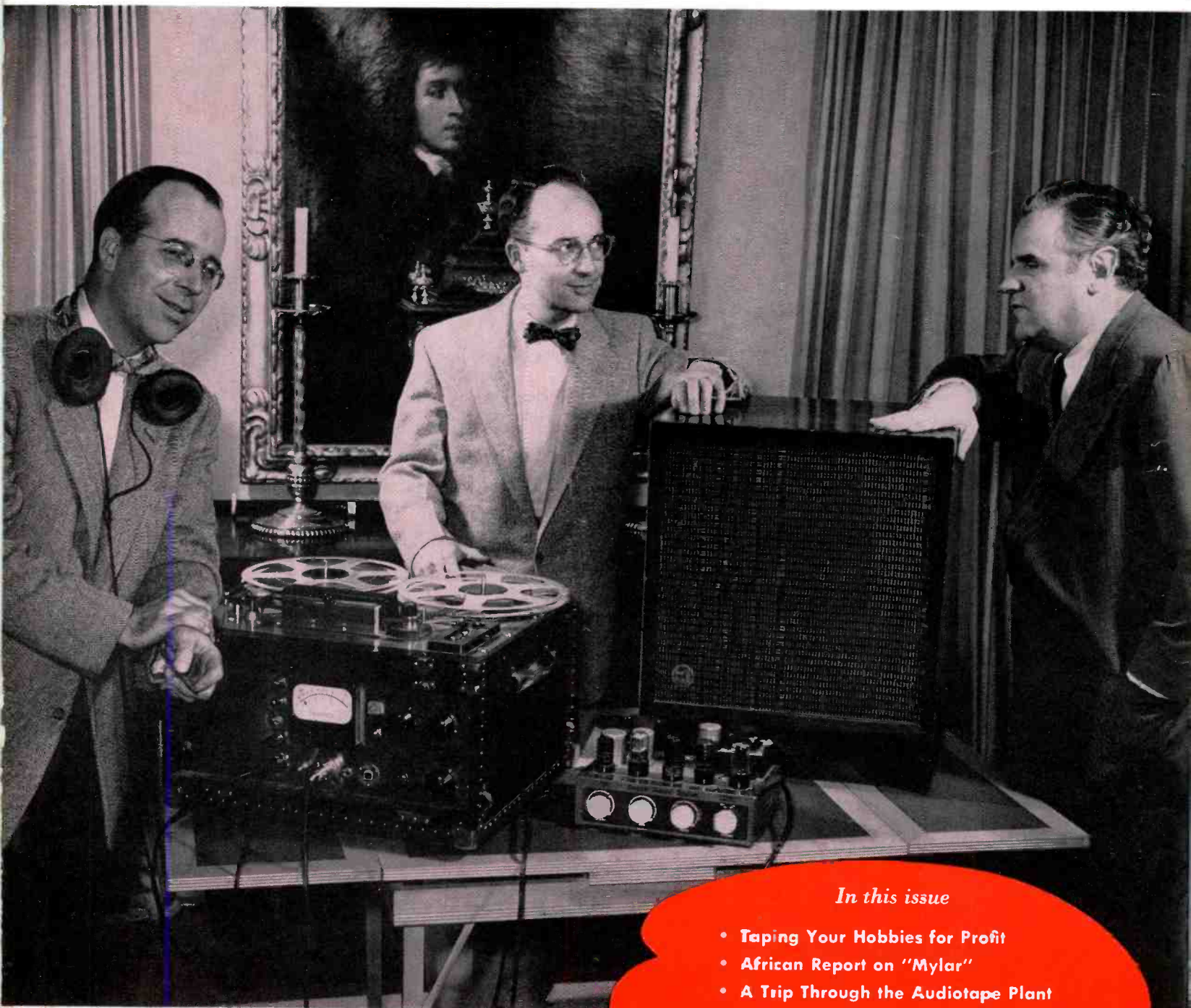


# audio record

Published by  
AUDIO DEVICES, INC.

444 MADISON AVENUE, N. Y. 22, N. Y.

audiorecords  
audiotape  
audiofilm  
audiopoints



Thiel and David Ficker and Alec Templeton (left to right) listen to playback of final tapes for Ficker Recording Service's new release, "Alec Templeton and his Music Boxes." Story on Page 2.

### *In this issue*

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- African Report on "Mylar"
- A Trip Through the Audiotape Plant
- Independent Labels Invade Tape Field
- New Tape Recorders
- More Tape on the Reel



# TAPING YOUR HOBBIES FOR PROFIT

Special interests and hobbies originally followed simply for pleasure are being made to pay unexpected dividends through the use of AUDIOTAPE and the unique merchandising program of two enterprising Connecticut record publishers named Thiel and David Ficker.

In seven years, the Ficker Recording Service of Old Greenwich, Conn., has moved up to the top ranks among small record publishers by developing a formula that not only competes successfully with the large record companies in the sale of "special" items, but offers its clients one of the best deals in the industry.

The Fickers point out that the field of special material has hardly been touched by record publishers. There are literally hundreds of records yet to be published for commercial and industrial use, and the possibilities of producing educational tools such as their nature records is almost limitless. The Fickers particularly encourage teachers to suggest needed material for the classroom or home study, although any audible interest or hobby with a genuine value and reasonably broad appeal has publishing possibilities.

Their formula sounds simple: publish only unique material, or subjects inadequately covered, and give each item individualized, tailor-made promotion. Actually, the success of the formula depends largely on the Ficker brothers' canny sense of the market and their stubborn refusal to any stereotyped rule-of-thumb about merchandising methods. As a result, their sales on a given item often run to three times the industry's normal expectations.

With this boost in sales, royalty fees frequently mount to many times the usual compensation from companies whose unpromoted records sit idly on the dealers' shelves.

The publication which inaugurated this unusual and successful "little business" bonanza is a remarkable series of records capturing the songs of American birds in their native habitats.

The bird records grew out of response to an article appearing in *Audio Record* (Oct.-Nov., 1951) describing the Fickers' business of "small lot" duplicating of discs and tapes. The article created overwhelming interest among the readers.

Among those who wrote to inquire about the possibilities of "home" recordings were Jerry and Norma Stillwell, a retired Mid-West couple with a life-long interest in nature, a remarkable knowledge of bird-



Mr. and Mrs. Jerry Stillwell recording wild bird songs on professional type portable tape equipment.

lore, and a newly acquired enthusiasm for tape recording.

In combining their old and new hobbies, they had managed, through a substantial financial outlay for equipment, and five years of tireless effort, to compile what still stands as one of the finest collections of recorded bird songs in existence. Their question was what to do with these tapes? Would anyone buy bird songs? Would anyone publish them?

The Ficker brothers said yes, but realizing the injustice of offering to buy the work of five years for a couple of hundred dollars, devised their present formula for publication rights. The Stillwells retained ownership of their tapes, waiting, instead, for the Ficker promotion campaign to multiply a generous royalty fee. They have never regretted this arrangement, for the Fickers proceeded to publish and sell their bird song records at a phenomenal rate.

To date, sales of the Stillwell records (a series of two) has more than tripled the best predictions of a half dozen New York record merchandising experts, despite the fact that the records retail for a sturdy \$7.95 apiece, the highest priced single-disc items in the Long Playing record catalogues.

The Fickers soon decided that a good market can be stretched to make it better,

so they deliberately set out to expand interest in birds and bird songs by promoting a group of items, each of which tended to increase interest in the others.

Recordings of caged birds have long been carried by pet shops but never, in their opinion, have been properly prepared or merchandised, so the Fickers set about publishing a "complete" pet shop line.

First of the group was a disc edited from a tape recording of miscellaneous talk by a parakeet named Mr. Morgan. The owner's voice was cleverly dubbed in with the bird to simulate an amusing conversation between bird and owner. The reverse side of the record is devoted to three sets of repeated phrases designed to be used in teaching parakeets to talk. This was followed by an album of three teaching records containing a vocabulary course of twelve phrases.

The next item was the first really satisfactory recording of canaries singing. This canary record is typical of the Fickers' dedicated concern for publishing only quality records. They spent weeks listening to all available canary records, carefully noting the common faults, and gradually working out the specifications for an ideal record. They were determined to publish the best possible record or none at all.

(Continued on Page 6, Col. 1)

audio  record

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NOV.-DEC., 1954

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the *Voice*  of *Music*

Model 700 "tape-o-matic" recorder

... part of the

**FIRST PRIZE**

in the Audio Devices' Contests

for HOME RECORDISTS

and for CHURCH RECORDISTS

**T**HIS portable, two-speed, dual-track recorder, made by the V-M Corporation, Benton Harbor, Michigan (one of the world's largest manufacturers of phonographs and record changers), will make a welcome addition to your existing tape recording facilities.

It includes the following V-M features.

**Single-knob control** for instant selection of tape speed, at either 7½" or 3¾" per second.

**Push-button controls** for rewind, stop, play and forward.

**Dual speakers** with 40 to 15,000 cycle range, including 5" x 7" woofer and 3.5" tweeter.

**Tape index timer** for locating any desired selection on the reel.

**Pause button** stops tape travel noiselessly while recording or playing back.

**Record-ready light** and distort light for adjustment of correct recording level.

**Treble and bass** controls, individually adjustable to suit your listening pleasure.

**Continuously variable** volume level control permits recording or playback at desired volume level.



**Monitor switch** permits monitoring through loudspeakers while recording from radio or phono connection.

**Safety switch** locks "record" button to prevent accidental erase.

**Concealed** 60-cycle hum control and bass boost.

**Flutter and wow**, less than 0.5% rms.

**Three separate input jacks**: one for high impedance microphone, one for radio-phono connection, and one high-gain input with special equalization for magnetic phono cartridges.

**Two output jacks**: one for external speaker with automatic disconnect of internal speakers, and one for external speaker plus internal speakers. By using both jacks, two external speakers can be used simultaneously.

**Professional quality** microphone with frequency range of 60 to 10,000 cycles, ±5 db.

**Finished** in rose and gray water-resistant leatherette with golden expanded metal grille. Weight, 30 lb complete.

... and with it you get

**\$100<sup>00</sup> CASH**

**PLUS** 20 7-inch reels of plastic-base

**audiotape**

— that's over 4½ MILES of the world's finest, professional quality magnetic recording tape!

— 20 HOURS of dual-track recording time at 7½"/sec. or 40 HOURS at 3¾"/sec!



**AUDIO DEVICES, INC.**

444 Madison Avenue, New York 22, N. Y.



Audio Devices Announces

# **TWO** **BIG-PRIZE** contests

for the best articles on

"How I Use My Tape Recorder"



for HOME  
RECORDISTS

TELL US how you use your tape recording equipment—for pleasure, for entertainment, or for educational purposes in the home. The following information could also be included in your contest article: description of equipment—type of material recorded—methods of cataloging and storing your tape "library"—and any special gadgets or hookups you might have developed to help you get the most out of your tape recorder.



for CHURCH  
RECORDISTS

TELL US how your tape recording equipment is being used to further the work of the church—in recording sermons—for choir practice and recitals—in the Sunday School or any other department. Contest articles should describe all of the various applications which have proved of educational, religious or cultural value to any or all segments of the church organization. A description of recording equipment and methods will also be of interest.

these prizes will be awarded in EACH CONTEST!



one FIRST PRIZE

consisting of

a V-M "tape-o-matic"  
recorder\*

plus \$100.00 cash

plus 20 7-inch reels  
of plastic-base  
Audiotape!

two SECOND PRIZES

each consisting of

\$100.00 cash, plus  
15 7-inch reels of  
plastic-base Audiotape!

three THIRD PRIZES

each consisting of

\$50.00 cash, plus  
10 7-inch reels of  
plastic-base Audiotape!

### CONTESTANTS PLEASE NOTE:

In addition to the above prizes, \$25.00 will be paid for any non-prize-winning article that is published in Audio Record or any other Audio Devices publication.

At the option of the winner, Audiotape can be substituted for all cash prizes, at a special contest rate of only \$2.00 per 7-inch reel. In lieu of a \$100.00 cash prize, for example, the winner can elect to receive fifty 7-inch reels of Audiotape.

Articles may be as long as necessary to include all pertinent facts, but preferably not over three typewritten pages, single spaced.

Photographs of your equipment or recording operations will, of course, greatly enhance the value of your entry—so be sure to include them wherever possible. Sketches or diagrams of your recording hookups, too, may help to clarify your story.

All contest entries become the property of Audio Devices, Inc., and no articles will be returned. Articles which have been previous-

ly published elsewhere will not be eligible. Audio Devices reserves the right to edit all material before publication.

**CONTEST CLOSING DATE:** All entries for these two contests must be post marked not later than midnight, April 1, 1955. In the event of a "tie" in judging the articles, the one which was received first will be awarded the prize. Hence it is to your advantage to send your entries in as soon as possible.

Articles should be identified, on the first page of the manuscript, as either "Home Recording Contest" or "Church Recording Contest."

Address all contest entries to:

Contest Department

**AUDIO DEVICES, Inc.**

444 Madison Avenue, New York 22, N. Y.

\* The V-M Tape Recorder is described on the other side of this sheet.

# A Report on "Mylar" from Darkest Africa

The following account of Mr. Colin M. Turnbull's African expedition is extracted verbatim from a letter received from Mr. Turnbull by Mr. C. J. LeBel, Vice President of Audio Devices, Inc. It describes the expedition's trip and recording work from Morocco, across the Sahara, to Gold Coast.

We left Colomb Bechar on March 24th, after last minute checking of equipment, cleaning and repacking. The road, or rather the track, was so badly corrugated that for the first thirty miles we were uncertain whether we should continue or not. Both the car and the equipment seemed to be in danger of being shaken to pieces. Reports had said the route was bad, but we had counted on being able to travel fast enough to lessen the effect of the corrugations; as it was we were overloaded even more than before by heavy metal sand-mats and extra gasoline and in any case fast travel was excluded by jagged rocks that littered the road.

The next day conditions improved, and we arrived at Adrar, the French post from which the Meheriste troops go out on camel back for six month periods, covering the whole desert from Morocco to Tombouctou. We camped and fixed up our equipment, and found that already one microphone and the portable recording machine had suffered, though not seriously. In each case the result of poorly soldered connections, and put right in a half hour. It was while testing our equipment that we got our best recordings; a crowd of Arab boys had gathered around, and tired of seeing nothing but machinery, started playing and singing. We recorded a series of play-songs that fitted into the program we had in mind, and some delightful story telling. As soon as we played-back the harm was done, and it was impossible to get quite the same spontaneity. But the next day the children fetched an old blind beggar who sat down and sang for two hours, and gave us some of the loveliest music we got in the whole of North Africa. When we played back to him his expression remained unchanged apart from an initial start of surprise. It was magic, but he accepted it, and only remarked when he had something in his own singing to criticize.

Recording the Commandant of the post was very dull work after this, and we were lucky to get through it without much re-recording, as our generator failed us and



Mr. Colin M. Turnbull (right) makes an on-location recording in the Belgian Congo.

the batteries were getting dangerously low. So far the batteries seemed to have been the only things affected seriously by the heat, which was up to 125 during the day. The Mylar base tape (Audiotape) ran and handled as cleanly and easily as under ordinary conditions, whereas one reel of ordinary plastic-base tape that we had for comparison seemed very prone to stretch. We left our two test reels sitting open in the sun at mid-day for a couple of hours, ran them through and back at fast speed and slow speed, with increased tension on the drag.

Three days work saw us through, and we spent a whole day re-organizing the packing of the car. The bulk of the tape we stored on the floor, where it would be out of the sun and would get the draught from the floor ventilators; the test reels were again left on the surface where they would get whatever was going. Every piece of cushioning and wrapping went around the equipment, and we set off for the longest and worst stretch of the desert. It was worst from the point of view of lack of habitation or shelter, and the total absence of any vegetation, but as far as the track went it was the best we had seen for weeks. Admittedly we got stuck in the sand several times, but providing we kept the car moving we had nothing to worry about. Except heat. During the four days it took us to cross this uninhabited section of the desert the temperature range daily was from 35 at night to 135 during the day. The metal cans of the test reels were hot enough, when left in the sun, to bring a blister on my hand. The car was filled with sand dust, and the hygrometer which seemed to have been damaged by the vibration gave a reading of 25, the accuracy of which I would not vouch for. It never read

higher than 30 at this period.

Once we reached the Niger River, just above Gao, the humidity increased to a comfortable point and the temperature range dropped to 50-100. We drove down through the Dahomey forests to the coast, across through Togo and into the Gold Coast. There we announced our arrival to the Gold Coast Government, and said that we had a message for them from their representative in London. The message we had recorded before leaving, and we played a part of it to the Prime Minister's secretary. He thought that we should bring it to a large political rally the Prime Minister was attending at the Accra Stadium, and having got us that far insisted that we play it over through the P.A. system.

The effect on the immense crowd (it was the beginning of the campaign for the first free elections in the Gold Coast) was electrifying — particularly when the message suddenly broke into a song which, as far as I could make out, was slightly on the risky side. But from that moment onwards we were feted like kings, and were given every possible help in our work. We were invited by the Paramount Chief of the Mankessim district to attend a festival there, but most of our work was in or around Accra. The humidity there is constantly high, and the temperature also. An average 80/80 would not be far out, though the maximum thermometer reading was seldom over 90.

We took advantage of the mains electricity in Accra to edit all our material to-date, and were glad to find that all earlier splices were firm and intact. Each new reel of Mylar base tape (Audiotape) that we ran through when the humidity was 92, temperature 95, and left standing under these conditions for one hour (as had the Mylar test tapes), stuck sufficiently badly to make it necessary to give a fast wind through and back before a satisfactory recording could be made. Even then it still stuck frequently. Our Mylar test tapes were also treated to a few days in a refrigerator, but I can only say that I was unable to detect the slightest difference in performance, strength or quality.

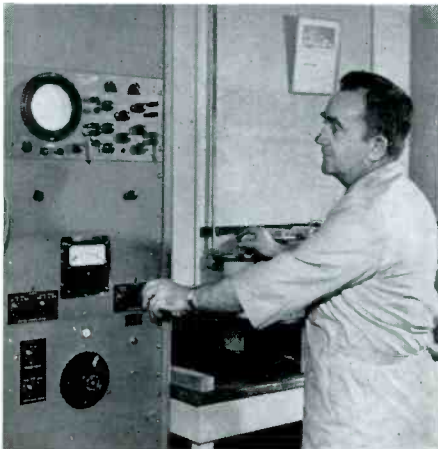
We left our batteries to be charged before starting off on the next lap of our journey, but on testing them found that what little life had been left in them had been efficiently and effectively sucked out. Fortunately we had some three thousand

(Continued on Page 6, Col. 2)

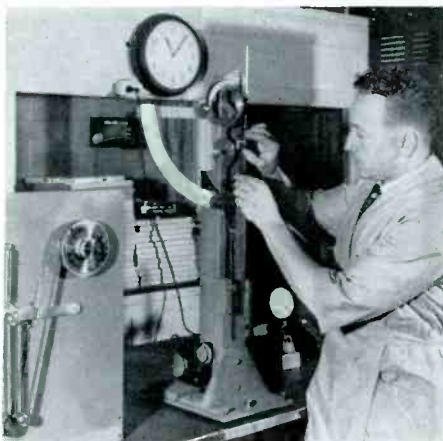


# A Trip Through the Audiotape

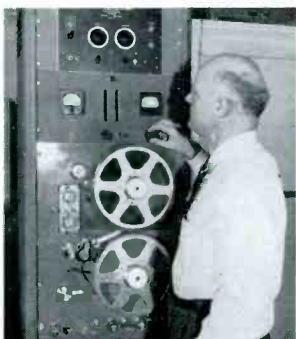
by William C. Speed  
President  
Audio Devices, Inc.



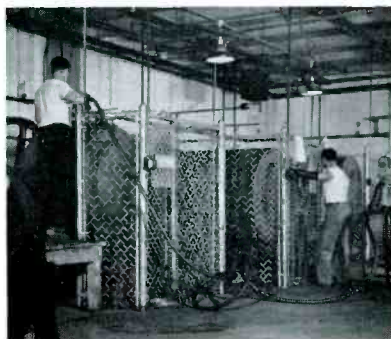
BH curve tracer accurately measures the magnetic properties of oxide powders.



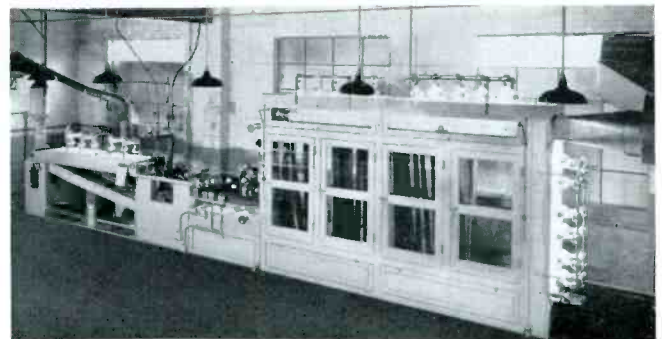
Tensile strength of Audiotape base material is checked on this precision test equipment.



Specially designed magnetic defect detector reveals the most minute imperfections in the tape coating.



In these huge ball mills, magnetic oxide mixes are pulverized to extreme fineness.



A portion of the Audiotape coating department, showing one of the specially designed precision coating machines.

Our customers often say, "I certainly do wish I could see how tape is made." Well, we cannot give all our friends a personally conducted tour through our plants, but we do want them to know the principles of manufacture and the care that is necessary to maintain AUDIOTAPE quality. After all, we pride ourselves on our reputation as manufacturers of the highest quality material—a reputation granted by discriminating professional users only after long and careful trial. We value this reputation for uniform quality far more than the knowledge that we are also the world's largest exclusive maker of sound recording materials (Audiotape, Audiodiscs and Audiofilm).

Since the keynote is quality, it is fitting that our trip starts in Quality Control. Here are prepared the specifications for the many materials which go into the manufacture of Audiotape: iron oxide, plastic binder, solvents, plastic or paper base material, reels, and even packing materials. It is here, too, that test samples from each new shipment of these raw materials are carefully examined to make sure they meet our specifications for quality and uniformity.

Each batch of iron oxide is checked first in a BH curve tracer, which gives us an accurate picture of its magnetic properties. Coercive force and remanence must be held between very narrow limits. In addition the powered oxide must be able to absorb the correct amount of binder. Finally, a test batch is milled and coated on an actual test tape. This tape is carefully checked for frequency response, output and distortion, and only after passing these tests is the batch released for production use.

Under theoretically ideal conditions of oxide manufacture, every batch would be

identical in coercivity and remanence to every other batch. Actually, however, it doesn't work out this way and the magnetic characteristics of oxides are subject to slight variations in every batch. If each batch were formulated directly into the tape coating, these variations would result in corresponding changes of electrical and mechanical behavior.

We have successfully overcome this problem by maintaining a large inventory of processed iron oxide powders which we scientifically *blend together* in predetermined quantities. This blend takes into consideration all the magnetic and physical properties of the individual lots of oxide with the result that the finished product is exceptionally uniform from reel to reel and from month to month. Our friends and customers, particularly in the professional field, cannot tolerate "good tape today and substandard tape tomorrow."

From the Quality Control department we now step out into Manufacturing—where we find many of the same precision operations are performed, but on a much larger scale.

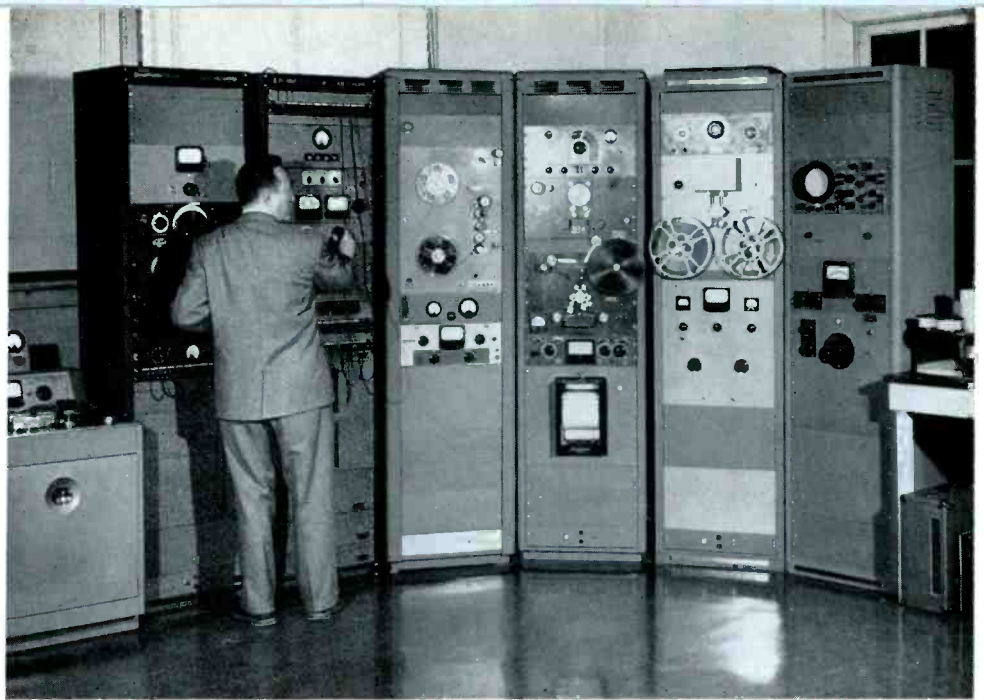
The first step in actual tape manufacture is the physical formulation of the oxide coating. The magnetic oxide powders, binders, antifricition materials, antistatic agents and solvents are intimately mixed and finely ground or milled in huge rotating drums filled with hardened steel balls. These "ball mills" each weigh more than a Mack truck and are water cooled to absorb the heat generated by the powerful action. After hours of such attrition, the now liquid compound is drawn from the mills, filtered and pumped to thoroughly agitated storage tanks which feed the coating machines.

Tape coating machines are large, complicated, and expensive. They are also unique,

# Plant

for they were designed and built within our own factory. Running at high speed, these machines unwind large rolls of cellulose acetate, "Mylar", or paper, then apply a microscopically thin layer of sizing or extra strong adhesive. This is quickly dried and the layer of magnetic oxide is coated on with micrometer precision. Controlled heat and dust-free air evaporate the solvents from the oxide coating, leaving a smooth, hard, flexible surface with a variation in oxide thickness of less than 5/100,000 of an inch. The thickness is electrically measured continuously throughout manufacture, and the recording properties are actually measured and charted as the master roll is wound up. These machines are never stopped to change rolls, for new rolls are fed in with a "flying splice" just as on a newspaper printing press. As each roll is finished, a swatch is taken from the end, checked again for thickness, numbered and sent to Quality Control for electrical and microscopic checks.

The next and final step is the slitting of the wide roll into individual ribbons. Normally one thinks of slitting ribbons, adhesive tape, or ticker tape, and the operation, however, is far from a simple operation. The finished tape must not vary in width more than the thickness of a human hair. The slit edge must be *straight*, and free from microscopic irregularities or roughness. The temperature must be precisely controlled. The slitting blades must not generate dust or shreds, which could be entrapped between layers when wound onto reels. Tape must be wound under constant and exact tension, no part of the reel may be loose or sloppy, no part of the reel may be so tight as to cause excessive stresses in the base material. Room dust, lint from clothing, even dust from the box that contains the reel must be eliminated.



Here in the Quality Control laboratory, Audiotape performance is repeatedly checked on the finest equipment.

Inspection under polarized light shows up flaws and strains; every reel is carefully checked by trained inspectors. There is no piece work here. Care and accuracy are too important.

The completed reel of tape is now placed in a dust-proof, polyethylene bag, each reel is passed on a conveyor belt over a giant demagnetizer or "bulk eraser" and popped into an Audiotape box ready for consumption.

Meantime, random samples are taken at regular intervals by Quality Control. The laboratory again checks Uniformity, Sensitivity, Frequency Response, Distortion, Peak Bias Point, and perfection of coating. Records and actual samples of tape from every day's production are kept in the files and correlate with the serial number appearing on every box and package of Audiotape.

All these quality controls cost money, because if any lot is substandard we have no other choice than to destroy the questionable reels. Every reel sold to school, amateur, or broadcaster is of the same uniform quality that goes to the phonograph recording companies and Army,

Navy and Air Force.

The precision manufacture and quality control just described applies to all standard Audiotape, including, of course, the new Type LR (Longer Recording) Audiotape.

There is still another type of Audiotape, however, where even greater precision is required. That's the Type EP (Extra Precision) Audiotape, which is used in high-speed electronic computers, telemetering equipment and other specialized magnetic data recording applications. Here, even microscopic surface imperfections or "drop-outs" which could not be detected on a sound recorder might cause malfunctioning of the complex data recording equipment. More elaborate precautions are taken in every step of manufacture, from Quality Control all the way through to dust-proof packaging in sealed steel containers. EP Audiotape is tested on our specially designed defect detector—and is *guaranteed* defect free!

We hope this little "factory trip" will give you some idea of what's behind the familiar slogan: "Audiotape—it speaks for itself".



A portion of the Audiotape slitting room.



Precision test equipment measures the frequency response of Audiotape production samples.



### Taping Your Hobbies for Profit (Continued from Page 1, Col. 3)

The success of their own recording (of borrowed canaries and a borrowed organist) is achieved by putting organ accompaniment and a carefully edited tape of full-throated canary songs on separate sound tracks. These were then carefully blended into a single satisfying program of canary singing at its best.

Further breaking away from stereotyped record publishing methods, they sought to capture the interest of potential bird record buyers by selling bird houses and feeding stations, mechanical bird calls, books on birds, and a clever cardboard quiz chart for teaching children to identify the more common birds.

The NATURE WHEEL & NATURE RECORD is a quiz chart marketed in combination with a special six-inch disc edited out of the original Stillwell records.

Each of these items was promoted because it opened a wedge into a different facet of the potential market. Promotion on the original bird song records quickly followed each of these exploratory advances, and the result was increased sales.

But sensing that even a promotion campaign augmented by such sales boosting tie-ins as bird houses, nature charts, and bird books must soon hit the saturation point, the Fickers are starting promotion on another item in their backlog of recorded "audible manuscripts." Turning to a new field of interest, they have issued a 12 inch Long Playing record of forty-five nostalgic tunes played on a group of antique music boxes from the collection of their renowned Greenwich, Conn. neighbor, Alec Templeton.

Mr. Templeton, an internationally famous pianist, has taken advantage of his world-wide concert tours to bring together a remarkable collection of these rare and elaborate antique instruments, but unlike the Stillwells and their bird songs, he had never attempted to preserve the tunes on tape. The Fickers, however, saw in this unique collection another opportunity for sharing profits, and consequently arranged to do the tape recording for Mr. Templeton in his home. Currently launched on a hard-hitting merchandising program that no big-name record publisher would bother to give to an off-beat item, the Ficker Recording Service is well on the way to proving again that the tape recordist and the small record publisher are ideal partners for turning "audible" hobbies and special interests into profits.

## INDEPENDENT LABELS MOVE INTO TAPE FIELD...via Livingston

The swift expansion of the pre-recorded tape library as a new high-fidelity product has encouraged many of the independent record companies to enter this relatively unexplored market.

Livingston Electronic Corporation, of Livingston, New Jersey, has announced the availability, through its sales network, of new tapes by several of the more progressive independents. As duplicator and national distributor for these labels, Livingston will supply high-fidelity outlets with a varied catalog of quality recorded tapes. Production will be limited to a tape speed of  $7\frac{1}{2}$ " /sec. until a greater number of slower speed machines are capable of satisfactory results. Early releases will be made by the following companies:

Atlantic Records has announced material recorded by such artists as Erroll Garner, Mary Lou Williams, Jimmy Yancey, Barbara Carroll, Sylvia Syms, Dizzy Gillespie, Wilbur DeParis, Mabel Mercer, Mae Barnes, Vernon Duke, and other top recording stars. These programs will be available on dual-track reels, predominantly 5", with the exception of binaural tapes which will be supplied on 7" reels. An interesting item in the Atlantic Library will be a complete performance of Romeo and Juliet, starring Eva Le Gallienne, Dennis King and Richard Waring.

Empirical Recording, a high-fidelity label rapidly gaining recognition for its unusual work in Dixie-land recordings will release its library on tape on a regular schedule and will also make available material recorded binaurally.

Esoteric Records, Inc. have announced their first five reels of a diversified repertoire which will include their famous English Medieval Christmas Carols with the

Primavera Singers of the Pro Musica Antiqua of New York, Seven Canzonas of Giovanni Gabrieli with the New York Brass Ensemble, an album of 18th century music with Nicanor Zabaleta, harpist, an album of African tribal music and dances, and an album of Larry Carr recently released on disc.

Oceanic Records will feature in their first tape release a Saint Saens Cello Concerto in A minor, op. 33, Haydn Cello Concerto #1 in D major, op. 101, Beethoven's "Battle" Symphony, op. 91, Bizet's Symphony #1 in C major, and other material not yet designated. These classical tapes will be available on seven inch dual-track reels.

An unusual entry into the tape field is the Riverside Label. In this group the accent is not on high-fidelity, but rather on the rarity of the material and the desirability of preserving it on a permanent medium.

For example, Riverside's firsts will include an album of Jazz of the Roaring 20's, Rediscovered Fats Waller Solos, some rare Bix Beiderbecke, and other collector's items normally not available on tape.

Coming on the heels of Livingston's recent Connoisseur releases and the original Livingston popular series, there is considerable significance to be attached to the action of these companies. It is strongly indicative of an accelerated upswing in the sale of pre-recorded tape and tends to prove that this new medium is now gaining the acceptance predicted by tape recorder manufacturers over two years ago. It now appears that the tape recorder has emerged from the novelty class and has become an important integral program source in a high-fidelity system.

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### A Report on "Mylar" from Darkest Africa (Continued from Page 3, Col. 3)

miles between us and our next recording session, and we charged all batteries from the car generator as we ran. The road we chose was along the Togo and Dahomey coasts and into southern Nigeria; through the Camerouns into French West Africa, down to within 20 miles of Yaounde and

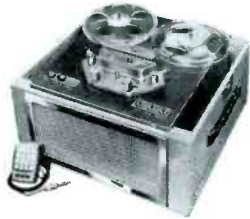
across, due East, to the Belgian Congo border—and from there on I was in old hunting grounds, and knew what possibilities there were for work that was really after my heart—among the Pigmies of the Ituri.

That is where I am now—but you'll get that in the next installment!



## NEW RECORDER MODELS

by Bell Sound Systems, Inc.  
Columbus 7, Ohio



**Model RT-75 3-Speed Portable**  
**\$149.95**

Tape Speed	Frequency Response
7 1/2" /sec.	50-9,000 cycles, ± 3 db
3 3/4" /sec.	50-6,500 cycles, ± 3 db
1 7/8" /sec.	50-4,000 cycles, ± 6 db

Portable, dual-track recorder with single lever control for instant selection of tape speed. Equalization automatically corrected for each speed. Rewind, 70 sec. for 1200-ft reel. Fast forward, 90 sec. for 1200-ft reel. Wow and flutter, less than 0.25% at 7 1/2" /sec. Push-button recording switch interlocked to prevent accidental erase. Dual neon recording level indicators. Two microphone inputs (one for crystal and one for dynamic or ceramic) and radio-phono input. Outputs for external speaker and external amplifier. Includes 6" by 9" speaker, microphone, 600-ft reel of tape and take-up reel. Power output, 3.5 watts. Weight, 35 lb.



**"CubCorder" Battery Operated Portable**  
**\$224.95**

Dual-track, battery operated portable with either 7 1/2" and 3" /sec. tape speeds (Model 2260) or 3 3/4" and 1 7/8" /sec. (Model 2261). Has microphone with built-in monitor playback level, miniature transmitter for playback thru radio without connections to set, and wet cell batteries that can be recharged from car cigarette lighter outlet. Unit includes ceramic microphone, shoulder strap, battery charger cable, battery syringe, one 600-ft reel of tape and take-up reel. Weight, 20 lb.

**Information Wanted:** Mr. Louis C. Sutherland, University of Washington, Seattle 5, Wash., is in need of a circuit diagram for a Telephonograph manufactured under basic patents by the American Telephonograph Co., Springfield, Mass. Only identifying mark is number 111K on motor frame. If any of our readers can supply this information, please notify Mr. Sutherland. He would like to put this museum piece in working order.



by C. J. LeBel, Vice President,  
Audio Devices, Inc.

### MORE TAPE ON THE REEL



C. J. LeBel

For some time there has been discussion of the need for greater recording time on a reel of given size, leading to the production of our LR tape. Examples of the value of longer time may be found in the recording of symphonies and lectures. The writer suggested that it would be possible to put a fifty per cent greater length of tape on a reel of given size, if a thinner base could be used.

#### Where to Reduce

Before we could produce the thinner tape, it was necessary to decide just where the .7 mil overall reduction in thickness should be accomplished. The coating thickness is small to begin with, about a half mil, and it did not appear feasible, with all available expedients, to reduce the thickness by over one or two tenths of a mil. This seemed to indicate that the base would have to be reduced to .9 to 1 mil, and two materials were available—cellulose acetate and the polyester Mylar\*.

In a magnetic tape, the coating supplies the magnetic properties, but most of the physical strength is provided by the base. It was necessary to make sure that LR tape would have enough strength to withstand mechanical transients during recorder starting and stopping, as well as the lighter but continuous stress of normal running. Furthermore, the tape would have to provide this strength over a wide range of climatic conditions. While few of our users are explorers, even the continental U.S.A. provides a wide range of ambient conditions (disregarding the still wider variations experienced in the export market).

#### Tests at Normal Humidity

The first tests were run under typical winter conditions, 75° F. and 50% relative humidity, in our climate room, with the results shown in Table I.

	Yield Strength	Breaking Strength
1 mil Acetate	3.7 lb.	3.9 lb.
0.9 mil "Mylar"	4.2 lb.	7.6 lb.
1.45 mil Acetate	5.0 lb.	5.5 lb.

These results can be deceptive, for few parts of this country have so favorable summer conditions.

#### Tests at High Humidity

As most of our readers will testify, the humidity generally rises in hot weather, and their tape is seldom stored in air-conditioned quarters. Therefore, another series of tests were run at 75° F. and 90% relative humidity. This is comparative gentle, but it gave an answer without too much discomfort for our indefatigable Frank Radocy. The results are shown in Table II.

	Yield Strength	Breaking Strength
1 mil Acetate	1.8 lb.	2.5 lb.
0.9 mil "Mylar"	4.1 lb.	7.6 lb.
1.45 mil Acetate	3.0 lb.	4.1 lb.

Recorders in general use were designed to safely handle tape with a 1.4 mil cellulose acetate base, even in summer, which would seem to set a desirable minimum yield-strength of about three pounds at 75° F. and 90%. The above data would seem to rule out 1 mil acetate, which retains only 60% of the limiting strength, whilst accepting .9 mil "Mylar," which has 137% of the limiting value.

#### A Practical Test

We try very hard to avoid the curse of much audio engineering research, undigested figures, so a number of tape recorders were set up in the climate room, and operated at 75° F. and 90% relative humidity. The 1 mil acetate showed an erratic tendency to break, but the .9 mil "Mylar" was entirely satisfactory.

#### Conclusion

It is clear that thin acetate base is likely to lead to trouble during even mildly humid summer conditions, whereas thin "Mylar" is quite satisfactory due to its low moisture absorption. Therefore, we have chosen "Mylar" base for LR AUDIO-TAPE.

\* Du Pont Trade Mark

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