

Behind the Scenes (and Sounds) at WMGM

Picture-Story of Recording Activities at one of America's Leading Producers of ET Shows

In less than a year, Metro-Goldwyn-Mayer Radio Attractions has developed into one of the country's leading transcribed show-makers, with more than 200 stations in the United States, Canada, Hawaii and Alaska carrying its award-winning features.

Working on both coasts, M-G-M Radio Attractions turns out a roster of eight first-rate open-end ET shows which was awarded Variety's 1949-50 "New Program Development Award." The half-hour programs are based on familiar Metro screen properties like "The Hardy Family," "The Story of Dr. Kildare," "The Adventures of Maisie," and "Crime Does Not Pay." The quarter-hour commentary and interview shows feature top film personalities Lionel Barrymore, George Murphy, and Paula Stone.



Singled out by Variety as "particularly outstanding" was the "M-G-M Theater of the Air" hour-long version of popular films with star casts including such notables as Frederic March and Florence Eldridge (above), Marlene Dietrich, Maurice Evans,

Charles Laughton, Raymond Massey and Pat O'Brien. It is a series that, both Variety and The New York Times agree, "stood up favorably in comparison with 'Lux Radio Theater.'"

(Continued on Page 2, Col. 2)

A SIMPLE PROCEDURE FOR STEREOPHONIC SOUND RECORDING

by James F. Nickerson, Director, Psychology of Music Laboratory, University of Kansas

Stereophonic sound is not new but how to demonstrate its function in normal hearing has been difficult and expensive. The effect of two-eared orientation to a complex sound field and especially to music is of much concern to the staff of the Psychology of Music Laboratory at the University of Kansas. The task of affording classroom demonstration of stereophonic effects has been simplified by the pre-recording of various types of sound and the presentation of these materials both monaurally and binaurally. Of particular interest is the contribution of stereophonic principles to recording and transmission of music. Orchestral music so recorded seems to possess a vitality and brilliance far beyond that of our finest high fidelity single channel recordings. Even with limited fidelity of equipment the two-channel system affords a subjective realism and vitality to the recorded sound not experienced in present



Stereophonic recording equipment in use at Psychology of Music Laboratory, University of Kansas. Set-up shown includes two Pentron recorders in tandem, matched right and left field speakers, and binaural headset.

radio broadcast and recording techniques.

By means of two Pentron Astra-Sonic (T-3) tape recorders the Music Laboratory has been able to record conveniently musical events on the campus, and set up classroom demonstrations of the phenomenon of stereophonic listening.

Essentially the phenomenon is produced by the slight differences to be found in the sound wave patterns at either ear. These slight differences in time, intensity

and quality are sufficient to afford the mind additional means of organization and orientation to the sound field not available in our single channel recording processes. The slight and subtle differences to be found between the two patterns are crucial not only to right-median-left orientation to sound but to some extent to all directional orientation. This directional orientation afforded by the mind's reaction to the contrast in stimuli at each ear is responsible for the marked gain in "fidelity" and reality of recorded sound, particularly music.

To achieve a simple means of two-channel recording in order to preserve these subtle differences in recording, the recording shoes of one of the tape recorders (T-3 Pentron Astra-Sonic) were removed and re-inserted with the brass magnetic insulation to the top. On the standard Pentron recorder the brass strips are on lower half of shoe thus making the recording on the upper half of the tape as it passes the recording shoe. Linking the two recorders in tandem

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audio record

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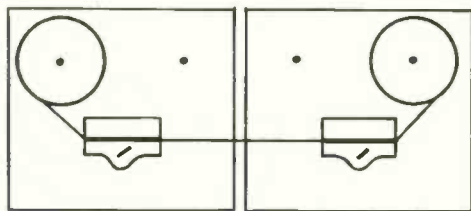
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Stereophonic Recording

(Continued from Page 1, Col. 3)

by passing the tape from left to right as indicated in the diagram below, one channel was recorded on the lower half of the tape and the second channel on the upper half. In case of any marked discrepancy in drive shaft speed between the two machines, the rubber pressure wheel can be removed from the machine to the right.



Schematic diagram of set-up for stereophonic recording, with two modified Pentron Astra-Sonic Recorders operating in tandem.

As long as the positions of the two recorders remained unchanged the time relationship between the two channels was maintained. Any alteration of position of either recorder would result in gross distortion.

For demonstration purposes each channel can be carried to the same speaker but the stereophonic phenomenon does not emerge. Using a single microphone for pickup, identical signals can be placed on each channel. Even though the two signals are carried to separate right and left speakers the stereophonic effect does not emerge. Slight shift in the position of the two recorders can simulate the stereophonic effect or produce echo effect when channeled through the same speaker. The optimum in producing the stereophonic effect seems to be achieved by spacing the two microphones about fifteen inches apart and facing outward at an angle of 45° from a line drawn from sound source to a point midway between the two microphones. The field speakers should be spaced well apart and turned inward slightly toward the center of the room.

A simple check on the amount of error introduced by the possible differences in capstan speeds of the two recorders was achieved by use of Lissajous figures on an oscilloscope. Fluctuations observed when

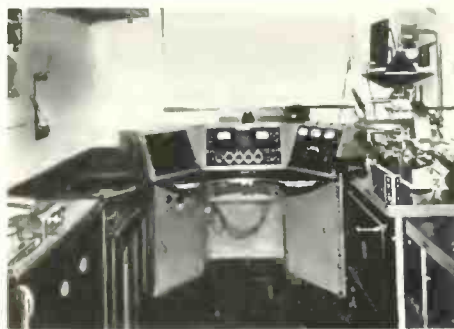
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Behind the Scenes at WMGM

(Continued from Page 1, Col. 3)



2 But sharing equal billing with scripts and casts was the first-rate quality of the platters. When M-G-M Radio Attractions entered the program transcription business, the company built what knowledgeable recording engineers consider one of the finest recording set ups in the United States. It involved an investment of more than \$100,000 in precision equipment to meet all professional standards of performance. Shows produced on the East Coast originate in the modern studios at 711 Fifth Avenue where they are under personal supervision of Production Chief Raymond Katz and Director Marx B. Loeb (seated). The special RCA 10-position console has facilities for filters and feeding to echo and reverberation chambers.



3 Shows are piped from control room mixing consoles to one of the recording rooms (above) where a master and a safety are recorded simultaneously on Ampex tape recording machines. Compact recording rooms also contain Scully Lathes, Cook Cutters and Amplifiers, Fairchild playback machines, Fairchild cutting machines, and Cook re-recording consoles featuring quality control amplifiers.



4 Tape goes to editing room for editing and timing by Edgar Small (right), assistant to Production Chief Katz. Following the script, Small eliminates fluffs, coughs and other extraneous noises, tightens cues. In addition to "M-G-M Theater of the Air" and "Crime Does Not Pay," both of which are transcribed in New York, shows taped on the West Coast are flown East for editing and mastering.



5 Actual cutting, inserting and splicing of tape is done by a staff of four recording engineers under the direction of Paul C. Baldwin (right), chief recording engineer.







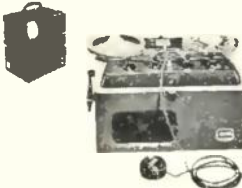







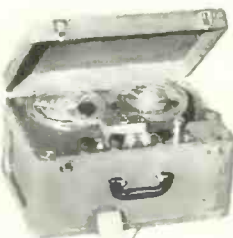


6 After editing, show is returned to recording room where it is transferred through re-recording console and a special quality-control amplifier to a master disk on the Scully lathe.

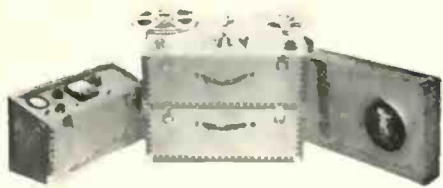


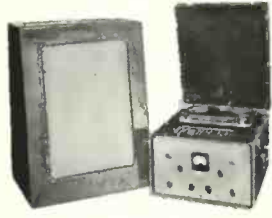

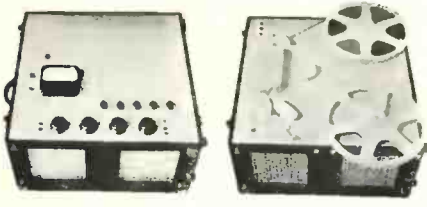
Resultant platters have earned for themselves an immediate acceptance from stations throughout the country, Canada, Alaska and Hawaii.


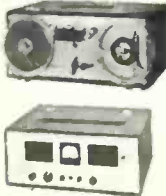




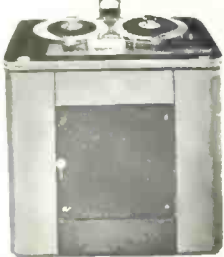
QUICK FACTS ON MAGNETIC TAPE RECORDERS

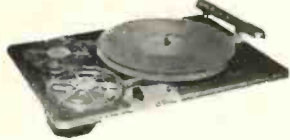




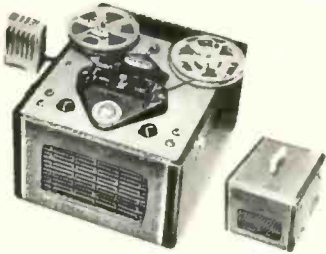

(Additional Information can be obtained by writing to the manufacturer)

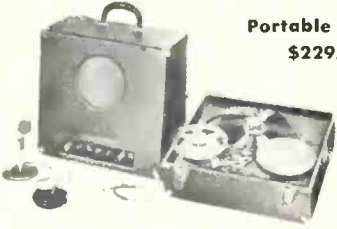


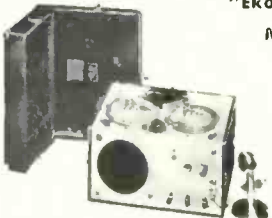
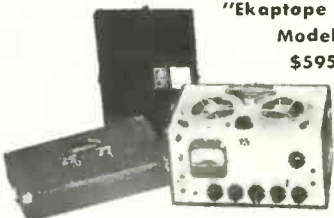


Manufacturer	Model and Price	Frequency Response	Data	Tape
AMPEX ELECTRIC CORPORATION 1200 Howard Ave. Redwood City, California	 <p style="text-align: right;">Portable Model 400</p> <p style="text-align: right;">\$750.00</p>	<p>50-15,000 cycles (± 2 db) at 15"/sec.</p> <p>70-10,000 cycles (± 2 db) at 7 1/2"/sec.</p>	Portable, dual-track recorder, with tape speeds of 15 and 7 1/2" per second. Signal-to-noise ratio, over 55 db at either speed. Either half-track or full-track recordings can be played back without changes in adjustment. Separate record and playback heads. Instantaneous starting. Rewind time, 1 1/2 min. Simultaneous monitoring. Weight—approx. 60 lb.	<p style="text-align: center;">Wound with OXIDE IN</p>
	 <p style="text-align: right;">Console Model 300C</p> <p style="text-align: right;">\$1,575.00</p>	<p>50-15,000 cycles (± 2 db) at 15"/sec.</p>	Professional-type, single-track recorder, with tape speeds of 15 and 7 1/2" per second. Signal-to-noise ratio, over 60 db. Separate record and playback heads and amplifiers. Rewind time, 1 min. for full NAB reel. Design flexibility permits modifications for special applications, including multi-channel recording and response beyond 30 KC. Also available in portable and rack-type units.	<p style="text-align: center;">Red Oxide, Plastic Base Recommended</p>
AMPLIFIER CORPORATION OF AMERICA 396-398 Broadway, New York 13, N. Y.	 <p style="text-align: right;">"Twin-Trax Magnemuse" Model 810B (7 1/2"/sec.)</p> <p style="text-align: right;">\$285.00</p>	<p>50-9,000 cycles (± 3 db) at 7 1/2"/sec.</p>	Portable, dual-track recorder, with automatic reversal—giving up to 1 hour continuous play on 7" reel. Dynamic range, 45 db. Input channels for microphone and radio-phonograph. Total distortion, less than 3%. Shuttle speed in both directions. Weight—42 lb.	<p style="text-align: center;">Wound with OXIDE OUT</p>
	 <p style="text-align: right;">Model 810C (15"/sec.)</p> <p style="text-align: right;">\$345.00</p>	<p>30-13,000 cycles (± 2 db) at 15"/sec.</p>	Single or dual-track recorder with tape speeds of 15 and 7 1/2" per second. Separate heads for erase, record and monitor. Simultaneous monitoring while recording. Dynamic range, 50 db. Shuttle speed in both directions.	<p style="text-align: center;">Red or Black Oxide, Plastic or Paper Base</p>
	 <p style="text-align: right;">"Magnemaster Console" Model 815</p> <p style="text-align: right;">\$395.00</p>	<p>50-15,000 cycles, at 15"/sec.</p> <p>50-10,000 cycles, at 7 1/2"/sec.</p>	Portable, dual-track recorder, with 7 1/2" tape speed and automatic reversal—giving 4 hours continuous play on 13 1/2" reel. Tape speed, 7 1/2" per sec. Microphone included. Weight—55 lb. Other data same as for "Twin-Trax Magnemuse" above.	<p style="text-align: center;">Wound with OXIDE OUT</p>
 <p style="text-align: right;">"Twin-Trax Magnorama" Model 910B</p> <p style="text-align: right;">\$495.00</p>	<p>50-9,000 cycles (± 3 db) at 7 1/2"/sec.</p>	Portable, dual-track recorder, with 7 1/2" tape speed and automatic reversal—giving 4 hours continuous play on 13 1/2" reel. Tape speed, 7 1/2" per sec. Microphone included. Weight—55 lb. Other data same as for "Twin-Trax Magnemuse" above.	<p style="text-align: center;">Wound with OXIDE IN</p>	
AMPRO CORPORATION 2835 North Western Ave., Chicago 18, Ill.	 <p style="text-align: right;">"Ampro-Tape" Model 731</p> <p style="text-align: right;">\$109.50</p>	<p>100-7,000 cycles, at 3 3/4"/sec.</p>	Portable, dual-track recorder with 3 3/4" tape speed—giving 2 hours playing time on 7" reel. Input channel for microphone, radio or phone connection. Rewind time, 4 min. for 7" reel. Includes microphone, 5"x7" PM speaker, and jack for external speaker or earphones. Weight—17 lb.	<p style="text-align: center;">Wound with OXIDE IN</p> <p style="text-align: center;">Red Oxide, Plastic Base</p>
BELL SOUND SYSTEMS, INC. 555 Marian Rd., Columbus 7, Ohio	 <p style="text-align: right;">"RE-CORD-O-fane" Model RT-65</p> <p style="text-align: right;">\$169.50</p>	<p>70-8,000 cycles (± 3 db) at 7 1/2"/sec.</p>	Portable, dual-track recorder with 7 1/2" tape speed. Rewind ratio 6 to 1. Includes crystal microphone, 6" PM speaker, inputs for microphone and radio-phonograph, and head-phonograph monitoring jack. Weight—33 lb.	<p style="text-align: center;">Wound with OXIDE IN</p> <p style="text-align: center;">Red Oxide, Plastic or Paper Base</p>

Manufacturer	Model and Price	Frequency Response	Data	Tape
BERLANT ASSOCIATES 4917 West Jefferson Blvd., Los Angeles 6, Cal.	 <p>"Concertone" Model 1401 \$345.00</p>	<p>40-15,000 cycles (± 2 db) at 15"/sec. 40-7,500 cycles (± 2 db) at 7 1/2"/sec.</p>	<p>Professional type single or dual track recorder mechanism and electrical chassis for console installation. Tape speeds, 15" and 7 1/2" per sec. Signal-to-noise ratio, over 50 db. Fast forward and rewind time, 1 min. for 10 1/2" reel. Separate record, erase, and playback heads. Monitors while recording. Carrying case and console available. Weight—50 lb., in case, with 8" speaker.</p>	<p>Wound with OXIDE IN Red Oxide, Plastic Base</p>
THE BRUSH DEVELOPMENT CO. 3405 Perkins Ave., Cleveland 4, Ohio	 <p>"Soundmirror" Model BK-414 \$199.50</p>	<p>To 5,000 cycles, at 7 1/2"/sec.</p>	<p>Portable, single-track unit, available with 7 1/2 or 3 3/4" tape speeds—providing 30 to 60 minutes recording time. BK-414 has automatic rewind. BK-414S has manual mechanism. Signal-to-noise, 40 db. Flutter, 0.3% RMS. Fast forward and rewind, 75"/sec. Inputs for microphone, radio-phono. Output, 3 ohms +30 dbm. Includes 6" PM speaker and crystal microphone. Weight—38 lb.</p>	<p>Wound with OXIDE IN</p>
	 <p>Model BK-415 \$209.50</p>	<p>To 3,800 cycles, at 3 3/4"/sec.</p>	<p>Table model, single-track units available with 7 1/2 or 3 3/4" tape speeds—providing 30 or 60 minutes recording time. BK-411 has automatic rewind. BK-427 has manual mechanism. Signal-to-noise, 40 db. Flutter, 0.3% RMS. Fast forward and rewind, 75"/sec. Inputs for microphone, radio-phono. Output, 3 ohms +30 dbm. Includes 8" PM speaker and crystal microphone. Weight—34 lb.</p>	<p>Red Oxide, Plastic or Paper Base</p>
	 <p>"Soundmirror" Model BK-411 \$199.50 (mahogany) \$209.50 (blond)</p> <p>Model BK-427 \$209.50 (mahogany) \$219.50 (blond)</p>	<p>To 5,000 cycles, at 7 1/2"/sec. To 3,800 cycles, at 3 3/4"/sec.</p>	<p>Educational Model, similar to BK-411 above, except as follows. Has higher output and superior quality and volume for large classrooms. Includes RCA accordion cone speaker. May be played through radio, separate speaker, amplifier or PA system. Manual mechanism. Cabinet has handles for easy carrying.</p>	<p>Red Oxide, Plastic or Paper Base</p>
CRESTWOOD RECORDER CORP. 624 West Adams St., Chicago 6, Ill.	 <p>"Magictape" Model CP-201 \$189.50</p> <p>Model CP-201FF \$199.50</p>	<p>50-8,000 cycles, at 7 1/2"/sec.</p>	<p>Portable, dual-track recorder with 7 1/2" tape speed. Rewind time, less than 2 min. Microphone and radio-phono input channels. Includes crystal microphone and 6"x9" speaker. Model CP-201FF has fast forward time of 1 min. 20 sec. for 7" reel. Weights—27 lb. (CP-201), and 29 lb. (CP-201FF).</p>	<p>Wound with OXIDE OUT Red Oxide, Plastic Base</p>
EICOR, INC. 1501 West Congress St., Chicago 7, Ill.	 <p>Portable Model 115 \$144.95</p>	<p>80-7,500 cycles, at 7 1/2"/sec.</p>	<p>Portable, dual-track recorder with tape speed of 7 1/2" per sec. Removable capstan permits conversion to 3 3/4" per sec. Rewind speed, 6 to 1. Crystal microphone and speaker included. Weight—27 lb.</p>	<p>Wound with OXIDE IN Black Oxide Paper Base or Red Oxide Plastic Base</p>
FAIRCHILD RECORDING EQUIPMENT CORP. 154th St. and 7th Ave., Whitestone, N. Y.	 <p>Console Model Unit 125 \$2,750.00</p>	<p>50-15,000 cycles (± 1 db) at 15"/sec.</p>	<p>Professional type, single-track recorder with 15" tape speed (7 1/2" and 30" models available). Total noise and distortion -64 db (ref. 2 1/2% dist.). Adjustable bias. Speed tolerance, 0.1%. Built-in VU meter and circuit checking. Unit-type, plug-in chassis. Automatic stop—instant braking and reversal.</p>	<p>Wound with OXIDE IN Red Oxide Plastic Base</p>

Manufacturer	Model and Price	Frequency Response	Tape	Tape
RANGERTONE INC. 73 Winthrop St., Newark 4, N. J.	Portable Model R-5P \$2,025.00 	45-15,000 cycles (±2 db) at 15"/sec. 50-8,000 cycles (±2 db) at 7 1/2"/sec.	Professional-type, single-track, dual-speed recorders, with choice of 3 3/4", 7 1/2", 15" or 30" per sec. tape speeds. Distortion less than 2% total harmonic. Maximum signal-to-tape noise, 55 db. Peak flutter, less than 0.1% at 15"/sec. Rewind speed, 0 to 250"/sec. Meets all NAB adopted standards. Complete monitoring and mixing facilities. VU meter, signal indicator and footage counter. Also available with positive "sprocketless" synchronization for motion picture and TV applications. Weight of portable model—drive unit, 65 lb.; playback amp., 52 lb.; record amp., 37 lb.	Wound with OXIDE IN Red or Black Oxide, Plastic Base
	 Console Model R-5C \$3,000.00	45-15,000 cycles (±2 db) at 15"/sec. 50-3,000 cycles (±2 db) at 7 1/2"/sec.		
RCA A new RCA Professional Tape Recorder, Type RT-11A, will be available in February, 1951. This will be described in a later issue of Audio Record. For information, write to RCA Victor Division, Camden 2, New Jersey				
REVERE CAMERA CO. 320 East 21st St., Chicago 16, Ill.	 Portable Model T-100 \$159.50 Model TR-200 (with radio) \$199.50	To 7,500 cycles (±3 db) at 3 3/4"/sec.	Portable, dual-track recorder with 3 3/4" speed—giving up to 1 hour recording on 5" reel. Signal-to-noise ratio, over 45 db. Rewind speed, 102.5"/sec. Fast forward, 37.5"/sec. Neon recording level indicator. Inputs for microphone and radio-phon. Outputs for external speaker or headphones. Microphone and 5"x7" PM speaker included. Weight—25 lb.	Wound with OXIDE IN Red or Black Oxide, Plastic Base
	SONAR RADIO CORP. 59 Myrtle Ave. Brooklyn 1, N. Y.			
SONAR RADIO CORP. 59 Myrtle Ave. Brooklyn 1, N. Y.		Portable Model T-10 \$395.00 	35-9,500 cycles (±2 db) at 7 1/2"/sec. Portable dual-track recorder (automatic reverse) with 7 1/2" tape speed. Harmonic distortion, 1%. Signal-to-noise ratio, 55 db. Rewind, 30"/sec. Four input channels, VU meter, attenuator, equalizer, gain and tone controls. Power supply and speaker in separate case.	Red Oxide, Plastic or Paper Base
THE STANCIL-HOFFMAN CORP. 1016 North Highland Ave., Hollywood 38, Cal.	 "Minitape" Model M4 \$212.50	100-5,500 cycles (±2 db) at 7 1/2" or 15"	Portable, single-track recorder with tape speeds of 3 3/4, 7 1/2 and 15" per sec. Signal-to-noise ratio, at least 35 db. Completely self-contained battery operated unit (recording only). Weight—13 lb.	Wound with OXIDE IN
	Model R4 \$1,670.00 	50-15,000 cycles (±1 db) at 15"/sec.		

Manufacturer	Model and Price	Frequency Response	Data	Tape
MAGNECORD INC. 360 North Michigan Ave., Chicago 1, Ill.	<p style="text-align: center;">Portable Model PT6-JA \$548.00</p> 	<p style="text-align: center;">50-15,000 cycles (± 2 db) at 15"/sec.</p>	<p>Portable, single-track recorder, with interchangeable capstans for 15 and 7½" tape speeds. Two separate heads. Combination record/playback amplifier. Low impedance mike input, bridging input, monitor speaker, O-level output terminal, VU meter, terminal for external speaker.</p>	
	 <p style="text-align: right;">Portable Model PT63-JA \$721.00</p>	<p style="text-align: center;">50-15,000 cycles (± 2 db) at 15"/sec.</p>	<p>Same as above, except with three separate heads for erase, record, and playback for monitoring from tape while recording. PT63-J amplifier has separate record and playback amplifiers, and switch for equalization at 7½ and 15" tape speed.</p>	Wound with OXIDE IN Red Oxide, Plastic Base
	<p style="text-align: center;">Portable Model PT7-A Recorder and PT7-P Amplifier \$908.00</p> 	<p style="text-align: center;">50-15,000 cycles (± 2 db) at 15"/sec.</p>	<p>Portable, single-track recorder, with 15 and 7½" tape speeds. Three separate heads. Safety-interlocked push button controls. Signal-to-noise ratio, over 55 db. Separate record and playback amplifiers—equalization at both speeds. Three microphone inputs and bridging input. Includes VU meter, monitor speaker, and output for external speaker.</p>	
	 <p style="text-align: right;">Console Model PT7-CC \$950.00</p>	<p style="text-align: center;">50-15,000 cycles (± 2 db) at 15"/sec.</p>	<p>Complete console combination including PT7 recorder (as above) and PT7-C line-level amplifier. Separate record and playback amplifiers. Headphone jack. Switch for 7½ and 15" equalization. Switch for record, playback or bias reading on 4" VU meter. Black enamel finish with burn-proof Formica top and chrome trim.</p>	
PRESTO RECORDING CORP. P. O. Box 500, Hackensack, N. J.	 <p style="text-align: center;">Portable Model PT-900 \$799.00</p>	<p style="text-align: center;">To 15,000 cycles, at 15"/sec.</p>	<p>Portable, professional-type, single-channel, dual-speed recorder, operating at 15 and 7½" per sec. Three separate heads, for erase, record, and playback. Three microphone channels. Fast forward and reverse. VU meter.</p>	
	 <p style="text-align: right;">Model RC-10-14 \$684.00</p> <p style="text-align: right;">Model RC-10-24 \$761.00</p>	<p style="text-align: center;">To 15,000 cycles, at 15"/sec.</p>	<p>Professional, single-channel, dual-speed recorders (15" and 7½"/sec.) for rack mounting. Three separate heads, permitting monitoring from tape while recording. Three-motor drive mechanism. Fast forward and reverse. RC-10-14 controlled by rotary type selector switch. RC-10-24 completely push-button controlled. Can be arranged for remote operation.</p>	
	 <p style="text-align: right;">Console Model 5R-950 \$2,785.00</p>	<p style="text-align: center;">30-15,000 cycles (± 1 db) at 15"/sec.</p>	<p>Professional, single-channel recorder, with 15 and 7½" tape speeds (15" and 30" optional). Signal-to-noise ratio, over 60 db below max. signal. Fast forward and reverse, 240 ft./sec. Three separate heads. VU meter. Amplifier and power supply units on hinged panel.</p>	

Manufacturer	Model and Price	Frequency Response	Data	Tape
THE GENERAL INDUSTRIES COMPANY Elyria, Ohio	Tape-Disc Recorder Assembly Model 250 \$79.50 	(depends on amplifier used)	Combined disc and tape recorder assembly for installation in console or portable case. Tape speed, 3 3/4"/sec., dual track. Fast forward and reverse. PM erase. Takes 5" reels. Disc recorder cuts and plays back up to 10" discs, at 78 rpm. Records from tape to disc and vice versa — and from microphone or radio to disc or tape.	Wound with OXIDE IN Red or Black Oxide, Plastic or Paper Base
MARK SIMPSON MFG. CO. INC. 32-28 49th St., Long Island City 3, N. Y.	"MASCO" Model LD-37 \$169.50 Model LD-37R (with radio) \$199.50 	80-8,500 cycles (±3 db) at 7 1/2"/sec.	Portable, dual-track, dual-speed recorders, arranged for instant change from 7 1/2 to 3 3/4" per sec. Up to 2 hours recording time available on 7" reel. Signal-to-noise ratio, 45 db at 7 1/2". Automatic equalization. Neon recording level indicator, volume and tone control, monitor switch, 6" PM speaker, and microphone. AC erase and bias. Microphone and radio-phono inputs. External speaker and amplifier outputs. Available with or without built-in AM tuner. Weight of mechanism (less case), 28 lb.	Wound with OXIDE IN
"MASCO" Model DC-37 \$179.50 Model DC-37R (with radio) \$209.50 	80-5,000 cycles (±3 db) at 3 3/4"/sec.	Models LD-37 and 37R, without carrying case. Models D-37 and 37R, with two-tone tweed carrying case.	Red Oxide, Plastic Base	
"MASCO" Model D-37 \$179.50 Model D-37R (with radio) \$209.50 		Models DC-37 and 37R have metal cover with carrying handle. Cover operates interlock switch and can be locked with key.		
OPERADIO MFG. CO. St. Charles, Ill.	"Du-Kane" Portable \$189.50 	50-8,000 cycles, at 7 1/2"/sec.	Portable, dual-track recorder with 7 1/2" tape speed. Power output, 7 watts. Input channels for microphone and radio-phono. Output jacks for headphones and external speaker. Rewind time, 80 seconds for 7" reel. Microphone and built-in 6"x9" speaker included. Weight—26 lb.	Wound with OXIDE OUT Red Oxide, Plastic or Paper Base
THE PENTRON CORP. Chicago 16, Ill.	Portable Model 9T3 \$167.50 	50-8,000 cycles, at 7 1/2"/sec. 50-5,000 cycles, at 3 3/4"/sec.	Portable, dual-track, dual-speed unit (7 1/2" and 3 3/4")—providing 2 hours recording on 7" reel. Signal-to-noise ratio, 50 db. Flutter less than 0.5%. Fast forward and rewind ratio, 20 to 1. Inputs for microphone and radio-phono. Outputs for headphones, external speaker, and PA system. Includes 6" PM speaker and crystal microphone. Weight —28 lb. Other models also available.	Wound with OXIDE IN Red Oxide, Plastic or Paper Base
PERMOFLUX CORPORATION 4900 West Grand Ave. Chicago 39, Ill.	Permoflux "Tape-Riter" \$279.50 	Ample for all voice recording	A desk-type magnetic tape recorder designed primarily for office use as a dictating machine—also applicable to many other business purposes. Features special "cartridge" loading which eliminates threading. Automatic erase. Simplified controls. Microphone includes stop-start switch. Weight—20 lb.	Wound with OXIDE IN Black Oxide, Paper or Plastic Base

Manufacturer	Model and Price	Frequency Response	Data	Tape
TAPETONE MFG. CORP. Sales Office: Broadcasting Program Service, 23 W. 45th St., New York 19, N. Y.	 <p>Portable Model \$229.00</p>	100-8,000 cycles, at 7 1/2" /sec. 100-6,000 cycles, at 3 3/4" /sec.	Portable, single-track recorder operating at 7 1/2" per sec. (3 3/4" optional), with built-in 78 rpm record player. Hum level, 40 db below normal operating level. Rewind time, 7 min. Neon volume indicator lamp, 8" PM speaker and crystal microphone. Weight—approx. 40 lb.	Wound with OXIDE OUT Red Oxide, Plastic Base
UNIVERSAL ELECTRONICS SALES CORP. 1500 Walnut St., Philadelphia 2, Pa.	 <p>"Reeleast" Model C-1-A \$219.00</p>	70-8,000 cycles (± 3 db) at 7 1/2" /sec.	Portable, dual-track recorder with 7 1/2" tape speed and automatic reversal, giving 1 hour continuous play on 7" reel. Signal-to-hiss, 60 db. Signal-to-hum, 50 db. Fast forward and rewind. Electronic recording level indicator. Inputs for microphone, phono and radio. Output for external speaker or PA system. Weight—34 lb.	Wound with OXIDE OUT Red Oxide, Plastic Base
WEBSTER ELECTRIC CO. Racine, Wisc.	 <p>"Ekotape Pla-Mate" Model 109 \$156.50</p>	60-4,000 cycles, at 3 3/4" /sec.	Portable, dual-track recorder with 3 3/4" tape speed—giving 2 hour recording time on 7" reel. Fast forward and rewind, 7 5/8" per sec. Neon recording level indicator. Input jacks for microphone and radio-phono. Output jack for external speaker. Includes 5"x7" PM speaker and crystal microphone. Weight—34 lb.	Wound with OXIDE IN
WEBSTER ELECTRIC CO. Racine, Wisc.	 <p>"Ekotape" Portable Model 101-4 \$369.50 Model 102-4 \$407.00</p>	60-7,000 cycles, at 7 1/2" /sec.	Portable, single-track recorder with 7 1/2" tape speed. Fast forward and rewind, 7 5/8" per sec. Electronic eye recording level indicator. Inputs for microphone and radio-phono. Output for external speaker. Includes 8" PM speaker. Weight—50 lb. Model 101-4 includes crystal microphone. Model 102-4 has 500 ohm input and additional 500 ohm output for telephone lines.	Black Oxide, Paper Base
WILCOX-GAY CORP. Charlotte, Mich.	 <p>"Ekaptape Network" Model 105 \$595.00</p>	70-7,000 cycles (± 3 db) at 7 1/2" /sec.	Portable, single-track recorder with 7 1/2" tape speed. Signal-to-noise ratio, over 35 db. Total speed variation, less than 1%. Fast forward and rewind, 7 5/8" /sec. VU meter. PM and HF erase. Jacks for 2 low level or 1 bridging input. Two 500 ohm (0 dbm) outputs and 1 monitoring jack.	Wound with OXIDE IN Red Oxide, Plastic Base
WILCOX-GAY CORP. Charlotte, Mich.	 <p>"Recordio" Model 1B10 \$149.95</p>	85-6,000 cycles, at 1.875" /sec.	Portable, dual-track unit giving 2 hours recording on 5" reel. Includes phonograph turntable and pick-up for recording from disc to tape. Rewind time 1 1/2 min. for 5" reel. Jack for external speaker. Recording level indicator. Includes 6" oval speaker and crystal microphone. Weight—21 lb.	Wound with OXIDE IN
WILCOX-GAY CORP. Charlotte, Mich.	 <p>"Recordio" Model 1C10 \$187.50</p>	65-8,500 cycles, at 1.875" /sec.	Portable, single-track unit giving 1 hour recording on 5" reel. Includes disc recorder and reproducer. Records from tape to disc and vice versa, and from microphone or radio-phono to disc or tape. Fast forward and reverse. Automatic stop. Recording level indicator. Jack for external speaker. Includes 5"x7" oval speaker and microphone. Weight—27 lb.	Red Oxide, Plastic or Paper Base

NOTE: All prices listed are subject to change without notice. Consult manufacturer or local dealer for exact price, as some prices are list and others net.

audio pointers for the Recordist

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

A SURVEY OF TAPE RECORDERS

Last year we published a survey of the many tape recorders then reaching the market, and considerable interest was expressed by our readers. Now another season has rolled around, and we present the newest developments once again. Over 40 machines, from 24 manufacturers, are listed.



C. J. LeBel

Although three different applications cover most uses of tape recording (home, educational, and broadcast), one business recorder has also been listed. The needs of these fields differ widely, and the tabulated data should enable one to select the most suitable machines for a given job.

Some Trends

It is interesting to note that only 7% of the machines call for black oxide tape alone. 93% use red oxide or either type. At this rate, black oxide tape will probably be obsolete in another year. The same degree of standardization has not yet been achieved in direction of wind, though already over 75% of the machines and over 80% of the manufacturers prefer the oxide-in wind. As older designs are scrapped, we may expect the oxide-out wind to disappear.

When we said that the limit to frequency response lay in the machine and its heads, and not in the tape — they all laughed. But recent developments have vindicated us, for many of the latest machines have increased the frequency range per inch of tape speed by 50% or more, as compared to previous practice. This has led to lower tape speeds, wider use of smaller reels, and smaller and lighter machines, without loss of recording time or quality. The use of twin recording tracks has also helped this trend, and about half of the machines listed are of that variety.

In the professional machine field, the year has seen improvement in drive systems. Three-motor designs have become

available at lower cost, and friction clutches of improved quality have also come into use. As a result, flutter is now often less than it has been.

At the same time, reduced distortion and improved signal to noise ratio have resulted from improved purity of bias wave, and from better amplifier design.

Experience of the past year has served to better define the requirements in various fields, to the point where a little comment might be in order.

Home Applications

Home uses for tape machines may be divided into two classes — wide and narrow range.

For speech only — party entertainment, baby's first words, and the like, uniform response to 5 kc is surely adequate. For music, particularly long selections and full programs, the range must be greater if the quality is to even approximate that of the latest microgroove recordings. An acceptable range would be to 8 kc, but 10 kc would be closer to the quality of many discs. Home equipment of this nature is, surprisingly, available from many manufacturers.

A magic eye tube makes a much better volume indicator than does a flashing neon lamp, and where recording overload must be avoided the former is essential. A meter would be even better.

While the typical home recorder has a signal to noise ratio of the order of 40 db, it should be remembered that many microgroove discs achieve 50 db.

Education

Gradually, it has been realized that a recorder for general school use must provide faithful reproduction, not merely pleasing sounds. Some aspects are less stringent, but the most important applications demand this very rigorously. Experiments by Prof. William J. Temple and the writer seem to indicate a need for uniform response up to at least 7.5 kc in these cases.

The frequency range cited is from microphone input to speaker output, so that a good microphone is essential. Because the usual classroom is too reverberant, a directional microphone is preferable. This in turn demands higher pre-amplifier gain than is sometimes provided.

Since the built-in loudspeaker is usually inferior in quality to the recorder itself, it is necessary to provide an external wide-range speaker and circuit means to feed it. If regularly needed, as in a speech class, the speaker could well be fastened to the classroom wall. In other cases it could be mounted on the same cart as the recorder.

For volume indication a meter is preferable, though a magic eye tube is acceptable for less critical applications. If a meter is provided, it would be very handy to be

able to use it to check bias. Any machine used as often as in schools should have front panel means for checking bias every day.

While the most common school-need is for a machine with one high gain (microphone) input and one medium gain (radio) input, dramatic work may demand three or four input positions for as many microphones, used simultaneously. In that case, the only recourse is to a broadcast type machine. Many colleges have done this.

Broadcasting

Frequency range requirements have been well standardized by the NAB, but there is considerable need for a light AC operated portable machine of full broadcast quality. Too many stations have been forced into using poor equipment for remote jobs, because 60 or 70 pounds of equipment was too much to carry.

Such a machine might have only a single microphone input, but it would have full frequency range and signal to noise ratio.

Because of the importance of at least approximately correct bias, it would be very desirable to include provision for checking bias current by meter.

Yes, tape recorder designs have improved a great deal in the past year.

Don't Forget that YOUR OLD DISCS ARE WORTH MONEY

Used recording discs that are "worthless" to you may be worth much more than you think! For you can easily convert them into cash by taking advantage of Audio Devices' long-standing policy of buying used aluminum-base discs of any make.

The prices you can get range from 4 cents to 15 cents per disc, depending on size, as follows:

10"	— 4 cents each
12"	— 8 cents each
13 1/4"	— 10 cents each
16"	— 15 cents each
17 1/4"	— 15 cents each

What's more, Audio Devices will pay *cheapest-way freight** on all shipments of 100 pounds or more.

All used discs should be shipped to: The Audio Manufacturing Corporation 25 Parker Ave., Glenbrook, Connecticut

Every year Audio Devices pays thousands of dollars for the return of these old discs. So don't overlook this excellent opportunity to reduce your recording disc costs.

Why not pack up your used blanks and ship them to the above address. You'll be surprised at how high the check can be.

*Freight Classification: Scrap aluminum for remelt purposes only.

Stereophonic Recording

(Continued from Page 2, Col. 1)

one channel was introduced to the vertical plates and the other channel to the horizontal plates were no greater than those introduced when either recorder was checked against an identical signal from a signal generator.

Classroom demonstrations are being achieved by use of two matched right and left field speakers and by means of binaural headsets. Since all demonstration sound can be pre-recorded the task of classroom

demonstration is considerably simplified and made more effective.

The Psychology of Music Laboratory sponsored by the Department of Music Education at the University of Kansas expects to continue demonstration and research in the area of stereophonic orientation to sound. The staff feels that stereophonic sound is here to stay in recording and transmission of sound. It is a practicable and realizable recording condition for commercial developments, for the home phonographs, for amateur recordings and perhaps for sound motion pictures.

Master Audiodiscs Now Available in LCL* Shipments

*Less than Carton Lots of 25

From time to time we have had requests for Master Audiodiscs packaged in quantities of less than 25 discs per box.

To meet such requirements, double face Master Audiodiscs, in 13 $\frac{1}{4}$ " and 17 $\frac{1}{4}$ " sizes are now available packaged 5 discs per box.

The unit price for these discs, when purchased in quantities of 5 per box, is the same as for quantities of 25 per box—\$3.05 list for 13 $\frac{1}{4}$ " double-face Masters, and \$5.10 list for 17 $\frac{1}{4}$ " double-face Masters.

This alternate method of packaging has been made available only on double-face Masters.

Heigh-Ho, COME TO THE FAIR!

The AUDIO FAIR for 1950 will be held at the Hotel New Yorker, New York City, on October 26th, 27th, and 28th—in conjunction with the Second Annual Convention of the Audio Engineering Society.

This second AUDIO FAIR—the only exhibition devoted exclusively to sound recording materials and equipment—promises to be even bigger and better than the first one, which was held last year, at the same place. Two whole floors have been reserved for exhibitors, and visitors will have an opportunity to see—and hear—the latest developments in every field of sound recording and reproduction. There is no charge for admission.

Audio Devices will be there, of course. And we cordially invite you to visit our exhibit, in Room 651.

ANY QUESTIONS? If you have any questions on the operation or application of disc or tape recording equipment, please send them to Audio Record, 444 Madison Ave., New York 22, N. Y. We will refer them to our technical experts and publish the answers in a subsequent issue.

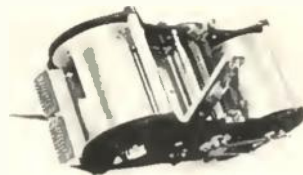
Magnetic Sleuths Track Down Elusive Data

Magnetic tape recorders are now available for the recording and interpretation of variable or transient data for ground applications or airborne use under severe shock accelerations.

The Cook Research Laboratories, 1457 Diversey Parkway, Chicago 14, Ill., has developed the following multi-channel recorders—designed for incorporating into vehicles, aircraft or other mobile equipment. When used with suitable coupling equipment and sensing instruments, they provide a complete data recording system.



Type MR-3—Includes 6 information plus 1 reference channel, with a recording time of 3 minutes at tape speed of 10" per sec. Its small size (8 $\frac{3}{8}$ x 2 $\frac{7}{8}$ x 3 $\frac{3}{4}$ ") and light weight (3 lb.) make it especially suitable for guided missile and airborne use.



Type MR-12—Includes 50 information, 4 reference, 2 marker and 6 spare channels. It has a tape speed of 14.2" per sec. and a recording time of 5 minutes. It is designed for airborne use, to withstand impact shocks of 15 G's. Weight, 25 lb. with tape.

Further information on these, or other custom-built data recorders, can be obtained by writing to Cook Research Laboratories.

AUDIOSCRIPTS 1950

12 Complete, Prize-Winning
Scripts from Scholastic Magazines'
and AER Contests for 1950

This new collection of student-written radio scripts brings you—in one convenient volume—the prize-winning entries from the Scholastic Magazines' and AER contests. These 12 complete scripts are "essential reading" for both teachers and students who are planning to participate in next year's radio writing contests.

Each script is complete with all necessary sound cues and sound effects instructions—making excellent material for dramatization and recording in the class room or at home.

The prize-winning scripts contained in this 1950 collection are listed below:

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Third Prize — IT HAPPENS EVERY DAY, by Pattie Ann Lewis

Fourth Prize — ESCAPE FROM LIBBY, by Roger Lee Paulson

THE BEST THINGS IN LIFE, by Ronald Wolfe

General Radio Scripts

First Prize — ATOMIC ERA ONE, by Bernard H. Merems

Second Prize — RAISING OF THE DEAD, by Janice Anne Chaskes

Third Prize — THE VOICE OF TOMORROW, by Morton Hytner

Fourth Prize — EXPLORING THE MAYAS, by Barbara Halladay

A. E. R. NATIONAL RADIO SCRIPT CONTEST

(College Students)

Classification No. 5 — Scripts for Home and School Recording

First Prize — THE RUNAWAY CHRISTMAS BUS, by John Suchy

Second Prize — THE LIFE OF WILLIAM BLAKE, by Miss Janaan Noonan

Third Prize — MY LAST DUCHESS, by Robert Lee

AUDIOSCRIPTS 1950 is offered to you at cost—\$1.00 net each (less than 10 cents per script). Send check or money order to Audio Devices, Inc., 444 Madison Ave., New York 22, N. Y.

