montreal, P. Quebec, Canada

AURORA SCIENCE TAPE SOCIETY

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Sierra Madre, Calif.

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- Two powerful hi-fi speakers.
- 10-watt wide-range amplifier.
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The Ferrograph Stereo 3S is designed for the playback of stereo tapes and also offers all the features monaurally of the popular Ferrograph 3A Series. While it is possible to employ auxiliary amplifiers, the Ferrograph "Stere-ad" unit offers the ultimate in matched amplifiers resulting in superb stereo reproduction.

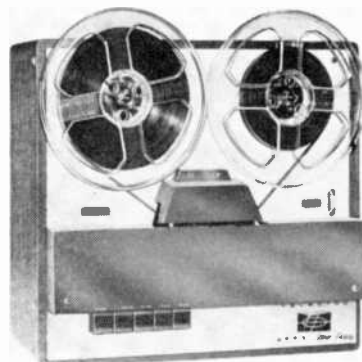
Conversion kits to permit stereo replay are now available in limited quantities to owners of non-stereo tape recorders.

ERCONA CORPORATION
(Electronic Division)

16 W. 46 Street, Dept. 24, New York 36, N. Y.
In Canada: Astral Electric Co. Ltd.
44 Danforth Road, Toronto 13

NEW PRODUCTS

TELECTRO TAPE DECK



Telectrosonic Corp., 35-18 37th Street, Long Island City, N. Y., has announced a new stereo tape deck. This tape transport, Series 900, will record and play back stereo, with a 4-track head that will accommodate both 2 channel and 4 channel stereo tapes as well as dual track monaural tapes. The deck has 3-speed versatility ($1\frac{1}{8}$, $3\frac{3}{4}$ and $7\frac{1}{2}$ ips); separate record and playback heads which permit simultaneous monitoring; a solenoid operated automatic shutoff switch; a digital tape counter; a rotary designed speed selector; a unique braking system; and a fast wind-rewind method. Flutter and wow is held to less than $\frac{1}{4}$ of 1% distortion, with the signal to noise ratio better than 50 db. Frequency response is 40-15,000 cps at the faster speed. The transport permits easy mounting anywhere, vertically or horizontally, and it is available in five models which sell from \$89.95 to \$114.95. Write Telectrosonic for additional details.

NORELCO CONTINENTAL



A stereo version of the Norelco "Continental" has been announced by the High Fidelity Products Division of the North American Philips Company, Inc., 230 Duffy Avenue, Hicksville, Long Island, New York. Engineered and manufactured by Philips of the Netherlands, this machine features push button controls, twin tracks, and three speeds ($1\frac{1}{8}$, $3\frac{3}{4}$, and $7\frac{1}{2}$). It can be used to record monophonically, and to play back monophonic or stereo tapes through the unit itself or through an external hi-fi system. The machine has inputs for recording off a microphone, tuner, and phono and for mixing. The unit consists of tape drive mechanism, two preamplifiers with controls, one power amplifier, and a Norelco wide-range speaker with extra powerful magnet. For stereo, a second power amplifier and

wide-range, dual cone speaker in a matching cabinet is available. Frequency response at the faster speed is 40-16,000 cps, signal to noise ratio is 54 db, an l wow and flutter at the faster speed is 0.15%. The Continental is priced at \$299.50. For further details, contact the manufacturer.

MADISON FIELDING AMP.



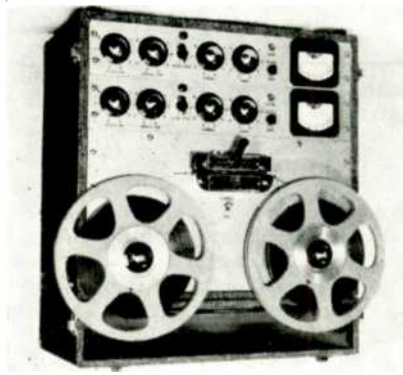
Madison Fielding Corp., 5 Lorimer Street, Brooklyn 6, N. Y., is marketing a 40-watt stereophonic, Series 320 amplifier. Two complete amplifiers, each with a fully integrated pre-amplifier section, are mounted on one chassis. In addition to the individual controls for each channel, the unit features a Master Volume Control, which controls both levels simultaneously for stereophonic program levels. Power response is 20 to 20,000 cycles plus or minus 1 db, and frequency response is uniform with .5 db, 20 to 20,000 cycles. The price is \$169.95 without cabinet; \$19.95 for matching cabinet. Write to Madison Fielding for more information.

TAPE-KARE KIT



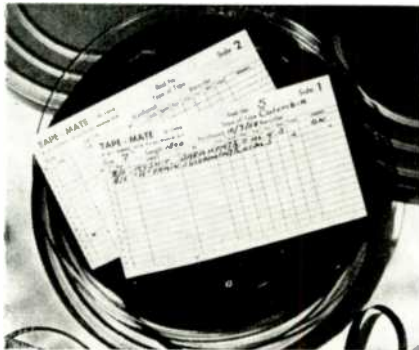
Service men agree that it is just as important to keep recording tapes and heads as clean as records and needles. Robins Industries Corp., 36-27 Prince Street, Flushing 5-1, N. Y., is marketing a new Tape-Kare Kit TK-2, which consists of a specially formulated cleaner for recording heads and a tape cleaning and lubricating cloth. The head cleaner contains a special solvent to remove oxides and plasticizers which pile up on the head. The cloth which is applied while the tape is in motion not only cleans foreign matters from the tape, but deposits a microscopic film, of Silicone on the tape. The kit sells for \$2.00.

STEREO-X RECORDER



International Radio & Electronics Corp., of Elkhart, Indiana, is marketing a new portable stereo tape recorder, the "Stereo-X." This machine offers speeds of 15, 7½, and 3¾ ips; other speeds may be had upon request, split or full track erase, as desired. Also featured in this machine are: micro-sync timing, frequency response of 20 to 30,000 cps plus or minus 2 db at the 15 ips speed, flutter and wow of .07%, signal-to-noise ratio of 54 db, and it utilizes 5" to 10½" NAB reels, and 14" reels on the long play model. For price and additional details, contact the manufacturer.

ROBERTS TAPE-MATES



H & I Roberts has available Tape-Mates, which are 3 x 5 cards in pad form for noting the details of tape recordings. These fit easily into a standard index card file. Each card has enough space for 15 subjects on each side, thus only one card is needed for each reel. There is space for noting number, date, subject, by, from, speed, start, stop, volume, bass trebel, and remarks. The top of the card notes the reel no., type of tape, size of reel, length, purchased, type of recorder, and it is imprinted, side 1 & 2. A pad consisting of 30 cards costs \$1.00, and is obtainable from H & I Roberts, 50-24 31 Avenue, Woodside 77, N. Y.

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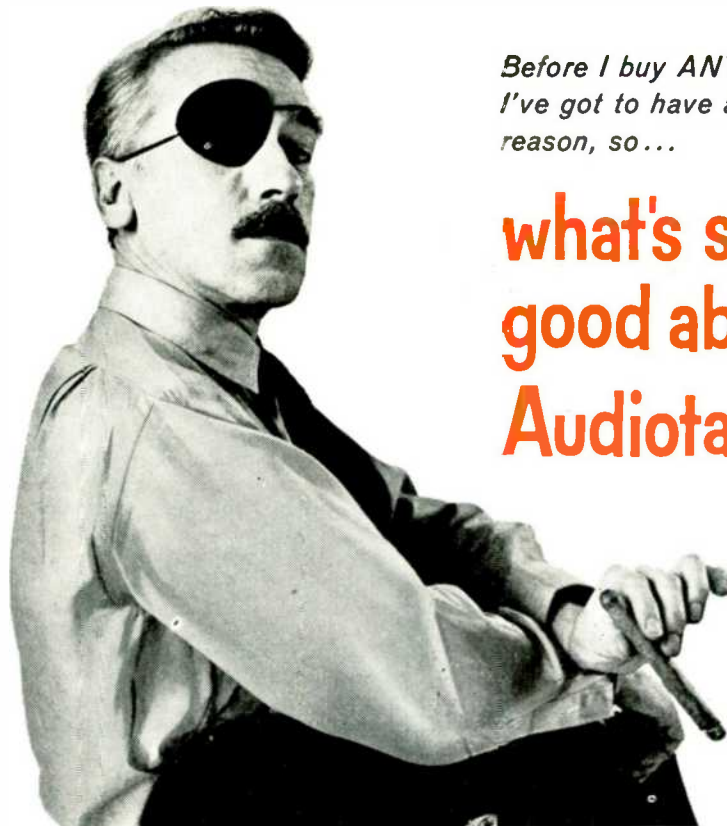
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TEEN TAPERS

BY JERRY HEISLER

SOME time back we asked teens to write to us explaining what they did with their tape recorders. Tom Nornhold of Reading, Pennsylvania, wrote us a very interesting letter which was the result of a survey he conducted amongst some of his friends. Tom admits that the survey is by no means extensive but he feels, and we agree with him, that the results are typical of teens everywhere. So let's try and summarize the opinions of teen recordists and what they think of recording.

It seems that most teens like to record at the faster speeds because of the better quality of the sound. Most of Tom's friends reported recording music a good deal.

As of today stereo is too expensive for teens, says Tom, but we will have to take issue with this. The main issue seems to be cost and today cost is falling rapidly and we find these tapes to be rapidly approaching the price of records. Teens have proven that they will pay in the vicinity of \$5 for records and likewise they can buy tape. We feel that more popular music is needed on tape however.

Tom went on to ask his friends what they liked to record and all came up with the answer of music, among other things. This is just as we expected.

One of the most interesting questions on Tom Nornhold's survey was the question of whether or not the teens would like to see the stereo tapes feature popular artists.

Most of the teens agreed to such names as Elvis Presley, Pat Boone, Rickey Nelson, and the like.

We feel this is an important thing for tape manufacturers to realize. These are the records the teens are buying by the hundreds of thousands in the stores and these are the tapes they will buy. We feel that it is worth noting also, however, perhaps why there are not many of these tapes on the market. Stereo lends itself best to orchestral groups rather than vocalists. A voice is more one dimensional than two.

Tom asked his friends if they would like to see record stores set up a duplicating arrangement whereby people could dub tapes for a nominal charge. Most of the teens interviewed felt that this would be too bothersome. This is something worth considering however.

The most notable thing that this little survey pointed up is the fact that the teens like rock and roll music and want to see more of it available on the pre-recorded tapes. We hope the industry will take note of this. Thanks a lot, Tom, for this interesting view.

The question has been presented to us many times by confused teens as to just what constitutes a professional recorder. Is it determined by the price tag, by the specifications, or by the fact that radio stations use them?

I hope that I can offer a little insight into this very common question.

A professional recordist, just as an ama-

teur, records sounds and wants the most perfect reproduction he can obtain. Hence he selects equipment that is of the highest possible quality. Among some of the best known professional machines are: Ampex, Berlant, Magnecord, and several others. These machines are truly professional and are built to very high standards and incorporate many features that the professional recordist needs. These machines run from \$400 to more than \$1000. Naturally if these machines will serve the professional then they will be excellent for the amateur. But does the amateur need this type of equipment?

Professional recorders often have facilities for mixing several microphones. They accommodate 10 1/2" reels of tape, and are accurately balanced to avoid the slightest imperfection. But many of the recordings originally made on these machines never remain in their original form. Master tapes for records are made on these machines as well as sound tracks for movies and material for radio and television.

The field most familiar to the average recordist is the broadcast field. Many teens write concerning certain equipment they have seen at high school games where a radio station was covering the event. The teens feel these machines must be the best.

Actually, while this may be true, the tape when played over the radio comes through your set at lower fidelity than your home recorder because the broadcast waves can't carry the high frequencies. The stations start out with the best because they know they are going to lose something before it's over.

And you'll find many a station with a home type of recorder also.

Actually, the professional machines are not built for the home user nor are they priced for him. They have features which he doesn't need and therefore he should not pay for them.

Remember that any equipment you use should be tailored for your needs. The average home recorder is tailored for the home user and is designed so that he can work with it.

Most home recordists could not work with the many controls and the sensitive microphones used in a professional machine.

By all means purchase professional equipment if you can afford it and if you ARE a professional.

But if you're the average home hobbyist the amateur machine is excellent for you and will probably end up giving you better results.

In the final analysis it is the recordist that makes the recording a professional one and not the machine.

A skilled operator can make fine recordings with the simplest of home machines, while the inexperienced recordist wouldn't even know how to set up a professional machine. Don't feel slighted when you see a professional machine. You've got an awful lot to work with in the home recorder and don't sell it short.

TAPE IN EDUCATION

BY MAJOR JOSEPH J. KRAMP, USAF, RET.

THE passage of the National Defense Education Act of 1958 declared the need for more emphasis on the teaching of modern foreign languages and authorized funds of over fifteen million dollars a year for four years specifically for this purpose. These funds are for the establishment of language centers and institutes with institution of higher education and for research and studies on more effective methods of teaching such languages and to develop specialized materials for use in such training. Another part of the National Defense Education Act authorizes up to 70 million dollars per year for four years to be allotted to the various states, who must match the federal funds, for strengthening their instruction in science mathematics and modern foreign languages. This adds up to a very considerable sum of money to be spent in the near future on new instructional methods.

The use of tape in the teaching of languages, while still in virtual infancy, has achieved enthusiastic acceptance. The term "Language Laboratory" has become a standard term for educators throughout the country. Many of our Universities and Colleges have elaborate language laboratories and a number of our secondary schools have been able to establish worthwhile laboratories on a reduced scale. We anticipate that many more language laboratories will be made available from the funds provided by the National Defense Education Act.

One simply constructed laboratory-classroom that has attracted considerable attention is the one at Brighton High School, Rochester, N. Y. This laboratory was established under the direction of Margaret V. Wojnowski, head of the Department of Foreign Languages of the school. This very workable lab-classroom was constructed mainly by the school maintenance staff with a cost of all materials and equipment of under twenty five dollars per student station.

Miss Wojnowski has done a remarkable job in the development of techniques for the teaching of languages in her laboratory. A typical procedure is to put the dialog which usually introduces each lesson in the text on tape, preferably by a native or bilingual speaker without tendency toward regional pronunciation. Pauses are judiciously placed for pupil repetition. The teacher explains the meaning of the dialog and insures that the pupils know the exact meaning of what they will hear and repeat. The pupils then put on their headsets and listen to the entire dialog. Every student hears every syllable clearly and distinctly while he looks at the text. There are no outside distractions and attention is excellent. On the subsequent playings, the students repeat during the pauses while the teacher can walk among the class, listening to individuals and commenting on errors without embarrassing the pupil or interrupting the others. This procedure has many advantages for the student and the teacher: (1) The use of native speakers or bilingual speakers

with excellent pronunciation to record the dialog provides a master voice free of region influences (2) By repeating and imitating the fine speech of the master voice, the students learn the correct accent, pronunciations, and intonation for a firm pattern of speech in the language. (3) Pupils listen, read and repeat every dialog and learn its new vocabulary and grammar patterns in a rather painless way. Pupils do not become bored because they are kept busy all the time and are not just listening to others. (4) The teacher is relieved of the chore of reading the same dialog many times. In addition, each repetition is exactly the same as the others and the students listen more carefully and understand better.

Another procedure is to tape a number of questions on the dialog. The students first listen to a question and its answer. The question is then repeated with a pause for the students' answers. The correct answer is again repeated with a pause for the correct student repetition. The students are able to see their own progress and their interest is stimulated.

Grammar exercises are corrected by taping the correct form. The pupils watch their exercise papers while the correct form is repeated twice with a pause for the student repetition. Better comprehension of the grammar form is achieved because the pupil hears the form correctly, he corrects his work and then he says the form. This active learning of exercises is far superior to the old blackboard correction of homework. The oral repetition of the correct phrase gives him a readier facility with the language which stimulates his desire to learn.

The teacher has a very vital role in the operation of a language lab such as this. In directing the procedure she can see when class activity needs to be speeded and when methods must be changed to be more effective. She can devote vastly more time to individual help and is able to detect the need for individual help more quickly and surely than with older methods of instruction.

It is the student of course who really benefits by this method of instruction. He has the advantage of listening to excellent pronunciation which he can imitate and repeat. Every student can hear as clearly and as distinctly as any without the ambient noises and distractions which are unavoidably present in the classroom. The instruction has a personal quality that is a stimulating experience for the student. The emphasis of the course is shifted from the traditional reading-writing to the aural-oral approach which is easier and more interesting. Learning to read the language is in fact made somewhat easier by this approach.

Ideally, texts should be written especially for this method of teaching to optimize the techniques being developed. The tremendous financial boost given by the National Defense Education Act should aid in the preparation of these texts.

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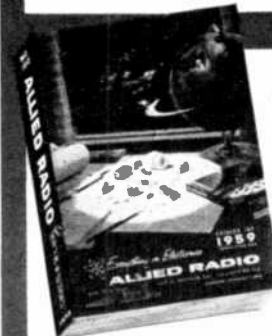
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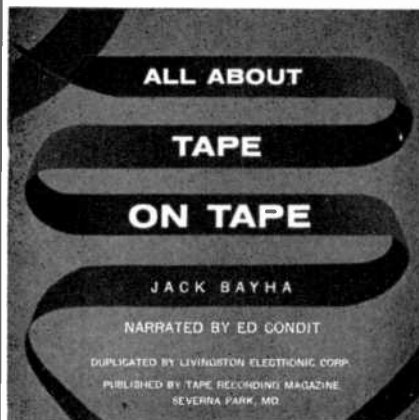
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QUESTIONS & ANSWERS

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

Slow Recorder

Q—Can tapes be re-recorded from one machine to another without a resultant loss in the speed sound? By that I mean when a re-recording of a song is played should it sound as if it were being sung at a slightly slower tempo?

If it is possible to re-record without too much loss of speed, what machine or machines would you recommend for the purpose? I am more or less of a beginner in this field and therefore anything that you can tell me I would appreciate having expressed in lay terms.—V. H., Laurelton, N. Y.

A—One of the two recorders is running at an improper speed, either too fast or too slow. The speed may be checked by running a length of tape through the machine and timing it carefully. For instance, if the speed is set at 7½ inches per second, then 75 inches of tape should pass the head in ten seconds. You might try this on both machines.

If the machine is running slow, which is most likely, check the pressure pads that hold the tape to the head. These sometimes become quite gummy and will slow the tape. Either replace or clean them. One of the commercial lubricants may be applied to the pads or wiped on the tapes.

Sometimes recorder speed is very much affected by the line voltage. If the house current is not up to where it should be, the machine will run slow. Your electric company can check this for you.

When checking the pressure pads, also clean and lubricate with one of the silicone lubricants, the tape guides as well. Consult your instruction book regarding oiling the recorder. Most recorders are made to require little or no lubrication and any which is attempted should be done with the greatest of care. Oil in the wrong spots can cause slippage of drive wheels and pulleys, as well as upsetting the drag of the reel clutches.

You can quickly check which recorder is the slowest by copying a tape from one to the other and then playing the copy on the first recorder. If it sounds slow, then the second recorder is at fault. If it sounds right, both machines are matched, and if it sounds high or fast, the second machine is running at too great a speed.

Tape recorder speeds are fixed by the diameter of the capstan in relation to the speed of the drive motor. If the house current voltage is where it should be, then the fault will lie in the recorder.

Loss of Sound

Q—I am a beginner in tape recording. I have had loss of sound on my tape and distortion. When consulting my manual, it told me to remove the plastic top and clean the heads with alcohol and a soft cloth. My

tape recorder has two plastic tops and, furthermore, I wouldn't know which are the heads. I have had my tape recorder cleaned three times at the service store. My mother refuses to spend another cent on cleaning. She says it must be getting cleaned improperly because we have had it cleaned three times in four months. I am 15 and feel capable of cleaning it. Could you please send me some instructions on cleaning it and maybe some illustrations.—C. Mc. F., Syracuse, N. Y.

A—In this case we agree with your mother that the heads need no further cleaning, however, while dirt accumulating on the heads will give the trouble you mention, there are other causes too.

The heads should be easy to locate once you have removed the cover. In the Webcor there are two of them, one on either side of the capstan and roller which move the tape.

You will find the pressure pads which hold the tape against the heads mounted on springs. If these are dirty or worn they can cause a loss of sound. If worn they should be replaced; if dirty, they may be cleaned with the alcohol and roughed up a bit with a nail file to restore the knap of the cloth.

You might also put a tape on the recorder after you have removed the covers and play it. See that the motion of the tape is even and that it doesn't shift up or down on the heads.

If you over-record or under-record your tape you will get distortion, so watch your recording level.

Other than these things, there might be a bad tube or other component in your amplifier. This would have to be checked by a serviceman with test instruments to determine the exact cause of the trouble.

Sound on Sound Again

Q—I was interested in the letter and your answer thereto relative to recording sound on sound. It had always seemed to me that this could be done by the simple expedient of shorting out the erase head during the second recording on any standard recorder. If a single pole, two position switch is installed connected so that in one position it connects the erase head and in the other substitutes a dummy load equal to the resistance of the head then the recording bias will always be present. Please put me right if I am wrong.—W. H. M., Terra Ceia, Fla.

A—You can make a sound on sound recording by bypassing the erase head, however it is difficult to get the correct level for both recordings because the first cannot be heard while the second is being recorded. In most cases it is necessary that the first recording be audible.

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, Hi-Fi TAPE RECORDING, Severna Park, Md.

Tapes to the Antarctic

To the Editor:

I am writing in the hope that someone reading your Tapes to the Editor column will be able to help me. For some time now I have thought of beginning to exchange tapes with servicemen who are serving in the Antarctic region, but don't know whom to contact to get started. I am a member of the Voicespondence club but to my knowledge there are no members of the club there.

Several times recently I've read articles about the job the men stationed in the Antarctic are doing and I thought they might appreciate receiving tapes from someone in the States containing music, news, etc. Of course I am not even sure they would have any tape recorder there but it is possible that one might be included with the communications equipment they have there.

I was in the Air Force for three years, so I had a good opportunity to find out how much mail from home can mean and I am sure some entertainment via tape would be appreciated just as much as a letter would.

I hope you will be able to include this letter in a future issue and possibly some of your readers will know of someone I can contact about sending tapes to the Antarctic.—Lynn McCracken, 4825 S.E. 9th Avenue, Portland 66, Ore.

As a starter you might contact the services who have men in the polar regions, writing to the headquarters of each in Washington, D. C. We are sure that a number of recorders are available to the men. Readers with suggestions can send them directly to Mr. McCracken. Good luck to your worthy project.

Russian Language Tapes?

To the Editor:

I wonder if you could tell us where we might find a tape-recorded course in the Russian language, preferably in stereo but monaural would do fine. I have tried most of the sources of tape instruction mentioned in TAPE RECORDING but without success. This is just for myself and wife as a matter of interest and improvement.—Len Hoskins, Brookfield, Wis.

EMC Recordings Corp., 806 E. Seventh Street, St. Paul 6, Minn., has recently announced a series of tapes in Russian for students and teachers. The lessons include elementary Russian conversation, readings in Russian of familiar folk tales and fairy stories and traditional Russian folk songs. The tapes are voiced by native speakers of the Russian language. Write to EMC for full details and price.

Suggestions

To the Editor:

First I want to say that I find your magazine definitely worthwhile. However, I thought by now it would have become a bit

thicker and I refer to pages (both editorial and advertising). Some suggestions I have to make would include expanding the new product reports to more than one a month and the inclusion of a monthly editorial. These in fact, I would like to see if no more pages are added.

A specific subject which it seems to me should get as much space as possible is the new four-track system, for without any suggestion of scaring those who feel that two-track and 1½ ips is the ultimate and they are set for life, every effort should be made to encourage those who are willing to forge ahead. And here I refer both to the consumers and the manufacturers and, of course, to the dealers as well.

Thus every piece of new system equipment and recorded tapes should be given attention as soon as possible at this point.

Four-track tapes have been available since the New York show but, as yet, I have seen no reviews. Even if they are prepared in advance, a special review could have been added somewhere. In short, if you are in favor of four tracks, get behind it and clear away the confusion and doubt that exist.

Finally, since the magazine is devoted to all forms of tape recording the addition of the Hi-Fi to the title seems to me to be another example of the improper use of the phrase which is destroying its value.—Edwin H. Hess, Richmond Hill, N. Y.

Since only four four-track tapes have been issued and relatively few folks have four-track machines, we have been awaiting the decision of the field before going one way or another. It is our policy to report things as they happen. Until we have had the opportunity to test a number of four-track machines we do not feel free to give opinions on what should be done.

Fixed a Hot One

To the Editor:

In comment on the letter regarding the hot recorders. . . I had one too. It got so hot it warped all the reels and finally gummed up the motor. I have had the machine a year and a half and I use it for making my own tapes with a Pilot FM tuner from a nearby station. As the station sends out a printed program we can select the music we wish to record. To correct the hot deck, I took the machine apart. The bottom motor bearing was bone dry. I had a friend make a nylon bearing and we also made a new fan blade, a little larger and bent it in the opposite direction to make a down-draft. Now the heat comes off the bottom instead of the top. All is now well except that most of my reels are now pre-bent. I would like to hear from someone close by who tapes music for music's sake.—James Thompson, 1505 Brandon Ave., Youngstown, Ohio.

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LONG LIFE NEWSLETTER

The tape recorder has long since become the standard means for making instantaneous recordings on both the amateur and professional levels. The very ease by which a tape recorder can turn out a high quality recording, however, has led many to the false assumption that tape machines do not require regular service and maintenance. Like all electro-mechanical devices, tape machines need regular attention to assure optimum performance. Long Life Fluids are acknowledged the world over as the standard means for maintaining every type of tape recorder, from the least expensive voice machine to the most elaborate multi-channel professional recorder. The makers of Long Life are happy to bring you this first of a series of informative articles on recorder maintenance. In this first article, we shall examine some common conceptions on tape maintenance and discuss their validity in the light of proven laboratory experience.

Common Concept: The Most Important Maintenance Operation Is To Keep The Magnetic Heads Clean. It may once have been true that tape recorder heads require constant cleaning to assure their proper functioning, but this day is long since gone. Improvements in head design and especially in the chemical composition of the tape itself have all but eliminated the need for cleaning the heads of a recorder except on rare occasions. The fact that small accumulations of oxide dust can be seen on the head structures is not indicative in any way of head impairment. In our laboratory, every major brand of tape and many popular types of recorders have been given thousands of hours of tests, and results show conclusively that no large benefit accrues from cleaning the heads regularly to remove whatever may have accumulated there. If contamination at the head is enough of a problem to cause trouble, no amount of cleaning will remedy it for long. Either the head itself, or the tape, or perhaps both, are defective, and the contamination will build up after the cleaning and negate results. The only solution in such circumstances is to examine the head or tape for the source of the trouble, and make replacement if necessary. Cleaning the heads occasionally with Long Life Cleaner is of course a good idea, but is not necessary in the maintaining of your machine.

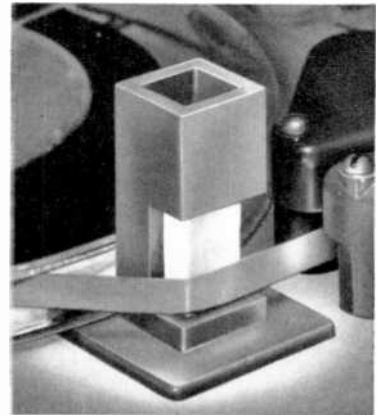
For What Then Is Long Life Cleaner Used? The most common source of trouble with all tape machines is in speed control. The speed of the tape is determined directly by the capstan-pressure roller assembly. If, for any reason, the capstan is not turning at the proper speed, or if the pressure roller is allowing the tape to slip against the capstan, variations in speed will occur which can not help but destroy the quality of recording and reproduction possible from the machine. It is a safe bet that every non-professional (and most professional) recorders suffer from some sort of difficulty in the drive system. That is where Long Life Cleaner really plays an important role. The pressure roller, usually made of rubber, readily absorbs grease, dirt, lubricant from the tape, and other contaminants, as the tape passes by it. These contaminants gradually reduce the driving force of the assembly and allow the tape to be driven at a non-constant rate. At first the change may be small, and can be measured only as an increase in wow or flutter. As the condition worsens, a change in velocity of several percent can result. This change occurs gradually enough so that many users do not realize that the change has occurred. Long Life Cleaner is specifically compounded to attack the rubber pressure roller just enough to extract the contaminants and remove them, leaving the rubber resilient and able to exert full driving force. The importance of this cleaning operation cannot be over-emphasized. Likewise, Long Life Cleaner is useful in cleaning all internal rubber or cloth drive belts and puck rollers, which frequently become contaminated with lubricants and impair speed control. The capstan-pressure roller assembly should be cleaned before every use of the recorder, while the internal rubber parts need attention after every 25 hours of operation.

What About Maintaining the Tape Itself? Not only the recorder becomes contaminated with use. The tape too picks up extraneous materials which gradually impair its ability to reproduce or record. Splices become sticky and spread adhesive from layer to layer and from tape to machine. Friction of tape to heads increases as the oxide surface wears, resulting in greater modulation distortion and higher head wear. Recognizing the need for a simple, easy way to clean and lubricate tape, the makers of Long Life Fluids have recently introduced a new Master Kit, which in



The three Long Life Fluids are now packaged in Squeeze Feed Plastic Bottles.

addition to the familiar cleaner and lubricant, incorporates a new special fluid specific for use on the tape. This fluid is called the **Tape Conditioner**. It is applied to the tape automatically as the tape is played by means of the new **Tower Applicator**, which meters on the Conditioner as the tape passes by it. The Tower Applicator fits easily and quickly onto any tape recorder, and is the ideal way to re-condition every reel of used tape you own. Many use 'Long Life' on every new reel of tape they buy the first time they use it, thus assuring top performance from the very beginning. The Tape Conditioner fluid contains the specific polymethyl silicone lubricant found in the best grades of magnetic tape itself, and in addition, several plasticizing and anti-static agents. The Tower Applicator and Tape Conditioner Fluids are musts for proper tape-machine maintenance.



The Tower Applicator automatically applies the Conditioner to the Tape as the tape passes by it.

Details on the New Long Life Master Kit. The new Long Life Master Kit combines for the first time all of the fluids and applicators needed to do a complete maintenance job. Three specific fluids are included: Cleaner (for machine); Lubricant (for the heads and guides); and Tape Conditioner (for the tape). All three fluids are packaged in the new 'Squeeze-Feed' plastic bottles, especially designed for fast, economical dispensing. Three special applicators are also included in the new Master Kit. The Tower Applicator has already been described. The other two applicators are capillary devices which screw onto the bottles of cleaner and lubricant, so that, with the slightest squeeze, the needed amount of Long Life Fluid is dispensed to the head, guide or capstan. And, when you run out of one of the fluids, you can purchase a new bottle of just that fluid alone, without rebuying the entire kit.



The New Master Kit contains three fluids and three special applicators plus complete instructions.

Where Do I See the New Long Life Master Kit? Your favorite high fidelity dealer, music or photo store is now featuring the new improved Long Life. You can recognize it easily by the distinctive trademark shown below. The Master Kit is only \$3.98, and replacement bottles of fluid just 98¢.

To introduce readers of this magazine to the new Long Life Master Kit, a special discount is offered by your dealer during February and March. Simply clip out the Long Life trademark printed below, sign your name and address below it, take this to your dealer, and he will allow you 25¢ toward the purchase of your Master Kit. Do it today. This offer expires March 31, 1959.



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Location of the First Annual Monterey Jazz Festival, was the horse show arena of the Monterey County Fair Grounds. Many obstacles were encountered by this selection, but these were tackled and soon overcome.

Festival in Stereo

by C. H. Malmstedt

. . . . stereo concert wows community audience.

INTO the gold-green hills of autumn California came something new. Rhythmic, lilting, majestic, the new arrival flooded the countryside that, barely more than a century ago, was the home of California's first capital—Monterey. Combining the talents of such jazz-world greats as Harry James, Louis Armstrong, Dave Brubeck, Dizzy Gillespie, Billy Holiday, Ernestine Anderson, Cal Tjader, Lizzie Miles and many others, with those of the San Francisco Little Symphony and the Monterey County Symphony conducted by Gregory Millar, this was the First Annual Monterey Jazz Festival.

It was, however, an even more modern arrival—stereophonic sound—that, for many listeners, stood out as the lustiest, most impressive and delightful of the newcomers to the Peninsula. It was, in fact, stereo that made the three-day, five-concert event a First in more ways than one—for the three-channel sound reinforcing and the three-channel stereo tape recording were no doubt the largest-scale operations of their kind ever attempted in this country, or likely anywhere—and accomplished with a success far above the expectations of even those with the highest critical standards in music and the faithful reproduction of it.

Like all firsts, preparations for the event were loaded with problems, most of them technical and many of them complex. A group of civic-minded citizens had conceived the idea of a jazz festival, had chosen a president, a manager, and a location—the horse show arena of the Monterey



The Cal Tjader Quintet entertains the Festival audience.

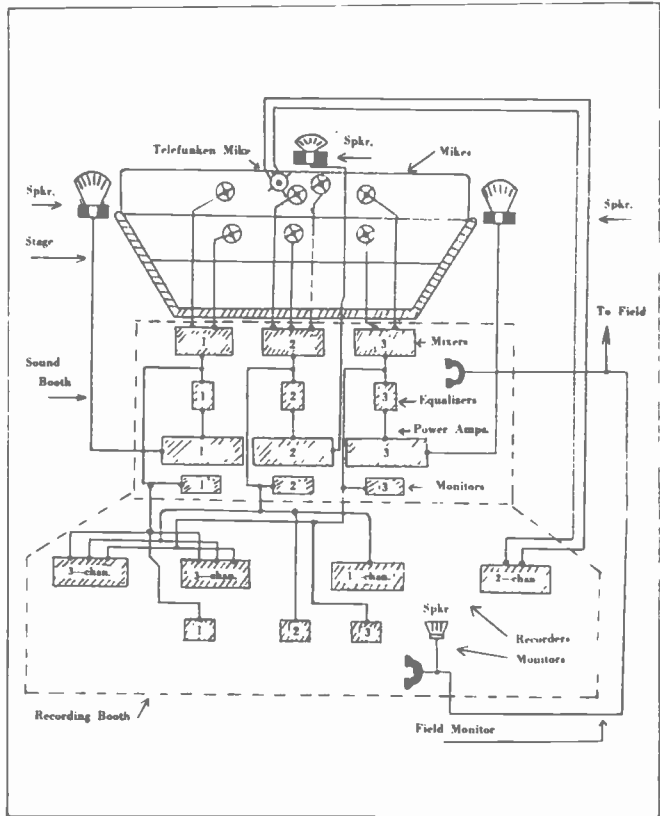
Vesta Photo

County Fair Grounds—plus an impressive line-up of proposed participants. But from this action to the moment when an improvisation by Dave Brubeck tore down the "house" was a long jump—one filled with days and nights of brainwork and musclework, and planning that should be of interest to other communities wishing to undertake similar endeavors on behalf of the community and those among its young people with an interest in music—for one of the primary motives behind this festival in stereo was to raise funds with which to establish a chair of jazz at the Monterey Peninsula College. Two scholarships were the result. But first came the headaches.

The arena, roughly 300 feet long, 150 feet wide, had no "shell" suitable for projection of sound; the earthen floor of the arena had a rise in its center, sloped for drainage; the location thought of for the stage faced buildings at the other end—not good for the best in sound; the "floor" was dry and dusty in the wake of numerous field events.

Faced with these and many other problems, Lt. E. L. St. Ville, head of the festival Sound Committee, and Lt. R. C. Avrit, both of the U. S. Navy Postgraduate School, Monterey, went to work. Both men are audiophiles, particularly in tape, and possess considerable experience in the field of sound recording. But *who* had experience on a scale grand enough to match the plans of the Festival Committee? Their first stop: The Ampex Corporation, Redwood City, California, industrial pioneers in tape recording, audio systems, stereophonic sound. For the lieutenants, their first stop was also their last. Ampex responded in a manner more than heartwarming to any civic committee on which most members were, like these two navy men, serving as volunteers. Having been approached for consultation, Ampex filled not only this need, but dove in all the way—with a \$25,000 sound reinforcing system loaned for the event by engineer Harold Lindsay; with a three-channel stereo tape recording system; a double-channel stereo recorder; a single-channel recorder (to enable the Armed Forces Radio and Television Service to record the entire program for later broadcast to servicemen overseas); plus all the necessary associated equipment, including 3000 feet of cable, all the dual-channel stereo tape, and 30 miles of one-half inch three-channel stereo tape.

The wheels now began to turn with jet speed—and ran



Block diagram of the stereo recording and sound reinforcing system used for the festival. 3-channel, 2-channel, and full-track, single-channel recorders were utilized in the setup.

head-on into more problems: a very low budget for construction of the stage and shell (the festival being financed by voluntary subscriptions), and the fact that the festival location was directly under a major approach pattern of the Monterey Airport, from which operate both commercial and military aircraft. One thing was apparent: the sound reinforcing system would have to be not only good but perfect; for another, they had better establish liaison with the airport authorities and try to co-ordinate programming with airport operations. But first things first.

To escape the echo from the buildings at one end of the arena, the stage would have to be located in accordance with sensible acoustic engineering practice. Headed by en-



Dave Brubeck Quartet with members of the Symphony. When a plane almost drowned out Mr. Brubeck's performance, this quick-thinking ad-libber went into several bars of "Wild Blue Yonder," and the audience loved it.

Peter Breinig Photo



Vestal Photo

Dizzy Gillespie does his stuff for the festival audience. Advance ticket sales for the affair were better than anticipated, and those that came left favorably impressed and thoroughly entertained.

gineer R. J. Tinkham, the Ampex crew and the Sound Committee lieutenants quickly saw that there was only one such practical location: at the end where the buildings were—facing the open end, where large oak trees would provide a natural absorbent back-drop. As for the rise in the floor of the arena, that would be taken care of by a bulldozer, resulting in an almost flat forward portion with a rise of six inches at the middle and of three feet at the rear. As for the dusty earth, quick-growing rye grass would take care of that before opening day. Next, the stage and the shell.

After several considerations, a rejection of some, and an increase in the original budget (made possible by better-than-expected advance ticket sales), the stage and shell came out as follows: Fifty-five feet wide at the front or proscenium, 22 feet wide at the rear wall, and 24 feet deep. This put the side walls, which extended two-thirds of the way forward, at an angle of 45 degrees. From the eight-foot-high rear wall a cantilevered ceiling of plywood was set at an angle of 20 degrees, rising toward the front. Here, a 55-foot I-beam set eight feet back of the front edge of the stage supported it. The stage floor was of three levels, or risers, the first five feet above ground level and eight feet deep, the other two six inches above the one in front, and of equal depth with the first. This, it was concluded, would adequately accommodate everything from a three-man combo to the combined 75-piece symphony and the jazz groups that would perform with it. And it did.

A control booth to accommodate the four recorders plus monitor amplifiers and speakers was built to one side and slightly forward of the stage. A control booth for the sound reinforcing system, also including a monitor-speaker system for each of the three channels, was incorporated in the truck that carried the system, the two booths being connected also by a field monitor and telephone system—of which more later.

To assure against any sector of the audience area being blasted by the speaker system, and to render the stereo feature effective for as great an area as possible, a no-seating space of some 15 feet was cleared directly in front of the stage and shell. Had space permitted, an even larger area would have been thus cleared.

Microphone placement to accommodate the performing groups of various sizes was now tackled. For an effective three-channel stereo pickup, this presented its own problems, all the more so because in addition to the taping



Vestal Photo

Billy Holliday, Jerry Mulligan, Buddy de France and Benny Carter take over. All jazz-lovers will be able to share in this musical treat, for the tapes have been made available to recording companies.

there was the necessity of so placing the loudspeakers that the entire arena could be flooded with sound without the risk of feedback; no small problem, considering an open-air facility to seat an audience of from 6000 to 7000. There were, however, some favorable aspects: for the front third of the audience space, no electronic sound reinforcing was really necessary, since the stage and shell design was such as to naturally fill this requirement for direct sound.

For the rest, reinforcement was not only necessary but would have to be of a quality indistinguishable from direct, natural sound, for the Festival Committee wanted to repeat the San Francisco Opera House demonstration in which the audience was to detect no difference between natural and reinforced sound. In short, not only the tape recording but as well the sound reinforcing would have to be stereophonic. What was more, it would have to be right the first time, for, unlike studio recording sessions, these concerts would provide little or no opportunity for rehearsals, audio experiments and try-outs.

After two full days' work, this is the setup presented to the Festival Committee by Ampex and the Sound Committee: Three microphones (Altec 21B) were suspended from the overhead about three feet back from the front edge of the stage, one at the center, the other two 10 feet to each side, all 10 feet above the front riser. Three floor-stand mikes (Altec 21D) were set on the center riser, one at approximate stage center and one 10 feet each side of



Peter Breinig Photo

The Dave Brubeck Quartet solos. Some of the performers were unacquainted with the techniques of stereo recording. Lack of knowledge or cooperation can spell disaster for reproduction possibilities. Fortunately, the engineers were prepared for such mishaps.

center, plus an announce-and-solo mike of the same type at center of the front riser. The cables of all four of these mikes were secured at 10 feet in an effort to limit inadvertent moving of the mikes from one pickup area to another—actions which would, of course, destroy the stereo effect. An additional mike (Telefunken SM-2 double-channel stereo) was suspended 11 feet above the stage at front-center. As a precautionary measure against the possibility of feedback and that of some performers not maintaining proper position, all three of the suspended 21B mikes were so rigged as to permit lateral motion forward and backward—a measure well worth the time it took to install it, as will be seen later.

Next came the recording-reinforcing equipment installation. For recording, four tape recorders were set up as follows: Two three-channel stereo recorders (Ampex 300-3), for master and protection master, utilizing $\frac{1}{2}$ -inch tape at 15 inches per second and including the new Ampex Master Equalization, which is claimed to yield 7 db better signal-to-noise ratio than earlier methods; one two-track recorder (Ampex 601-2); and one full-track recorder (Ampex 300) utilizing $\frac{1}{4}$ -inch tape at 15 ips.

For sound reinforcement, two trailer-carried speakers (Altec H210) were installed, one at each end of the stage, on the ground; the high-frequency units thus were about nine feet above ground level. Another speaker system (Fidelity Sound 5512) was set on a platform atop the stage overhead (this was necessitated partly by the fact that a capacity house eliminated the center aisle which would have, with some success, permitted retaining the center speaker on the ground at stage center). For the side speakers, the crossover frequency was 400 cycles, for the top system 500. Equalization for the combined speaker systems was flat to 12,000 cycles, with a drop of 4 db at 15,000 cycles.

With the double- and triple-channel recording, no electrical inter-channel mixing was employed, the pickup for these heads being common to the sound reinforcing system. Mixing within the three individual channels was, of course, necessary to provide smooth choice-control between the stand mikes and those suspended, and to bring in the announce-and-solo mike as required. These mixers were utilized as follows: One mixer handled the announce-solo mike, the center stand mike and the center suspended mike, the output of this mixer feeding the roof-mounted center speaker system. In an identical manner, separate mixers handled the left- and righthand suspended and stand mikes, each feeding the corresponding side speaker system. Outputs of the three mixers were fed into equalizers specially designed after some preinstallation tests of the speaker system. Three individual 75-watt power amplifiers carried the equalizer outputs to the speakers.

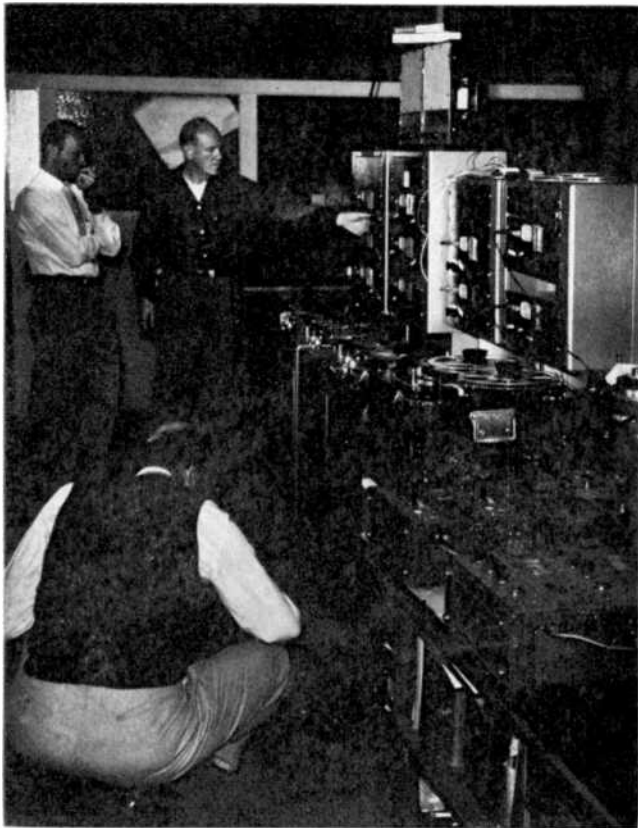
Input to the three-channel stereo tape recorders was picked off at the outputs of the mixers, thus keeping it independent of speaker equalization. The single-channel recorder was fed in the conventional manner by the center channel alone, controlled by the center mixer. The double-channel recorder, fed by the Telefunken stereo mike and associated amplifiers constituted an independent channel set up to obtain test material for comparison of this type of pickup with others. The only interchannel mixing was, therefore, the natural acoustic mixing inherent to the setup, the shell and the arena, and of course that from the lap-over of the speaker systems reaching the mikes.



Lizzie Miles sings. One of the primary motives behind this planned community endeavor was to raise funds with which to establish a chair of jazz at Monterey Peninsula College.

With the elaborate setup thus completed and checked out, other aspects of co-ordination were checked with festival manager Jimmy Lyons and president Hal Hallett. Airport authorities had assured the festival of their utmost co-operation, the Navy going so far as to ground some flight operations while re-routing others during performances. All was in readiness, including the impressive lineup of talent signed up by the manager; and including a sound-crew member stationed about three-quarters of the way up the arena with a telephone for use in reporting to the sound and recording control area his judgement of sound balance and intensity as heard by the audience—thus also assuring that proper instrumental and vocal balance would be fed into the multiple recorders.

Success of both planning and execution was soon proved, from the first moment of the concert on, but most satisfyingly during the performance of "Petrouchka," with Gregory Millar conducting the symphony orchestra. Having captured the audience with the grandeur of its 75 pieces, members of the orchestra suddenly stopped playing, stood up, stretched, shook hands with each other, while the sound went on as though nothing had happened—revealing that the portion of the number they had tape-recorded during rehearsal was in fact quite indistinguishable from the live performance. Another impressive test of the high quality of both the recording and the sound reinforcing system came when, after the end of an evening session terminating with Louis Armstrong and his All Stars, the earlier-stilled playback and sound system were again turned on as the last of the audience were filing out of the arena. It was all there, on the tape, so vivid, so lifelike that the people, amazed, captivated, turned to the already-dark stage as though convinced that they would find the famous band still there.



Equipment in the recording booth consisted of: (left to right) 1—full-track recorder ($\frac{1}{4}$ " tape), 2—three-track stereo recorders ($\frac{1}{2}$ " tape), 2—two-track stereo recorders ($\frac{1}{2}$ " tape), 1—three-track stereo recorder ($\frac{1}{4}$ " tape), and 2 more two-track stereo recorders ($\frac{1}{4}$ " tape).

During the three evening concerts and two afternoon performances dozens of high points amply demonstrated the success of this recording and reinforcing system. A few other things also became evident, including the necessity of acquainting even some star performers with stereo techniques—a point it will be well to keep in mind for those wishing to undertake operations of this kind even on a smaller scale. Failure of performers to understand stereo pickup techniques or failure to conform to sound engineers' instructions regarding them, can result in a triple hazard: (1) The stereo effect can be jeopardized or completely lost; (2) even the non-stereo pickup can become a very poor one; (3) efforts to compensate for this lack of knowledge or cooperation can cause feedback that it is of course impossible to remove from the tape without also removing the performance.

This festival provided a few examples: A veteran of the jazz world moved so far forward of his proper position that only the earlier-mentioned foresight, which had caused the engineers to provide pulley adjustments on the suspended mikes, saved the situation for performers and audience alike, to say nothing of the tape recordings. Another celebrated performer moved the stand mikes so far out of position that the three stereo channels were completely fouled up. This performer's lack of comprehension was so great that after an engineer had gone up and corrected the first mixup, the performer again promptly rearranged the mikes to suit himself—never knowing that most of his performance came out fine on both the tapes and the speakers only because the engineers finally switched off the stand mikes entirely, and made the pickup on the sus-

pending mikes, of which the performer apparently was unaware.

It is this kind of emergency action that, although usually successful, can lead to the third hazard—feedback. An incident of some ringing feedback was encountered in one such circumstance but was quickly eliminated by hauling the center suspended mike up about a foot higher; another instance where precautionary measures born of experience and a sound knowledge of acoustic principles paid off quickly.

As to precautionary measures concerning performers' mike techniques in stereo, it cannot be too strongly emphasized that such practices as working too close to mikes can be suicidal not only to the stereo effect but as well to the general performance. A serious off-balance situation, in both three-channel and two-channel stereo, can also be caused by failure to move instruments—the piano, for instance—to stage center before following a large-group performance with that of a smaller one. Such failures, too, can generally be compensated for only by switching off the stand mikes and making the pickup on the more distant suspended mikes—thereby risking the loss of some accent, or definition.

Fortunately, this festival in stereo was marred by very few such shortcomings, and those minor ones. Paramount, for all concerned, was the great over-all success and highlights such as an ad-lib one on a Dave Brubeck performance—during which this artist, without blinking an eye, delightfully segued into several bars of "Wild Blue Yonder," thus saluting an airliner that, because of several instrument approaches in poor visibility, had just about drowned him out; and thus perhaps providing the festival and its recordings with a unique identifying theme and, incidentally bringing down the house with applause.

This appreciation can soon be shared by jazz-lovers all over the nation, and the world—for the Festival Committee has made the tapes available to the recording companies to whom the various performers are under contract; and several companies have already indicated an interest in buying them.

To accommodate this demand and thus also improve the festival's income, the three-channel master tape has been duplicated and also dubbed into two-channel audition tapes for $7\frac{1}{2}$ -inch playback. This was done in such a manner as to preserve much of the three-channel stereo effectiveness, the center channel component having been mixed into the two side channels at about 6 db below the reference level of the two side channels—thus assuring retention of the full stereo effect without loss of definition on vocal and instrumental solos and specialties performed on-mike at stage center.

Subsequent playback of these two-channel tapes at $7\frac{1}{2}$ ips has amply confirmed the soundness of the methods and equipment used. If any deterioration of fidelity is present, it is so slight as to be of no more than academic interest. Added to this technical success, no observer could fail to be impressed with another and an even more important success attending this festival in stereo; the human success brought about by co-operation—between the civic, the military, the industrial, and the world of art—to give some youngsters without adequate means of their own an opportunity to help retain and enhance in our mechanized age those attributes found most profoundly in the universal language of music.



U. S. Army Photograph

Artists conception of the Atlas with the communications relay provided by the U. S. Army aboard. The recorder was constructed at and the entire relay equipment package was produced by the U. S. Army Signal Research and Development Laboratory at Fort Monmouth, New Jersey.

Tape Recorder Satellite

. . . . the first voice from outer space depended on a tape recording

THERE were two tape recorders which were definitely out of this world. They were the tiny machines implanted in the nose of the Atlas ICBM missile that broadcast President Eisenhower's voice to the world from outer space.

Known as Project Score (Signal Communications by Orbiting Relay Equipment) the satellite was actually a communications relay, the heart of which were the tiny tape recorders developed by the Signal Corps. It is looked upon as a first step toward "courier" satellites for military communications.

The communications payload in the missile consisted primarily of transmitting, receiving and recording equipment which were designed to receive, store and relay messages from ground stations. When in range of these stations the orbiting relay could receive and transmit seven written messages and one voice message at one time.

To obtain messages from the communications relay in the Atlas, a ground station triggered off the relay transmitter by electronic command. As long as the satellite courier was in range, the ground station could also transmit its own message for relay to another station. Messages also

could be relayed from one station to another without storage, if desired.

The orbiting communications relay was installed inside the Atlas, using the missile itself as the carrier. The relay consisted of two transmitters, two receivers and two recorders, using erasable loops of magnetic tape. The total payload, including the antennas was about 150 pounds. The transmitter produced 8 watts of power and used zinc-silver oxide batteries with an estimated life of four to six weeks. Solar cells, which were successfully converted for satellite use by the Army Signal Corps for the Vanguard program were not used because of the expected short life of the huge Atlas satellite in orbit.

Four ground stations were used with one in Georgia, one in California and two in Texas. The installations were in trucks and contained multiplex equipment which could handle up to 60 words a minute on each teletypewriter channel or a total of 420 words a minute plus a voice communication. The recorder in the communications relay could store about 1680 telegraphic words in its 4 minute storage capacity.

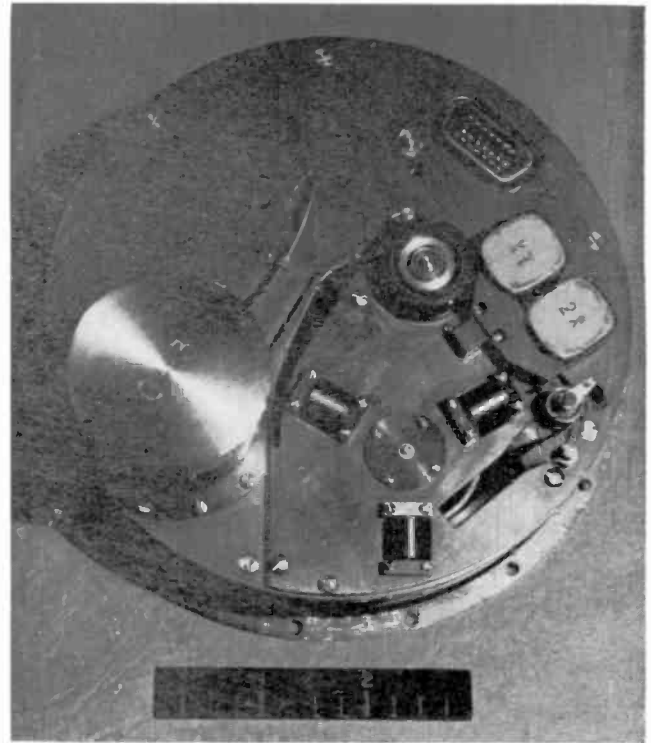
The satellite communications relay shows promising advantages in helping to solve the growing traffic jam in the radio wave spectrum in ground-to-ground military communications. The system also suggests a means of eventually using satellite relays to store large amounts of messages, carry them thousands of miles and release them on call to ground stations around the world.

It may also be possible to place orbiting units in space which will stay in the same relative position in regard to the earth, thereby permitting simultaneous worldwide radio and TV broadcasting. The signals would be sent from the ground to a satellite which in turn would pass them on to a second unit in space which would broadcast them back to the ground on the other side of the earth.

The missile plunged into the earth's atmosphere and burned on January 21 over the Pacific Ocean between Guam and the Philippines.



U. S. Army Photo

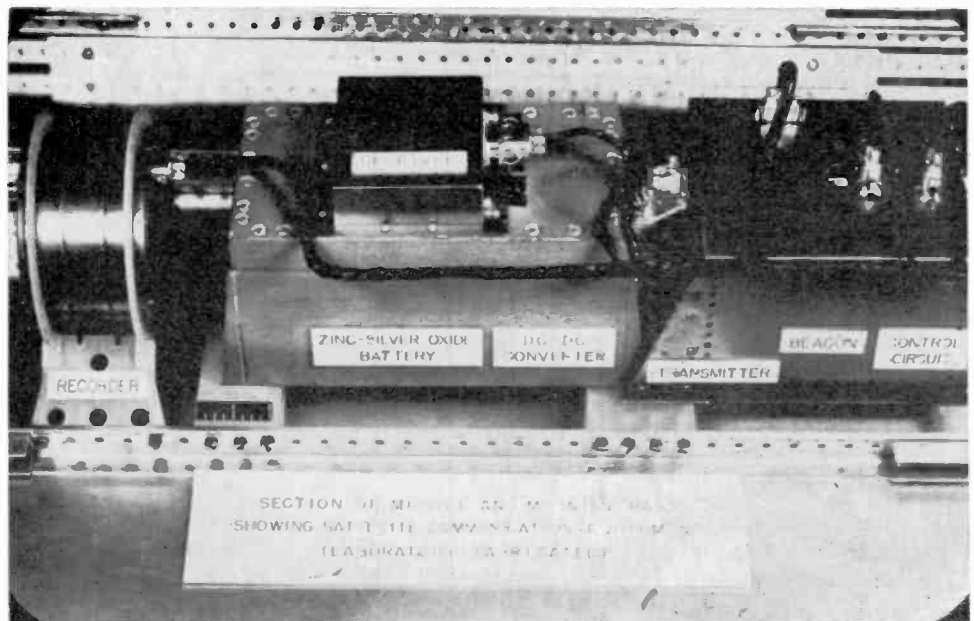


U. S. Army Photo

Above: The tape recorder mechanism in the Atlas communications satellite includes an endless tape cartridge holding 75 feet of single-track high resolution polyester instrumentation tape, a drive system, a record and playback head, an erase head, and a momentary contact switch. Record and playback speed is $3\frac{3}{4}$ ips, and is established by a governed D.C. motor driving the flywheel capstan assembly by a thin polyester belt. The momentary contact switch uses two beryllium-copper ball bearings with conductive lubricant and a conductive spot on the tape. The structure of the recorder is magnesium.

Left: A miniature tape recorder identical to that in the Atlas communications satellite is examined by John Licht, who had a leading part in its design and development.

Communications relay equipment installed in the Atlas was designed to receive, store or relay messages from ground stations. The transmitter produced 8 watts of power and uses zinc-silver oxide batteries.



U. S. Army Photo



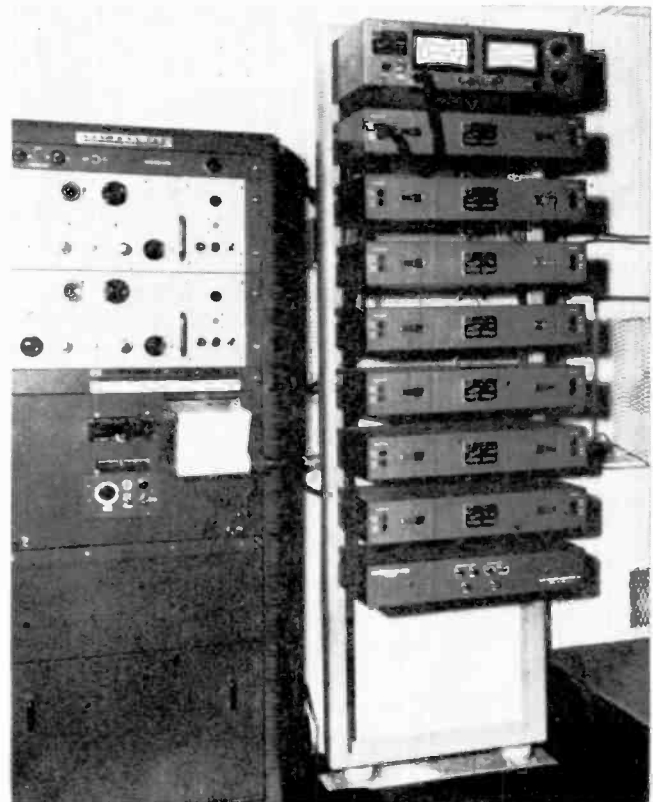
General view of control desk of typical U. S. Army ground station, with main control panel (inclined) at right-center. Satellite-to-ground receivers are in cabinet at far right. At left is the remote control equipment for orienting the antenna.

U. S. Army Photo

Below, left: The U. S. Air Force Atlas missile is poised preparatory to firing which launched it into successful orbit during a test to determine its satellite launching capability and its launching technique. Its take-off was carried out under the auspices and authority of the Advanced Research Projects Agency of the Department of Defense, December 18, 1958, Cape Canaveral, Florida. Below, right: Multiplex equipment used in the U. S. Army Ground Stations is for simultaneous transmission of several teletypewriter messages. Recording equipment at left is for experimental measurements.



U. S. Air Force Photo



U. S. Army Photo

Preserve Those Old Discs

by Major Joseph J. Kramp, USAF Ret.

... Don't discard your old phonograph discs. You can copy them on tape and make them sound better on your hi-fi.



The basic equipment for copying old records includes turntable, some sort of scratch filter, and your recorder. The scratch filter should be adjusted to reduce surface noise to an acceptable level. The filter shown here is the Fisher HF 50, which although no longer manufactured, may still be available at some dealers. The Fisher HF 50 is very useful in this application and can also remove turntable rumble and hum picked up by the tone arm. If you want to add a tone control unit, it should be placed between the scratch filter and the recorder. The tone control unit can correct the equalization curve of the discs to match the characteristics of tape.

DO you have a stack of old phonograph records in your attic? Have you wondered what you should do with them? Many of these old records are well worth a little effort to make them usable. You can play them on your present hi fi but the result will usually make you shudder. Modern equipment simply will not give you the result you should get from these records.

Let's get out that old Caruso record and see what can be done. The old shellac pressings have some characteristics that just do not fit in with our present ideas of hi fi. The high frequencies are greatly attenuated or completely absent, the surface noise is extremely high and the dynamic range is low. Nothing can be done, of course, about high frequencies that are missing but we can remove the surface

scratch and, to a certain extent, we can increase the dynamic range.

The easiest way to eliminate the surface scratch is to attenuate sharply all frequencies above 5000 cps. The older shellac pressings did not go above 5000 cps anyway so you will not be losing anything. You can accomplish this attenuation by the use of a good scratch filter. Modern light weight pickups give more scratch on old shellac records than the older heavier pickups. You can experiment with adding weights to your present pickup but remember that added weight means added wear to your stylus.

The idea of lubricating discs to reduce wear and noise has been in the minds of recording engineers for a long time. The seemingly unsurmountable problem has been the

There are many fine old albums and discs stored away that are well worth preserving. Many of these are outstanding performances by the greatest artists of their time which of course cannot be redone. Many people also have discs which were pressed in very limited numbers and are therefore extremely scarce. Many travelers have collected folk music etc. on their travels thru foreign lands and replacement of these discs would be both expensive and difficult if not even impossible. If you have any of these treasures, by all means put them on tape to insure against their loss and against the inevitable wear that is inherent in disc recording. With a little effort you can do a creditable job of improving the quality of the record to make it more enjoyable on your modern sound equipment.



fantastically high pressures developed between the stylus and the disc which break down all ordinary lubricating films. In searching for a high strength lubricating film, I found a product called Molub Alloy, manufactured by the Imperial Oil and Grease Co. and distributed by Imperial Metallic Lubricants Company with representatives in most large cities. I got mine from the John N. Thorp Co., 78 Middagh St., Brooklyn, N. Y. This product is compounded of several metallic substances including molybdenum disulphide and is probably the slipperiest stuff known. It also has a terrific film strength and will support loads of 100

tons per sq. inch. The material will adhere in a dry layer after the grease vehicle is washed off with solvent. I thinned this light grease with lighter fluid and rubbed it well into the grooves with a pad. This resulted in a substantial reduction in the surface noise of old discs. I also found that the lubrication allowed me to increase the weight on the stylus way beyond what was possible on an unlubricated record. Continued use showed little increased wear on the stylus. Using this method of lubrication and weighting the pickup to 6 or 8 ounces you can probably get a usable tape from discs you had considered utterly hopeless.



This disc, the folk song "Planting Rice" which I acquired in the Philippines has several scratches and a crack from the center hole to the edge. On the edge at the arrow you can see the tape which is applied to the bottom of the disc over the crack and the grease pencil mark which is rubbed into the surface of the crack. A scratch has been filled similarly at the upper left of the picture.

Cracks and scratches can cause a lot of grief on old discs but their effect can be minimized by proper treatment. Adhesive tape on the back side of the disc will hold the edges of a crack in alignment but you will still get an annoying tick on each revolution. A grease pencil thoroughly rubbed into the crack will reduce this tick a great deal. Rub the grease pencil across the crack parallel to the grooves until the crack is well filled. The first playing will remove the excess filler leaving the crack filled enough to reduce the tick substantially. You can of course edit out all of these ticks if you wish but it is seldom worth the bother. Bad scratches on the surface of the disc should also be filled with grease pencil.

Your discs of course should be thoroughly clean and flat before you attempt to tape them. A thorough brushing with detergent will clean them and a short while on a warm flat surface will straighten out any warps. A heavy weight placed over the center of the disc while it is on the turntable will also help to correct minor warpage.

If the center hole of the record has become enlarged so the disc tends to turn eccentrically on the turntable, it is best to enlarge the hole some more and center the disc manually by trial and error until it runs true. This takes a while but is worth the effort for a one time play.

After we have the disc cleaned, flattened, patched and lubricated to reduce the mechanical shortcomings we can do something about the material that has been recorded on it. The old discs used a variety of compensation curves so it



In an experiment with lubrication of discs some "MOLUB ALLOY" is being rubbed into the surface of the disc. This lubricant has a very high film strength and appears to stand up under the terrific pressure of the stylus. This experiment resulted in a substantial reduction in surface noise and also allowed much more stylus pressure to be applied.

will be best to adjust your tone controls for the most pleasing result. After all you are the best judge of what sounds best to you. You will not be able to do much with the high frequency end of the spectrum because there wasn't much there originally and you do have to attenuate the noise. If you are using a sharp cutting filter to remove noise you should adjust your treble control to give considerable roll off. A sharp knee where you start to attenuate will give the music an unnatural sound. By proper use of the Audio Baton manufactured by Blonder Tongue you can accomplish this compensation, high frequency attenuation and at the same time add a degree of presence to the recording.

The dynamic range of the old shellac discs was rather low. You can help this a bit by manually adjusting the gain control on your record channel as you listen to the monitor.



An old turntable resurrected from the attic did an excellent job on old scratchy shellac discs. The limited frequency response of the old tone arms and cartridges provides an automatic scratch filter. The tone control amplifier is being used to correct the response curve of the recording. You will have to adjust the tone control for each disc since there is no way of knowing what compensation was used for the original recording.

To be a real expert at this you would of course have to know the score of the music as well as knowing the disc very well so you could anticipate the degree of change in the volume you should introduce at each instant. Basically, though, what we will do is attenuate the soft passages a bit and amplify the loud passages a bit to increase the dynamic range by a small amount. Do not overdo this, however, and start with a low enough level so you do not overload in the loud passages. A little practice with this should show you how much up and down on the gain control sounds best to you and after all you are the expert.

If you are copying a long selection which is on several discs you will want to cue the start of each disc to avoid long lapses between sides. A sheet of paper with a hole in the center for the spindle placed between the turntable and the disc will allow the disc to slip on the turntable while you hold it with your finger. Find the start of the music on the disc and hold the disc stationary with your finger while you start the tape transport then release the disc, then stop the tape transport as soon as the end of the music is reached. If you have access to a full track recorder you can edit out these pauses but of course if you are recording half track you will have to eliminate the pauses by cueing.

So let's get those old discs out of the attic and examine them. A goodly number of them will probably be of no interest any more but you may be surprised at what you do find. The memorable performances of the artists of yesteryear are still great even if the recordings of them are not up to the present hi-fi standards. You cannot get a hi-fi recording of any of Caruso's performances but with a bit of effort and an old disc you can turn out a tape which will be impressive to even the most critical music lover.

ERRATUM: In the article "Tape Your Records" in the last issue, our draftsman inadvertently omitted the output jack. To connect the output jack, you should install a .1 mf, 400V capacitor between pin 1 of the 12AX7 and the center pin of the output jack. Several people have inquired about installation of this circuit in other equipment. This is easily done. You should disregard the power supply shown in the diagram and use the power supply of the component you are installing it in. The power requirement is very modest and should not disturb the operation of the other equipment.



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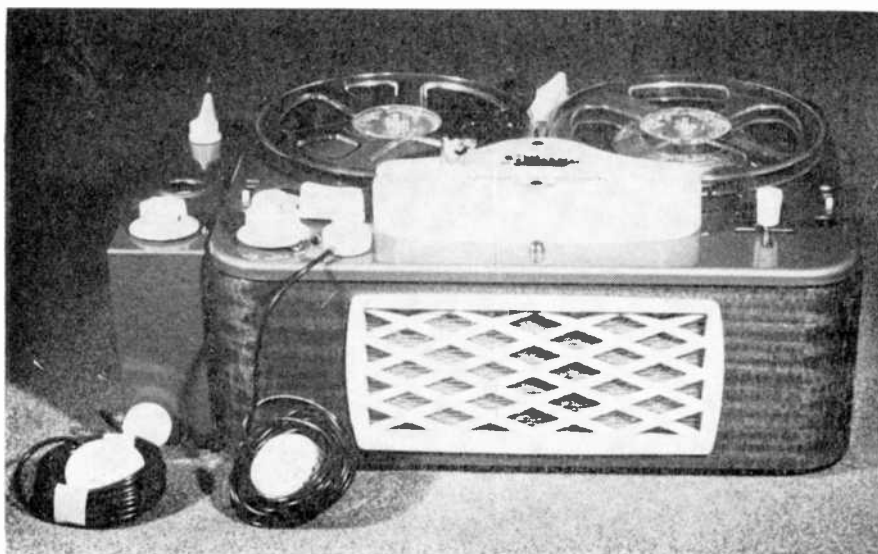
OCCUPATION

MAKE AND MODEL OF RECORDER

Institute of Human Communication, Inc.
Box 35, Severna Park, Md.

NEW PRODUCT REPORT

STAFKSTED



TANDBERG STEREO QUADRUPLE

. . . new model records and plays four tracks on regular tape or will play two and four track stereo tapes.

THEY keep adding things but it never seems to get any bigger." This was the comment made by one of our editors when the Tandberg Quadruple was removed from its packing for test.

The machine itself is identical in appearance and general operation to the Tandberg stereo model reviewed in our July 1958 issue. The unit measures 15 x 11 $\frac{3}{8}$ x 6 $\frac{3}{8}$, has the adjustment for various line voltages and three speeds 1 $\frac{7}{8}$, 3 $\frac{3}{4}$ and 7 $\frac{1}{2}$ ips.

A number of changes have been incorporated into this new model, most important of which is a 4 channel head and the ability to record stereo through the use of an external stereo recording amplifier.

Without this amplifier, the machine will record monaurally either on paired tracks (1 and 3 and 2 and 4) or will record each track separately.

If the lowest speed is used and the tracks recorded separately the playing time for a 1200 foot (7 inch reel of tape) will be *eight and a half hours!* Even at the 7 $\frac{1}{2}$ ips speed using the four tracks the playing time is two hours.

Of course, if the machine is used

to record and play stereo then the time will be cut in half.

And, if you *really* wanted playing time you could use the thin tapes and boost the time to 16 hours.

The head is a special made in-line 4 channel head. The gap is .00016 inch and the co-linear alignment is excellent. A two track erase head is provided. Thus the recorder will record and play back normal half track tape, or a full track tape using both head halves. In addition it will play four-track stereo and monaural as well as two track stereo and monaural tape.

In one direction the recording takes place on track one or track three, or

Product: Tandberg Model 5-2 Stereo Quadruple

Distributor: Tandberg of America, Inc., 10 E. 52nd St., New York 22, N. Y.

Price: \$489.50 with two mikes and amplifier

on track one and three at the same time if the recording is stereo.

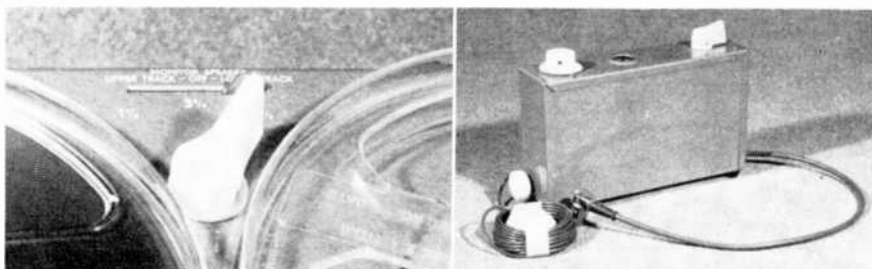
The control for these various modes is found in the lever under the volume control knob. It has three positions, stereo, monaural 1-4, monaural 2-3. When in the monaural playback mode both amplifiers are coupled to the same track.

For monaural recording and playback the lever should be in one of the two monaural positions. Four track monaural recording is done by placing lever in monaural and recording the reel in one direction then turning it over and recording in the other, dual track fashion. The lever is then shifted to the other position and the process is repeated to obtain the four tracks on the one tape. It is possible to switch back and forth between any two tracks.

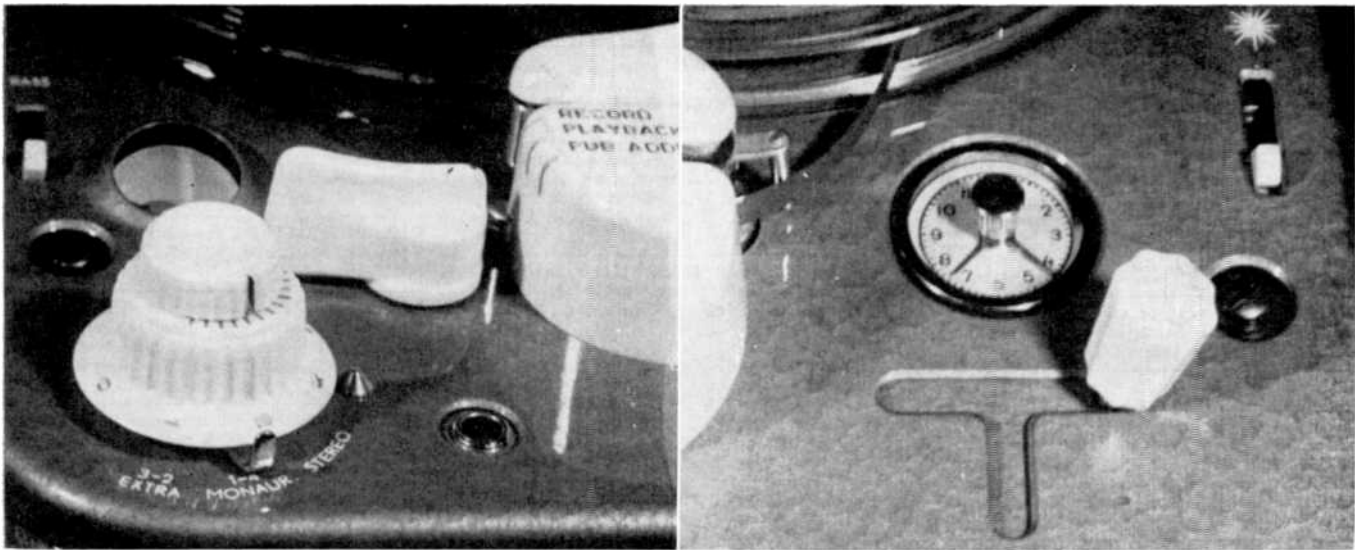
If two track recording is desired instead of the four track so that it may be played on standard two track machines then use the monaural position and turn the tape only once.

Using four track stereo, the tape is played all the way through and then turned over, as with ordinary two track recording. Actually, this might be thought of as dual track stereo.

The volume control is made as a



Left: the machine has three speeds, 7 $\frac{1}{2}$, 3 $\frac{3}{4}$ and 1 $\frac{7}{8}$ ips which are conveniently changed by turning the lever between the reels. Right: the external stereo recording amplifier contains volume, equalization controls and recording level indicator.



Left: on the left side of the recorder are the bass switch (top), recording level magic eye, play/record switch and the stereo switch and volume control. Right: right hand side of recorder has On-Off switch, programming counter and function selector which controls fast forward, rewind, play and record. A pilot light is mounted on the deck and a loudspeaker switch is located above the speed control lever giving output control.

double knob so that each track can be individually regulated when playing stereo disc records. As the knobs are coupled together by friction, moving one will carry the other along with it although they may be separately adjusted by holding one and turning the other. Once stereo balance has been secured by doing this, then the two knobs are turned together as a balanced volume control.

The stereo record amplifier is a separate unit. It is placed on the left side of the recorder itself and the power supply lead from the recorder is plugged into it using the receptacle on the rear of the case. The lead from the amplifier is plugged into the jack on top of the plastic head cover of the recorder and a mike is plugged into the jacks on recorder and stereo amplifier. The equalization knob on the amplifier should be set for the speed being used.

The volume for one microphone is

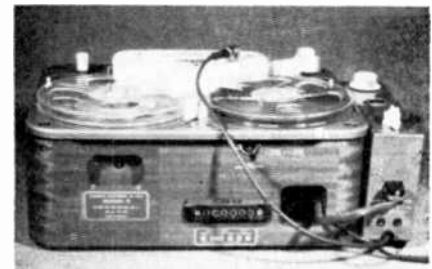
adjusted by the knob on the stereo amplifier and for the other by the large volume control on the recorder.

Stereo tape has been standardized so that the left hand mike (facing the sound source) and the left hand speaker during playback are connected to the upper track.

With this machine stereo records may be copied on tape, a very worthwhile practice since stereo disc records are subject to wear and damage while tape is not. One of the channels is connected to the terminal marked input on the recorder and the other channel to the terminal marked input, lower track, on the stereo record amplifier. Recording level in any case can be judged by the magic eyes on the recorder and amplifier.

The amplifiers have a power of three watts on each channel for stereo or six watts when they are coupled in the monaural position. We found this amount of power to be ample for home conditions.

The recorder may also be used as a



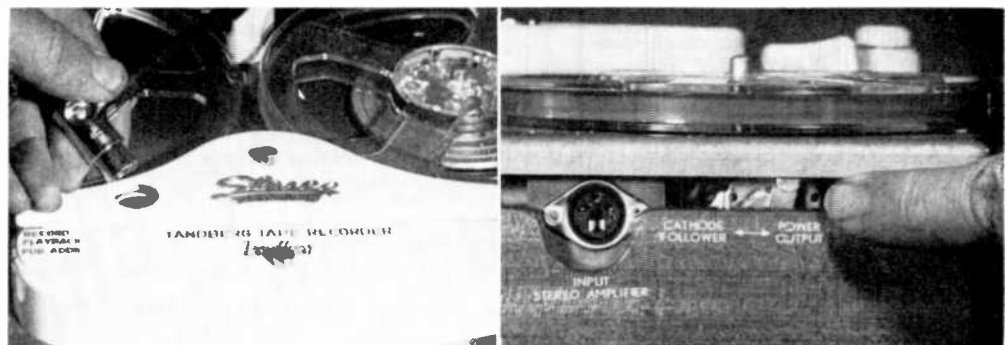
Rear view of recorder showing how power supply cord is hooked into external amplifier. Also shown is the input and output block for making connections to external speakers, radio, etc.

public address system amplifier.

The recorder was used in the tests to record and playback monaurally and to record and play back stereophonically, both two and four track.

It performed satisfactorily on all counts. The recorder is well made, is very quiet in operation and is worthy of your consideration if you are contemplating the purchase of a machine.

Left: connection of the stereo record amplifier is made to the heads by inserting the plug into the jack found on top of the head cover. The plug is polarized so a wrong connection cannot be made. Right: switch indicated by finger provides either a power output for driving a speaker or a cathode follower for driving an amplifier. Both amplifiers have stereo amplifier inputs making it possible to use the complete amplifier as a stereo phonograph.



SHOP OR SWAP

Advertising in this section is open to both amateur and commercial ads. HI-FI TAPE RECORDING does not guarantee any offer advertised in this column and all swaps, etc., are strictly between individuals. RATES: Commercial ads, \$30 per word. Individual ads, non-commercial, \$.05 a word. Remittances in full should accompany copy. Ads will be inserted in next available issue. Please print or type your copy to avoid error. Address ad to: Shop or Swap, HI-FI Tape Recording Magazine, Severna Park, Md.

WANTED: Buy, rent, or exchange tapes or records of the dance bands of the "Swing Era." DeRidder, Dolgeville, New York.

SELL: Going into service—1/2 off—new stereo tapes; 40% off or best offer—EV-664, 2 EV-636 mikes; CA-14 Pentron mixer, RC88 Garrard; 1/3 off or best offer—EV-667 new transistor mike, FF75ES Viking stereo deck, 2 RP61VU preamps, 3DT Bell stereo amplifier, 330-C Scott stereo AM-FM tuner. J. Lucas, 9-11 S. Main, Oberlin, Ohio.

AL JOLSON RADIO BROADCASTS wanted. Buy or trade. Robert Starrett, 33 Washington Square West, N. Y. 11, N. Y.

WANTED: Ampex Model 400A portable half track, 7 1/2 and 15 speed. Also have Tapesonic Model 70C 3-speed portable to sell or swap. Does someone have Telefunken U-47 condenser mike in good shape to dispose of? Cliff Juranis, 525 Burtonwood St., Reading, Pa.

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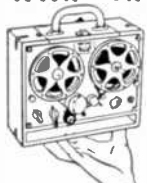
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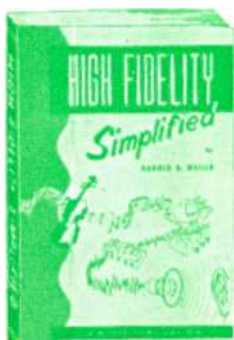
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