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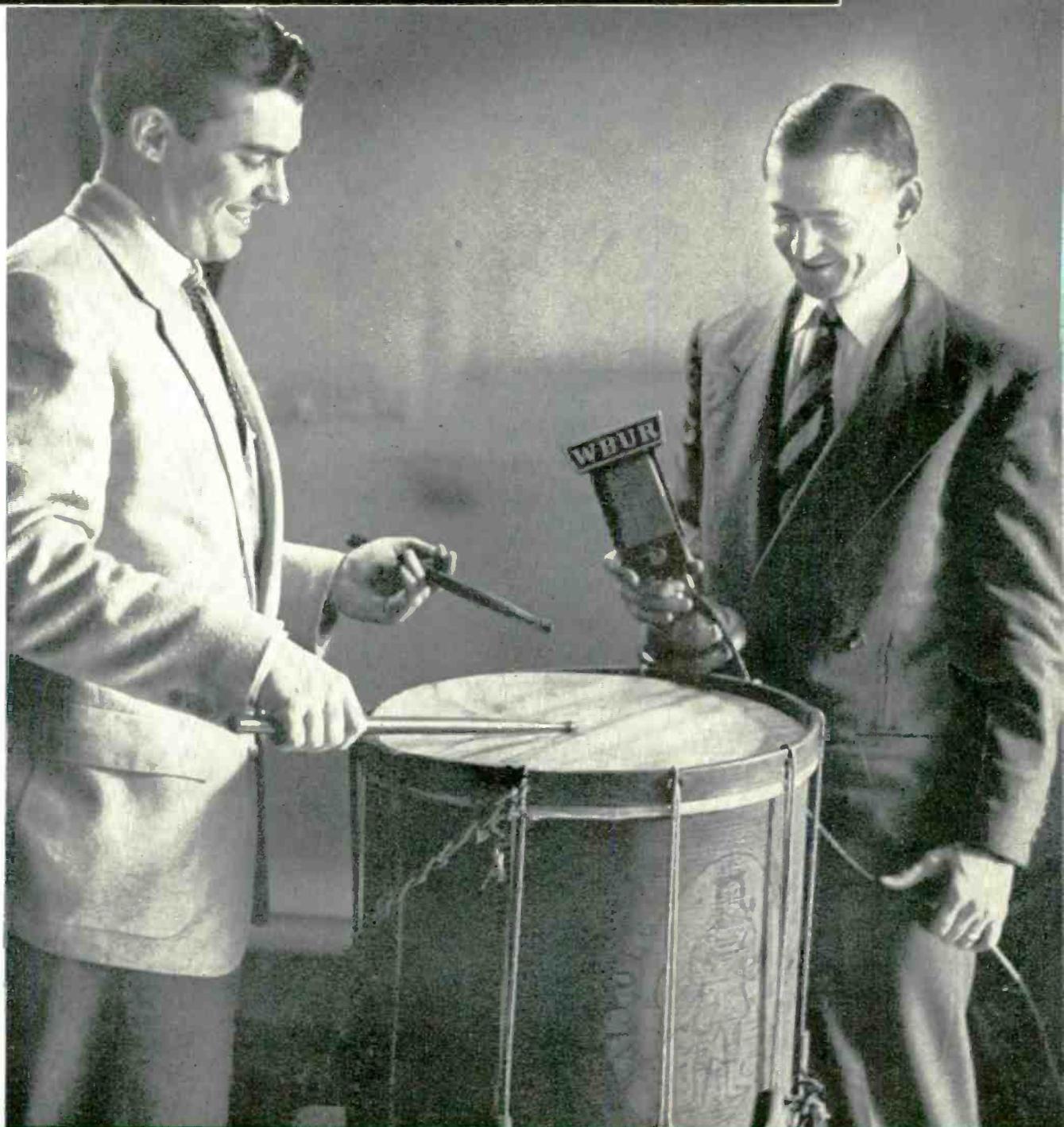
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35c

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	Yield Strength	Breaking Strength
1 mil Acetate	3.7 lb.	3.9 lb.
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1.45 mil Acetate	5.0 lb.	5.5 lb.

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Vol. 2 No. 3

Announcement

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• • •

Thanks for everything!

Gratefully yours,

Hack



MAGNETIC FILM &

TAPE RECORDING

VOL. 2 No. 5A

JULY-AUGUST, 1955

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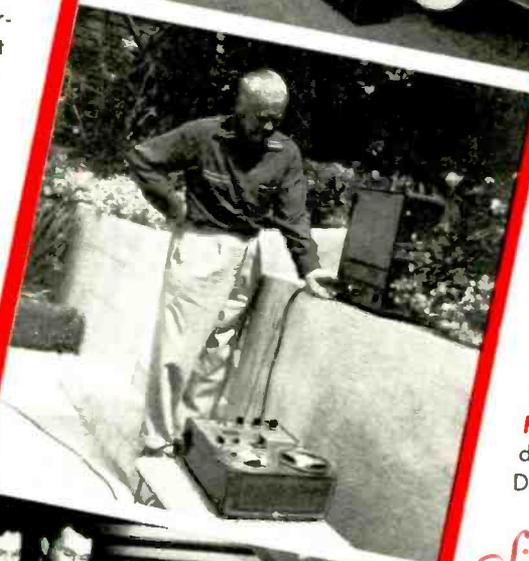
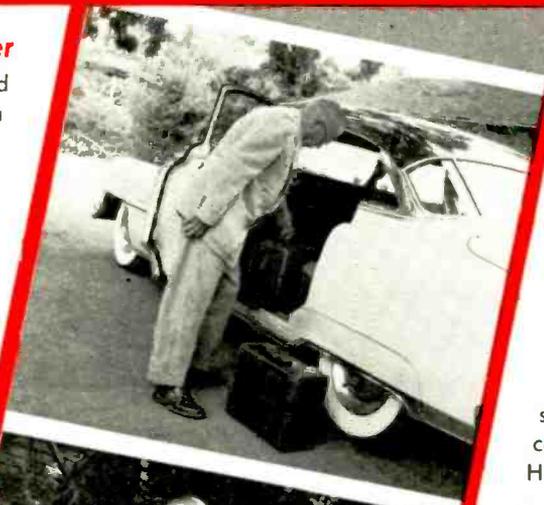
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NEW TAPES

By Charles D. Sigsbee

NEW tapes continue to roll from the duplicators at an increasing rate, offering the tape recorder owner a wider and wider choice of music on tape.

RCA has issued a second batch of tapes and has altered the price structure—downward. We hope to have some of these for review in the next issue. Some of the material on the RCA release is new and not obtainable on discs. This we regard as a healthy sign.

CLASSICAL

Beethoven—"Pathétique" Sonata No. 8
"Moonlight" Sonata No. 14
Bernard Vitelsky, Pianist
OMEGATAPE 6010

In speaking of the "Pathétique," the program notes say that the slow movement is "velvety in texture." It should be, but in this recording, isn't.

Vitelsky appears to be an excellent technician but, in the delicate second move-

ment of the 8th Sonata, he lacks the feeling and warmth to bring out the gossamer-like texture required for an adequate interpretation. It might be his sense of timing or shading but whichever, the whole fails to provide the flow vital to the life of the music. Other pianists with perhaps less technical perfection have accomplished this feeling, so it is not impossible.

The "Moonlight" fares a little better perhaps because of a longer familiarity between the pianist and content. I am left with a feeling throughout, however, that Vitelsky might do better with the more modern composers, particularly those who stress technique rather than form and melody.

The recording is fine but not of the excellence I have come to expect from OMEGA.

Gabrieli, Giovanni—Seven Canzonas for Single and Double Brass Choirs
New York Brass Ensemble
Conducted by Samuel Baron
ESOTERIC TAPE LIBRARY ES 5-2

This unusual music will probably be most appreciated by music students and musicologists as it is, to me, more of an historical than a musical interest. The Canzona, immediate forerunner of the familiar Sonata form, as interpreted here by Gabrieli, is largely fugal in nature. Certainly the compositions of this 16th Century Venetian must have had their influence on the later North German Bach. There is much in the music to make one think immediately of the latter composer.

The tape is beautifully recorded with an excellent separation of instruments and control of the difficult to record brass timbre. The Ensemble consists of four trumpets, two horns, one tenor trombone, one bass trombone and a tuba. Oh yes, almost lost in one Canzona is a violin! Having recently had occasion to broadcast a brass choir, I can appreciate the problems of balance that must be overcome. Esoteric mastered the task; we compromised and gave up!

Tchaikowsky—Aurora's Wedding (Suite)
Leopold Stokowski and his Symphony Orchestra
RCA VICTOR TC-1

For those not familiar with the title (are there those?) Aurora's Wedding is a one act fantasy arranged by Diaghileff from the score of the Sleeping Beauty and contains much of the well-loved music from that work.

A brilliant recording conducted in the lush style that has become the trademark of Stokowski. This is music of the dance recorded not for the dance, but for the listener at home. Take, for example, the famous "Bluebird" pas-de-deux; here is sensuous, soaring music that wrings every last ounce of beauty from the score; even the most talented dancers would intrude. (My wife, a ballet lover, scoffs at this which only serves to prove how opinionated reviewing really is.)

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A multiple microphone pickup was used, in contrast to the single mike recording of "Victory At Sea." Consequently, the solo instruments stand out in bold relief; the harp is reproduced with the same intensity as the horn. The resultant sounds produced is one of the reasons for Stoky's great fame as a recording conductor.

Grieg—Holberg Suite
Two Norwegian Melodies
Concert Artist Symphony Orchestra of London
Mervyn Vicars, Conductor
OMEGATAPE 5003

The Holberg Suite is music of the early 18th Century written by Grieg in the late 19th Century. Designed as a tribute to the Scandinavian poet, it was written for his 200th Birthday Celebration. Each of the five movements depicts musical style of Holberg's rococo period. One does not usually associate Grieg with baroque music, but he interpreted it as well as his more contemporary style. In all, the Suite is a very pleasant experience.

The two Melodies on Track B are more in Grieg's idiom. Lifted from Norwegian folk music, the melodies offer a light, if not profound, few minutes to fill out the tape.

The tape quality is excellent and the small London orchestra just right size for this music.

Kodaly—Summer Evening
Prokofiev—A Summer Day
Concert Artist Symphony of London
Mervyn Vicars, Conductor
OMEGATAPE 7005 (Deluxe Series)

A remarkable recording, both musically and technically. I have listened to it many times and find myself more "taken" with each hearing. The first sound to emanate from the speaker is the most lifelike English horn I have ever heard on tape or disc. This is the type of music you will want to go back to again and again.

Obviously recorded with the multiple microphone technique, Mr. Sibbick, the engineer, has managed to endow the small orchestra with a full rich sound which should have great appeal among high fidelity enthusiasts.

Musically it is difficult to imagine the Kodaly expressed here as being the same one responsible for "Hary Janos." Summer Evening is free in expression what with Romantic Period overtones. It might best be described as pastoral music, never brash, never loud but always delicate and quietly warm as one might justifiably expect a summer evening to be. The initial theme set by the English horn is referred to again and again throughout the composition as sort of a friendly guidepost to keep the music and the listener on the same path.

Mervyn Vicars has the orchestra under complete mastery at all times and seems to draw out just the right quality to make this a memorable, but all too short, listening experience.

The coupling piece, A Summer Day by Prokofiev, is a delightful little descriptive piece for children written much in the mood of his Classical Symphony. This is

an orchestration of a set of piano pieces and has more recently been used for ballet by Jerome Robbins.

It is not difficult to imagine why OMEGA has seen fit to give this a "Deluxe" classification. It is almost perfect in every way.

Tchaikowsky—Swan Lake (Suite)
The Philharmonia Orchestra
Robert Irving, Conductor
RCA VICTOR TB-4

As the preceding tape was music for the dance recorded for listening, so this is music for the dance recorded for the dance. Robert Irving does a forthright job of conducting, maintaining a steady beat throughout.

As a victim of habit I had become used to the earlier Victor recording of the same suite by The St. Louis Orchestra conducted by Vladimir Golschmann. The arrangement of selections is different in this British version so it took several hearings to become adjusted. I now feel that this is the better recording, both musically and technically.

The violin soloist in the *Voyage of the Swan Maidens* proves himself to be a virtuoso and might have benefited from a name mention. This is the highlight of the recording; a languid, moonlit journey across the lake.

The string tone of this EMI recording is particularly impressive, although the whole tape is worth nothing but superlatives. I, for one, will never be happy with that earlier recording.

Strauss, Richard—Also Sprach Zarathustra
Chicago Symphony Orchestra
Fritz Reiner, Conductor
RCA VICTOR TCS-1, TCSD-1

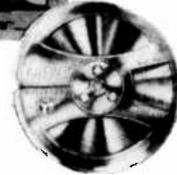
This is a stereophonic (not binaural, thank you) tape only, apparently not available in a monaural version. The serial designations above will serve as your guide to which one to order. TCS albums are for "in line" or "stacked" machines, while the TCSD albums can only be played on staggered (1.25 inches) head machines only. Unfortunately, I have a staggered arrangement and was sent an "in line" tape for review. Consequently any review I might give on the basis of my half track listening would be biased (no pun), so I will refrain from doing so until I am able to get the proper tape.

However, on the basis of what I have heard on the monaural tapes, I would imagine the presentation to be an impressive one. The only reservations would be those of equipment or interpretation.

RCA recommends placing the speakers in corners so that the axes intersect at a point about three quarters of the room length. I have always heard that one should place the speakers facing directly into the room as the natural dispersion qualities of the speakers plus room reflection would take care of the rest. If any of the readers have conducted experiments in this regard, I would appreciate hearing about the results.

SEMI-CLASSICAL MUSIC
Music For Dining—The Melachrino
Strings
RCA VICTOR TP-1

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Music For Relaxation—The Melachrino
Strings
RCA VICTOR TP-2

I relaxed and dined to these tapes and found them admirably suited to the job. Even more, they are interchangeable, I dined to the relaxation music, relaxed to the dining music, and didn't notice any difference.

For the life of me I can't understand the restrictive title; it is music designed for almost anything: background, foreground, to talk over (or under), bridge playing, watching television, masking a secret phone call from other members of the family, and on and on. Adventurous fellow that I am, I even listened to it the other night and found it quite pleasant for that too.

Like the RCA classical tapes they are recorded with excellent fidelity and sound better than their record counterparts and should find ready acceptance.

POPULAR
Dixieland Rhythm Kings
EMPIRICAL TAPE LIBRARY EM5-4, Volume 2
This month we were favored with two excellent Dixieland tapes, both authentic and both highly desirable but for different reasons.

Gene Mayl's DRK's, in spite of their Bourbon Street sound were organized in, of all places, Dayton, Ohio. Consisting of tuba, cornet, clarinet, trombone, piano and banjo they turn out a right fancy two-step from one end of the tape to the other. The recording was made mostly on location and occasionally the customers appear in raucous voice, one can even be heard whistling the melody during a blues number. The recording, duplicated by Livingston from an Empirical label master, leaves nothing to be desired from an engineering standpoint and should be well worth consideration from anyone looking for high fidelity, authentic Dixieland.

Reel Jazz
George Lewis and His Ragtime Band
JAZZTAPE 4005

As good as the preceding tape is, musically speaking, this one is even better. In fact, there is something about this one that captures your fancy right from the beginning, Dixieland fan or not. Perhaps it is the age of the musicians all of whom are contemporaries of Louis Armstrong, Kid Ory, King Oliver and Jelly Roll Morton. Or it could possibly be the obvious enthusiasm in their presentation. Whatever, it is difficult to resist.

Transplanted New Orleaninians (?) will get a kick out of "Burgundy Street", a half-sung, half-recited tour of that thoroughfare with commercial overtones. In case you are not from New Orleans, it is pronounced bur-GUN-dy. Now how do you suppose that happened?

The nostalgic "A Closer Walk With Thee" has been shortened by OMEGA through the simple expedient of turning off the volume so that this old out-going march fades away into the night. I don't think I will ever forgive OMEGA for this as I consider this rendition to be one of the finest examples of American folk art I have ever heard. There is as much fervor in this simple expression of faith as I have ever heard in some of the great classical chorales. But then why not, they

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Better act now. If experience proves the offer to be too liberal it may be withdrawn.

THE TAPE SHELF

Box 214, 22nd St. Station
St. Petersburg, Florida

I own the following equipment for playing monaural binaural 7.5 IPS tapes:

- () I already have your "Master Tape Libraries" listings.
- () I don't have them. Please send.
- () I have (have not) started a library of pre-recorded tapes.

Name

Address

each had the same motivation.

I would label this as a genuine collector's item, quite possibly one of the latest authentic touches of old New Orleans, the birthplace of the American Jazz idiom.

The Exciting Mambo

Ramon Marquez and his Orchestra
OMEGATAPE 5010, Dance Series, Volume 3

Ten Mambos by Ramon Marquez of Mexico City are about as many as even the most avid devotee of this exciting rhythmic pattern could take at one sitting or should we say, dancing! OMEGA claims this to be authentic Mambo and we have no reason to doubt them.

Recorded in Mexico City there is nothing in the tape that could be called outstanding as it all proceeds at about the same tempo. Definitely designed for dancing it even includes, on the jacket, the basic Mambo step through the courtesy of the Arthur Murray Dance Studios! We haven't tried it yet, but we intend to and if the column is missing from the next issue, you'll know what happened. This stuff does get under your skin, doesn't it.

Piano Rio

Maldonado and his rhythm
OMEGATAPE 5008

This fellow does up his program as a program, complete with theme at beginning and end, good practice tape for budding young radio announcers—announce your own numbers.

If you like the piano style of Jose Melis, you'll like this Maldonado. There is, however, an hombre with a fiddle (soft violin if you wish) who keeps intruding every now and then and for some reason or another keeps breaking up the mood for me. Further, there are two Calypso tunes played without words which is about the worse thing that could happen to them.

The recording is good and if you like the blend of a guitar, bongo drums, piano and a "tastefully soft violin", then you will like this.

Patterns for Trombone

Joe Howard and Orchestra
JAZZTAPE 4001, Dance Series, Volume 4

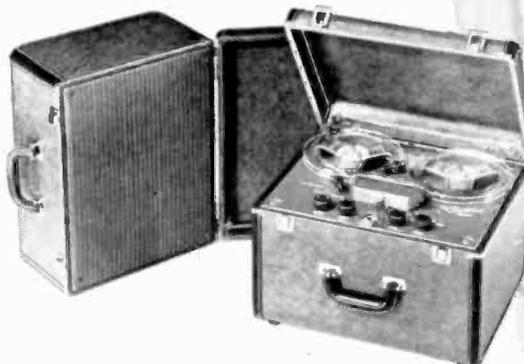
In my day we would have labeled this "smooth" music and danced cheek to cheek throughout. Old standards such as *Tenderly, I'll Be Around, Take Me in Your Arms, I Cover The Waterfront* and others skillfully arranged by Jerry Fielding and presented by Joe Howard and his Orchestra. This is placed by OMEGA in their Dance Series and, in my opinion, no better dance music can be found anywhere, at least not all on one recording.

Joe Howard has been pushing a slide trombone for a good long time, having started with Ben Pollack's Band the Alma Mater of many prominent musicians, the most notable of which is probably Benny Goodman.

By curious coincidence one of the arrangements is of the traditional "Ain't Gonna Study War No More" which appears, also, this month in the George Lewis Dixieland tape under the title, "Down By The Riverside." The difference in interpretation is interesting.

The recording is of excellent fidelity.

Crestwood brings you new features...new models for 1955

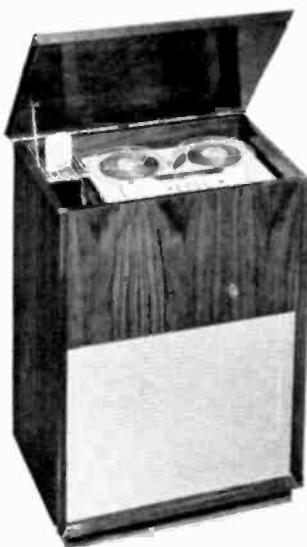


CRESTWOOD new model 404 offers high fidelity response. (30 to 15,000 cycles at $7\frac{1}{2}$ " per second tape speed.) Gives you crystal clear performance — free from wow, hum and distortion . . . combined with model 402 power amplifier and speaker makes a two-case portable package . . . fits nicely into your hi-fi system and your budget, too!

Exceptional fidelity (50 to 10,000 cycles at $7\frac{1}{2}$ " per second tape speed) is featured in the new CRESTWOOD 304. New tape transport mechanism and professional type recording heads make the 304 one of the best values ever offered in a tape recorder . . . includes internal speaker, microphone, radio and TV connection cable.



The new CRESTWOOD consoles move tape recording enjoyment into a permanent and prominent position in your living room, den or recreation room . . . instantly ready to record or reproduce. Extended range dynamic speakers — fully baffled for complete range reproduction — give you truly outstanding sound quality . . . Choice of 300 or 400 Model Series in hand rubbed cabinets.



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BY DAYSTROM

Daystrom Electric Corp.
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Yet, in the truest sense only your ear can really distinguish the quality of fine recorded sound. Only your trained touch can really judge the simple, smooth operation of a tape recorder. It is for this reason that Federal, without bold reference to technical specifications, invites you, the real jury, to listen to the FME.

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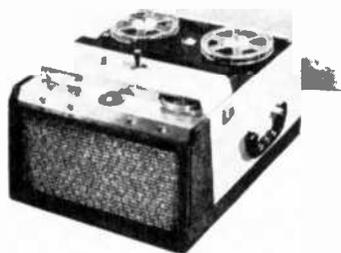
NEW PRODUCTS

ELECTROVERT MIKE



Electrovert, 489 5th Avenue, New York 17, N.Y., has announced its D 10 omnidirectional, spherical and D 11 uni-directional, cardioid microphones. They have a frequency range of 60 to 10,000 cps, a high grade transformer which transforms the M.C. impedance of 60 ohms to a value of 40,000 ohms, and a handsome ivory molded bakelite finish. Each weighs 10 ozs. and is equipped with a 5 foot cable. When it is desired to cut down the reverberation of a room or extraneous interfering noise, the uni-directional type is preferable to the non-selective D 10. The desk stand can be removed and they can be used as hand microphones. The list price for each is \$19.50 F.O.B., New York. For additional information, write to Electrovert, above address.

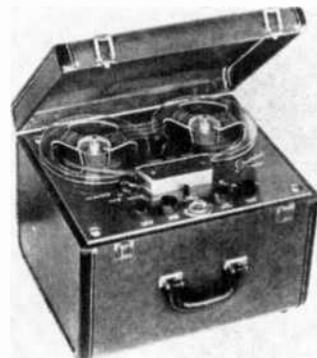
PENTRON "PACEMAKER"



Pentron Corporation is marketing the "Pacemaker," Model T-90 recorder. This machine is dual track, has $7\frac{1}{2}$ and $3\frac{3}{4}$ ips speeds, frequency response of 50 to 10,500 cps, signal to noise ratio of 50 db, single lever control for fast forward, fast rewind and play, two speakers, automatic index counter, magic eye recording indicator, and microphone input, radio input, auxiliary speaker and auxiliary amplifier

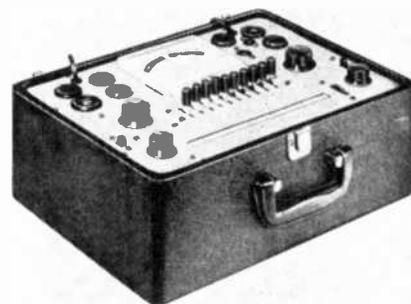
jacks. It sells for \$189.50 For additional information, write to Pentron Corporation, 777 S. Tripp Ave., Chicago 24, Illinois.

DAYSTROM 404



Daystrom Electric Corp., 837 Main Street, Poughkeepsie, N. Y., introduced the Daystrom 404 recorder-pre-amplifier at the Electronic Parts Show in Chicago. This machine has a frequency response of 30 to 15,000 cps, $7\frac{1}{2}$ and $3\frac{3}{4}$ ips speeds, and less than 2% flutter and wow. It features "Non-Vibre" meter mounts, the Crestwood programmer to accurately catalog recorded selections, an electric-eye level indicator, shock mounted tubes, and a companion amplifier and speaker in a matching carrying case is available. For complete information and price, write to Daystrom, above address.

KNIGHT TUBE TESTER



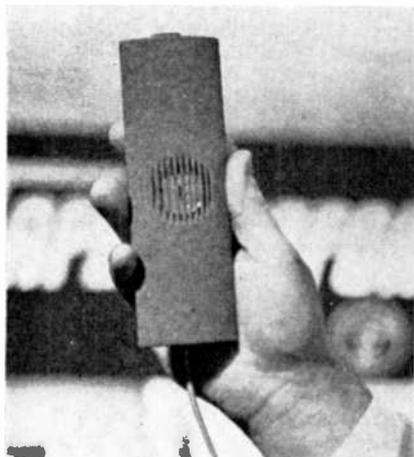
Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois, announces a new Knight tube tester kit. This tester accurately measures tube performance by the cathode emission method; checks for shorted elements, open elements and heater continuity; and has special features, such as universal socket pin selectors, which prevent obsolescence. It also has a $4\frac{1}{2}$ " meter, line voltage compensator, a clearly marked, smooth operating roll chart, and a single unit, 10-lever function switch. This kit can be used for testing 4, 5, 6 and 7-pin large, regular and miniature types, as well as octals, loctals, 9-pin miniatures and pilot lamps. The price is \$29.75 f.o.b. Chicago; a portable model is obtainable at \$34.75; an adapter for checking TV picture tubes is available for \$3.75. For complete details write to Allied, above address.

NEW "INDUCT-O-PHONE"



Fenton Company, 15 Moore Street, New York 4, N.Y., has introduced its new "Induct-O-Phone." This intriguing instrument operates by induction of magnetic flux created by a loop of wire under a rug or around a building, which is fed by the output of a radio or audio amplifier. It provides listening pleasure in hospitals, large assemblies, and is desirable for late night listening—wherever the noise might be disturbing to others. The instrument has short extension arm volume controls for the hospital type. The home type has knurled knob control and lists for \$12.95. For complete information, write to Fenton Company, above address.

BASS BOOST MIKE



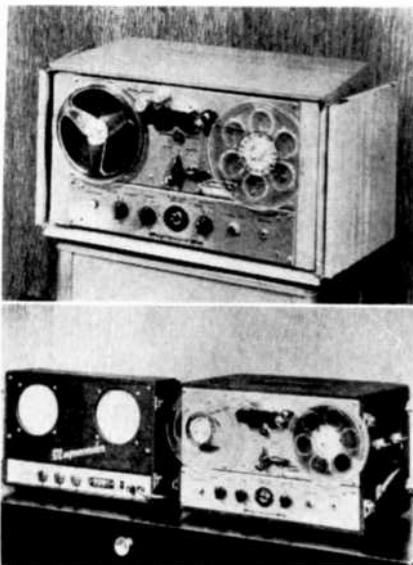
Frank L. Capps & Co., Inc., 20 Addison Place, Valley Stream, N.Y., is marketing their Model CR BB crystal microphone. This instrument has a frequency response of 30 to 12,000 cps, output of -52 db, and is finished in grey wrinkle. It is a bass boost mike which acoustically amplifies frequencies between 40 and 150 cps up to 12 db. There is a fingertip knob for bass control, and the unit is designed for use either on a microphone stand or on its side without any stand. It carries a list price of \$36.00. Complete information is obtainable by writing to Frank L. Capps & Co., Inc., above address.

PENTRON "CLIPPER"



The "Clipper," Model RWN recorder has recently been introduced by the Pentron Corporation, 777 S. Tripp Ave., Chicago 24, Illinois. This machine is dual track, has 7½ and 3¾ ips speed, frequency response of 50 to 9000 cps., signal to noise ratio of 42 db, monomatic single knob control for record or play at either speed, fast forward and fast rewind. It also has microphone and radio input jacks, and auxiliary speaker and amplifier output jacks. The price of the instrument is \$129.50. Full details are available by writing to Pentron.

MAGNECORD RECORDERS



Magnecord, Inc., 1101 S. Kilbourn Ave., Chicago, Ill., is marketing the M-30D "Aristocrat" and the M-34 "Educator" portable recorders. The "Aristocrat" is encased in a special plywood cabinet finished in maple or mahogany veneer, is equipped with two inputs, has speeds of 3¾ and 7½ ips, and contains two high impedance outputs, high and low level. It is priced at \$339.

The M-34 model (lower picture) has a self-contained 10 watt power amplifier and two 6" wide range speakers. It is equipped with treble and bass controls for wider tonal range. The amplifier attaches to the rear of the recorder for carrying purposes. This sells for \$429. For additional information, write to Magnecord, above address.

As you know...

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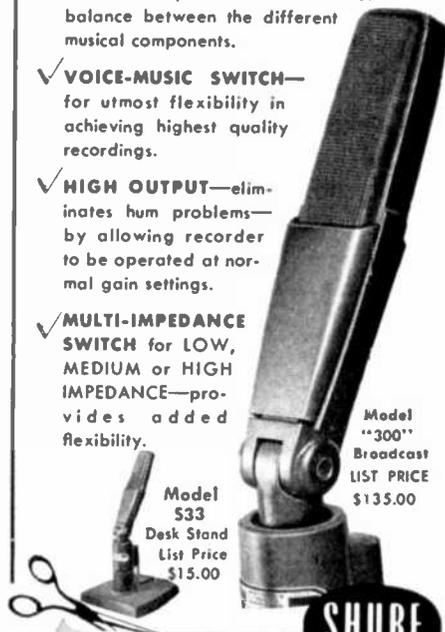
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- ✓ **BI-DIRECTIONAL PICKUP PATTERN**—enables you to arrange the artists around microphone to obtain the best balance between the different musical components.
- ✓ **VOICE-MUSIC SWITCH**—for utmost flexibility in achieving highest quality recordings.
- ✓ **HIGH OUTPUT**—eliminates hum problems—by allowing recorder to be operated at normal gain settings.
- ✓ **MULTI-IMPEDANCE SWITCH** for LOW, MEDIUM or HIGH IMPEDANCE—provides added flexibility.



Model 533 Desk Stand List Price \$15.00

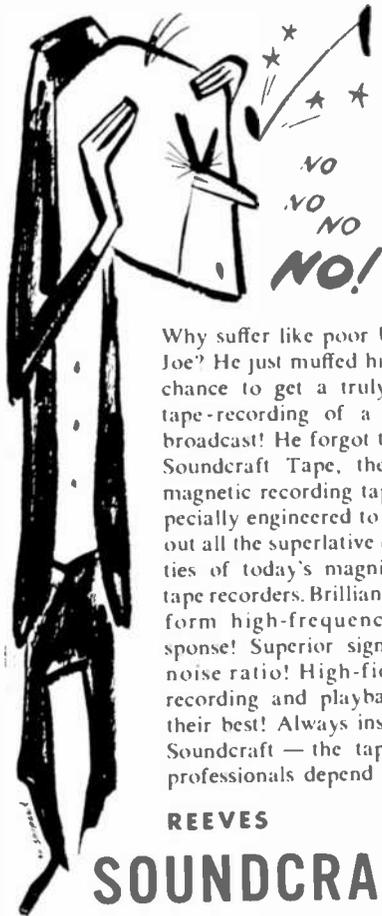
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ELECTRO-VOICE 664



Electro-Voice has announced an advanced type cardioid dynamic microphone, Model 664. This mike provides uniform response at all frequencies from 60 to 13,000 cps, has an output level of 55 db, 150 ohms, can be used on floor, desk stand, or carried in the hand, and is finished in Satin Chrome. It features a pop-proof filter which minimizes wind and breath blasts, special shielding from dust and magnetic particles, the E-V acoustalloy diaphragm, an on-off switch, and is equipped with an 18 foot cable. List price is \$79.50. For further information, write to Electro-Voice, Inc., Buchanan, Michigan.

tion motor. The "Emperor" is of modern design and sells for \$249.50. For complete details, write to Pentron Corp.

DE-JUR STENORETTE



The De-JUR Amsco Corporation announces the development of an entirely new concept in dictation machines. The new compact machine is called the DeJUR Stenorette. It is a push button operated machine that can be used for either dictation or transcription, thus saving the cost of a separate transcribing unit in small offices. The Stenorette has tone and volume controls and using tape provides the maximum in fidelity of reproduction. Five push buttons provide automatic control for recording, listening, forward and reverse high speed winding and stopping. Dictation corrections or playback are facilitated by an automatic scale indicator. The microphone is equipped with a control bar so that it is not necessary to touch the machine during dictation and errors can be completely erased and new material added with maximum convenience. Distribution will be through franchised dealers. The price of the unit is only \$169.50. For full details regarding machine and dealerships write DeJUR-Amsco Corporation, 45-01 Northern Blvd., Long Island City, N. Y.

PENTRON "EMPEROR"



Pentron Corporation, 777 S. Tripp Ave., Chicago, Illinois, has introduced its Model HF-400 "Emperor" recorder. The machine is dual track, dual speed (7½ and 3¾ ips), with a frequency range of 40 to 12,000 cps and signal to noise ratio of 50 db. It features a new single lever control for fast forward, fast rewind and playback; three speakers, two heavy duty woofers mounted in the recorder case and a third roving tweeter speaker mounted in a separate baffle; an automatic index counter; microphone, radio inputs and auxiliary amplifier and auxiliary speaker jacks; and a recording level meter. It has separate record-playback and erase heads, and a shaded four pole self-starting induc-

AMERICAN CRYSTAL MIKE

American Microphone Co., 370 South Fair Oaks Ave., Pasadena 1, Calif., is marketing the model X-203 crystal type tape recorder microphone, which is also suitable for paging systems and general purpose work. This instrument is omni-directional, covers a frequency response range from 100 to 7,000 cps, weighs only 2 ounces, has an output level of minus 55 db, is supplied with a 5 ft. single conductor shielded cable, and is available in various colors. It may be placed on its back on desk or hand held. For complete information and price, write to American Microphone Co., above address.

LANGUAGE COURSE

The Tapespondence School Box 54, Middlebury, Vermont, offers a 10 hour language course, including 5 guidance tests to be recorded (which are corrected free of charge), on 5 reels, dual track tape, recorded at 3¾ ips. The masters and the copies were made by A-V Tape Libraries. A 220 page manual accompanies the tapes which sell for \$50.00.

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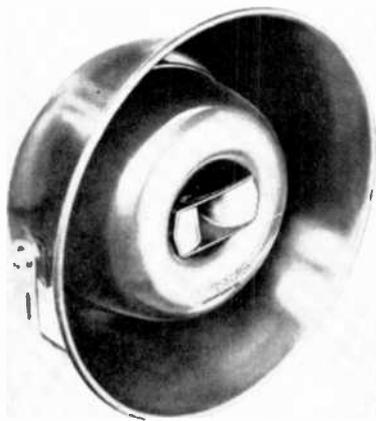
Please let us have your new address just as soon as you know it so we can change our records accordingly, and give you uninterrupted service.

ELECTRO-VOICE 927



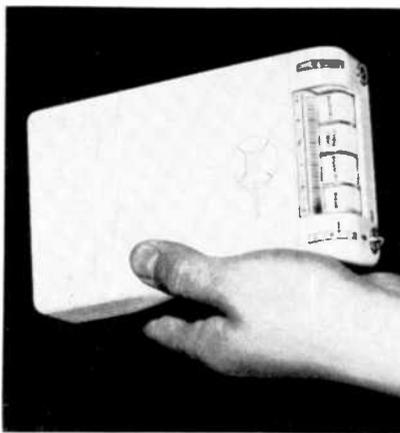
Electro-Voice, Inc., Buchanan, Michigan, is marketing its new Model 927, slim crystal microphone. This mike has a frequency response of 50 to 6,000 cps and an output of -50 db. The instrument is available with or without an "on-off" switch and is supplied with a 5' cable. The 927 fits into a base stand for use as a table mike, or it may be hand held if more convenient to the user. The stand is furnished with the microphone. It has a brushed chrome and contrasting gray finish. For complete information and price, write to Electro-Voice.

NEW SPEAKER



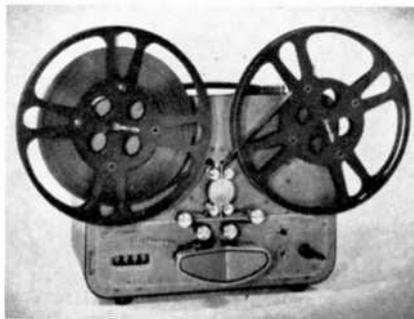
University Loudspeakers, Inc., 80 S. Kensico Ave., White Plains, N. Y., announce a new full range weatherproof coaxial loudspeaker. Model BLC, of dual range design. It measures 22 1/2" in diameter with a depth of 9", and it comprises a low frequency woofer coupled to a balanced compression type of exponential horn, which has an 8" throat and extends to a 22 1/2" diameter mouth. Coaxially mounted is a separate high frequency tweeter with its own driver unit coupled to a wide-angle horn. This model has a frequency response of 70 to 15,000 cps, an input impedance of 8 ohms, and is finished in green and gold. The list price is \$75.00. For additional information write to University Loudspeakers, Inc., above address.

MINIFON P55



The world's only pocket-sized push-button precision wire recorder, the Minifon P55, will soon be available. This instrument is made in Western Germany by Protona, and will be distributed exclusively by Geiss-America in the United States. The P55 contains the world's smallest electric motor; will record up to 5 hours of speech at 4 1/2 ips, or up to 2 1/2 hours of music at 9 ips; has a crystal microphone which will record as far away as 20 feet; has push-button control; can be adapted for dictation purposes; has a frequency response from 150 to 5500 cps; weighs 28 ounces; and many accessories are available, such as a wristwatch mike, a combination speaker-microphone for recording and playback, and a dictation foot switch. The price of the P55 is \$289.50. Further information is obtainable by contacting Geiss-America, Chicago 45, Ill.

STANCIL-HOFFMAN S6



Stancil-Hoffman Corp., 921 North Highland Avenue, Hollywood 38, California, has announced a new line of professional magnetic film equipment, designated as the Model S6 system. This system is engineered around a 24 volt battery supply, and a full line of inverters and converters is available for any camera and recorder combination. The studio production unit consists of three cases: one case contains a two-channel microphone preamplifier mixer with an announce microphone and buzzer system; the second—the recording amplifier, playback amplifier and power supply; and the third—the film transport or sprocket drive. The S6 is available for 16 or 17 1/2 mm film, and is adaptable for many accessories including special directional microphones, cables, and sound powered telephones for intercommunication. For complete details and price, write to Stancil-Hoffman, above address.

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Auto-
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On-Off
Switch

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GOOD NEWS

FOR ANYONE WHO OWNS
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Out September 15, a new publication,

THE HARRISON CATALOG OF RECORDED TAPE

At the present time, there is no single source of information, telling you what is available on recorded tape. This new Harrison Catalog will fill this need. It will contain:

- 1.) A complete alphabetical listing of currently available classical and popular music on tape. (The listing will show musical content, recording speed, reel size, single or double track.)
- 2.) Cross reference by company.
- 3.) Feature articles of interest to the tape collector, audiophiles and all owners of tape recorders.

Ask for this catalog wherever recorded tape is sold or write directly to the publisher. 15c a copy.

THE HARRISON CATALOGS

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1/4" Mylar & Acetate Tapes

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... in seconds!

- Diagonal cut capable of withstanding 3 pound pull
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- Also splices leader to any base magnetic tape without adhesives.

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TAPE CLUB NEWS



Voicespondence members (left to right) Roy Howard, Patricia Howard, Doll Goss, Vic Goss and Lawrence Howard enjoy first picnic-convention of club.

The first picnic and convention ever held for Voicespondence Club members was staged in Los Angeles on June 5. Over 60 members, together with other interested parties attended the affair, which received considerable publicity in local papers. Activities for the gathering were planned by District Deputy Victor Goss, assisted by his wife Doll and Voicespondent Roy Howard.

The program included a tape recorded message from Mr. and Mrs. Owens at club headquarters in Noel, Virginia, speeches by Roy and Vic regarding club aims and problems, and a question and answers session with member Ralph Hiett assisting with technical data. Much time was spent in getting personally acquainted with one another and in discussing tape recording. An enjoyable time was had by all.

Emotionally overwhelmed by the warm display of hospitality which greeted him at the dock, Voicespondence member Gordon Harris of Milford Haven, South Wales, found a ready welcome awaiting him on his arrival in this country. Voicespondent Dick Kenny of Stamford, Conn., was on hand to play a composite recording of tapes for him from several other members welcoming him to the United States.

Since joining Voicespondence in February, 1954, Gordon has acquired many friends in America. Intrigued by descriptions from them about life in this country, Gordon is finally fulfilling a dream by spending some time with each of them.

So far, Gordon's travels have covered the eastern part of the U.S. from Niagara Falls to Pensacola. Some time during the three months that he has planned to remain here, he will visit Nantucket, the home of the founders of Milford Haven.

A new tape recording club dubbed The United Recording Club has been formed and incorporated. This organization is seeking international members with or without tape recorders. Complete information is available from United Recording Club, 2516 So. Austin Boulevard, Chicago 50, Illinois, for any interested parties.

International Tape Worms, now affiliated with an Australian tape recording club

known as A.T.R.A., is at present the only Australian club for tape recorder owners, engineers and enthusiasts. It is expanding steadily in its membership and welcomes members from all over the world. The club sends out a magazine to all members the first of each month which is entitled "Resound," and also supplies badges to them. Members of this Association are entering the IARC 1955-CIMES 1955 (4th international contest of the best amateur sound recording) and to all we extend our best wishes for luck. Australian headquarters for the association may be reached at Box 36, P.O., Noble Park, Vic., Australia.

Weird sounds of African wildlife and music are soon to be captured on tape through the efforts of a new member of World Tape Pals, Joseph George Vella of 5/B Dabermida Street, Asmara, Eritrea. Joe has just purchased a British make semi-professional recorder, and he is going to use the unusual recordings in conjunction with 16 mm travel films.

Another member of WTP, B. Sam Taylor of Medford, Oregon, is attempting to preserve the sound effects typical of the Oregon forests on tape. Sam intends to record everything from a shotgun firing to the whirr of a power saw and thunder of the fall of a giant sugar pine tree.

Jimmie Hammer, 7121 210 St. S.W., Edmonds, Wash., would like to organize a new tape club. Anyone interested in same may contact Jimmie at the above address.

JOIN A CLUB

TAPE RESPONDENTS INTERNATIONAL

Fred Goetz, Secretary
P. O. Box 1404T, San Francisco, Cal.
THE VOICESPONDENCE CLUB
Charles Owen, Secretary

Noel, Virginia
WORLD TAPE PALS

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

INTERNATIONAL TAPE WORMS
Art Rubin, National Chairman

P. O. Box 215, Cedarhurst, L. I., N. Y.
GLOBAL RECORDING FRIENDS

Alfred L. Sferra, D.D.S., Secretary
125 Hamilton Street, Bound Brook, N. J.

QUESTIONS & ANSWERS

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

Q—Several times I have run across this problem with tape. A program is recorded and months later the succeeding recordings are greatly less in volume and quality. At times the same equipment was used but in one instance the later recordings were made on superior equipment but the quality was poor.—J. C., Nashville, Ga.

A—There are a few causes for the conditions you describe and perhaps one of those listed below is your trouble. 1—Your recorder may use a permanent magnet for erasure and the tape is riding too close to the magnet on playback. This will have the effect of weakening the signal on the tape each time it is played. 2—Magnetized head, capstan or guides will have the same effect. As a head accumulates magnetism its output will drop. Try a head demagnetizer to see if it will improve the condition. 3—Dust particles accumulated on the heads will also weaken and lessen the quality on both playback and recording. Clean the heads as recommended in your instruction book. Tapes will last indefinitely with little loss if properly stored. Keep in metal cans or the boxes in which the tape is packed, away from heat and magnetic fields.

Q—Part of the sound on my tape fades after it is played a few times. If I play it over again more of the sound on the tape fades. Could you tell me the trouble? —D. C., Chicago, Ill.

A—See the answer above. Another possibility is that some current may be leaking into the erase head during playback and thus weakening the recording.

Q—In your article on Hum by James Mills in the June issue the AC loop was not explained. Could you tell me what this is as I'm not the best in electronics. Also, you state that radios have a ground above ground. Does the ground symbol shown on a radio hookup mean that it must be connected to an actual ground?—C. H., Cincinnati, Ohio.

A—A.C. loops are very low resistance paths between common chassis grounds which ordinarily would cause no trouble and can be ignored. However, when an audio output is highly amplified, those loops produce objectionable noise and hum. When you connect two audio devices, such as a recorder and radio together using one side of your line carrying the signal as a ground between the two, the effect is greater. The ground symbol shown on a radio drawing does not necessarily mean a connection to

the earth. For instance, if a loop antenna is used, no ground connection is necessary, yet the drawing will show a "ground."

Q—The booklet of instructions that came with my recorder states that while its standard crystal microphone is sensitive enough for general use, dynamic mikes can be obtained for more exact recordings. I'm not an audiophile, and I record mostly the music of stringed instruments, as heard in early folk music and modern hill-billy music. However, like anyone else I appreciate clarity of tone and fidelity. Would it pay me to invest in a dynamic microphone? My second question concerns the duplication of tape and since following your magazine I've come to realize that this is a highly specialized art, for which service, specialized firms get paid a commensurate fee. I have tried connecting two recorders together but I find the signal to noise ratio is not good and there seems to be quite a loss in the medium to low frequency tones. Is there anyway I can refine this process without spending thirty or forty dollars for an electronic mixer or preamplifier?—M. T., Wellesley, Mass.

A—If you want to get really fine reproduction on your recorder it is, of course, good to procure one of the better microphones. Be sure its db rating is such that your pre-amplifier in the recorder can handle it. Generally any mike of—55 db or less will be O.K. in so far as output is concerned. Any recording is subject to the limitations of the weakest link. The mike should be better than the recorder and the recorder must be good enough to get the most out of the speaker system. As you say, dubbing tapes is quite an art and we hope you found the article on hum in the last issue of help in improving your results.

Q—Could you please let me know if, on a recorder having a permanent magnet erasing head, erasing of a tape (without recording) at 3¾ ips is more efficient than at 7½ inches per second.—C.C., Schenectady, New York.

A—There will be no difference in efficiency in a permanent magnet erase between the two speeds. This is due to the fact that the time constant of a magnet is so short (about 1 microsecond) that a tape would have to travel at tremendous speeds before any effect of a speed change would be noticed. The erase magnet and tape contact would have to be the same at both speeds.

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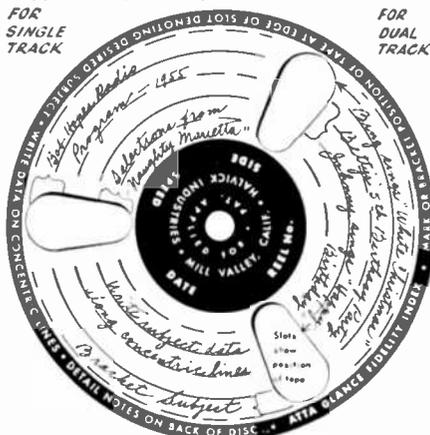
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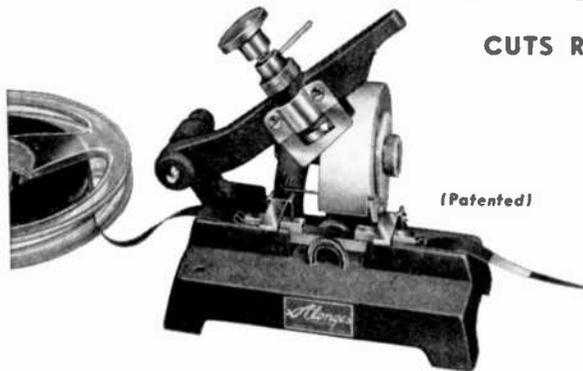
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TAPES TO THE EDITOR

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

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

To the Editor:

Perhaps it is just the company I keep, but in my circle of friends there are hardly any such "untouchables" as would not like to own a tape recorder and a good deal of time is spent talking and dreaming about the subject. Alas, the economic considerations have, so far, restricted the activity to the talking stage, however feverish; after all, to be practical, even the low-cost units on the market today still represent a considerable investment.

Moreover, almost the identical group is in the process of gradually scrounging together a Hi-Fi system, component by component; thus most of the present commercial tape recorders would represent a duplication of the pre-amp, amplifier and speaker portion of the system. To my knowledge there is only one low-cost tape mechanism available for intergration into the home system.

From my own experience it occurs to me that much interest might be shown by us "impoverished dreamers" in an article on some "home-made" equipment in your magazine. Such an article would probably show the wiring diagrams, etc. and use commercially available sub-components.

If it is your considered opinion that my suggestion would not result in any saving over the existing mechanism, a statement to

that effect would also put an end to our fruitless conjecture and put an end to our misery until we are able to "shell out."—*Werner Field, Dover, New Jersey.*

The manufacturer of a package unit who buys in quantity can put together the same components much cheaper than you can—but the fun in the hobby is doing it yourself. A "package" tape recorder of good quality needs only an external speaker system of good quality to give you what you want. You might come out best doing that. As you probably know, the tape mechanism itself is the heart of a recorder and a good one should be secured. Ed.

To the Editor:

I am rather new at tape recording. I had a wire recorder which was not satisfactory and I now have a tape recorder. As a Justice of the Peace, I use both in court.

Your magazine makes the hobby of tape recording interesting and gives many tricks of the trade, as well as up to date recording methods and accessories.

I would appreciate getting in touch with any tapeworms in the Miami Valley (from Dayton to Cincinnati area). I have written to all four Tapespondence clubs.

I would like to start a tape recorder club to meet and discuss methods and techniques. I would be happy to act as intermediary

for those who have tapes and wish to swap, rent or borrow. Also I will correspond back and forth at no cost to the swappers, with those who get in touch with me.—*John H. Clayton, 6905 Gleason Avenue, Dayton 7, Ohio.*

To the Editor:

I challenge you to cite for me the law which limits the frequency response of AM transmitters in the United States to 5000 cps, as stated in your column in the June issue.—*Karl C. Thomas, State College, Pa.*

To the Editor:

... you state that standard broadcast stations are limited to a 5 k.c. bandwidth, "by law." This was startling news to us, and presented two alternative conclusions: Either your informant studied one of the Q&A manuals and little else, or some mysterious organization, of whose existence we here are woefully unaware, is merrily passing laws governing broadcasting stations. If the latter is true, we would like to know if this organization supersedes, countermands, or in any way renders invalid the Federal Communications Commission's Rule governing Radio Broadcast Services, number 3.46, sub part c, which states in effect that the *minimum* bandwidth would be plus or minus 7500 cycles, but does not restrict a station's bandwidth to any particular maximum value, providing interference is not caused on adjacent channels, and since the bandwidth, or rather sidebands of higher order have been found to have very little power, it is conceivable that an A.M. station could transmit plus or minus 15,000 c.p.s., or at least enough so that it deserves more than the cavalier treatment expressed in "... adequate for ... A.M. radio."—*Jerry Boos and Chuck Lilligren W'DLB-W'DLR-FM, Marshfield, Wisconsin.*

To the Editor:

In the June 1955, issue of TAPE RECORDING, on page 20, you make the statement that AM radio is limited by law to 5000 cycles. I would like to clarify this misconception you seem to have on the allowable modulation limits of AM radio stations.

AM radio is NOT limited by law to 5000 cycles. There is NO restriction on the maximum modulating frequency in AM radio. Only in the case that interference is caused to other stations by modulating frequencies above 7500 cycles is the station required to limit its upper modulating frequency and the upper limit is then 7500 cycles and NOT 5000 cycles. Please refer to Part 3, Section 3.46, paragraph c; of the FCC Rules and Regulations.

High quality programs on AM are not rare, but it takes a high quality receiver and adequate signal level to enjoy them fully. Of course, high quality LP recordings and pickups are necessary at the station. In the majority of cases it is the lack of receivers capable of reproducing high-fidelity programs and not the inability of the AM stations to broadcast a high quality signal that lead some people to believe that all AM radio is poor quality. — *Kenneth E. Larson, Transmitter Chief, W'DGY, Minneapolis, Minnesota.*

To the Editor:

In your June issue of TAPE RECORDING I note your statement . . .

" . . . is adequate for voice recording and recording from AM radio which is limited by law to 5000 cycles."

This is a very common misunderstanding, but I believe that it is one that should be cleared up. Broadcast stations are *not* limited by law to 5000 cps. The only provision included in the regulations in this regard, provides for attenuation above 7500 cps . . . *provided* interference is being caused, but note that this is the exception and not the rule. It is possible that some stations are required to cut at 7500, although I know of none.

Broadcast stations are required to be within 2 DB at 7500 cps. I know of several broadcast transmitters that are within 2 DB at 10,000 cps and I believe that some models especially those using something other than high level modulation, exceed these ratings.

Nearly all AM stations have distortion ratings that are lower than the combined recording-playback distortion of the records they play.

I hasten to add, however, that in many cases this low distortion extended frequency response is not available to the home recording enthusiast or Hi Fi fan. Many IF stages clip this extended frequency response down to the 5000 cps figure you mentioned or less and non linear detectors often contribute far more distortion than was originally present.

This is not a criticism or your fine magazine. It is a very common fallacy, and one that I would like to try to clear up. — *W. E. Bradford, Manager, KSSI, Sulphur Springs, Texas.*

Thanks to each of you for setting the record straight. We made the error when we said the limitation was imposed by law. We did not mean to imply that there was anything wrong with AM radio—there isn't. It has been here a long time and will be for a long time to come. As Mr. Bradford explains in his letter, the net output at the speaker is 5000 cps or so and, as we advised our correspondent, the lower speed on the recorder should be able to handle this range. Considering the number of stations rubbing elbows on the band and the fact that the stations run close to 100% modulation to give good coverage, they do a fine job.

To the Editor:

I would like to get a tape, or a copy, of the Desert Song as heard on TV on Saturday May 7 starring Nelson Eddie and Gail Sherwood. Unfortunately I missed this performance. Do you have a list of people in various cities who own recorders and would be willing to accept tapes from other recording fans and play them for these fans to friends and relatives who do not own recorders, record their reply and then have the tape sent back?—*Fank T. Scott, 543 E. 19th Street, Long Beach 6, Calif.*

We would suggest that you join one or more of the tape correspondence clubs, the address of which you will find listed on the club news page. You could then contact club members in the cities you have in mind to see if they would be willing to play tapes for non recorder owners.

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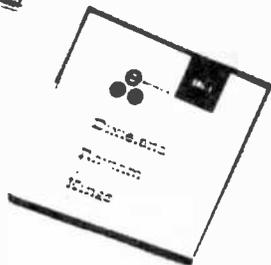
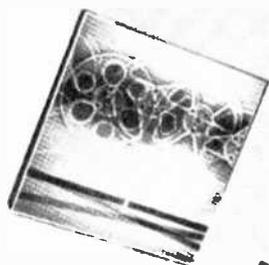


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SOUNDS THAT KEEP YOUR TRIP ALIVE

by Jeffery Grant

... sound is more potent than pictures in keeping memories alive.

Tape your trips with a portable.

YOU stand there in the crowd at New York's Idlewild Airport, your wife beside you, waiting for your Air-France flight to be called. You are nervous and you shift the portable tape recorder occasionally from hand to hand.

You are nervous because this is the first time you are going back since your troopship left Le Havre in 1945. You waited a long while for this trip. You and your wife saved and worked and studied travel folders long into many nights. But now you are going back. You are going back because you wanted to find once again the special fascination that Europe held for you as a GI during the war.

You tried to explain to many that special quality that is only in Paris spring night air, how it feels to walk down century-old streets in a German town. But it was no good:

it didn't come out right in words. You wanted to discover it all over again, and this time with your wife. You would even rent a car and retrace your route from the time you arrived at the replacement depot outside Paris to when you were assigned to the Third Infantry Division and ended up in Austria on VE Day.

You have only six short weeks . . . two weeks' vacation and a four week leave of absence you were able to wrangle from your firm. Not much time. Every minute will have to count. But even more important, you are determined to bring home a living, breathing slice of European life . . . you want to capture these six weeks in a form you will never forget. That is why you are carrying a portable tape recorder in your hand.

Shortly after the War, with a "liberated" German camera,



Aloft and on your way to France you have the opportunity to tape the voices of your fellow passengers. International flights carry people from all over the face of the earth and give you a priceless opportunity to capture the voices and accents that will make your trip really live.

you took all the photographs that every European tourist takes: all the famous sights and places that weren't reduced to bombed rubble.

You would sight a castle overlooking a lovely lake through the viewer of your camera and click the shutter. Two weeks later you showed the picture to buddies in your platoon. Despite a few grudging "yeah, that's nice all right," you could see the photograph held no special interest, not provoking even the slightest response.

The photograph was good: sharp and clear. But there was no experience to share. The photograph suggested nothing as to how you felt at the time you clicked the shutter. You shook your head at your friends' indifference.

A year later, leafing through the family photo album, you studied each one of the photographs you took in Europe. Even the lake scene. Now, even to you, they have become merely photographs. Every travel magazine is filled with such pictures. Lifeless . . . dull . . . static, a reproduction

of life frozen in time. You wonder why once you had found these photos so appealing.

But not really difficult to explain, you reflect. We have a tendency to forget over a period of time all but those emotional experiences that rock us the hardest. Unless the photograph has a special dramatic story all of its own to tell, we no longer associate or "read into" the photo the feelings we had at the time we took the picture.

You promised yourself that this time it was going to be different. With your portable tape recorder, inconspicuously housed in a businessman's briefcase, you would bring back a collection of sounds and voices that would be as appealing after ten years as the day you recorded them. A collection of sounds that would really excite the interest and enthusiasm of your friends. You are going to capture the songs, the honking of taxi horns, the tolling of the bells, the excited dialect of the guides that are bound up in the tinselled package we call "Europe." You are going to bring



The chatter of the Parisian taxi-driver and the sounds of the city are yours with a portable recorder. The blare of the horns and the screeching of the tires will bring to life the memories of a careening cab ride better than any photo could.

back tapes that "live." Back home in Minneapolis, three thousand miles away, you can flick the switch of your recorder and visualize yourself standing once again on a Paris street corner, talking to a "flick," or floating down the Rhine to the accompaniment of the soft music of a German band. You will be able to relive your trip . . . every minute of it . . . a hundred times. And for that matter, so will your friends. This time you will be able to share your experiences with them.

Suddenly Mary is tugging at your sleeve. Your daydream abruptly ends. She is young and superb. Her cheeks are flushed in anticipation. She looks up at you and smiles.

"They are calling our flight," she says.

Hastily you flick on the remote control switch on your microphone. The announcer's voice, pleasant in its rich French accent, crackles over the PA system: "Your attention, please. Air-France Flight 11 now ready for departure for Paris, France."

The announcement concluded, you turn the recorder off, making a mental calculation of how much recording time you have consumed. Your recorder accommodates five inch plastic reels of magnetic tape. Recording one track only, at $3\frac{3}{4}$ inches per second, you have a full thirty minutes of recording time before you will have to change reels.

Your recorder has been ingeniously designed to eliminate every ounce of unnecessary weight. So light you can carry it all day with no protest from your biceps muscles, it weighs less than thirteen pounds. Inside your luggage are packed 15 reels of a special green-colored high output magnetic tape. The tape's increased output sensitivity makes possible better recording at slow tape speed. This is important for a portable tape recorder. Because you are intent on recording sounds of the moment you do not have time to "ride gain" or make volume control adjustments. The high output tape gives you protection against overload and distortion, in case the record volume is set too loud. If it is set too low, the tape's extra sensitivity assures a clear recording.

Although you have purchased your portable only a few days before the trip, you couldn't resist experimenting. You recorded every sound or voice you heard with the intent fascination of a child with a new toy. You are amazed at the high-quality tapes your miniature recorder produces. You are even more surprised because your knowledge of electronics has been limited to throwing a light switch and tuning in a television set.

On board the plane, you record the roar of the transport's engines as they are revved up, straining for the take-off. Then you tape the voice of your French stewardess as she says, "Fasten your seat belts. Please observe the 'no smoking' sign."

Once in flight there is no lack of material to record: Mary struggling with the menu, trying to order in her best college French. The steward ceremoniously opening your bottle of champagne with a pop, deftly capturing the bubbling overflow in poised cocktail glasses. Then your toast to a glorious, happy six-week tour. A conversation with a French colonel who had just returned from Indo China. Two small children insisting on singing folk songs of their native province, Brittany, in the tape recorder.

You congratulate yourself on the perfect ease of capturing an incident and recording it so naturally, so realistically so that the tape will actually "live" as many times as you choose to play it. Teams of recording engineers in

years past have shipped literally tons of recording instruments from place to place in Europe to make recordings. By contrast, you make quality-perfect tapes with a briefcase recorder, battery-operated, weighing less than thirteen pounds. And you are seated comfortably on an Air-France plane, half way across the Atlantic; altitude of 12,000 feet.

At Le Bourget Airfield in Paris you pass a perfunctory customs examination, shoulder your way out to the street where your luggage and a cab is waiting. One thing you and your wife had resolved during the early planning stage of the trip was to stay clear of those hotels and restaurants run expressly for American tourists or which Americans have taken over in large numbers. You are determined to find and record as accurate and representative a picture of European life as you are able. You cannot afford to get caught in a mire of hotels and restaurants which are run as close approximations of what you might expect in New York or Chicago.

After many consultations with your French friends before you left and a careful study of your *Guide Michelin*, a guidebook for the motorist covering the whole country, you select a small hotel on Boulevard St. Germain listed in the "Very Comfortable Hotel" category.

You give the address to the cab driver. The cab lurches forward and you careen through the streets at a reckless speed. Bicyclists are everywhere. Your cab dodges in and out, screeching around corners, overtaking the slower and more cautious motorists. However, you soon come to the conclusion the cautious motorist is a vanishing minority group in Paris. All the while your cab driver keeps up a steady conversation in French, punctuating his phrases with a wave of either hand. Bit by bit your French begins to return and you groggily follow his conversation, one eye cocked on the road.

You explain to him, after some difficulty, that you are recording his conversation and the sounds of the taxi careening through the heavy Paris traffic. "Just like taking a picture, only we're recording sound instead," you emphasize. Your driver nods his head happily. Although he has never heard of a tape recorder, he expresses particular pride that his voice is being recorded, even insisting on a lengthy dissertation on the high cost of living in Paris.

Back in Minneapolis when you decided to record your trip, Mary expressed concern that people would object to having their voices recorded. "After all, this is something new. It's not like aiming a camera and snapping a picture. Maybe people feel differently about having their voice recorded."

Despite dark fears of being arrested as spies or having the police confiscate both recorder and tape, the idea was too appealing to pass up. Then again, it was not always possible to record secretly. While the reluctance-type microphone attached to the recorder had a remote control switch and recorded from all directions it would often be necessary to hold it in various positions, often at arm's length, to catch a voice or sound properly. Often, too, you discovered better results were obtained when you announced in advance you were tape recording parts of a conversation. You quickly learned the French term for magnetic tape—"ribon magnetique" and tape recorder—"enregistreur-reproducteur."

The cab driver's eager cooperation and the delighted willingness of your fellow passengers on the Air-France flight were repeated over and over again. Only rarely did



The sound of the cathedral bells ringing out across the square can easily be picked up by the mike of your portable recorder. By using a self-contained portable you are free from the vagaries of varying current supplies.

you encounter hostility. You found only curiosity and eagerness to be of help. There was the white-haired gentleman who personally insisted on escorting you under half of Paris on the Metro subway system to help you find an out-of-the-way student cafe located in the basement on a narrow little street near the Cathedral of Notre Dame where student songs were sung. Little known even to native Parisians, the cafe has been a tradition to generations of Sorbonne students. Everyone you met had suggestions on new sounds to record, sounds that are typical of Paris. You had planned a two week stay in Paris, but in three day's time you already had a list of suggested recordings that would take more than a year to complete.

Prior to your trip you had wondered whether it would be necessary to give a few coins to obliging children and others for recording their voices. By analogy, most American tourists are expected to tip when taking photographs of natives who pose before famous cathedrals and other obvious places of interest through Europe. However, you soon discovered an American with a tape recorder occupies a quite distinct and unique category, keeping him quite apart from the annual tourist invasion.

The thought of a gratuity, you are certain, did not cross the mind of one single person whose voice you recorded. Often you would explain the recorder, let the person listen to his own voice, faint but audible through the microphone playback. (To conserve weight your recorder had no playback amplifier. Your recorded tapes are played on another recorder or you can transmit radio waves to a standard radio set in the same room, and dial in your tapes, loud and clear.) Your tape recorder invariably became a subject of mutual interest and led to friendships, intimate and frank discussions, giving you an opportunity to see whole fragments of European life, ordinarily closed to American tourists.

One of the first days in Paris was set aside for a recorded shopping tour, organized under Mary's direction. Through centuries of custom Parisians shop in certain districts. The Rue de Rivoli is certainly the most lively street in Paris, invisibly divided by the Palais-Royal. Here the wealthier districts are divided from the poorer quarters. From Saint-Germain-l'Auxerrois to the Hotel de Ville, the shops along the Rue de Rivoli are devoted to the working classes, almost one huge shop. Big stores: La Samaritaine, Le Louvre,

L'Hotel de Ville are surrounded by hundreds of small shops selling cheap clothes, shoes and costume jewelry. The entire district is overcrowded with people carrying parcels.

The hurried bustle of the large stores made excellent contrast with the reserved quiet and splendor, as recorded by your tape recorder, of the Rue Royale, a street of milliners, jewelers and antique shops. On the Rue de la Paix, the shop windows overlooking the street give the impression of only a silent and elegant vestibule. In the windows are displayed a few bottles of perfume or a luxurious bolt of silk material. On Place Vendome are located two of Paris' most sumptuous jewelers, world-famed Instituts de Beaute. You attend a style show, then visit the "workshops of high culture" where new fashion modes are set. Then to the "Marche aux Paces" or the flea markets where thieves and "fences" rub shoulders with honest tradesmen, selling in the open air every conceivable article of merchandise.

With imagination and judicious use of the tape recorder, we were able to capture the personality and atmosphere of every store we visited that we felt worth recording. Les Halles we found to be an entire district where fish, meat, vegetables, cheese, game, flowers, fruit and eggs are sold. You are there early one morning as the country produce comes in. The ground is slippery and you make your way through crates of food produce of all sorts. A strong odor characterizes the whole area, and everywhere you turn you see frogs jump out of bunches of watercress and an occasional rabbit escape from a basket. The chase of one rabbit, through a labyrinth of crates, followed by three fat commission-agents, was one of our tape-recorded highlights of the day.

Les Halles is bordered by small cafes and restaurants, many of which are held in high repute by our French friends. "Le chien qui fume," "Le Pere Tranquillee," "l'Escrgot d'Or," "Le Pied de Cochon" are especially well known. Following our early-hour tour of Les Halles, we counteracted the damp morning air with a bowl of especially delicious onion soup, accompanied by jokes from the proprietor, whose fat jowls shook each time he roared with laughter.

During your stay in Paris, one of your most intriguing occupations was seeking out good restaurants. Again, your tape recorder captured faithfully the elegant luxury of Maxim's, the traditional eating place of the boulevardier and the bon vivant, to crowded, joyous small restaurants, offering just good food and music.

Here are some of your more memorable recordings made in Paris: A Sunday afternoon on the Champs-Elysees where you recorded a puppet show, complete with the delighted shriek and cries of the small children. The Madeleine where the off-color post card hawkers descend or force upon anyone resembling an American tourist, together with nervous, shadowy figures offering to negotiate black market currency manipulations. The only cops in the world who will pause at a book seller's stall on the Seine or an art shop window and will discuss either Picasso or the Existentialists. An interview with the delightful members of the chorus back stage at the Follie Bergere. (You were on your own on this one.) Conversations recorded during an afternoon spent on the sidewalk cafes.

You recorded, of course, the usual stereotyped places every tourist visits: a trip up the Eiffel Tower, an afternoon at the horse races, a tour through Versailles. But you have been in Paris long enough to see a little beneath the sur-

face. Your recorder captures occasionally the unhappy undercurrent through a sad voice—attesting that life is hard, price-wise, in Paris.

Following two weeks in Paris, you rent a Renault and you're on your way westward through the chateau and cathedral studded provinces of France. The battery of your portable tape recorder can be re-charged by plugging a connection into the cigarette lighter of a car, but you are disappointed to discover that your Renault has no cigarette lighter. But each evening in your hotel room, using a compact, lightweight charger, you re-energize your battery for the recording to be done the following day.

In the Loire Valley, on the indolent, blue Loire River, you pause at Orleans. You are there in May when the people of Orleans keep the memory of Joan of Arc alive each year. You record an evening's festivities in the cafes, celebrating the liberation of the town from the British in 1429. You also record the services at the famous Orleans Cathedral. In the province of Burgundy you tour the vineyards, record a heated argument between two wine merchants on the respective merits of their wines.

Then you are in Alsace-Lorraine and the scenery becomes more familiar. Even in the cheery May spring weather you still remember fighting your way through in the dark, drizzling winter of '44-'45. There is Strasbourg, Colmar, Rouffach. In D'Alsace, traveling over country roads, you find the small farmhouse of the family that risked their life to hide you in their cellar for three days when you were cut off behind German lines, until your outfit recaptured the town. The meeting with the Duviers was both tear-choked and joyous. You eat a good country meal of the Provinces: a stew, humble perhaps, but rich in flavor with its many vegetables and a quarter of green cabbage.

You enter Germany over the Rhine Bridge at Kehl, stopping at Heidelberg, recording a philosophy lecture at the University in the afternoon, and student drinking songs in the evening in the beer gardens and restaurants. Then a boat tour on the Rhine. A trip through the Black Forest where you record famed German craftsmen manufacturing hand carved clocks and toys, working in their own home workshops. In Bavaria your recorder captures the folk dances, songs and music of the mountain festivals. On your tape you record Bavarians dancing the "Schukplatter" and yodeling, dressed in native costumes. Your recorder captures the dialect of the Bavarians—so distinct and different that other Germans have a difficult time understanding them.

From Hamburg you take a boat to Juist, a small island resort center in the North Sea. You even find time for the Wagner Music Festival at Bayreuth.

In Munich, you are so intent on recording the music of a restaurant band that you keep edging your chair closer and closer until the sliding trombone narrowly misses your nose. Glancing back, you see everyone in the restaurant roaring with laughter. Then you realize you are seated a full eight feet away from your table, microphone in hand.

Throughout your trip you discover the limitations and capabilities of your recorder. Operating the microphone remote control switch and the record and volume dials represents no more of a trick than clicking the shutter of a camera. But you soon realize that recording becomes an art when you begin to comprehend microphone placement. Where is the best spot to locate the recorder when two



Native songs and the native music can often be taped in the small cafes, giving you a slice of life that you will treasure long after your trip has come to an end. The small portables are inconspicuous.

people are talking? When your subject is moving about? How to record sounds to obtain a directional effect? How is the best way to record some of the simpler folk music you were exposed to on your trip? You repeatedly wish that there were handbooks available for people like yourself touring Europe with a portable tape recorder. But then, tape recording is much too new to expect to find any detailed instructional material. You are pioneering a method of sound hunting that is soon destined to become a national pastime hobby.

Bit by bit, through a trial and error process, you learn microphone techniques. You are able to come closer and closer to the special effects toward which you are working. But the recording principle is so simple and fool-proof that it is almost impossible to get bad results. However, your recordings become better from the standpoint of "artistic effect" as your handling of the microphone improves. For example, in recording an old man whose voice is tired and resigned, you are able to accentuate his personality, depending upon the distance and the angle at which you hold the microphone. Not very important, perhaps. But once you become thoroughly entangled in the hobby of tape recording, you strive for better and better results, slight graduations in tone and emphasis.

Midway through your trip you have exhausted your reels of magnetic tape you brought from the States. You find a variety of magnetic tape brands available on the European market. But in France you use tape made by Eastman Kodak's Paris plant and in Germany you select Agfa magnetic tape or "Magnetoband." Neither concern, however, is marketing magnetic tape in the United States at present. Once home, with a pair of scissors and splicing tape, you will edit down the many hours of recording—eliminating the unnecessary verbiage, cleaning up the recordings where necessary—until you have a series of tapes that tell the story of your trip concisely, and with real dramatic impact.

Back in Paris, near the end of your sixth week, you have turned your Renault back to the rental agency. Mary is rearranging your clothes in the luggage, preparatory to your flight home. In the bottom of one suitcase, together with a few rolls of color film, is your 8-mm. movie camera. Somehow you had forgotten its existence for the entire six weeks of your trip.



The U. S. Navy Band being picked up outdoors. Close microphone perspective is used to reduce the effects of wind and eliminate extraneous noise. The recorder can be seen at the left.

Recording Bands Outdoors

by
L. L. Farkas

. . . . outdoor band concerts are an American institution. Here are some tips on taping them.

WITH summer approaching, bands and orchestras will be moving out into the open. Right with them will be hosts of fans, intent on picking up the music with their tape recorders. It's fun to make outdoor pick-ups, and they can be made quite easily, but they do present a few particular problems.

The first thing to consider is the type and source of power. Is it AC or DC, and is it readily available? You don't want to take a chance of burning up your AC recorder by plugging it into DC. Probably the simplest way to find out what kind of current is available is to call the local electric company. As a double check you should have in your kit a neon bulb current tester. These can be had at your local radio parts house.

The location of this source of power is also important. If it is within a few hundred feet or so and the cable you use has good-sized leads, you will probably be able to operate your recorder satisfactorily. But if the distance is greater, or if small wire is used in your extension cable, then the voltage may drop to such a point that it affects the operation of your recorder. This condition will be evidenced by sluggish operation of the drive, by low level

and distortion of the audio. A simple remedy is to use a tapped auto transformer to boost the voltage to the operating value. In such case however, an AC voltmeter should be connected across the line at the recorder end to make sure that the voltage is not boosted too high, otherwise there is danger of burning out some of the recorder tubes or other components. Average readings should be between 110 and 120 volts for normal operation.

At this point the question may be raised: Why can't I keep my recorder close to the source of power and run a long microphone cable to where the band is set up? This can be done provided you have a low impedance microphone, use a shielded cable, a matching transformer at the recorder, and also have sufficient gain in the recorder amplifier to make up for the loss in the additional length of cable used. With a high impedance microphone, such as the crystal types supplied with most tape recorders, you cannot safely use more than about 25 feet of cable without seriously attenuating the high frequencies. For longer runs with a high impedance mike you will need two matching transformers with the high impedance side of one connected to the mike and the high side of the other to the

recorder. Your low impedance shielded cable is then connected to the low impedance side of both transformers.

At the same time you are apt to pick up AC hum from any nearby transformer, open wire power lines, or even light circuits, particularly if your microphone cable runs parallel to such a line for any distance at all. So generally it is safer as well as less expensive to use a long power cable.

You may run into the situation where there is no regular AC outlet available, but where the bandstand is equipped with a bank of lights. In such case it is handy to carry a light socket adapter, so that all you have to do is unscrew one of the light bulbs and take your power directly from the socket.

If no power is available in the immediate vicinity of the orchestra site, you can of course make use of a car-type inverter to supply you with the required power. This method will work out all right but it has some limitations. Your car must be kept running the whole time that the recorder is on to keep the battery up. At the same time the car must be kept far enough away from the orchestra so that the sound of its motor is not picked up as background noise by your microphone, and yet it must be located sufficiently close so that the loss in the power cable will not affect recorder operation. You can also connect your inverter to a power pack, in which case the recorder and power supply can be set up where desired.

To be completely free of external power problems, you can use one of the battery, or battery and spring drive sets. These recorders have the advantage of being very light and therefore are well adapted to the outdoor type of pick-up. One thing you must watch however is the tape speed, for that affects the quality of the recording. Very few recorders reproduce frequencies above 5000 cycles per second at a speed of $3\frac{3}{4}$ ips; and this frequency response is cut even further if the $1\frac{7}{8}$ ips speed is used. Now if you want fairly good quality in your recording, you should use at least a speed of $7\frac{1}{2}$ ips. And if you are a high fidelity fan, then you will probably rely upon a 15 ips speed in an attempt to capture all the fundamental and harmonic frequencies of the music being played.

For outdoor recording it is questionable whether the highest frequency response is justified. There are so many extraneous sounds that may be picked up by the recorder and which will mar the recording as well as distract the attention of the listener during the playback, that many prefer a lower frequency response to eliminate some of the noise. If you consider that numerous outdoor orchestra pick-ups are transmitted to broadcast stations via Class C telephone lines which cut off around 5000 cycles per second, you may feel that truer reproduction is not essential. This is purely a personal choice, and you will have to decide for yourself whether you want to hear the high frequencies with a possible addition of extraneous noise at the cost of more tape, or that you are willing to forego the high fidelity for slightly less noise and a gain in tape.

The next important point to consider is the pick-up of the orchestra. How can you set up your microphone to obtain the best results outdoors? There is one general answer to this question: the microphone must be set as close to the instruments as possible. This is true regardless of the size of the orchestra. And while exact distances will vary, since a small orchestra must be placed much closer to the microphone than a large orchestra, the aim is to group the instruments in a close semi-circle around the microphone

so that their tones will greatly predominate over any outdoor sounds.

This is particularly true in a busy sector of a town or city. There the extraneous noise, such as the sound of traffic, the hubbub of people talking, or even the roar of an aircraft overhead, will frequently appear in the outdoor pick-up as background sound. And although it may not be noticed by a person standing on the spot, nor while monitoring the recording, it can be painfully evident during the playback.

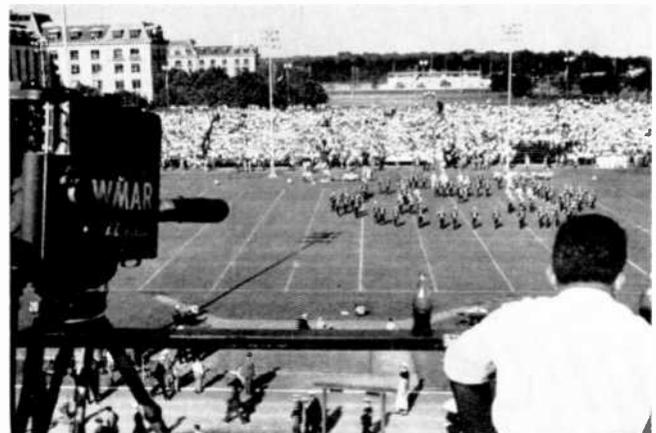
One way to prevent such noise is to make a check recording on location, even without the orchestra present. A few minutes of tape with the tape recorder controls turned to an average setting should give you a pretty good indication of the noise level as well as the direction of the greatest amount of noise. You can then take steps, while making your set-up, to keep the microphone beam away from that particular area.

Here the type of microphone used is important. It is obvious that a duo-directional type of microphone, like the ribbon or velocity or an omni-directional type would, by picking up sound from the back, make it more difficult to exclude unwanted noise than a microphone with a pick-up beam in only one direction. With a little care in placing the single-beam microphone, the noise can be kept oriented toward the dead side, the point toward which it will have the minimum of effect on the desired sound.

A microphone with low sensitivity is also useful for outdoor pick-ups. Since its overall response is low, it will pick up only the strong bursts of sound originating directly within its beam, not responding to the noise of lower intensity reaching it from the sides and rear. You can obtain the same effect, even with a sensitive microphone, simply by decreasing the gain of the recorder, thus reducing the amount of sound pickup directly as well as indirectly.

Now it may be well to consider the effect of the outdoor pick-up on the tone quality of the musical instruments. Outdoors, the short reverberation present in the well-designed studio or auditorium is missing. Thus strings will not have the same high and brilliant tones that characterizes them indoors. And much of the bass notes will be lost. In fact an orchestra outdoors using a studio set-up will very frequently have a thin, brassy quality.

To counteract this defect you must use a very intimate set-up. Keeping strings close to the microphone will give



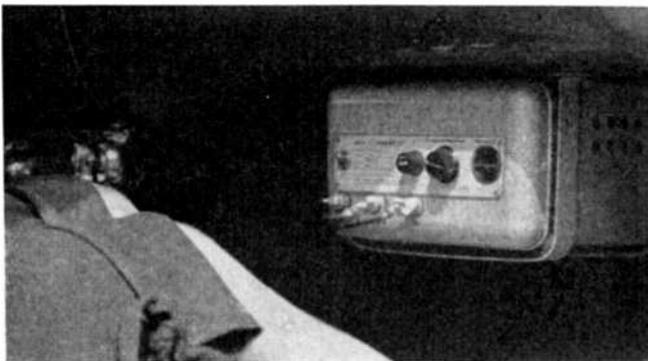
On distant pickups the effect of the wind is very pronounced. Sometimes it seems to blow the music away. The atmospheric conditions also affect the quality of the recording. On long shots such as this, a parabolic microphone will help to concentrate the sound and give greater volume.



If you must run a long line, a microphone transformer should be used to match the impedance of the mike to the input impedance of the recorder. A low impedance mike and low impedance cable are best. If a high impedance mike is used, two transformers and a low impedance line are necessary.



A new power pack, just brought out by Carter Motors, supplies the necessary current for tape recorder operation. It features a 12 volt battery which operates an inverter to deliver the necessary 110 A.C.



An inverter installed in your car may be used to provide the current for tape recorder operation. The battery should be kept fully charged while the inverter is in operation so that full voltage will be delivered.

them a fullness of tone that will replace some of the missing singing quality. Similarly saxophones and woodwinds will maintain their solidity of tone by grouping them close in. The brass instruments will usually have no difficulty in pounding through, but the bass, whether produced by the bass fiddle or a tuba, will have to be picked up at close range also to assure its being heard.

Sometimes the bandstand will have a smooth, shell-like back, generally of wood, to project the sound forward. With this kind of arrangement care must be taken that the

brass does not predominate. To prevent that, the microphone must be set fairly low, so that the instruments in the front row have a direct shot at the microphone while those in the rear, against the shell, are slightly shielded by the bodies of the musicians in the first row. Also the bass may have to be moved away from the shell to prevent its tones from booming against it and then into the microphone.

And speaking of reverberation, a great deal of unnecessary distortion is introduced by the use of P.A. systems with outdoor set-ups. While the purpose of such systems is to amplify only the sound of vocal or instrumental solos, they are often left to operate all the time. Now if the volume of the system is kept low, the only time the P.A. system will be effective is when the soloist is performing at its microphone. Provided he does not work too close to this microphone and the recording microphone does not face one of the P.A. loudspeakers, the quality of your recording should not be seriously affected. In fact the slight increase in echo caused by the P.A. system during the full orchestral parts may even simulate the reverberation of an auditorium and thus enhance the recorded tones by making them more brilliant.

In too many instances however, the volume of the P.A. system is kept so high at all times that it makes the orchestra tones boom and occasionally even spill over into a feedback howl or blurr. And even if this extreme is not reached, with the loudspeakers dispersed over a wide area, the excessively amplified sound will be picked up by your recording microphone at different times—depending of course upon the distance of the various speakers from the pick-up point—after the direct tones of the orchestra. The delayed sound will muffle parts of the orchestrations and make some of the tones seem to stutter, so that the overall presentation and recording will be ruined.

In some instances the audience will reduce the reverberation caused by the P.A. system, especially if it is a very thick crowd. This is caused by the sound absorbing properties of the persons' clothing. Generally however this effect is insufficient to correct a poorly adjusted P.A. system.

The best remedy is to cut down the volume of the system, but if this cannot be done, then the only alternative is again to move your microphone as close to the instruments as possible. Since this will result in an increase of the orchestra tones picked up by the microphone, the sound level of your recorder must be reduced, thus decreasing the microphone sensitivity and causing a corresponding decrease in the amount of the extraneous loudspeaker sound recorded.

There is still another condition which occurs in the outdoor use of a P.A. system and which will affect your recording. Often the vocalist using the P.A. microphone is accustomed to hearing the slight echo caused by the audience speakers inside an auditorium. Outdoors, in order to duplicate the effect, he crowds the microphone and raises his voice until he hears himself booming back. If your microphone is set at the same location as the P.A. pick-up, you will get distortion from the soloist as well as echo from the P.A. system. To avoid this, it is advisable to set your microphone three or four inches behind the P.A. unit, away from the orchestra. While here you take a chance that the soloist will not come close enough, you should still be always able to boost his part high enough to record it adequately. At the same time you will be fairly certain

that he will not boom and distort, even though you might get slightly more echo from the P.A. system than if your microphone were closer.

Wind will also affect an outdoor pick-up. The slightest breeze blowing past the microphone will sound like a cataract. Some of this noise can be eliminated by placing a windshield around the microphone. Either a metallic type of screen or a handkerchief tied over the pick-up head will decrease the hiss of the wind by shielding the diaphragm or pick-up element of the microphone from direct contact with the wind. Still wind causes distortion by changing the density of the air through which the musical tones travel and hence their velocity. This means that the tones will not arrive at the microphone in exactly the same relation as when they started out. The result is distortion. When the sound scattering or fading effect of the wind is added, you will then record the same weird tones you may have noticed when listening to a broadcast of a band at a football game. The music distorts and then seems to be blown away, only to return loud and clear for a few bars, and then distort and fade once more. This applies principally to long distance pick-ups.

The remedy is the same as before: make the pick-up as close as practicable, even if it means affecting the overall balance, for here it is better to compromise and even lose some of the voices rather than introduce the distortion caused by the wind. Again the close pick-up means less gain on the microphone and therefore less response to the physical effect of the wind. At the same time the decreased distance between the source of sound and the pick-up means that the wind has less time to change the velocity of the sound waves. Thus the one remedy decreases both the noise and the distortion caused by the wind.

Still another factor which will affect the balance of an orchestra picked up outdoors is the weather. As the density of the air varies, as the atmosphere becomes more and more saturated with moisture, so will the speed at which the sound waves travel from the orchestra to the microphone. On some days the tones of the orchestra may be dampened to the point where they sound dead, while on others the

music will be crisp and clear.

The instrument most affected by these changes is the bass. On damp days it will boom out, predominating so much over the other instruments that you will have to move it back or turn it away from the microphone. At other times it will scarcely be heard. For that reason you cannot assume that a good set-up one day will continue to produce the same balance from then on at the same location. Instead, you will have to check the orchestra balance, by a trial recording if possible, each time that you make the pick-up. This will permit you to make slight adjustments in the position of the various instruments to compensate for the variations introduced by the weather.

Should you encounter rain while recording and wish to finish the job even under those adverse weather conditions, you can both shield and protect your microphone by placing an ordinary bathing cap over it. This will not only decrease the noise caused by the drops, but also keep the water from ruining the delicate elements of the microphone. The recorded results may not have the highest quality, nevertheless you will have your recording.

Thus far nothing has been said about the location of your recorder. For the best results, set it in a spot where you can see the director of the band or orchestra. Then, by watching his movements, you can easily anticipate pianissimos or crescendos and make the necessary volume compensation to record all the low tones and yet prevent the distortion so often caused by the blast of sudden sound peaks.

If you have an opportunity to set up your equipment ahead of concert time, do so. You can then easily route your power and microphone cables out of the way of the crowd, either by concealing them under the bandstand, under seats, or by running them overhead, even tied to trees. In this way you will be assured that no one in the audience will disconnect or break any of your cables. It will also permit you to arrive shortly before the start of the performance, set up your recorder, plug in your cables and, without last minute arrangements and strain, you will be ready to go.

REPLACING THE PRESSURE PADS—Karl A. Barleben

THE typical amateur portable tape recorder uses pressure pads, usually of heavy felt, to hold the tape in close contact with the magnetic head. Some of the professional machines do not have pads but depend upon the carefully regulated tape tension to get the necessary contact.

The pressure pad is an important link in the sound chain, particularly when you consider that as little as .001 inch separation between the head and the tape will drop both the response and the volume by a great deal.

When new, the pads work very well but when they begin to show signs of wear, or an accumulation of particles, or become glazed, they should either be cleaned and roughed up to restore their original condition or should be replaced.

They should be inspected every time the head is cleaned, which should, on some recorders, be done after every ten hours of running time. If in need of replacement, the best thing to do is to get a new set from the manufacturer. On most machines it is a very simple matter to pry off the

old pads and cement new ones in place with some quick-drying cement such as DuPont Household Cement or model airplane cement. Do not let the cement get on the head.

In an emergency, pads may be cut from velvet or from felt of a thickness that matches the size of the original pads. The pieces can be cut with scissors or a razor blade.

The replacement pad should be tipped lightly with the cement and put into position. Be careful not to use too much cement as some of it may get on the face of the pad and harden the material at that spot. Allow the cement to dry thoroughly before running the recorder.

The need for the pads to be replaced is sometimes signaled by the recorder beginning to squeak or squeal as the tape passes through. This usually indicates a glazed and hardened pad. Cleaning with carbon tetrachloride and roughing up the nap with the edge of a fingernail file or sandpaper may cure the difficulty. For best results, replace the pads promptly whenever they begin to show signs of wear.



The sound of a bell actually cast by the hands of Paul Revere is recorded at the Dedham Historical Society, Dedham, Mass., by "Woody" Sloan, (left), and Sid Dimond, (right).

Recording the Sounds of Freedom

by Sidney A. Dimond and George W. Sloan, Jr.

Photos by David Strickler

... using recorders, the authors have developed "Documentary Illustrations" to dramatize their lectures.

THE Latvian escaped person was insistent. He would tell the story of his experiences under Communism; about the loss of his first wife and children; his imprisonment and torture; his loss of liberties. But he would talk only in the utmost secrecy. He was afraid of Communists in the United States who might, he was convinced, kidnap his new children and his second wife. We waited until about midnight, set up our Magnecorder in his living room, and with the doors and windows locked and the lights out, we recorded his story. His voice literally bristled with fear as he spoke barely above a whisper. The Mag caught all the overtones, and we had another bit of material for "Footnote to Freedom," a documentary series for WHDH, Boston.

"Footnote to Freedom" emerged from frustration in the summer of 1952. We had been writing and producing tape documentaries for short wave station WRUL, building the

shows around the free enterprise system in action. We had travelled throughout the East interviewing factory management and employees, asking always the same question: "What does *freedom* mean to you?" And we had been horrified to discover so many of our subjects had such a vague idea as to the specific meaning of freedom in their everyday lives. "Footnote to Freedom" had been conceived as a series of programs endeavoring to define freedom in the sounds and voices around us; to produce a greater awareness of the mental and physical liberties Americans take for granted. A 3,000 mile tour of New England by Jeep had given us the Latvian's story, as well as:

... The peal of the bell actually cast by the hands of Paul Revere in the late 1700's.

... The roll of a drum actually used by Washington's Army at Valley Forge.

One of the most successful tape cuts used in "Documentary Illustrations" is that of Alex (left) and Luda Wovk, children of a displaced family from the Ukraine, now living in Kennebunk, Maine. Audiences hear them singing hymns in broken English. ("Children are children, in any language!")



. . . A statement by a Negro newspaper peddler in Portsmouth, N. H., that he gave annual Christmas parties for needy white children because he "liked youngsters."

. . . An interview with a Rabbi who had bought Jews from Heinrich Himmler for \$26 each to save them from Hitler's gas chambers in World War II. [The Rabbi described how his Mother had been killed by the Communists, and his Father sentenced to death by them. His father later escaped to the U. S. A.]

These cuts, plus dozens of others, discovered by extensive field work in cooperation with local police officials, radio stations, and newspapers, to find "what personified freedom in your community," remained in our files long after "Footnote to Freedom" had died for lack of a sponsor after eight shows. We had the feeling there was some way this valuable material could be put to extensive, permanent use.

Further broadcasting of this material was all but out. Why couldn't we, we asked ourselves, play back some of the cuts before live audiences? We were making numerous speeches at the time for various civic and religious organizations. Probing this tack, we set up our recorder in full view of the audience and played various tapes as a part of our personal appearances. It didn't work. The audience was more fascinated by the "gadger" than it was by what we or the tapes had to say! Then there came an idea: Why not *hide* the tape recorder behind a portable screen or offstage, connect it to small speakers placed in the hall, and bring in our sounds and voices on *vocal* cue? Thus the seed of "documentary illustrations" was planted.

Two years of constant experimentation stood between the seed and the flowering of the technique. The first time we tried it we "lost" the audience. Some of our cuts were four and five minutes long, and we had no direct audience discipline while the tape was being played. Over a period

of time we learned to use the tapes merely for *punctuation* of what was being *said by us*. We learned that the content of the tapes had to reveal great dramatic impact, unassisted. And we learned that for quick cueing to the next cut to be played, it was necessary to have some sort of a workable system.

That problem was simple to solve. We place "Scotch" Brand #43 leader and timing tape (2½-3 seconds at 7½ playing speed) between each cut. As soon as the cut ended, the operator threw on the brake of the machine, and it automatically cued itself up to the next *plastic* tape spot in the reel. Working from an outline similar to a radio script, we'd take turns speaking, and the operator would follow his copy of the outline, pushing the start switch on an unobtrusive cue. Example:

SID: Audience warmup. Introduction of thought that in radio we have to rely on various types of sounds to present a message. Different sounds have different meanings to different people. *Speaking of sounds, what does this sound mean to you?*

SOUND: *Paul Revere Bell.*

WOODY: Sound of bell means lots of things: In a court house, justice. In a church, religion. In a school, education. Behind the Iron Curtain, liberty. This bell was made by Paul Revere, thus to us, sound of bell means our heritage; our tradition; our tie with our ancestors.

On the cue, *Speaking of sounds, what does this sound mean to you*, the audience hears the Paul Revere bell. It is deep throated, pure and rich, and thrilling as it reverberates into infinity. The audience tries to discover the source of the sound, generally without success. Running



Many miles are covered in the search for good material for the "documentary illustrations." Shown above is their Jeep and recording equipment being unloaded at Dedham, Massachusetts, prior to a taping session at a local museum.

to the Magnecorder (PT6-J) backstage are two 12 inch Jensen Alnico 5 PM speakers, hidden in the hall before the audience arrived. Thus the pattern is established for the whole presentation: In a typical one (we now have four complete programs, are working on the fifth), the audience hears 10 to 12 different cuts. In the background, as we work toward the end climax, the audience hears two displaced children singing hymns in broken English, children they had met previously when the story was told of a Maine farmer who gave his farm for the use of DP families. Known as the "Freedom Farm" in Kennebunk, Maine, it has boasted occupancy by several families. The DP's work the land, learn the language, save money earned, and then move on to become self supporting American citizens, as another family takes its place. On the final punch line, "This is our Footnote to Freedom!" or its equivalent, the operator rapidly raises the gain. The audience hears the last few words of the hymn, and the tape crossfades to the sound of the Paul Revere bell, which is allowed to fade completely into perspective before one of us quietly says, "Thank you," and sits down. This is the technique of the "documentary illustration." And the basic content material, secured only after a constant and ever-present search for the story of freedom in sound and voice, remains alive, constructive, and usable!

Central Theme Necessary

Documentary illustrations, we found, were not successful unless the entire presentation was built around one central theme. One of our productions, therefore, is built around the thought that we are living in an age of "Fear, Faith, and Freedom." Another establishes the concept that freedom has many meanings; to us freedom "is the concern each of us, as individuals, has for basic human rights." In other words, freedom is the concern we have for contrast and character. [Contrast, of course, establishes our understanding of the other fellow, his background and his point

of view; character is brought out as meaning character traits and religious and moral implications.] All our tape cuts, in the outlines, are built around such a skeleton. Thus a unity is established; an over-all point which the audience may follow and remember.

Educational Uses

Our latest experiment is using "documentary illustrations" for straight educational purposes; a natural, since we are both instructors in radio at Boston University. In cooperation with the Crusade for Freedom, Station WRUL, and the Voice of America, we have developed a program called "Freedom Speaks" which features:

- . . . Part of a Radio Moscow newscast in English. (A sound of fear.)
- . . . A Radio Free Europe theme, "March of Opposition." (A sound of faith and freedom.)
- . . . "The Music Goes 'Round and 'Round" with Polish lyrics dubbed over the music. (The audience follows the words in English in its mind as it hears the foreign lyrics.)
- . . . The Communists jamming children singing Christmas carols. A high frequency "jam" signal is introduced in the midst of their songs. The jam is unpleasant to hear, and we bring gain up slowly until the audience is tremendously restless and annoyed, then cut it suddenly for the sense of relief it brings.

. . . Folk and traditional music performed by natives of countries in which the Communists have banned such "nationalistic trash." (Radio Moscow quote.)

. . . The "Freedom Bell" which tolls out its message of hope each day from the free zone of Berlin.

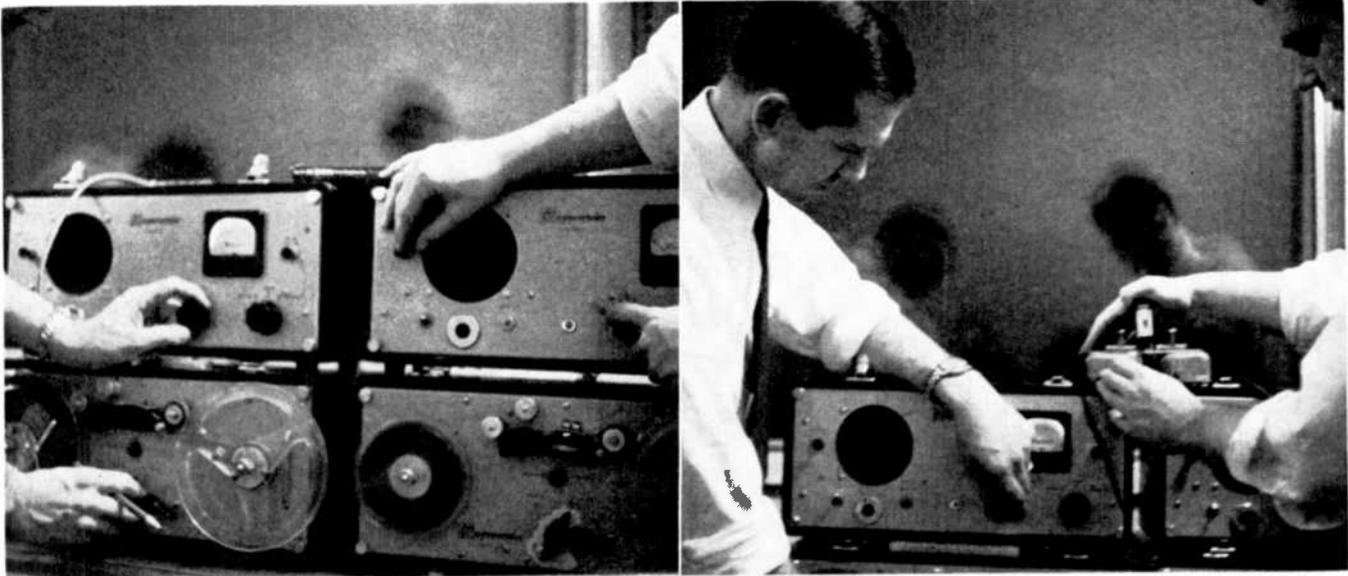
"Freedom Speaks" is actually a lecture about international broadcasting, and we sneak in a lot of factual information about the operations of organizations now engaged in that type of work. But every time the "talk" part of the presentation starts to get a bit dull, we bring in the sound of the thing we're discussing, and a rapid change of pace takes place.

There are dramatic variations possible in this type of performance. For example, we have several of the balloons which the Crusade for Freedom uses to fly messages behind the Iron Curtain. These fold so they may be easily carried in a pocket. At a strategic time in the speech we pull out one casually from a pocket, and unfold, and unfold, and unfold, until the balloon completely covers the rostrum. [We have experimented with this type of showmanship: At the point where we describe the reactions of the escaped person we interviewed in the middle of the night, we have the janitor kill all the lights in the hall, and in the dark the audience hears the subject saying: "Afraid of Communism? Yes. I'm afraid of Communism! Wouldn't you be afraid of it, too, if men came in the middle of the night and kidnapped your wife, your children? . . ." At the end of the cut the lights suddenly go on again.]

Professional Tips

Based upon our experience in developing this technique, we would make these suggestions to anyone interested in trying it:

- 1) Remember all tape cuts must be clearly recorded and dramatic in impact.
- 2) Be prepared to spend a considerable time searching out basic material, editing it, and fitting it into an overall pattern or message. (At the present time we do not carry a power converter in the Jeep; we depend wholly on existing power supplies. As yet, we have not suffered severe



Left: basic material recorded in the field is dubbed onto another tape before editing in order to bring all tape into the same volume, a technical asset essential, for "documentary illustrations." Right: editing work is done in the WBUR studios using a tape splicer instead of a tape splicing plate. Lead tape is placed between each plastic cut to be used.

recording limitations because of this arrangement.)

(Each recording situation presents its own problems. You have to use the "trial and error" method in determining your best pick-up. In recording the sound of the Paul Revere bell, for instance, we wanted to achieve a mellow, rolling tone with overtones of urgency—to symbolize America's heritage. The bell was kept in a large basement room of the Dedham, Massachusetts, Historical Society building. The cement walls produced the "live presence" effect we wanted, and by varying the mike position several times we found the exact tone we desired. We controlled the bell clapper by hand so that the sharp percussive sounds would not distort and overload the tape. The final position for the mike was approximately 30 feet away from the bell. At this distance the tone "matured" and the effect was perfect. Incidentally, if we get one minute of usable material out of four or five hours of recording, and several hundred miles of travel, we feel well repaid!)

3) Establish eye contact with the audience while tapes are being played. Follow the mood of the cut by your own behavior. You must provide mood leadership too!

4) "Tailor" your program for the audience you have. In a religious group, stress religious values. Before a high school group stress the role of the juvenile. Our basic themes are flexible enough so we can illustrate them with any number of cuts from our library, (which is carefully filed on five minute reels). If the program is directed toward the interests of a particular audience, emotional "transfer" takes place between you, the audience, and the tapes.

5) Don't expect much reaction, fast. Audiences are slow to warm up. Start with a couple of humorous stories, then work the audience into the mood you wish to convey. Invite the audience to see your equipment after the performance. Tape recorders to many people, strangely enough, are still forecasts of the Buck Rogers era! Sometimes, at the end of a performance, you will find someone from the audience who is a good subject for other programs. For this reason always take along a mike and an extra blank tape. We use an RCA 77 junior velocity mike; it seems to bring out voice overtones, and gives good fidelity at all

frequencies.

6) It is much easier to establish audience contact if you are free to move around a bit. Notes should be as unobtrusive as possible. (Our notes are on 5x7 white cards. We bring along our own portable rostrum, in case there isn't one available. Notes can then be put out of sight of the audience, and we can stroll over the stage.)

7) Don't be afraid to promote your presentations. We have had some excellent press reviews and feature stories on this technique in the *Boston Globe*, the *Christian Science Monitor*, and other papers. No one knows about what you do unless you help tell them!

8) Remember it will cost money to find suitable subject material. And involve some travelling, also. We put a large portion of each fee we receive into a kitty, and use that money to finance the activity. In this way it perpetuates itself, financially.

9) Avoid giving your performance too often, for free. You have a great investment in time, equipment, and energy. Our experience indicates that if the audience gets the program for nothing, appreciation is limited.

10) Don't get discouraged! The invention and refinements of tape recorders and auxiliary equipment, plus a reasonable amount of aggressive imagination, is making possible all sorts of thrilling experiences! In our work we hope we are making a small contribution toward a better understanding of the meaning of freedom and the American system. We aren't getting rich; we started, and continue, mainly for the thrill of developing a new technique. No amount of money could buy, for us at least, this type of letter which came recently from a woman in Manchester, New Hampshire:

"Your lecture last evening made a profound impression on me, and there should have been more people there to hear your message.

"Having had my two sons serve and die in World War II, I have been saddened lately by our American attitude and seeming lack of patriotism. Your message and your enthusiasm brought back my faith and hope."

And ours, too. Sounding off for freedom has renewed our faith, and decreased our fear for the future of freedom.

Capturing the Melodies of

... the world's largest chorus is one of the least recorded. Here's an opportunity for many pleasant hours of recording fun.

THE next time you're wondering what to do with your tape recorder, try setting it up in your backyard and picking up a little of the world's oldest and most unusual concert. You'll discover that tape recording insect sounds is one of the most fascinating hobbies you have ever undertaken. You'll enjoy making the recordings, and you'll have some of the world's most peculiar sounds to play back later.

There is no problem of finding material, or variety of material. Insect singers can be found in almost any kind of habitat, from the treetops to below the ground surface. Many species are actually more common in city backyards than anywhere else. More insects make noises than all other kinds of animals put together.

If you want to test the limitations of your equipment, try it out on some of the high-pitched insect sounds. Many of these have their strongest components above 10,000

cycles per second, and even the best modern equipment has a tough time coping with them. Some insect sounds actually contain strong elements up around 60- or 70,000 cycles per second, higher than recorded for any other kind of animal. Fortunately, the majority are much lower pitched, and can be reproduced with simple and inexpensive equipment.

Insect sounds involve surprising extremes in many other respects as well. Some are loud enough to be heard nearly a mile away, and others are so soft they can scarcely be heard when the insect is held practically inside one's ear. Some insects may sing at terrific rates for hours without stopping, others may sing one short song, then not sing again for several minutes. Some sing by day only, some at night only, and others sing both day and night. Some species sing one song in the daytime and a completely different one at night.

The insect noise-makers in any locality can be arbitrarily divided into two groups. There is first a relatively small number of loud singers, comprising the crickets, katydids, long-horned grasshoppers, and cicadas. Through their combined efforts, these loud singers produce a veritable bedlam of noise throughout summer and fall. There are only about forty or fifty species in any given locality, and perhaps a few hundred in the country as a whole. The other group of sound-producers involves literally untold thousands of species that make peculiar, soft sounds that are seldom, if ever, heard by human ears. These include beetles, leafhoppers, treehoppers, spittlebugs, aquatic bugs, wasps, bees, ants, flies and many others. Even such a lowly creature as the hog louse has well-developed sound-producing organs.

The fact that there are so many insect singers is responsible for the biggest problem in making good recordings of insect sounds. Even though there are only a few loud species, there may be a thousand or more individuals shrilling away in your backyard at any one time. The problem is to pick out any one individual and get a decent recording of his song. The people who record bird songs obtain directionality and cut out extraneous noise by facing the microphone into a parabolic reflector. This reflector is then turned toward the singing animal, as shown (next page), and the sound waves striking its surface are reflected toward the microphone in the center. These reflectors are usually made of aluminum for light weight, and may be covered with automobile undercoating paint on one or both surfaces. This serves to dampen noises made by accidentally striking the reflector, and to eliminate an undesirable metallic effect that often occurs. The cost of such a reflector about two feet in diameter is usually around fifteen or twenty dollars.

This method works very well for the loud insect singers, and those that sing in the treetops, such as the angular-



Top: the author preparing to record a ground cricket with the mike fastened inside a household funnel to eliminate extraneous noises. Lower: recording the "protest" note of a Passalid or Betsy Beetle. This insect makes its noise with its tail end, by rubbing two sharp projections on its abdomen against the undersurface of its wings.

Insect Singers

by
Richard D. Alexander

Ohio State University

winged katydids, the true katydid, some of the tree crickets, and the cicadas. However, it is generally unsatisfactory for those insects that sing more softly in bushes, weeds, or on the ground. It is difficult to carry such equipment through brush and undergrowth, and when the insect can be closely approached, it is no longer necessary. In these cases it is more desirable to have the microphone very close to the insect and pointing at it, and all that is needed is a small, cone-shaped device surrounding the microphone to exclude unwanted sounds. The author has found a household funnel with the spout removed to be quite satisfactory. The microphone can be seated inside the funnel in sponge rubber, and held in place with a split rubber stopper fitted around the microphone shaft and into the hole at the bottom of the funnel. A better and slightly more expensive method would be to have the cone spun out of aluminum into a bell-shape. Both sides of the cone should be taped or undercoated to prevent reflection. Actually this apparatus can be used very successfully for even treetop singers and others that cannot be closely approached.

You may have to learn to set your feet down softly if you want to sneak up on some of these singers. The ground singers, such as the field crickets, the ground crickets, and the mole crickets, are extremely sensitive to vibrations of the substrate. Sometimes it's necessary to wait a moment or two until a startled singer continues his song.

Most of the crickets will keep on singing if you turn a flashlight on them at night, but some of the katydids and long-horned grasshoppers will stop, and a few may fly away. In these cases you can usually get by if you keep the light directed to one side so that the insect is never in its full glare.

The other big problem is a consequence of the extremely high frequencies present in the songs of many insects. The most difficult to reproduce are the songs of the cone-headed grasshoppers, the meadow grasshoppers, the bush katydids, and the sword-bearing crickets. Some of these are actually above the hearing range of many people. A tape speed of fifteen inches per second and a high quality microphone are a must in such cases. The author, while working on an Ohio State University Research Foundation Project has used a Magnemite Portable Model 610-E with a Brush BA-106 microphone in the field, and a Magnecorder PT 63 A with an American Dymamic D-33 Microphone in the laboratory.

Another solution to the problem of obtaining decent recordings of soft singers, or those ordinarily surrounded by louder singers in the field, is to capture the insect and cage it, either indoors or out-of-doors. Most of the crickets, katydids, and long-horned grasshoppers are very easy to keep alive, and will sing readily in captivity. They will eat ground dog food, and water can be supplied by placing a

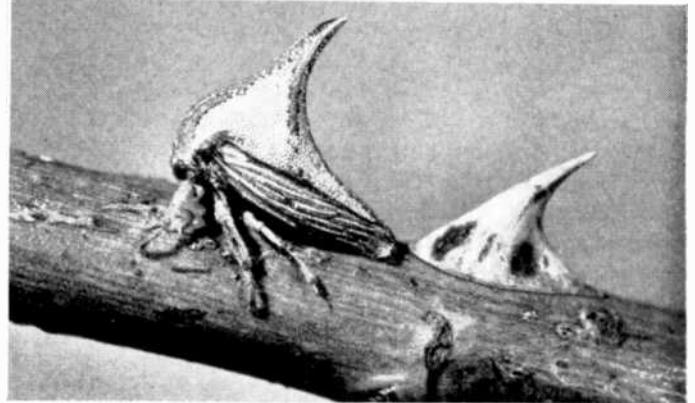
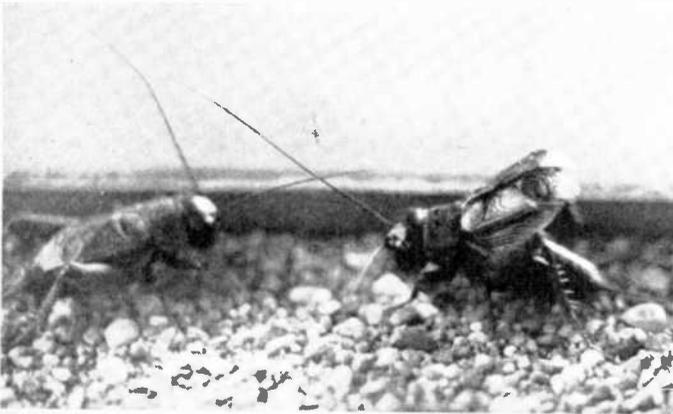


The author demonstrating the use of an aluminum parabolic reflector with the Magnemite Portable 610-E to record cicadas and other treetop singing insects.

pad of cotton in a dish of water or with a dental wick and corked vial as shown on page 37. The ground and field crickets can be cultured continuously this way with a minimum of care. A dish of wet sand will induce egg-laying, and the young crickets hatch in about fifteen days.

Recording caged insects, especially crickets, is a great deal of fun for another reason. You can pry right into the private lives of these little songsters and record some real "cricket talk." Sometimes a cricket will chirp continuously for a half hour or more, changing the quality of his chirp a little each time one of the other crickets in the cage moves. After listening and watching a while you can tell exactly what is going on in a cricket culture without even looking. Some of the courtship "songs and dances" are really fantastic.

If you want to get some weird sounds on tape, you might



Upper left: A male field cricket "talking back" to another male by chirping loudly. The wings are lifted and scraped together to make the noise. Upper right: one of the large black ants. Lower left: the cicada, commonly called a "locust" which sings loudly from the treetops in the summer. Lower right: a leaf hopper which imitates a thorn.

try picking up some of the beetles, bugs, ants, etc., that were mentioned earlier. Most of these will squeak or "bark" when they are caught and held. The sounds are usually so soft you can scarcely hear them. However, if you cup your hand around the microphone with the recorder gain turned all the way up and hold the insect right inside your hand, you can usually get a good recording. You may not believe what you hear when you play it back.

One of the interesting things that may be encountered in recording insect sounds is the presence of regional "dialects" or "accents" much like those in human speech. For example, in the northern states, the true katydid, *Pterophylla camellifolia*, usually sings a two-pulse phrase, "katy-did!" The same species in the south sings five, six, or even seven-pulse phrases, like, "katy-she-did-she-did-she-did!" These accents are not learned like ours, however, and a southern katydid reared in New England would probably still sing with a southern accent.

Insect songs all change in speed with the temperature. The snowy tree cricket, *Oecanthus niveus*, is sometimes called the temperature cricket because of the formula worked out by A. E. Dolbear in 1897. He found that the number of chirps in fifteen seconds plus forty gives a close approximation of the temperature in degrees Fahrenheit. A similar formula could probably be worked out for any singing insect.

Some of the facts about insect sounds are as unbelievable as anything a science fiction writer could dream up. We know, for example, that insect sounds are probably the oldest animal sounds on earth. We can imagine a landscape, around two hundred million years ago, practically devoid of animal life as we know it, but with the air ringing with insect songs. As insect sound signals developed

through the ages they followed a path completely different from our own. We have always considered insect sounds to be monotonously simple and inflexible, because they lack the dimension of pitch which is so important to our ears. Actually their significant features involve pulsations and rhythms so rapid that they represent another dimension to which our ears are as deaf as insect ears are to pitch change. It is intriguing to realize that we humans have always been surrounded by sounds we can hear perfectly well, but that we are completely unable to "decode."

The development of modern recording and analyzing equipment, in addition to studies on the capabilities of insect auditory organs, have begun to show us just how unique and complicated insect sounds really are. You can pick out some of their "hidden" qualities by playing recordings at reduced speeds. The field cricket's chirp becomes a three- or four-pulse sound instead of a continuous blurb as our ears hear it. Different kinds of field crickets have consistent variations in the numbers of these pulses in their chirps. The angular-winged katydid's, "zzz-zi-zik!" at one-eighth speed sounds like a heavy spinning metal disc slowly settling on a concrete floor.

These characteristics of insect sounds are due to the type of structure that produces them. This usually consists of a sharp-edged scraper which is rubbed across a row of tiny teeth called the file. In the crickets, katydids, and long-horned grasshoppers, this file and scraper arrangement is located on the front wings. The cicadas have large stiff drums on the sides of their abdomens that they pop in and out like the bottoms of two tin cans.

Generally speaking, the more closely related insect species are, the more similar are their songs. The crickets all make more or less clear musical sounds while the katy-

A battery jar culture of field crickets with dog toad, water, and a dish of damp sand for egg laying. Almost any type of large jar or screen wire cage is satisfactory for confining the crickets, katydids, and long-horned grasshoppers so that their songs can be recorded.

dids, long-horned grasshoppers, and cicadas make rasping, lisping, buzzing, or clicking sounds that are not at all clear and musical. The field crickets chirp loudly day and night. The mole cricket, the bush crickets, and the snowy tree cricket chirp only at night. The rest of the tree crickets, the sword-bearing crickets, and most of the ground crickets sing in trills, some day and night and some only at night. The shield-backed grasshoppers sing groups of short buzzes at night. The bush katydids produce single or grouped lispy phrases day and night. The true katydid steadily produces groups of loud, coarse rasps at night. The angular-winged katydids and the oblong-winged and round-winged katydids also sing loud coarse chirps or clicks at night only. Most of the coneheaded grasshoppers produce loud continuous buzzes starting late in the evening. The meadow grasshoppers usually sing two different kinds of notes, or sing at two different speeds. Their songs are rather soft and they sing both day and night. Some can only be heard a few feet away. The cicadas sing loud, vibrating songs only in the daytime, or at dusk.

The songs of insects are, in general, easy to tell apart. Learning to recognize them is fun for children and adults alike. The quickest and easiest way is by using recordings of the songs. They can be played over and over again, and similar songs can be closely compared. In this connection, Cornell University will soon publish a long-playing record of some forty insect songs recorded by the author last year in Ohio.

The author has recordings of over a hundred insect



species. He would be very much interested in receiving recordings of even the most common insects, especially the field cricket, from any part of the country, and would be glad to repay with copies of any of the recordings in this library.

BOOK REVIEWS

Your Tape Recorder—How to Select One and Get the Most Out of It. by Robert and Mary Marshall, 6 x 8½, cloth bound, 278 pp. including index, illustrated. Published by Greenberg: Publisher, New York. \$4.95

The authors of this book started from scratch more than five years ago by purchasing a tape recorder to record radio programs for their pupils to hear. They used their first recorder as anyone might use one, recording radio programs and discussions, the family gatherings, bird calls, pets, etc.

Becoming more interested in the possibilities of the recorder in teaching they wrote to manufacturers and queried dealers as to what had been done. They discovered there was practically no literature available so they set out on their own to get the facts needed.

In the process they worked with twelve different tape recorders and their list of uses for the machines shot from an original list of 25 to 1153. They made more than 2500 experiments in different kinds of recording. This book is the result.

It is not a technical book and the reader is led gently from zero knowledge of sound, decibels, cps.'s and similar items to a basic understanding of the terms.

The first part of the book is devoted to

the fundamentals of tape recording, the second part to applied tape recording in which the authors cover specific uses in education, business and professional work based on their own experiences.

For the person who knows nothing about tape recording or recorders, this book will be useful. The second part, covering the uses of recorders, should stimulate some ideas as to how a recorder may be used to fullest advantage.

High Fidelity Techniques by John H. Newitt, 6½ x 9½, cloth bound, 494 pp., including index, illustrated. Published by Rinehart & Company, New York. \$7.50

The author of this book is a member of the Massachusetts Institute of Technology engineering staff and has taught practical courses in electronics.

The book is actually a textbook on the subject, even to having questions to answer on each chapter. It is meaty and well written but the layman without any knowledge is going to have to do some "hard reading" to grasp all that the book has to say.

Specifically, the author has written this book for the practicing engineer who is not a specialist in the audio field, the prospective

home constructor of a hi-fi system, the radio serviceman who would like to get into custom sound installation; P.A. and recording studio operators, and professional audio technicians, engineers and home receiver designers.

The book is a practical one and it includes theoretical material where it is necessary to an understanding of the practical applications.

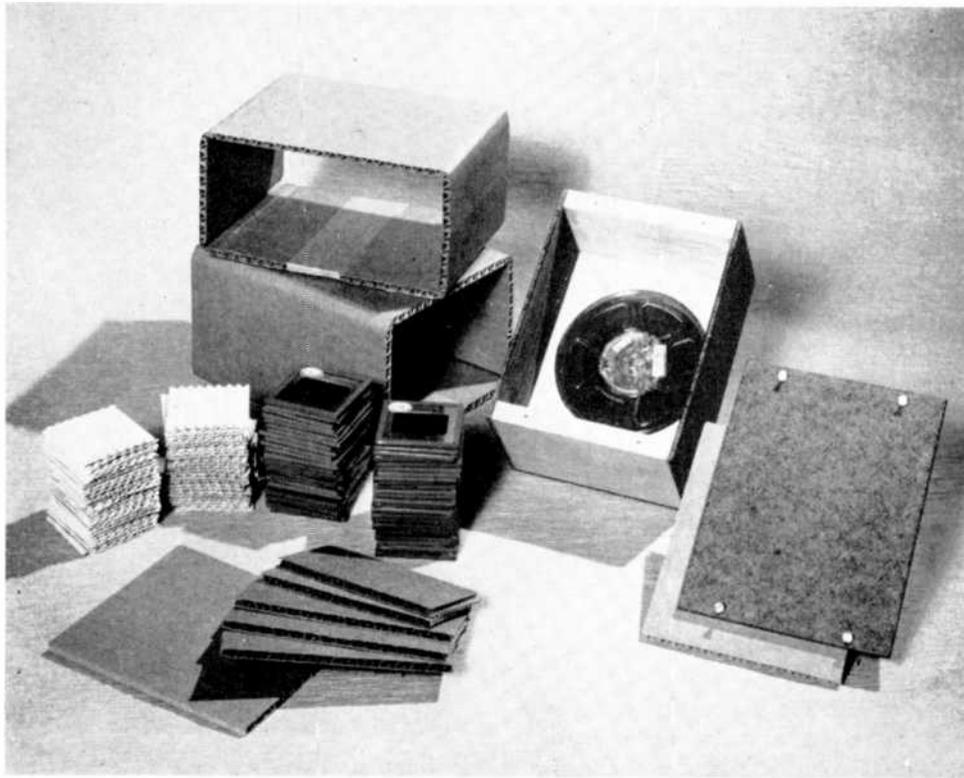
Its chapters include: What is High Fidelity?, Sound, Hearing, Listener Tests and Acoustics, Loudspeakers, Reproducer Enclosures, Electrical Crossover Networks, Distortion, Special Hi-Fi Circuits, Hi-Fi Amplifier and Amplifier Characteristics, Hi-Fi Receivers, Records and Record Players, Magnetic Recording and Custom Installation of Hi-Fi Equipment. In addition there are four appendices, the question section mentioned above and an index.

This is a very complete book and an excellent one. The author has had long experience with the subject and that understanding is reflected in this work.

As might be expected in a technical work of this kind, there are numerous charts and graphs, and circuit diagrams covering the various topics.

This is a reference work that should be on the bookshelf of every serious audiophile.

BUILD THIS TAPE & SLIDE SHIPPING BOX



by
Robert W. Luebke

*... This practical box protects both tape and slides
when sharing your trips by mail.*

If there is anything more pleasurable than receiving a tape from a friend it is a tape accompanied with photos; particularly photo slides in color. While pleasurable to receive, the great difference in size and shape between slides and tape presents a shipping problem. Slides intended for any amount of exchanges are usually the choicest ones and are usually mounted between glass; thus presenting the further problem of safety from breakage in transit.

This article explains how to make a durable, re-usable shipping box which accommodates both photo slides and tape. Designed around standard materials, this project provides an interesting evening of puttering with ordinary household tools. Illustrations and drawings are provided for the popular 2x2-slides or the newer stereo (3-D) type slides. You can alter the dimensions to suit. The step by step construction details are given for the 2x2-slides but also apply for the stereo type.

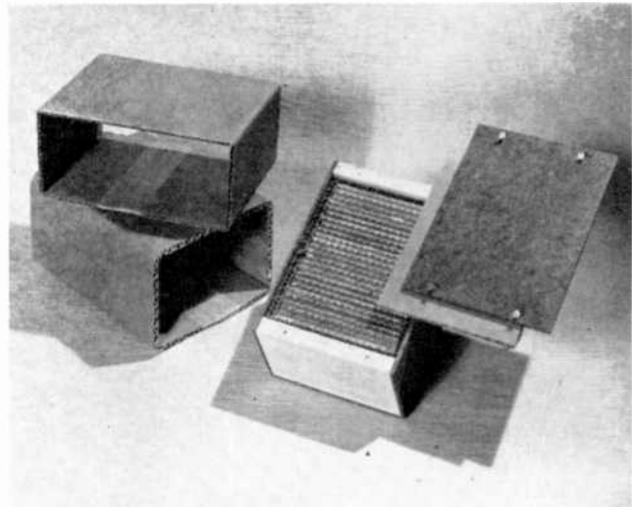
The box is built around the piece which becomes the recessed compartment for the tape (A). On a piece of $\frac{1}{2}$ " x 6" board (Note: a 6" board is actually $5\frac{3}{8}$ " wide) mark off but do not cut, a space $4\frac{1}{2}$ " long. Locate the center of this area by drawing diagonal lines from opposite corners. Draw a $4\frac{1}{16}$ " circle and cut it out with a

keyhole saw. To smooth the irregular edges left by the saw use a piece of coarse sandpaper held around an old tin can that is just slightly smaller than the $4\frac{1}{16}$ " hole. Try it for size with a 4-inch reel of tape; continuing the sanding operation until the reel slips in smoothly. Complete the "reel-recess" piece by sawing at the marks made earlier. The completed piece will measure $5\frac{3}{8}$ " long (the standard width of a 6" board) by $4\frac{1}{2}$ " wide and $\frac{1}{2}$ " thick with a $4\frac{1}{16}$ " hole in the center.

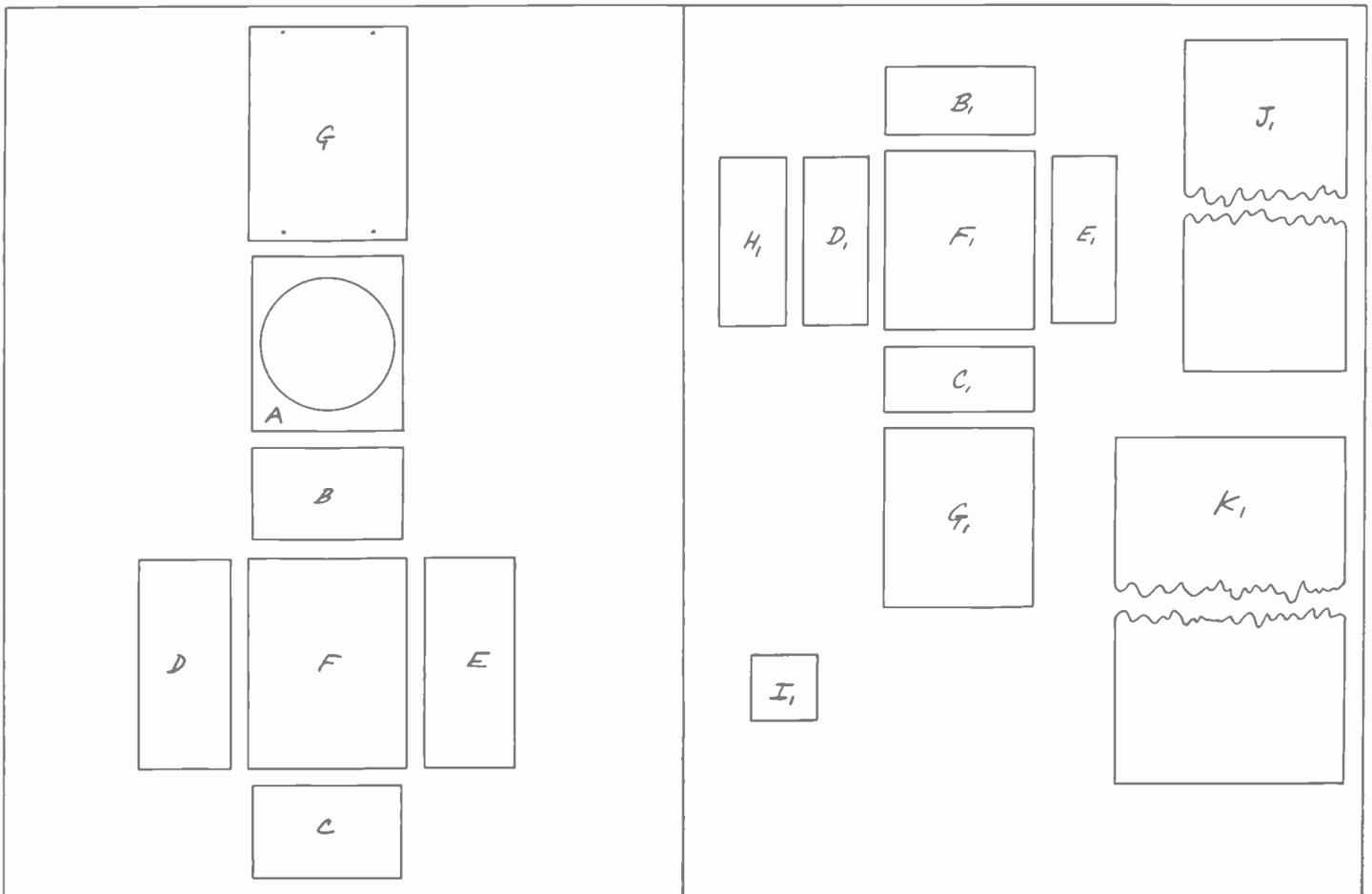
Next, saw a piece of the $\frac{1}{2}$ " board to a width of $2\frac{7}{8}$ " and long enough to cut out two pieces $4\frac{1}{2}$ " long (B & C), which will be the ends of the box.

Shape the sides of the box (D & E) from a piece of $\frac{1}{8}$ " tempered Masonite. Make 2 pieces $6\frac{3}{8}$ " long and $2\frac{7}{8}$ " wide. Nail and glue the two sides (D & E) to one of the ends, then insert the "reel-recess" piece and then nail and glue the other end.

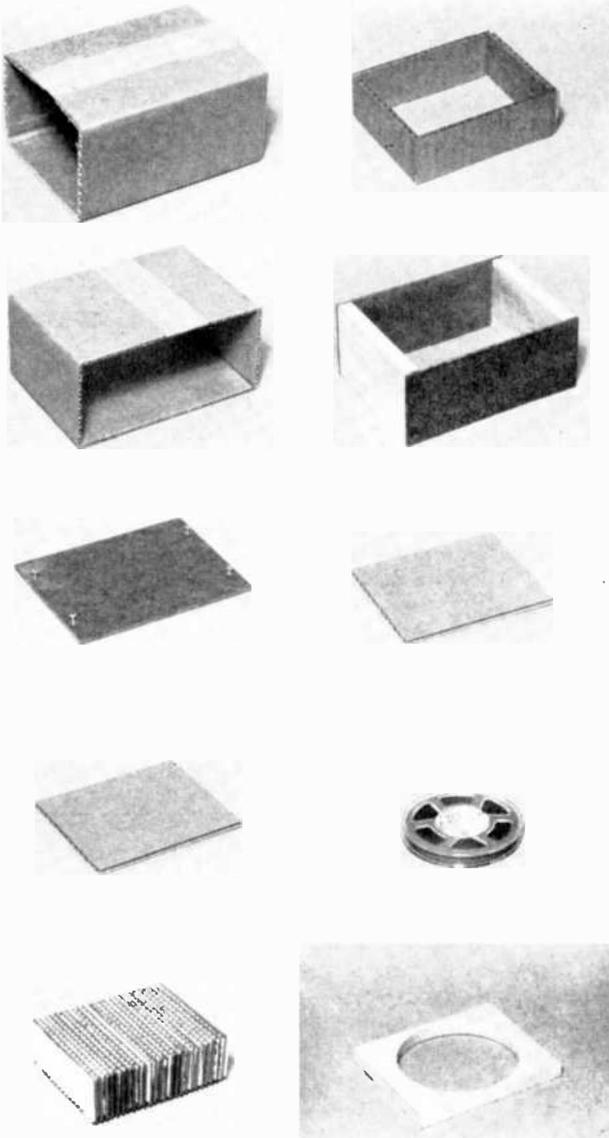
Now, cut 2 pieces $\frac{1}{8}$ " tempered masonite $6\frac{3}{8}$ " long by $4\frac{3}{4}$ " wide (F & G) for the top and bottom of the box. Apply glue to the bottom of the "reel-recess" piece; the bottom edge of the ends and sides; and then nail on the bottom. On the top cover drill and countersink $\frac{1}{8}$ " holes $\frac{1}{4}$ " inward from the ends and 1" inward from the sides,



Above: the complete case for shipping the stereo type color slides and tape in one package. The picture on the facing page shows a similar box designed for the regular 2 x 2 color slides. As the box is sturdy and crushproof, the slides may be glass mounted with safety. The recessed hole for the tape reel keeps it from shifting and prevents the reels from damage or cracking in transit. For mailing, the box itself is enclosed in the corrugated cardboard protectors shown and then wrapped in kraft paper. Left: your vacation trip, family activities or other material is much more enjoyable if a tape accompanies the pictures. A signal or spoken word can be used to tell the person to change the slide.



Left: the 2 x 2 slide box. Piece A is $\frac{1}{2}$ " x $4\frac{1}{2}$ " x $5\frac{3}{8}$ " white pine with a $4\text{-}1/16$ " hole cut in the center. Cut the hole before sawing board to finished size. Pieces B and C are wood, $\frac{1}{2}$ " x $2\frac{7}{8}$ " x $4\frac{1}{2}$ " and form the ends of the box. Pieces D and E are tempered Masonite $\frac{1}{8}$ " x $2\frac{7}{8}$ " x $6\frac{3}{8}$ " and F and G are also Masonite measuring $\frac{1}{8}$ " x $4\frac{3}{4}$ " x $6\frac{3}{8}$ " and make the top and bottom of the box. The top (G) has four holes drilled to pass the flat head wood screws. Right: the plans for the corrugated cardboard liners. B₁ and C₁ are 2" x $4\frac{1}{2}$ ". D₁, E₁, and H₁ are 2" x 5". F₁ and G₁ are $4\frac{1}{2}$ " x $5\frac{3}{8}$ ". There are 46 of the I₁ pieces cut from the sleeves used on flashbulbs or household bulbs. These measure 2" x 2". For stereo slides, cut them to 2" x $4\frac{1}{2}$ ".



An exploded view of the box showing the placement of pieces. The tape reel fits into the recess attached to the bottom of the box. Over this goes the cardboard liner to keep the reel in place. The edge liners are then placed in the box, then the slides with the interleaved corrugated protectors, another cardboard liner and the top is then screwed on. The box is then slipped in the cardboard mailing sleeves and the whole wrapped for shipment. Note that the corrugations in the outside sleeves run in opposite directions.

the slides. Use a razor blade and cut from a used shipping carton as follows: 2 pieces $5\frac{3}{8}$ " x $4\frac{1}{2}$ " (F & G, top and bottom); 2 pieces 2 " x $4\frac{1}{2}$ " (B & C, ends); 3 pieces 2 " x 5 " (D, E & H, sides and center). Between the slides use light weight corrugated paper cut from discarded flashbulb or household lamp sleeves. The box will hold 50 slides mounted in glass; requiring 46 pieces 2 " x 2 " square of this paper.

To make wrapping easier, the outside of the box is fitted with two re-usable corrugated cardboard sleeves. With the corrugations running in the short dimension, cut two strips; one $4\frac{7}{8}$ " wide and approximately 20" long (J); the other one $6\frac{7}{8}$ " wide and approximately 21" long (K). First encircle the box with the $4\frac{7}{8}$ " piece; butt the ends together and fasten with gummed tape. Leave the first sleeve in place on the box, then go over with the $6\frac{3}{8}$ " piece; butt the ends together and fasten with gummed tape as before. When thus encircled with two cardboard sleeves the corrugations will be at right angles to each other and will provide good protection to the box. Once made, these sleeves are easily slipped into place and will last for several trips.

Shipping Box—List of Material

2x2 Box	Stereo Box	Material
2-feet	2-feet	$\frac{1}{2}$ " x 6" Clear White Pine
8" x 24"	8" x 24"	$\frac{1}{8}$ " tempered Masonite
4	4	#4 x $\frac{3}{8}$ " flat head wood screws
18	18	$\frac{1}{4}$ " brads
		Wood glue
		Corrugated cardboard
		Gummed tape
		Flashbulb sleeves

Shipping Box Tools List

Tri-square, handsaw, hammer, nail set, hand drill, $\frac{1}{8}$ " drill, auger brace, $\frac{1}{2}$ " auger bit (to start keyhole saw), countersink bit, sandpaper and steel wool, compass, key-hole saw (or scroll saw), screwdriver, razor blade.

for the 4 #4 x $\frac{1}{2}$ " flat head wood screws. Fit the top cover and screw it into place. Smooth the edges of the top and bottom with medium coarse sandpaper held over a wood block; bringing the covers flush with the sides and ends of the box.

The completed box will be light in weight; strong and rigid. Corrugated cardboard fitted inside the box cushions

TAPED SERVICES GO TO FAR NORTH



Pastor Roth and recorder.

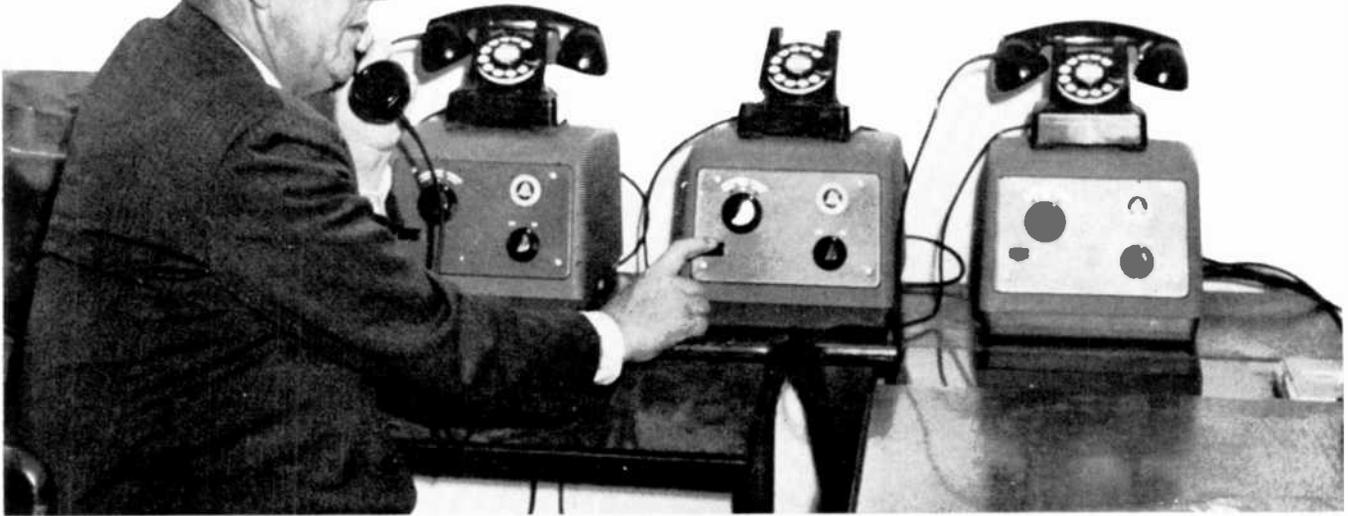
The voice of Pastor A. L. Roth of the Hillcrest Baptist Church of Columbus, Ohio is now heard conducting services at an Air Force Base "somewhere north of Labrador." When church member Joe Dickson left the congregation for a ten month tour of duty at the lonely arctic outpost he missed the Sunday services so much he wrote to Pastor Roth inquiring if a tape could not be made and sent as there was no chaplain at the base.

The response of Pastor Roth was immediate and getting out his recorder he taped the next Sunday's service. This was airtailed to the base and the members built their own worship services around the tape. Since then tapes have been sent every week and there are four tapes in the mail, coming or going, all the time.

by
William
Stahl

Need a Lift? — Call Inspiration

... Baltimore YMCA lends a helping hand via
magnetic recordings.



William Stahl, Baltimore YMCA Secretary, records a helpful message on one of the three telephone recorders.

"HELLO—we're glad you called! Robert Louis Stevenson, who was constantly ill, once wrote: 'Keep your fears to yourself—share your courage with others.' "

Five hundred thousand telephone calls during a fifteen-week period were answered with a similar greeting and thought. Magnetic recording helped make it possible but the idea behind "*Inspiration*," an automatic telephone service where one might receive an inspirational thought for the day, seemed to hit the people of Baltimore at a point of need.

The target date for starting was Wednesday, February 23rd, Ash Wednesday. The equipment—one automatic answering device—was installed and ready for use on Tuesday, the very morning a story about the service broke in the morning paper. The machine, located beside my desk, began to run like mad. There was only a test message on the drum so I hurriedly dictated the first real message for use by the people.

Things also began to happen at the central exchange of the telephone company. "Busy" signals piled up so fast that steps were taken immediately to install the second device before the scheduled starting time for the service. The second machine reduced the "busies" from 600 per hour to 300 per hour and before "*Inspiration*" was 24 hours old, steps to install device number three were initiated. We never did eliminate the "busy" signal problem all during Lent.

In fact, on March 9th, during a 24-hour period while answering approximately 6,000 calls, there were 16,352 "busies" of which about 1,350 were during the hours between midnight and eight o'clock in the morning!

Now, how is this service conducted? We rent from the Chesapeake and Potomac Telephone Company three Model 2A Announcement Automatic devices. Enclosed in each small and good looking case is a drum about four inches in diameter and three inches long coated with material which looks similar (and acts similar) as that which is used on tape for tape recording.

This drum revolves and the recording head moves along

its length much the same as the old Edison phonograph. It erases as it records new messages. While the message-length can be adjusted, we use only 30 seconds for the message on "*Inspiration*." The three machines are hooked up to answer three telephone trunk lines in series MUIberry 5-3510, 5-3511 and 5-3512. When one is busy the next in the series gets the call.

The operation of the machine is quite simple. There are two knobs on the front panel—one for "On" and "Off." When in "Off" position the telephone which accompanies the set can be used for outside service like any other phone. When in "On" position, the second knob becomes operative.

On the second knob there are three position, "Answer," "Check," and "Dictate." When set at "Answer" the device operates automatically giving the message which it contains to each and every caller. It begins at the start of the message and "hangs up" after the message is completed. This is unlike the WEather and TIme services where you may cut in at any point during the message and hold on for repeats. When the knob is on "Dictate," by holding down a spring type switch, the message is then dictated onto the drum through the telephone set. By setting the knob at "Check" the message can be heard without going out on the line.

What do we hope to do through this service?

Well, we do not indulge in "commercials." The three things we hope to promote in addition to providing "good thoughts" are *Church Attendance*, *Family Prayer* and *Bible Reading*. Five hundred thousand times in fifteen weeks we have had the opportunity to remind persons who called voluntarily about these three things.

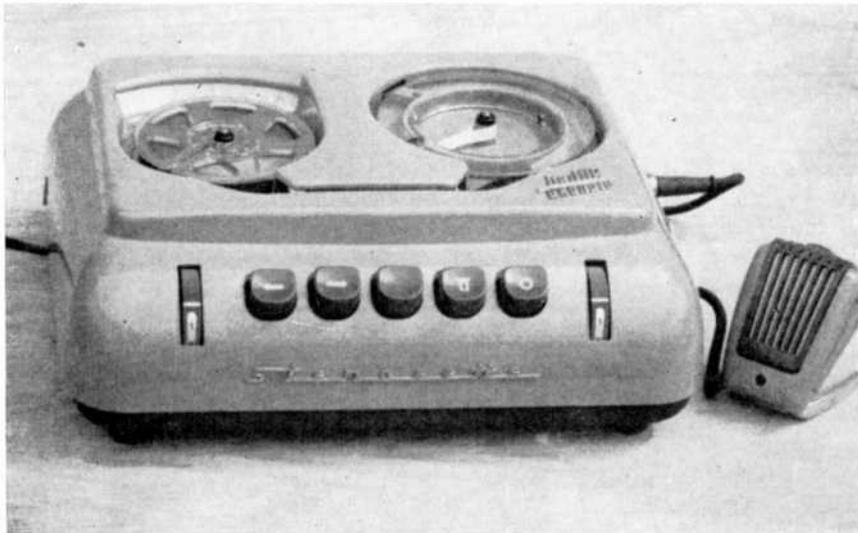
Perhaps a typical message in full will give an idea:

"Hello—we're glad you called!

A wise man knows what to do next; a skilled man know how to do it; and a successful man does it. God giveth to a man that which is good in His sight—wisdom, and knowledge and joy. (Ecc. 2:26)

Your Y.M.C.A. reminds you that families that worship together are happy families. —Thank you!"

NEW PRODUCT REPORT



DeJUR STENORETTE DICTATING MACHINE

... full controls, phone pickup, same unit may also be used for transcribing, uses standard 1/4 inch tape.

THE DeJur Stenorette is the first dictation machine built to use regular 1/4 inch tape. Its clever design and numerous fine features are going to make it a serious contender in the dictating machine field, especially since its price is far below machines currently on the market.

In addition, the fact that the same machine can be used for both dictation and transcription, will make it a practical instrument for small offices, such as a doctor's office.

The machine is small, compact and attractively designed. It measures only 11 1/2 x 9 1/2 x 4 1/4 inches and weighs 11 lbs., 4 oz. It takes up little desk space and can easily be transported in its carrying case for recording in automobiles, etc.

As the recording is done magnetically on tape, the motion of the vehicle has no effect on the recording. We tested this feature by using it in a car and also by violently bouncing the recorder while dictating. The result showed no evidences of the severe motion. As the unit draws only 30 watts of power, it should prove ideal for field dictation in conjunction with an inverter in the car.

Made in the West Zone of Germany

by the famous Grundig firm, it is being imported and marketed in the United States by the DeJUR-Amsco Corporation, long known for their line of projectors, cameras and electronic products.

The Stenorette is not a tape recorder although it has most of the features of one. It is a dictation machine and all its controls and features are geared to that end.

The frequency response, for instance, is peaked in the range of the human voice to obtain the utmost in clarity



The microphone-speaker controls the machine. The bar on right starts and stops it, the button above rewinds and plays back.

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

Product: DeJur Stenorette.

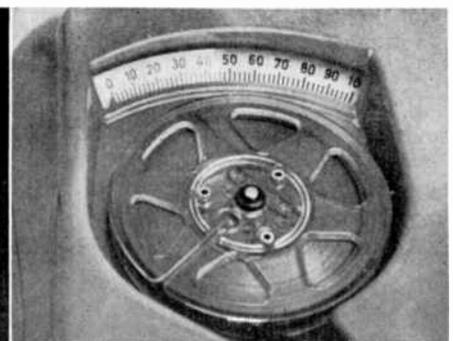
Price: \$169.50 including dust cover, log-pad, tape and microphone-speaker. Accessories extra.

Distributor: De-Jur-Amsco Corporation, 45-01 Northern Blvd., Long Island City 1, Long Island, N. Y.

of reproduction of speech. The machine was not designed to reproduce music.

The tape is held on a special reel and has a loop in one end. To thread the Stenorette, the stop button is pressed, which releases the pressure pad from the head. The tape is then simply dropped in the slot and the loop placed over the spindle of the takeup spool. It is not necessary to take a turn or two of tape on the reel as is done on a regular recorder.

After the machine has been threaded the plastic "lid" is placed on the take-up reel. This lid effectively prevents any possibility of tape spill or foul up. In fact, we attempted to make the tape spill or tangle by operating the machine contrary to instructions but the "lid" held the tape in place and the pile-up we did succeed in creating cleared by merely pressing the rewind button. From our tests we would say that the



An accurate scale, together with the log pad enables anyone to quickly locate any spot on the reel without difficulty.

possibility of tape trouble is entirely absent.

The reel which holds the tape is a special reel and is supplied with the machine. It measures 3-5/6 inches in diameter and holds 300 feet of tape which gives 30 minutes of dictation per reel at the 1-7/8 inch per second recording speed.

While the Stenorette has a number of unusual features the absence of a capstan and roller is perhaps the most unusual from a recording standpoint. This lack is really a step toward simplification and the mechanism keeps the tape moving accurately and constantly without those parts.

One of the objections which has been raised to the use of tape for dictation is that it was difficult to locate a specific point or letter on the reel. The design of the Stenorette has completely eliminated this drawback as the scale above the feed reel is very accurate and when used in conjunction with the log pads furnished for the guidance of the person who does the transcription, enables one to locate any point in the reel quickly and accurately.

Another unusual feature of the machine is the microphone-speaker. This small unit has two controls mounted on it. The bar at the side starts and stops the machine as desired, as in any of the current dictating machines.

The button on top of the mike, if pressed at the same time as the bar, will back up the tape and immediately replay the last portion. This is very handy for reviewing the last sentence or two if the dictation has been interrupted.

In addition, the microphone speaker is equipped with two legs which swing out of recesses, permitting the mike to be placed upright on the desk. A locking button, located at the top of the side bar, permits continuous recording or playback through the mike. A red indicator light is also incorporated in the unit to indicate when the machine is ready for dictation.

The controls are conveniently grouped on the front of the Stenorette. From left to right they are: a knurled knob which acts as a tone control to permit maximum clarity of dictation and it also functions as a "conference switch" which boosts the microphone sensitivity and permits recordings to be made of meetings, etc. Tests showed the pickup range of the mike to be about 15 feet with the switch in the conference position. Next to the

knurled wheel are the control buttons for: rewind, fast forward, record, playback and stop. Each is marked with an appropriate symbol. On the right of the panel is another knurled knob which is the on-off switch and volume control for both recording and playback.

Both the input and output is on the right side of the machine. A six-prong plug takes care of the necessary connections for both the mike, earphone or telephone pickup device.

On the left side is the socket for the foot or typewriter controls for transcribing. This is a four-prong plug, so mistakes in hookup cannot be made.

The telephone pick-up is a small induction coil having a rubber suction cup on one end for attachment to the phone. A junction box may be purchased as an accessory. This has outlets for both the mike and the pick-up with a switch mounted in the top to throw either into the recorder. This is handy if any amount of phone recording is to be done.

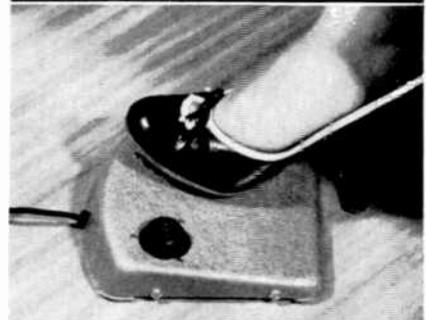
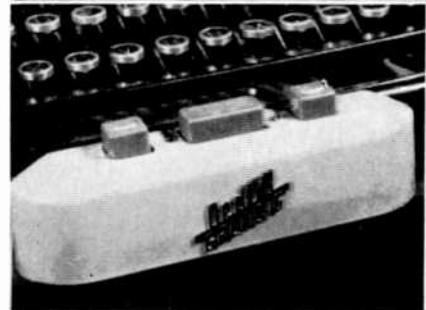
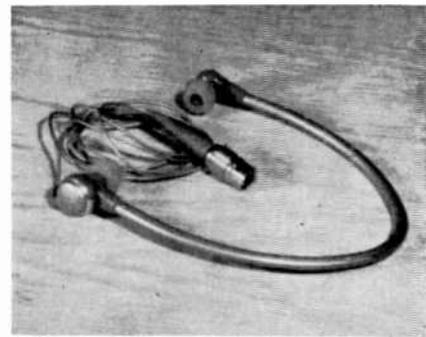
For the secretary either a single ear clip or a stethophone is available. The button type receiver is snapped into either unit as desired.

The control of the machine for transcription is positive. Either a typewriter control bar or a foot operated switch can be had. These allow for backing up the tape to catch the last few words, or to go over some difficult portion, or for running and stopping as desired.

In our tests of the Stenorette in both the office and the car we found that it performed in excellent style. No difficulties were experienced in either dictation or transcription but we did discover that the bar on the side of the mike must be held all the way in. We feel we can recommend this machine and venture to predict a bright future for it.



Controls are located on the front of the Stenorette and are plainly marked to permit easy identification and to avoid error.

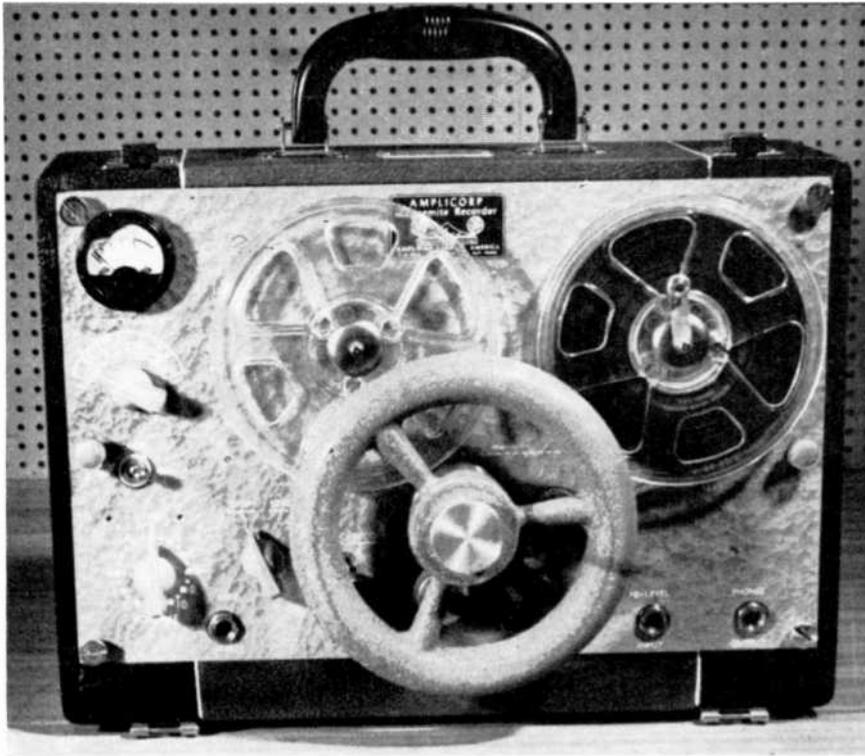


Top: the stethophone which the secretary wears for transcribing. Upper center: the telephone induction coil pickup, with its suction cup for attaching and the switching box to cut the machine to dictation or telephone pickup as desired. Lower center: the transcription control for typewriter. Bottom: the foot control for transcription.



The sturdy carrying case is extremely attractive and well designed. The machine clips into place in the case. The top is removable.

NEW PRODUCT REPORT



MAGNEMITE SELF-CONTAINED PORTABLE RECORDER

... battery operated electronics, spring driven
tape transport, VU meter, broadcast quality.

THE Magnemite Model 610 DV tape recorder is a spring-driven self-powered record and playback machine that is light, small, of pleasing appearance and good performance.

The machine is but little larger than this page in height and width and about six inches in depth. Its weight is about 19 pounds and it is very easy to transport.

The case is finished in two tones of blue and the front panel is gray hammer-tone with white control knobs and white lettering.

We found the electrical and mechanical components to be of excellent design, and we found the frequency response to be equal to "AA" program requirements (70 to 8000 cycles per second plus or minus 3 db) at the 7½ inch speed.

The tape transport is powered by

a flyball governed spring motor. The motor will operate for three minutes at each cranking and a signal light flickers when rewinding is necessary and before any change in speed is noticed so that by winding as the machine runs, longer stretches can be recorded without interruption. Some of the firm's other models will operate for longer periods than this on one winding.

The amplifier is powered by dry cells which have an operating life of 100 hours before replacement is necessary. The batteries are the common Eveready 950 for filament power and a 90 volt B battery obtainable anywhere provides the plate supply.

Because of this dry battery powering and good design, excellent signal to noise ratios were obtained (45 to 50 db down) using bulk erased tape.

STA **OK** STED

Product: Magnemite Model 610 DV

Price: \$385.00

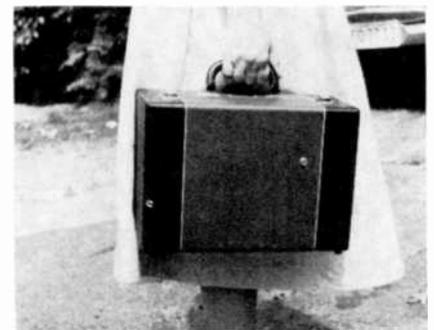
Manufacturer: Amplifier Corp. of America, 398 Broadway, New York 13, N. Y.

As this model does not have an erase head, the use of a bulk eraser is necessary to clear the tapes. An accessory permanent magnet erase head can be had if desired.

On this model a miniature VU meter is provided for recording and playback and it also doubles as a tester for both the A and B batteries.

When the recorder is received, the flyball governor is bound with tape to prevent damage in shipment. This tape must be carefully removed before the recorder is put into operation.

The machine may be used in any position and may be operated with the cover closed after the start switch has been thrown. The usual practice is to place the machine on some support while recordings are being made but if necessary, it may be used while walking provided abrupt movements are avoided. On the seat of a car, boat,



The Magnemite is small and easily carried to wherever it is needed. The case is finished in two tones of blue. Weight is 19 lbs.



The VU meter and its function switch. The four position switch will allow the meter to indicate the condition of the A and B batteries as well as the modulation on both recording and playback.

plane or train, the motion of the vehicle makes no difference whatever.

The supply reel is on the right hand side and the machine will accommodate 5 inch reels holding 600 feet of tape. Rewinding is done by hand. Threading is quite simple and straightforward and guide lines are printed on the face of the machine. The pressure roller, which holds the tape against the capstan must be swung out of the way in an arc. As the roller swings out, the pressure pad is automatically moved away from the recording head.

The large flywheel, which reduces wow and flutter to a barest minimum, nests in the top of the case but it may be left attached to the capstan if desired. The tape should be threaded before the flywheel is placed.

The V.U. meter is located in the upper left part of the panel with its function switch immediately below it. As noted previously, this meter also acts as a battery tester when the switch is in either A or B battery test position. In record position it shows the input volume and on playback, it again indicates the volume. The level control is located in the lower left of the panel and increases or decreases the gain as shown by the meter.

The recorder has three jacks, one for phone monitoring or playback, one for the microphone input and the third for a high level input such as a phonograph or radio. Only one input may be used at a time as a plug inserted in the high-level jack will automatically cut the microphone input.

The machine has no power ampli-

fier for playback in the field but recordings can be heard through headphones. Tapes made on the Magnerite can be played back on any recorder running at the same speed or a cord connecting the output jack to a power amplifier may be used. The output at the jack is 1.7 volts at 50,000 ohms. This was tried during the tests with excellent results.

No microphone is supplied with the machine but any crystal or high impedance dynamic will work with it.

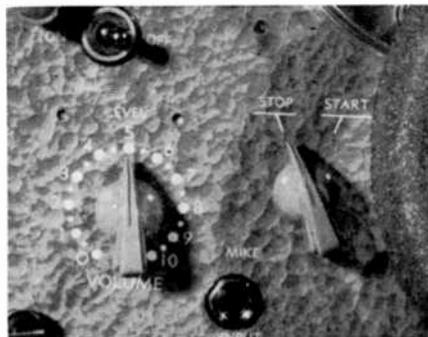
The motor is wound by inserting the crank handle in the opening on the side of the machine. About 75 turns will wind it fully. The recorder should be placed on some solid surface during winding.

The indicating light which is below the capstan on the front of the machine lights when the amplifier is turned on. If the machine is started, the light will blink and finally go out when the recorder is up to proper speed. Recording should start after the light goes out. As the spring motor runs down the light will again begin to blink indicating that rewinding is necessary. When starting the recorder, the flywheel may be given a slight push with the hand to help overcome the inertia.

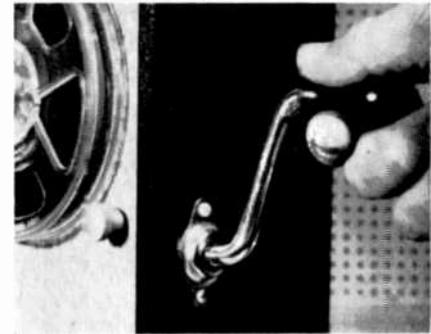
One unusual feature of the machine is the reversible head. This head has the same gap spacing both front and back so when one side begins to show wear the head may be reversed.

This recorder was used by us both in the studio and in the field. We found that it was easy to use and so light and compact, it was a pleasure to carry. Operation at all times was satisfactory as were the tapes produced with it.

We feel that this recorder is well made and is adequate for all purposes to which a portable recorder may be put.



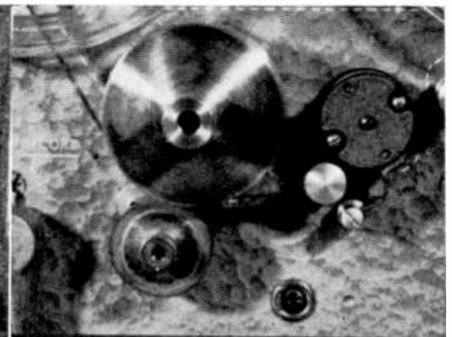
To the left is the volume control and to the right the start and stop switch. The microphone input jack can be seen below the control knobs.



Top: the flywheel and the crank handle fit in the lid of the recorder. For shipment the flywheel should be fastened to the lid as shown, otherwise, under normal usage it may be left attached to the capstan of the recorder. For playback of speech or music the flywheel may be left off but it should be on the machine when recordings are made. Lower: the crank is inserted in the side of the recorder.



The Magneraser, a handy bulk eraser is used to wipe tapes clean for the next recording. The unit is plugged into the regular 110 volt line and brought into contact with both sides of the reel. It may also be used to demagnetize heads.



Tape threading is easy and straightforward, and should be done before the flywheel is put on. The reversible head can be seen at the right.

SHOP OR SWAP

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

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

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

IT'S FUN to splice tape with Gibson Girl cutter-splitters. At your dealer or write: Robins Industries Corp., Dept. TR, 41-08 Bell Boulevard, Bayside 61, N. Y.

FOR SALE: Hi-fi equipment. Famous makes and latest models at a substantial savings. All like brand new and guaranteed perfect. Amplifiers, tuners, diamond pickups, changers, audio controls, speakers, tape recorders, microphones. I went nuts on hi-fi, and am now back to earth! Send stamped envelope for list. Phillip Lance, Greenwich, N. J.

DO YOU HAVE TWO FRIENDS . . .

. . . who are interested in recording and who would enjoy receiving a FREE sample copy of

TAPE RECORDING Magazine?

If you do, just send us the names on a postcard or use the coupon below.

TAPE RECORDING
Severna Park, Md.

Please send a copy of Tape Recording without charge to:

Name

Address

City Zone State

Name

Address

City Zone State

Your Name

Address

City Zone State

5-A

WISH TO swap tapes with persons interested in hypnosis and sleep learning. Herman Baryg, 11116¹/₂ Camarillo St., North Hollywood, California.

WANTED TO BUY: 16" Recording Turntable (Hysteresis), 16" cutting lathe with or without cutting head and good quality recording amplifier. Robert Latta, Box 357, Selmer, Tenn.

CORRESPONDENCE COURSES on tape in French, German, Modern, Biblical Hebrew, Italian, by professor, formerly of Berlin, Jerusalem, Rome, Paris. State your knowledge level, objective; I outline your program, price. Yaere Yadede, 2227¹/₂ Gatewood St., Los Angeles 31, Calif.

SWAP: Ho Model Railroad Equipment, value \$400 to \$500 for Hi Fidelity equipment. C. E. Fiene, Box 197, Steeleville, Illinois.

FOR SALE: Ekotape Professional Recorder, Model 107. Original cost over \$1,000.00. Sacrifice \$325.00 cash. Write to Dr. W. L. Carson, c/o First Presbyterian Church, 4602 Cary Street Road, Richmond, Virginia.

FOR SALE: Meissner AM-FM tuner, Thoradson 10 watt amplifier, Stromberg Carlson 12" coaxial speaker. Worth \$500 new, sell for \$150. J. W. Crowley, Severna Park, Maryland.

WILCOX GAY 2A10 push button tape recorder \$69; Webcor 210 1B \$99; RCA latest, finest SRT 403, 3 speakers, remote control, 40-10,000 cps, 7 watts, \$230 list, used few hours record political speech—\$169 or swap for 16 mm movie recorder or 15" or 7¹/₂" commercial tape equipment. All above in good condition, 2 speed, 2 direction, complete tape and mike. Harriott, 3666 51 Ave., N., Phone 41-5705, St. Petersburg 4, Florida.

FOR SALE: Twin-Trax, dual track, 7¹/₂ inch transport, automatic reversal at both ends of tape, will repeat one hour tape until shut off. Used less than 50 hours, perfect. Complete instructions. \$175. W. Hecht, 1233 Raible, Anderson, Indiana.

EICOR MODEL 1000 tape recorder, 7¹/₂" speed, 7" reels, new condition, \$65. V-M 3-speed portable amplified record changer, \$35. Electro-Voice 950 Cardax microphone, \$20. Prep 16 mm silent movie projector, \$10. Shipping charges additional. Marilyn Phillips, 311 Penfield, Rockford, Illinois.

WANTED: Recordings of American Album Familiar Music and Metropolitan Opera broadcasts prior 1951. C. Hurlbutt, 1910 South Marion, Denver, Colorado.

FOR SALE: One Bell Record-O-Phone RC 47A disc recorder slightly used. Best offer to be accepted. Mal Gottesman, Box 37, Rockaway Beach, N. Y.

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

CRESCENT TAPE recorder with custom built unit to drive in sync with motion picture projector, for duping sound to movies, \$100.00. Anderson Crop Dusters, 1495 Lindberg St., Stockton, Calif.

TAPE RECORDERS, Tapes, All brands. Reliable 7-year firm. Catalogue from: CARSTON, 215 E. 88, New York City 28.

FOR SALE: Revere T-10 with built-in motor switch, 6 months old, \$160. (List \$245.) Also Speak-O-Phone disc cutter, \$75. (List \$195.) Write TV-TIME, Woodmere, N. Y.

AUTOMATIC SHUT-OFF. Details free. Build 10¹/₂" reel adapter. Instructions \$1.00. LE ROI ENGINEERING, Box 251, Elmhurst, Illinois.

WILLIAMSON AMPLIFIER, with Partridge WWFB output transformer, matched pair KT-66 tubes, two filter chokes, two chassis, oil-filled capacitors. New condition, \$85.00 F.O.B. V. R. Hein, 418 Gregory, Rockford, Illinois.

DIFFERENT PRE-RECORDED tapes! Sample and catalog, 99c. Stone, Lunenburg 1, Mass. ✓

TAPE RECORDERS and accessories. Consult us about your recording problems. Liberal trade-in allowances on high fidelity recorders. Boynton Studio, 10 Pennsylvania, Dept. 305, Tuckahoe, N. Y. ✓

MAKE \$100 weekly spare time with your tape recorder. Send 25c refundable. LP DISCS MADE FROM TAPES. Both sides: 10 inch—30 minutes, \$4.25; 12 inch—45 minutes, \$5.75. Other speeds also. FREE Harold D. Weiler's new book "Tape Recorders and Tape Recording" with every order of \$12 or more. Artistic Sound, 24110 Rensselaer, Oak Park, Michigan. ✓

PRECISION MAGNETIC HEADS, Erase-Record-Playback. Stancil-Hoffman Corporation, Hollywood 38, California.

TAPE RECORDERS, tapes and accessories, nationally advertised brands. Free catalog upon request. Satisfaction guaranteed. Dressner, Box 66A, Peter Stuyvesant Station, New York, N. Y.

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

WILLIAMSON CIRCUIT amplifier, Heathkit W4-M, new condition, in use and performing per specs. Am graduating to ultralinear, \$39.75. Cobb, Box 88, Daytona Beach, Florida.

RADIO ANNOUNCING Practical Home Study Course. Uses tape library, taped lessons, text, syllabi, much professional material. Pathfinder Radio Services, 737 11 St., N.W., Washington, D. C., Dept. L.

ENTHUSIASTIC COLLECTOR desires core-tapespondence with others similar interests. Loves discussing any phase music, H.F., tape, Belden, New Brunswick, N. J.

YOUR TAPE recorder is obsolete. If it isn't an I-S-I. The most perfect tape transport mechanism made today. Write for details. Liberal trade-in allowance on used equipment. Sampson Electronics, Central City, Nebraska.

FOR SALE: Webcor, Model 2110 tape recorder, dual speed, dual track, brand new, not used more than 3 hours, need cash, original cost \$210.00, will sell for \$125.00 F.O.B. Contact George Boettcher, 258 Eldert St., Brooklyn, New York.

WANTED: Tape recorder, 1¹/₈ ips, for 7" reel, portable, new or used, good condition. Give full data. Claude E. Urban, 536 Court House, Pittsburgh, Pa.

101-8 EKOTAPE (Webster Electric) tape recorder, 2 inputs-2 outputs, 7¹/₂" speed, full track, 8" speaker. Like new, beautiful appearance. Works excellently. Cost originally \$385.50. Will take \$130.00. Also one new (in sealed carton) Wilcox-Gay 4A10 tape recorder, 7¹/₂ and 3³/₄" speeds, dual track, Worth \$149.95. Will take \$90.00. TOWERS, 935 N. 40th St., Philadelphia 4, Pa.

Now
THE ULTIMATE
IN MAGNETIC
RECORDING
TAPES



FERRO-SHEEN
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SHAMROCK #300



Here is a tape which some of America's largest recording studios are calling the "ultimate"! Two features raved about are the extremely flat frequency response at the high end of the spectrum and the complete absence of oxide shedding due to absolute bonding and the mirror-like surface imparted by the **FERRO-SHEEN** process.

You too, will find this new **FERRO-SHEEN** recording tape your "ultimate", whether it is for original program recording, tape masters for records and pre-recorded tapes, or for the highest fidelity in pre-recorded tape duplicates . . . in fact anywhere that highest quality professional results are a must.

HERE ARE OUTSTANDING FEATURES OF irish's FERRO-SHEEN PROCESS

EXTENDED FREQUENCY RESPONSE . . . all the highs . . . all the lows . . . limited only by the recording equipment in use.

REDUCED "DROP-OUTS" . . . nodules and agglomerates virtually eliminated.

40% to 100% REDUCTION IN HEAD WEAR . . . mirror-sheen surface operates with negligible friction and abrasion.

UNEXCELLED BONDING of oxide and base.

1200' on plastic reel \$3.80 audiophile net
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Order a supply of this remarkable new tape today and discover new thrills in magnetically reproduced sound. At your regular tape supply house or order direct from



***FERRO-SHEEN** is **irish's** exclusive new process of tape manufacture, which combines a new oxide and binder treatment, a new magnetic surface material and a new plastic base together in a new hotmelt lamination process, resulting in the strongest bond, the highest uniformity of oxide particles, and the smoothest surface ever attained in recording tape manufacture.

HERE ARE ADDITIONAL FEATURES OF SHAMROCK #300 TAPE.

- New **irish** reel . . . the strongest plastic reel on the American market, heavier by actual weight . . . has more plastic than any other reel. Two very large openings permit easy access to the threading eye.
- Has 4' eye-ease green leader.
- Packed in polyethylene bag.
- Includes **irish** reel-tab . . . provides space for noting subjects recorded and position on reel.

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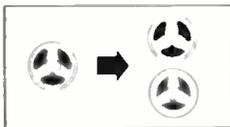




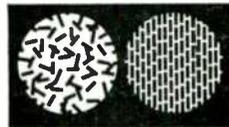
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YOU'LL GET EVERY NOTE of your favorite concert broadcast, sports event or dramatic program when you put it on new "Scotch" Brand Extra Play Magnetic Tape 190. Half as thick as conventional tapes but made with strength to spare, new Extra Play tape offers *50% more recording time* on a standard size reel. Thus, annoying interruptions for reel change are reduced to a minimum.

"Scotch" Brand's exclusive new oxide dispersion process gives you more brilliant sound, too. By packing fine-grain oxide particles into a neat, thin pattern, "Scotch" Brand has been able to produce a super-sensitive, high-potency magnetic recording surface on Extra Play Magnetic Tape. Hear the difference yourself. Try new "Scotch" Brand Extra Play Magnetic Tape 190 on your machine *today*.



EXTRA-THIN. 50% thinner, more potent oxide coating, 30% thinner backing permit more 190 Tape to be wound on standard-size reel. Result: one roll of new tape does job of 1½ reels of ordinary tape.



ELECTRON PHOTO microscope shows the difference! At left, artist's conception of view of old-style oxide coating. At right, "SCOTCH" Brand's new dispersion process lays oxide in neat, fine-grain pattern.

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