

JANUARY 1967

2/-

TAPE

RECORDING MAGAZINE

INSIDE

FULL COVERAGE OF
Hi-Fi & Video Topics

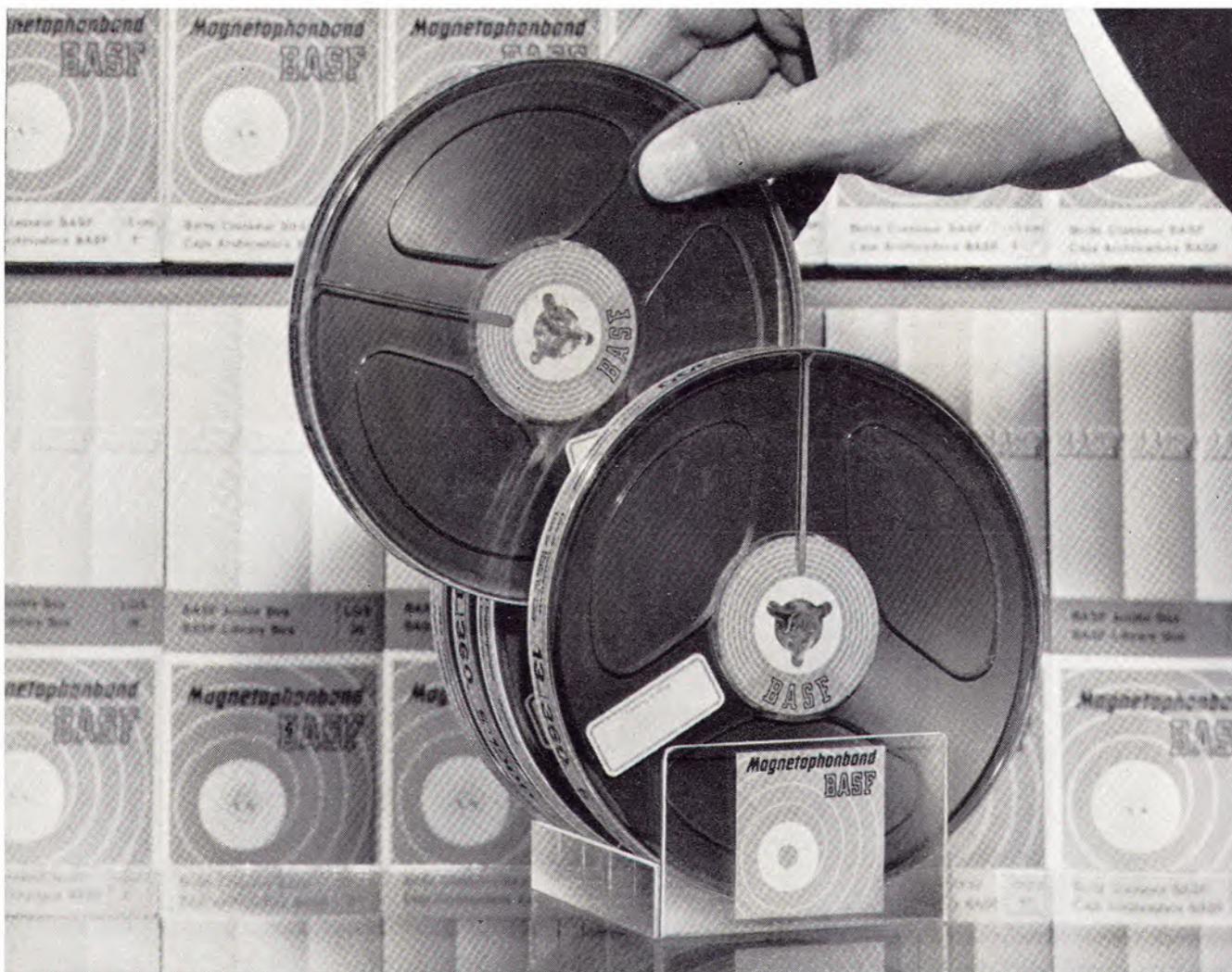
INCLUDING

**SCRIPTREADING
HI-FI SPEAKERS
'ORIENT EXPRESS'**

NEW PRODUCTS
RECORD REVIEWS
ETC

*Second class postage paid at
New York Post Office, N.Y.*





NEW! THE BASF ROUNDPACK **LESS EXPENSIVE**

Airtight Sealed Container



The symbol of
authentic sound

BASF UNITED KINGDOM LIMITED
5a Gillespie Road, London N.5 · Tel: CANonbury 2011

	Long Play: LGS35	Double Play: LGS26	Triple Play: PES18
5"	900'-25/6	1200'-39/6	1800'-63/6
5 ³ / ₄ "	1200'-32/6	1800'-52/6	2400'-87/6
7"	1800'-47/6	2400'-75/-	3600'-112/6

BRITAIN'S LARGEST SPECIALISTS

As Britain's largest tape recorder specialists we claim to have an unrivalled selection of the most up to date recorders on display in Gt. Britain. The most experienced staff with expert knowledge. Ideal demonstration conditions with every recorder ready for immediate demonstration and comparison. The finest FREE AFTER SALES SERVICING facilities available. The largest, most centrally situated and accessible showrooms in London devoted exclusively to tape recorders. Exaggerated claims? Don't take our word for it, put our claims to the test and visit whichever of our Showrooms is most convenient to you. You won't be disappointed and it's ten to one that if you are interested in buying a tape recorder you'll become one more of our many thousands of satisfied customers.

● HIGHEST PART EXCHANGES

● OVER 100 MODELS ON DISPLAY

● INTEREST-FREE TERMS

● UP TO 2 YEARS' FREE SERVICE

HIGHLY RECOMMENDED



REVOX 736

WYNSOR VANGUARD

AKAI 1710

TRAVEL FREE TO NUSOUND

To all our customers residing outside the Greater London Area we offer a unique Free Travel facility. For full details by return, write to our Head Office: 191, Plashet Road, London, E.13.

AKAI 1710 The latest Akai release. Completely self contained Stereo/Mono recorder. 4 tracks, 3 speeds, 5 watt output. 7" tapes. Automatic tape stop. V.U. meter. Superb quality, amazing value. **79 gns.**

WYNSOR VANGUARD The newest model to the famous WYNSOR stable. 3 Heads. Before and after record/replay facilities. 3 Speeds. 4 Tracks. 7" Tapes. Freq. 40-15,000. 6 watts output. Detachable 8" Hi-fi speaker unit giving superb reproduction. A wonderful value for money recorder at **59 gns.**

B & O 2000 The most comprehensive fully transistorised stereo recorder available. 3 speeds, 3 heads. 2 auto tape stops, 16 watts output, 6 way mixing. Records 2 track. Playback 2 or 3 track. Available in suitcase or table model versions. **129 gns.**

BRENELL Mk 5M The most comprehensive and finest mono recorder made by this famous British company. 3 heads, 4 speeds. Up to 10 1/2" tapes. Bass, treble controls. Mixing. Before and after record comparison facilities. V.U. Meters. 6 watts output. Separate record/replay amplifiers. **93 gns.**

SPECIAL OFFERS!
 B & O 2000 Brand New one only 95 gns.
 SONY 777. Superb mono model, 85 gns.
 GRUNDIG TK8. Perfect order, 19 gns.
 WYNSOR International. As new, 35 gns.

SONY TC260 A brilliant new 4 track stereo model. Separate record and playback volume controls. Bass and treble controls. V.U. meters. Automatic tape stops. 7" Tape. 2 speeds. Superb Hi-fi quality. Complete incl. 2 dynamic microphones, fantastic value at **97 gns.**

TANDBERG 6 One of the most technically perfect record/replay tape units available. Every possible facility provided. Sound on sound. Freq. 30-20,000. 3 Speeds. 2 or 4 track models. 7" Tapes. Auto tape stops. A perfect unit for use with the best hi-fi equipment. **110 gns.**

GRUNDIG TK6 A handsome high quality battery/mains portable by the world famous company. 2 Tracks. 2 Speeds. Freq. 50-13,000. 4 1/2" Tapes. Meter for recording and battery level. Includes superb dynamic microphone. A portable recorder with big machine performance and quality. **72 gns.**

REVOX 736 The stereo tape recorder that sells by reputation alone. One of Switzerland's finest products. Full professional record/replay facilities. 4 Preamplifiers. 3 Heads. 2 V.U. Meters. Track to track facilities. Freq. 30-18,000. For the perfectionist. **127 gns.**

AKAI M8 Japan's finest. Complete Stereo. 4 Speeds. Unique Akai Cross Field recording. Freq. 30-25,000. 2 V.U. Meters. 10 watts output. Auto tape stops. Bass, treble controls. 4 tracks. 7" Tapes, etc. Fantastic Hi-fi performance. **136 gns.**

UHER 4000L A superb 2 track all transistorised battery/mains portable. Unbelievable performance. Freq. 40-20,000. 1 watt output, 4 Speeds. 5" tapes. Ultra lightweight only 6lbs. Capable of recording to the highest standards and used extensively by professionals. **103 gns.**

AKAI X4 Completely fully transistorised stereo battery/mains portable. Superb performance. 3 Speeds. 5" Tapes. V.U. Meters. 4 Tracks. Operates from rechargeable batteries off mains. (Unit optional extra.) Has own power amplifiers. Freq. 40-20,000. Excluding microphones. **99 gns.**

SPECIAL OFFERS!
 TELEFUNKEN 85KL. Perfect conditions. 39 gns.
 AKAI M6 Stereo. Superb conditions. 69 gns.
 AKAI M 69. Fantastic quality. 39 gns.
 AKAI M7. As new. One only. 79 gns.

VORTEXION WV8 One of the most tried and tested models available. This latest model has the new Wright & Wearie 3 speed deck. 3 Motors. 3 Heads. Separate record/replay amplifiers. Before and after record monitoring facilities. 4 watts. Variable bias. 8 1/2" tapes, etc. **£115.10.0**

SONY TC200 This is the lowest priced hi-fidelity complete stereo recorder available. 2 Separate speakers. 2 Speeds. 4 Tracks. Meters. 2 Microphones inc. 7" Tapes. Track to track facilities. We have yet to see a recorder offering so much at such a price. **72 gns.**

TELEFUNKEN 300 A truly remarkable battery/mains portable tape recorder. Available in both 2 or 4 track models. Extremely portable and a delight to use. Easy to operate push buttons and controls. High quality dynamic microphone incl. Freq. 40-14,000. Wonderful quality. **49 gns**

82 HIGH HOLBORN, W.C.1 (1 minute Holborn Underground)
 242/4 PENTONVILLE ROAD, N.1 (3 minutes from King's Cross Station)
 228 BISHOPSGATE, E.C.2 (1 minute Liverpool Street Station)
 36 LEWISHAM HIGH STREET, S.E.13 (1 minute Lewisham Station)
 2 MARYLAND STATION, STRATFORD, E.15 (adj't Maryland Station)
 205 HIGH STREET NORTH, E.6 (opposite East Ham Station)

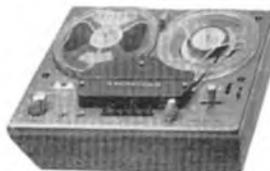
CHAncery 7401
 TERminus 9200
 BISHopsgate 2609
 LEE Green 2399
 MARYland 5879
 GRAngeWood 6543

HIGH HOLBORN:
 Monday to Friday 9 a.m. to 6 p.m. Saturday 9 a.m. to 1 p.m.
BISHOPSGATE:
 Monday to Friday 9 a.m. to 6 p.m. Closed all day Saturday.
 Open Sunday 10 a.m. to 2 p.m.
KING'S CROSS, STRATFORD, LEWISHAM, EAST HAM:
 Monday to Saturday 9 a.m. to 6 p.m. Halfday Thursday.

NUSOUND TAPE RECORDER CENTRES



move up to Tandberg



SERIES 6
Semi professional Stereo/mono tape recorders with cathode follower output. Three speeds — Three heads — Four amplifiers — "Sound on Sound" etc.
Model 64 4 track
Model 62 2 track
110 gns. each.



SERIES 9
High class monaural 3 speed (7½, 3½, 1½ I.P.S.) tape recorders, with quality comparable to the famous Stereo models. Extremely reliable machine recommended for all home and educational purposes, etc. Model 92 2 track only (teak case) 69 gns.



SERIES 8
High class monaural tape recorders suitable for home, business, education, photo sound, etc. (3½ and 1½) I.P.S. speeds—7" reels.
Model 823 2 track (teak case) 54 gns.
Model 824 2 track



SERIES 12
High Fidelity Stereo Tape Record and Play Back System. Two 10 watt Power Amplifiers with Bars and Treble Controls. Three speeds — Two elliptical Speakers — Pre-amp outlets. FM/Multiplex Filters for Stereo Radio Recordings.
Model 12 4 Track
Model 12 2 Track 105 gns.

(portable with lid) 57 gns. Model 843 4 track (teak case) 59 gns. Model 844 4 track (portable with lid) 62 gns



LOUDSPEAKERS

In handsome teak cabinets specially designed for use with Tandberg Tape Recorders and Radios.
Model 7 £23.8.6d. Length 20½", height 10½", depth 9½"
Model 8 £31.13.6d. Length 27½", height 13½", depth 11".

Model 9 £13.14.11d. Length 14½", height 10½", depth 9½".
Model 10 £14.4.2d. Length 7½", height 9½", depth 9½".

HULDRA RADIO

Two 10 watt stereo amplifiers and outstanding radio performance.
Model 8-5R (with 2 speakers) £122.8.5d.
Model 8-5S (without speakers) £106.9.1d.

Tandberg

For further information please write stating models you are interested in to:-

Elsone Electronics Limited, Hereford House
North Court, off Vicar Lane, Leeds 2.
Te ephone: Leeds 39334/5/6



**We wouldn't be in tape
if we couldn't make the best**

When you're a company whose products are world-famous quality leaders, you can never afford to be 'as good as' in anything.

You **have** to be best.

In entering the tape market, Kodak had to make a tape with a combination of features no other leading tape could match.

We did.

And we can prove it.

So can you, the very next time you buy tape.

Kodak Sound Recording Tapes—Standard, Long, Double, Triple and Quadruple Play—are available through Kodak Photographic Dealers everywhere.

Look for the yellow box, and ask for Kodak Tapes by name.



To Kodak Limited, Dept. 70A,
Kodak House, Kingsway, London, W.C.2.

**Please send me literature on
Kodak Sound Recording Tapes.**

Name.....

Address.....

.....

.....

TRM

'Kodak' is a registered trade mark

Check Chat Choose Cherish

Check with R.E.W. and you'll be amazed at the terrific selection of new and used high fidelity and tape equipment (400 Tape Recorders always in stock) all at the lowest possible prices . . . the impressive and exceptionally competitive range of "fringe benefits"—the interest-free hire purchase and credit sale terms, lowest deposits and in most cases free insurance, carriage, packing, etc.

Chat to your heart's content with our fully experienced and enthusiastic staff. They have all the "gen" and the facilities to demonstrate any make or model. They will make certain that you really do obtain the equipment best suited to your needs and budget, and value for money whatever the price level.

Choose from one of the widest ranges anywhere at our new showroom extension, including the best in American, European and Japanese equipment, all offering superb performance, workmanship and top entertainment. If you prefer, make your choice in the comfort of your own home from our literature and order with complete confidence through the fast and friendly R.E.W. mail order service.

Cherish the equipment you eventually decide upon. It will reward you in top performance and pleasure. You will have on call the benefits of R.E.W.'s comprehensive service facilities. And when you are ready for a change—we'll be ready with a generous part exchange allowance!

Send now for lists of new and used equipment or call and see the range for yourself.



SAVE £18. 7. 6 !
R.E.W. OFFER the superb
BELSONA Tape Recorder
List price 42½gns
OUR PRICE ONLY 24½gns

- One-hand control for easier operation.
- Powerful 3W. output.
- Monitoring facilities, etc.
- Recording level meter.
- Shock-proof moulded cabinet.

Interest Free Terms, £8 11s. 6d. deposit and 12 monthly payments of £1 8s. 7d. Carr. & pack. & ins. 19s. 6d.
Bulk purchase and high demand enable us to offer this superb semi-professional machine at barely half list price, saving £18.
Basically a ½ track mono recorder with tape speeds of 3½ and 7½ i.p.s. Freq. response 50-12,000 c.p.s. at 7½ i.p.s. Weight 19½lb. 7" spools. Mains operation. Complete with large elliptical loudspeaker and high quality dynamic microphone.

Big demand enables production costs to be cut on the well known and extremely versatile CINECORDER
Previous price £75

NOW ONLY 59gns

Interest Free Terms, £20 19s. 0d. deposit & 12 m'thly paym'ts of £3 8s. 4d.
The Cinecorder is a finely made instrument offering an unusually well balanced tone, and a wealth of facilities that appeal particularly to the cine enthusiast, but make it indispensable for any type of recording work. The large, elliptical, high-flux loudspeaker mounted in a detachable stand-up lid gives smooth, clean sound uncoloured by cabinet resonances. Special features include: Monitoring facilities, bias control for super-imposition, tape driven capstan and strobe, tape lift lever for cueing, etc., etc. Full specification on request.



for better value in any price range

R.E.W. (Earlsfield) Ltd. Dept. T.R.M., 266-8 Upper Tooting Road, London, S.W.17. Telephone: (01) 672/8267 or BAL 9175



The Hi-Fi models which present realism and beauty of Music

at such competitive prices.

favourable deferred terms over £10

TRANSISTORISED FM STEREO DECODER

SD-1. Can be used with any FM tuner having facilities for multiplex output. Compact size. Ideal for use with Heathkit Valve Tuners.

Kit £8.10.0 Assembled £12.5.0

Send for full details.



● **RADIO TUNERS** for better recordings. Heathkit tuners offer outstanding performance at lowest cost.

FM Tuners Models FMT-4U and FMA-4U

Total price Kit £16.8.0. (incl. P.T.)

AM/FM TUNER Models AFM-TI and AFM-I

Total price Kit £27.5.0 (incl. P.T.)

The FM or AFM Tuner are available for your convenience in two units, the tuning part in each case carried P.Tax. (Multiplex Adaptor available. Send for details).



FM TUNER

Hear the BBC Stereo Programmes on the **TRANSISTOR STEREO FM TUNER.**

Elegantly designed to match the stereo amplifier, Model AA-22U.

Available in two units, sold separately, can be built for



TRANSISTOR FM TUNER

TOTAL PRICE KIT (STEREO) TFM-IS £24.18.0 incl. P.T.

Kit (MONO) £20.19.0 incl. P.T. Cabinet optional extra £2.5.0

● TAPE EQUIPMENT

Pre-Amplifier (MONO) TA-IM

Kit £19.18.0.

Assembled £28.18.0.

Pre-Amplifier (STEREO) TA-IS

Kit £25.10.0.

Assembled £35.18.0.



363

Model D93-2 ½ track } Stereo either model
Model D93-4 ½ track } £36.15.0

TRUVOX D-93 TAPE DECKS

MAGNAVOX—363 DECK—3-speed Mono

2 track. £13.10.0.; with TA-IM Kit, £31.5.6.



D-93

● STEREO/MONO AMPLIFIERS

A wide range available including:—

20 x 20 watt Transistor Stereo Amplifier, Model AA-22U.

Kit £39.10.0. (less cabinet).

Walnut veneered Cabinet, £2.5.0. extra.

9 x 9 watt Stereo Amplifier, Model S-99. Within its price range an outstanding

integrated amplifier.

Kit £28.9.6. Assembled £38.9.6.

3 x 3 watt Stereo Amplifier, Model S-33H. A low-priced unit, ideal for use

with the Deram cartridge.

Kit £15.17.6. Assembled £21.7.6.

5 watt Mono Amplifier, Model MA-5. Kit £11.9.6. Assembled £15.15.0.

● LOUDSPEAKER SYSTEMS AND SPEAKERS

Berkeley Speaker System Kit with beautiful walnut veneered fully finished cabinet, 2 Loudspeakers. Frequency range 30-17,000 c/s. Kit £19.10.0.; Assembled £24.0.0.

Cotswold or MFS Systems

Frequency range 30-20,000 c/s. 3 Loudspeakers.

Either model: Kit £25.12.0.; Assembled £33.17.0

SSU-1 Low Cost System

Frequency range 40-16,000 c/s. 2 Loudspeakers. Size 23" x 11½"

x 11½" deep. Kit £11.17.6. (incl. P.T.), legs 14/6 extra.



BERKELEY

M. Order prices quoted include delivery U.K.

THE HEATHKIT LONDON CENTRE

See the complete British Heathkit range and a selection of American models at 233 Tottenham Court Road, W.1. Tel.: MUSEUM 7349.

Opening Times: MON-SAT. 9 a.m.-5.30 p.m. THURS. 11 a.m.-2.30 p.m.

We hope that you will visit us there.

Without obligation please send me

FREE BRITISH HEATHKIT CATALOGUE

Full details of Model(s).....

Name

Address

(Block capitals please).....

T.12

DAYSTROM LTD. Dept. T.12, GLOUCESTER

Even without its bi-directional recording and monophonic mixer, the Ampex 2100 would still be the best recorder in the world

Give it a hearing



If you were to dismantle your new Ampex 2100 (which heaven forbid), you'd find solid state electronics, four exclusive deep cut heads, bi-directional recording, a monophonic mixer, dual capstan drive, automatic threading device, solid-cast aluminium construction etc.

But it's what you get out of your Ampex 2100 that counts.

Ampex have a name to live up to. A name for the finest sound recording. And the new Ampex 2100 gives our best sound yet. There's only one way to prove the Ampex 2100 outperforms any other recorder in its price range. Listen to them all and make up your own mind.

The illustrated Ampex is the standard 2163. But there's also the Ampex 2165-3 in oiled walnut finish or an uncased deck model, the Ampex 2153.

You'd think that with all this the Ampex 2100 would cost over £250. But it doesn't. *Appetite whetter: Wow and flutter at 7½ ips, .08%*

Ampex make the world's best tape recorders. 800 series, 1100 series, 2100 series. Speakers, tapes, accessories. Ask your dealer about our 4-track "Stereo Concert" bonus offer.

AMPEX

Ampex sales and service facilities are conveniently located throughout Europe and the Middle East. For more information write to: Ampex Great Britain Ltd., Acre Road, Reading, Berkshire, England. Telephone: Reading 84411. Ampex S.A., Via Berna 2, Lugano, Switzerland. Telephone: 091/3.81.12. Ampex Europa G.m.b.H., 6 Frankfurt Main, Düsseldorf Strasse 24, Germany. Telephone: 252001-5. Ampex S.A., Nivelles, Belgium. Telephone 067/249.21. Ampex, 41 Avenue Bosquet, Paris 7e, France. Telephone: 705.38.10.



FOR PERFECTION IN SOUND

LOEWE OPTA

**INTRODUCE THE NEW
OPTACORD 450 BATTERY/MAINS**

CASSETTE LOADING TAPE RECORDER for 39 GNS.

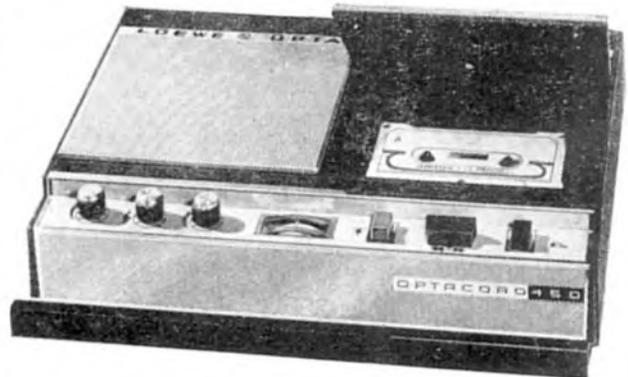
**OPTACORD 450 THE UNIVERSAL TAPE
RECORDER FOR BATTERY/MAINS OPERATION
(Power-pack incorporated)**

- New compact-magazine-system bans tape threading (Philips type).
- Unlimited reproduction possibilities with self-made recordings or commercially available pre-recorded tapes.
- Ready for recordings per microphone supplied with the set, as well as from the radio-receiver, record player or any other tape recorder.

Other features include:

Further to operation on batteries (5 monocells 1.5v each) or on mains (110/220 v a.c.) connection to car battery (6 or 12 V) also possible. Playing time with compact-magazine C 60 = 2 x 30 mins. with compact magazine C 90 = 2 x 45 mins. Monitoring via built-in loudspeaker, external speaker or headphone: Frequency response 50-8000 c/s; Contrast = 40dB.

Write for illustrated leaflet and further details to:



HIGHGATE ACOUSTICS

**71/3 Gt. Portland Street, London, W.1.
MUSEum 2901/5**

SONY REVOX REPS
WYNDSOR PHILIPS FERROGRAPH GRUNDIG
UHER SOR LOGRAPH TRUVOX
BANG & OLUFSEN TELEFUNKEN AKAI
ELABETHAN FERGUSON TANDBERG
whatever the make

	Deposit		12 Monthly Payments		Cash Price		
	£	s. d.	£	s. d.		Gns.	
MAINS 4-TRACK							
Fidelity Playtime ...	19	19	0	1	11	6	27
Ferguson 3222 ...	12	5	0	2	0	10	35
Grundig TK140 ...	13	6	0	2	4	4	38
Philips EL3558 ...	14	14	0	2	9	0	42
Ferguson 3224 ...	15	8	0	2	11	4	44
WyndSOR Vanguard ...	20	13	0	3	8	10	59
Philips EL3556 ...	21	14	0	3	12	4	62

	Deposit		12 Monthly Payments		Cash Price		
	£	s. d.	£	s. d.		Gns.	
MAINS 2-TRACK							
Ferguson 3220 ...	8	15	0	1	9	2	25
Grundig TK120 ...	10	6	6	1	14	5	29½
Tandberg 823 ...	18	18	0	3	3	0	54
Brenell Mk.5/3 ...	25	18	0	4	6	4	74
Brenell Mk.5/3 'M' ...	32	11	0	5	8	6	93
Ferrograph 631 ...	33	5	0	5	10	10	95
Ferrograph 633 Connoisseur ...	42	0	0	7	0	0	120

THE RECORDER CO

this is the name

★ INTEREST-FREE H.P. TERMS

Part-exchanges. Open Saturday 6 p.m.
Friday 6.30 p.m. If unable to call write for brochures

Just Released

**AKAI Model 1710 3 SPEEDS (15 i.p.s. optional).
4-TRACK STEREO. 2 BUILT-IN-SPEAKERS 5" x 7".
2 VU METERS. 7" TAPES. OUTPUT 5 watts per
channel. VERTICAL OR HORIZONTAL USE.
INCOMPARABLE VALUE. 79 GNS.**

STEREO/MONO

Philips EL3312 ...	16	16	0	2	16	0	48
Sony TC250A ...	19	19	0	3	6	6	57
Philips EL3555 ...	26	5	0	4	7	6	75
Akai 1710 ...	27	13	0	4	12	2	79
Sony TC260 ...	33	19	0	5	13	2	97
Tandberg Series 12... ..	36	15	0	6	2	6	105
Truvox PD104 ...	36	15	0	6	2	6	105
Beocord 1500 ...	36	15	0	6	2	6	105
Revox 736 ...	44	9	0	7	8	2	127
Beocord 2000K ...	47	5	0	7	17	6	135
Beocord 2000T De Luxe ...	48	13	0	8	2	2	139
Akai X-350 ...	66	10	0	11	1	8	190
Akai X355 ...	83	6	4	13	17	9	239

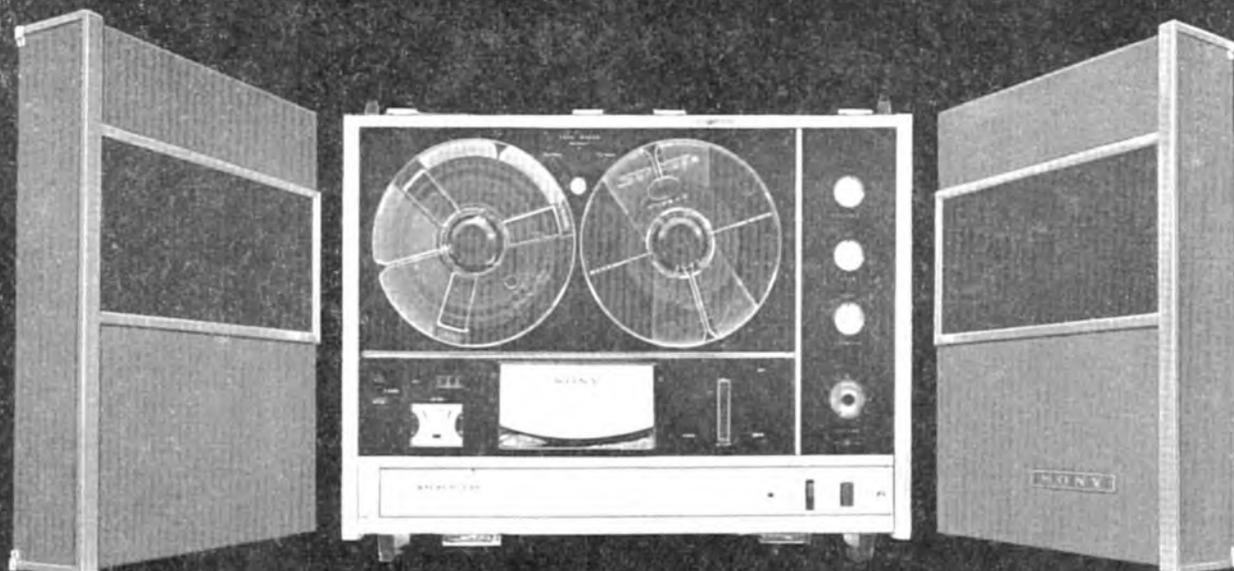
BATTERY

Philips EL3301 ...	9	9	0	1	11	6	27
Telefunken 301 4-T ...	18	18	0	3	3	0	54
Akai X-4 Stereo ...	34	13	0	5	15	6	99
Uher 4000L ...	36	1	0	6	0	2	103

THE RECORDER CO

(DEPT. T), 186/188, WEST END LANE,
WEST HAMPSTEAD, LONDON, N.W.6
Telephone: SW1 4977

Surround Yourself with SONY...



... Quadradial Sound

MODEL TC530—FEATURES ■ 4-track stereophonic and monophonic recording and playback ■ Quadradial (4-way) speaker system ■ High precision all silicon solid state circuit ■ Vertical or horizontal operation ■ "Retractomatic" pinch roller for easiest tape threading ■ 3-speed, full 7" reel capacity ■ Tape position indicator ■ Instantaneous pause control ■ Two illuminated, calibrated VU meters ■ Automatic "Sentinel" tape stop ■ Stereo headset jack. Price 120 Gns.

SPECIFICATIONS:

Power requirements:	100-125V and 220-240V AC, 50/60 c/s 65 watts.	Inputs (cont.):	High impedance Sensitivity—72 dB (0.19mV) 100k ohms) Auxiliary: Sensitivity—22 dB (0.06V).
Tape speed:	7½ ips., 3¾ ips. and 1⅞ ips. instantaneous switching.	Outputs:	Line outputs: 0 dB (0.775V), load impedance 100k ohms.
Reels:	7" diameter or smaller.		Speaker outputs: 2 x 8 ohm.
Recording system:	4-track stereophonic or monophonic.		Binaural monitor output: will accommodate stereo headset Model DR-3C (10k ohm impedance).
Frequency response:	30-20,000 cps at 7½ ips. (±3dB 50-15,000 cps. at 7½ ips.) 30-13,000 cps. at 3¾ ips. 30-10,000 cps. at 1⅞ ips.		
Wow and flutter:	Less than 0.17% at 7½ ips. Less than 0.3% at 3¾ ips. Less than 0.4% at 1⅞ ips.		
Power output:	5W R.M.S. per channel.	Dimensions:	19¼" wide x 9⅛" high x 15⅞" deep.
Signal-to-noise ratio:	Better than 48 dB (at peak record level).	Weight:	41 lbs. 10 ozs.
Harmonic distortion:	Less than 3% at 0 dB line output.	Accessories:	Stereo recorded 5" tape, 7" reel. Two SONY dynamic microphones (F-96). Integrated record replay connector type RK-46 60c/s Motor pulley, Reel cap, Head cleaning ribbon, Splicing Tape.
Level indication:	Calibrated VU meter x 2		
Tone controls:	Separate controls for bass and treble.		
Inputs:	Low impedance microphone inputs: transistorised (will accommodate any microphone from 250 ohm to 1K ohm impedance).		

SONY®

RESEARCH MAKES THE DIFFERENCE

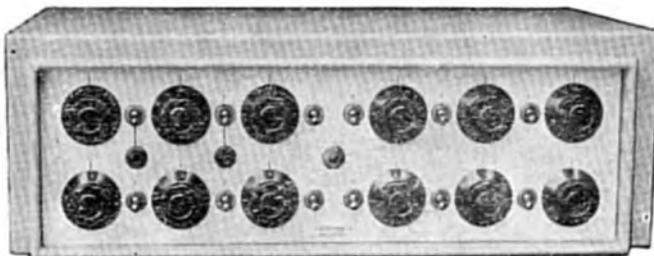
See your local Sony dealer now or write to:- Sony U.K. Sales Division, Mercia Road, Gloucester. Tel: Gloucester 26841. London Showrooms: 70-71 Welbeck Street, London, W.1. Tel: HUNter 2143.

—Vortexion

12-WAY ELECTRONIC MIXER

quality equipment

The 12-way electronic mixer has facilities for mixing 12 balanced line microphones. Each of the 12 lines has its own potted metal shielded microphone transformer and input valve, each control is hermetically sealed. Muting switches are normally fitted on each channel and the unit is fed from its own metal shielded mains transformer and metal rectifier.



FOUR-WAY ELECTRONIC MIXER

This unit provides for 4 independent channels electronically mixed without "spurious break through," microphone hum and background noise have been reduced to a minimum by careful selection of components. The standard 15-50 ohm shielded transformers on each input are arranged for balanced line, and have screened primaries to prevent H.F. transfer when used on long lines.

The standard 5 valve unit only consumes 18.5 watts. H.T. is provided by a selenium rectifier fed by a low loss, low-field transformer in a screening box. The ventilated case gives negligible temperature rise with this low consumption assuring continuance of low noise figures.

20,000 ohms is the standard output impedance, but the noise pick-up on the output lines is equivalent to approximately 2,000 ohms due to the large amount of negative feedback used.

For any output impedance between 20,000 ohms and infinity half a volt output is available. Special models can be supplied for 600 ohms at equivalent voltage by an additional transformer or 1 milliwatt 600 ohms by additional transformer and valve.

The white engraved front panel permits of temporary pencil notes being made, and these may be easily erased when required. The standard input is balanced line by means of 2 point jack sockets at the front, but alternative 3 point connectors may be obtained to order at the rear.

Mixer for 200-250 V AC Mains	...	...	...	£40 8 6
Extra for 600 ohm output model	...	...	...	£1 18 6
Extra for 600 ohm 1 milliwatt output	...	...	...	£3 0 6
Size 18½ in. wide × 11½ in. front to back (excluding plugs) × 6½ in. high. Weight 22 lb.				

THREE-WAY MIXER and peak programme meter for recording and large sound installations etc.

This is similar in dimension to the 4-Way Mixer but has an output meter indicating transient peaks by means of a valve voltmeter with a 1 second time constant in its grid circuit.

The meter is calibrated in dB's, zero dB being 1 milliwatt-600 ohm (.775 V) and markings are provided for +10 dB and -26 dB. A switch is provided for checking the calibration. A valve is used for stabilising the gain of this unit. The output is 1 milliwatt on 600 ohms for zero level up to +12 dB maximum. An internal switch connects the output for balance, unbalance, or float. This output is given for input for 40 microvolts on 15 ohm.

An additional input marked "Ext. Mxr." will accept the output of the 4-Way Mixer converting the unit into a 7-Way controlled unit. This input will also accept the output of a crystal pick-up but no control of volume is available.

The standard input is balanced line by means of 3 point jack sockets at rear but alternative 2 point connectors may be obtained to order at the front or rear as desired.

The 8 valves and selenium rectifier draw a total of 25 watts.

P.P.M. for 200-250 V AC Mains	...	...	Price on application
Size 18½ in. wide × 11½ in. front to back (excluding plugs) × 6½ in. high. Weight 23 lb.			
10/15 watt Amplifier with built-in mixers.			
30/50 watt Amplifier with built-in mixers.			
2 × 5-way stereo mixers with outputs for echo chambers, etc.			

Full details and prices on request.

VORTEXION LIMITED, 257-263 The Broadway, Wimbledon, S.W.19

Telephone: LIBerty 2814 and 6242-3-4

Telegrams: "Vortexion London, S.W.19"



A Winner

The DP4 microphone is another winner—by performance alone it has achieved world wide acclaim. It is used regularly by P.A. engineers, broadcasting and television companies, film studios, etc., as well as by many professional and amateur tape recordists. Its winning qualities have been designed and produced by Grampian—specialists for over thirty years in the field of sound equipment. We shall be pleased to send you full technical details of the DP4 and other microphones, together with descriptions of various accessories.

Specially designed to use with the DP4, in order to cut down wind noise is the Windshield — as illustrated here.



There is also the "Grampian" Parabolic Reflector. Where it is not possible to place a microphone close to the source of sound such as when making recordings of bird songs, weddings, car and train noises etc. the Parabolic Reflector has been proved over and over again to be of enormous value.



Grampian Reproducers Ltd.,
Hanworth Trading Estate, Feltham, Middlesex.

TAPE

RECORDING
MAGAZINE

Vol. 11

No. 1

January 1967

IN THIS ISSUE

- Tape trends and tape talk** 12
By the Editor
- My Side of the Microphone** 13
Margareta Bourdin
- An extract from Holiday Memory** 14
Dylan Thomas
- Tape recording techniques** 14
Denys Killick
- Recording the Decline and Fall of the
Orient Express** 16
Michael Barsley
- Cross Talk** 21
By Audios
- "On the Fringe" Hi-Fi Loudspeakers** 22
L. E. Watts
- Video News** 24
- Tape Record Reviews** 26
- New Products** 28
- Tape Exchanges** 32
- Advertisement Inquiries Service** 33

Cover Photograph: This famous photograph shows Dylan Thomas seated before a B.B.C.-Marconi ribbon microphone in a broadcasting studio. Acknowledged as one of the most brilliant writers and readers of his day, an extract from one of his actual broadcast scripts is reproduced on page 14 of this issue.

"TAPE Recording Magazine" is published on the third Wednesday in the month, by Print and Press Services Ltd., from 7, Tudor Street, London, E.C.4.

"TAPE Recording Magazine" is available by a postal subscription of 25s. per annum (U.S.A. \$3.75) including postage, or it can be obtained at newsagents, bookstalls and radio and music dealers. In the event of difficulty, write to the Publishers at 7, Tudor Street, E.C.4.

Back numbers, if still in print, are available at 2s. 6d. per copy.

Address all communications

7 TUDOR STREET, LONDON, E.C.4

EDITORIAL

FLEet Street 1455

Editor,
R. DOUGLAS BROWN

Advertisement Manager, VIVIENNE GOODING

ADVERTISING

LUDgate 9088

Managing Editor,
DENYS G. KILLICK

Tape trends and tape talk

By the Editor

WATCH OUT for a BBC Home Service programme to be broadcast at 9.30 p.m. on Wednesday, 14th December, announcing the results of the Amateur Recording Contest organised recently by the North Region from Manchester. The final judging, in which I was invited to take part, was an exciting affair, for it showed that a great deal of very interesting amateur work is going on which, to date, has not found its way into the old-established British Amateur Tape Recording Contest. The BBC has unique opportunities to stimulate and encourage amateur recording and I hope that this Contest will inaugurate regular activity of this sort by the Corporation.

It is no secret that the recording amateurs who have the ambition to embark on creative exercises with their equipment are disappointingly few in number. Membership of tape recording clubs and entries in tape recording competitions provides proof. So, unfortunately, does the evidence collected by manufacturers of tape about their sales to the amateurs.

This year's British Amateur Tape Recording Contest failed to draw in the number of new entrants hoped for, and reasonably to be expected in view of the much bigger effort to arouse interest by the sponsoring committee representing nine of the biggest firms in the industry.

I have heard many discussions on whether tape recording as a hobby is analogous to photography, and whether it will similarly develop from small beginnings to embrace millions of people. I feel sure myself that the right analogy is with cine photography.

The sort of effort which could make quite a difference is planned by the Barnet Borough Arts Council. In order to encourage tape recording as an artistic medium, it is organising a Tape Recorded Drama Competition. There can be no better way of bringing more recruits to recording and I should like to see the idea taken up elsewhere. Effort organised locally should be more successful than that run from London.

The Federation of British Tape Recording Clubs is also experimenting with a contest with a defined theme—in this case "People Talking." Entries, not exceeding eight minutes, must be submitted by January 31, to 33 Fairlawnes, Maldon Road, Wallington, Surrey.

The announcement by Philips of the first *range* of cassette tape recorders (as distinct from battery portables only) raises important questions for the tape enthusiast—and for the manufacturing companies, too. Will those firms which are concerned with the mass market put most of their effort in future into cassette models, leaving a few specialist companies to cater for the amateur enthusiast whose interest is creative recording? Will the sale

of large numbers of cassette machines stimulate, or inhibit, creative recording? Are we on the eve of a development which I have several times forecast in these pages: the separation of the market into tape *players* for the music fans and tape *recorders* for the enthusiast?

The big firms who are pioneering cassettes also manufacture professional recording equipment and they cannot, therefore, make a complete switch from quarter-inch to one-eighth-inch magnetic tape at this stage. I suppose it would be technically possible gradually to switch to one-eighth tape as standard for professional and amateur use, but I don't see the professionals welcoming that. So I confidently hope that the "big boys" in the business will continue to cater fully for the serious amateur, alongside the cassette market.

And discreet inquiries, when I was on the Continent recently, satisfied me that one of the biggest manufacturers is fully committed to both cassette and spool-to-spool.

Apart from its non-standard specification, the great disadvantage of the cassette is that it is almost impossible to edit tapes; thus creative recording—the making of feature programmes of any kind—is virtually impossible.

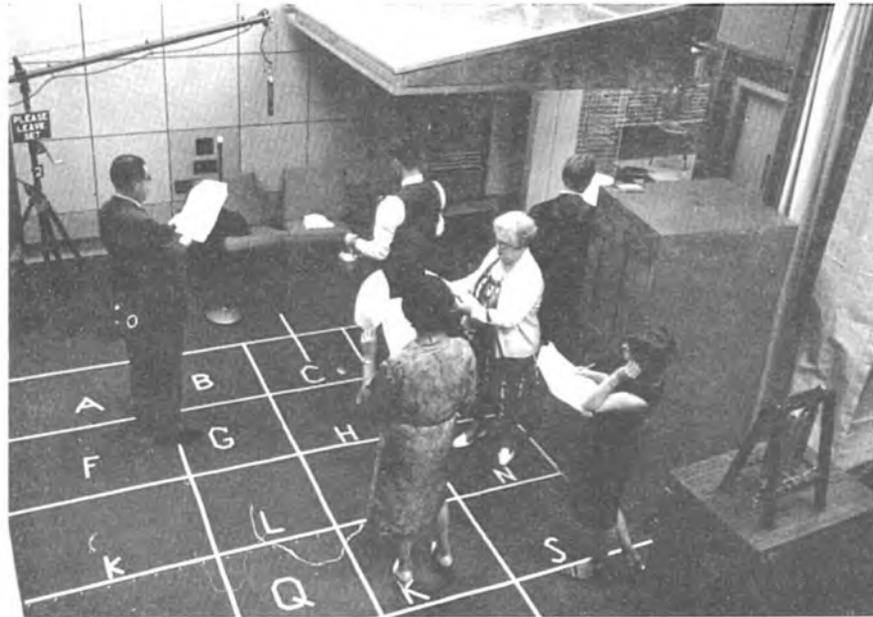
The battery portable using a cassette is a different proposition, provided it has the facility of transferring recording material on to an orthodox quarter-inch tape reel-to-reel model. The simpler and the lighter battery portables can be made, the better.

Even if the "cassette market" turns out to be an entirely different thing to the present-day hobby enthusiast market, there should be incidental gains involved for the latter. Firstly, much of the research which goes into the cassette models will produce dividends for tape machines of all kinds. Secondly, large additional numbers of people may be attracted to tape recording by the simplicity of cassette handling and a proportion of them, one hopes, may have their eyes opened for the first time to the possibility of creative recording.

The manufacturers will be wise not to underestimate the continuing importance of amateur enthusiasts for recording. I imagine there are few readers of this magazine who, over an average year, do not receive many requests from friends and acquaintances for advice on buying tape equipment. Personal recommendation still counts for a great deal.

My friend John Crabbe sent me a copy of the 1967 Audio Diary (Link House Publications, Dingwall Avenue, Croydon, 7s. 6d.) and I recommend it as a useful pocket compendium of audio facts and figures, as well as a convenient diary. The audio section has been extended since last year's edition.

A TALENTED YOUNG MEMBER OF THE CAST OF "MRS. DALE'S DIARY", ACTRESS
MARGARETA BOURDIN
 TELLS READERS THE INSIDE STORY OF PROFESSIONAL DRAMA RECORDING FROM
MY SIDE OF THE MICROPHONE



Typical of a BBC drama studio, we see here a recording session for "The Archers" in progress. Note the simplicity—and the kettle!

Photo by courtesy of the BBC

By profession I am an actress, trained at the Royal Academy of Dramatic Art. I love my work. Let me at once confess that for me, as for most actors, acting means primarily the stage—the living theatre. The living theatre is truly alive. The actors are flesh and blood, moving and speaking in front of a living audience. The emotion portrayed on the stage is infectious—it's caught by the audience; the audience reacts to it and the actors react to the audience.

The experience of the actor builds up as an emotional rapport with the audience. Ideally the actor, the theatre, and the audience become as one with the drama.

By contrast the sound studio could be regarded as a cold, clinically lifeless, environment. The very real mounting tensions of the theatre have no place in the studio. There is no scenery, no costume, no atmosphere—only the ever-present tension of the live microphone—and the audience is invisible.

The fascinating thing about the microphone is the challenge it creates. If the actor feels he is in isolation, he must always remember that the listener is in equal isolation. By portraying a dramatic situation the actor creates an illusion in the listener's mind. But the creation of this illusion is going to depend on skilful script writing, skilful production, and skilful reading. My own job is concerned solely with the reading.

Recently I have been playing the part of Gunnell Hobjär, a Swedish *au pair* girl,

in "Mrs. Dale's Diary." It is no coincidence that I am myself Swedish by birth. This fact relates to the production technique. If the producer wishes to portray a Swede he will, if he can, use a Swede for the sake of authenticity. But once that fact is established, all other facts are secondary to the production technique—to the skilful creation of the dramatic illusion. I hope I may be excused for letting you into a professional secret, but this is an excellent example of the kind of dramatic licence so often employed in recorded drama. As a Swede myself I know full well how a Swedish girl should sound and act. But in "Mrs. Dale's Diary" Gunnell Hobjär does not speak or act quite like this; she uses the kind of voice and the kind of accent that you, the British listener, believe should be used by a Swedish *au pair* girl. Thus the illusion is made easier for the listener.

No actor can successfully read a part unless he both feels and believes in it. Not only must he completely accept the characterisation, but he must also believe implicitly in the dramatic situation being portrayed. No actor will happily accept a part if he feels that either the character or the situation is absurd or incongruous. Complete faith, complete acceptance and complete surrender to the part is the only approach likely to be successful.

The only reason I stand in front of the microphone is to record the sound of my voice. The only reason I am paid to stand in front of the microphone is because of the way in which I use that voice. The words one reads are, of course, important—the way one reads them far more important.

For instance, one scene in *The Diary* called for a conversation to take place between another member of the cast and myself in a very cold attic. The technical problems of making the sound sound as if

it were coming from an attic are nothing to do with me, and I know nothing about them. But my problem is to use a voice that not only convinces the listener that the words are being spoken in the attic, but also that the speaker is freezing cold at the same time.

People speak differently in different places and under different circumstances. If you were really in an attic you would not use the same voice you would use in the drawing room. When portraying a scene that depicts action in an attic the script reader must use the right voice, and only experience teaches what it is. Similarly conditions of climate, heat, cold, wind, can all be conveyed quite simply by skilful use of voice. In just the same way the practised script reader knows very well that an "outdoor" voice is very different to an "indoor" voice. But again, indoors in a museum calls for a different voice to indoors at a party.

Very often we use sound effects to support the action. A typical instance might be a conversation taking place in a motor car. The readers are standing in the studio before the microphone. The sound effects people are attending to their part of the business, and this might or might not be heard by us in the studio. Whether we hear the effect or not, the two readers purporting to be seated in the car are mentally in that car at the moment they read their scripts. The voices they use are the voices that real people do use when they are driving. A lapse on the part of the reader would completely destroy the illusion. If this part of the script were to be read in an incorrect voice it would sound as though the conversation were taking place in a drawing room with a rather noisy car just outside the window.

On the stage the actors move about, both in relation to the rest of the cast and the fixed objects of the scenery, and the audience can see movement. In front of the microphone movement is entirely illusory. It is conveyed by clever technical means, and very small movements on the part of the reader away from, or to one side of, the microphone. But at all times the reader uses the voice appropriate to the movement, and it is this voice which enables the listener to accept the technical cleverness without question.

When an excerpt of "Mrs. Dale's Diary" is to be recorded we all see the script for the first time only that morning. We read through together once "cold," and then run through again in front of the microphone. After that we record. The time involved is probably about two to three hours for a programme duration of fifteen minutes.

Stated like that it seems very simple. In reality, of course, there's rather more to it. The producer will interrupt and advise—sections will be tried again, first this way and then that. Individual members of the cast may well improvise; if an actor feels his lines are more convincing re-phrased he will not hesitate to re-phrase them; the unexpected remark is often thrown in.

The people I work with are to me just lovely people. This is not merely a polite convention because I sincerely mean it—they really are. It is a great thrill to me to be one of a number of people, all professional through and through, who stand in their shirt sleeves or loose jumpers in front of a microphone and contribute to the magic illusion of recorded drama. I have never regretted a single minute of the many happy hours I've spent in this way, and if I could only convince you of one small truth—that reading before the microphone is fun—then this very inadequate little story of mine will have more than served its purpose.



The news reader is a specially skilled script reader. Robin Holmes' original type-script has been heavily amended with last-minute alterations. Never be afraid to change the written word where appropriate

Photo by courtesy of the BBC

TAPE RECORDING TECHNIQUES

Nothing to record?

DENYS KILLICK doesn't believe it. Why, he asks,

not experiment with the sound of your voice?

A TAPE RECORDER and microphone together comprise a complete mechanism for recording and reproducing sound at will. Apart from the human intervention of the operator, they demand only one other essential—a sound source.

Amateurs sometimes complain, and bitterly at that, "I've nothing to record." What unmitigated nonsense. The entire world of sound is at our disposal. Familiarity is said to breed contempt; perhaps if recording equipment were to cost ten times its present price we should value the facility more highly, and therefore treat it with greater esteem.

The one obvious sound source that should always be available is the sound of our own voices. Don't be discouraged if, after hearing your own voice reproduced for the first time, you begin to hate yourself very much. This is a perfectly natural and normal reaction which everyone experiences. Accept your own voice as it is. Don't worry about regional accents; they should be preserved, not moulded into an artificial Oxbridge-B.B.C. hybrid.

The things that really matter are the way in which you use your voice, the material you decide to read and the way in which the recording is taken.

Even after having learned to live with the sound of your own voice you may well still feel, justifiably, that when reading before the microphone the results are dull, flat, uninteresting and lifeless. Worse still, you may not think this at all, even though it be true, and inflict upon relatives, friends and acquaintances an endless stream of playback of dull, flat, uninteresting and lifeless material. Not only are you deluding yourself but you are well on the way to living in splendid isolation.

So let's tackle script reading in a sensible and logical way. The skilled reader has many weapons in his armoury, and he will not hesitate to bring them into use at appropriate moments. In normal life, how often do you raise your voice? How often do you speak in a whisper? How often do you change the pitch of your voice? How often do you vary the speed of your speech?

As a nation the British tend, by tradition, to be reserved. Natives of the latin countries are far more expressive with their voices. A British railway station is usually a scene of quiet, resigned, dignified activity (frustration?). A continental railway station, on the other hand, buzzes with excitement and animation. The main difference is in the voices of the people and the way they use them. One of the first things the script reader has to do is to overcome his natural inhibitions, to let himself go and to start to use the full range of his voice.

When the voice is reproduced mechanically, the listener does not have in front of him the live personality of the speaker. All he has is artificial sound, produced from a box of dead ironmongery.

The reader must have confidence in his material.

TRM reproduces an extract from HOLIDAY MEMORY, a script broadcast by the author,

Dylan Thomas

AUGUST Bank Holiday. A tune on an ice-cream cornet. A slap of sea and a tickle of sand. A fanfare of sunshades opening. A wince and whinny of bathers dancing into deceptive water. A tuck of dresses. A rolling of trousers. A compromise of paddlers. A sunburn of girls and a lark of boys. A silent hullabaloo of balloons.

I remember the sea telling lies in a shell held to my ear for a whole harmonious, hollow minute by a small, wet girl in an enormous bathing-suit marked "Corporation Property."

I remember sharing the last of my moist buns with a boy and a lion. Tawny and savage, with cruel nails and capacious mouth, the little boy tore and devoured. Wild as seed-cake, ferocious as a hearth-rug, the depressed and verminous lion nibbled like a mouse at his half of bun, and hiccupped in the sad dusk of his cage.

Copyright Dylan Thomas, 1947. From "Quite Early One Morning," published by J. M. Dent & Sons at 15s.

The living personality is lost—it has been filtered out in the mechanics of the record/playback process. So if a voice sounds dull and uninteresting in real life, it will sound ten times more dull and more uninteresting when recorded. One of the great secrets of voice recording is to inject into the interpretation as much as possible of the personality of the reader, so that the listener will not only be aware that this is a human being reading, but that it is a human being with feelings and emotions.

The job of the reader is not merely to pronounce a string of words; it is to convey the sense and inner meaning of those words to the listener. The words must be said in such a way as to help the listener build up within his mind a mental picture of the scene or action being described. If the script indicates dramatic action, then there must be at least an equal dramatic inflexion in the voice. Violence requires violent treatment; serenity requires serene treatment. But above all the sense and meaning must be conveyed to the listener.

When we read in everyday life we read "to ourselves." Words on the printed page are so arranged and punctuated as to guide the eye. Those same words, when read aloud, might very well require a totally different treatment.

If, in a book, we come across a long and involved sentence, it is easy to go back to the beginning and read it over again more slowly to puzzle out the meaning. In recorded sound it is not possible for the listener to go back over an involved statement to analyse it. The sense must be understood as soon as it is heard; if not, the listener can't go back, he can't make sense of it and the recording will hold no interest for him.

However the text might be printed on paper, the script reader adapts the punctuation to suit his medium. Long sentences are broken down into short sentences; statements are simplified, and once made are given emphasis by the inclusion of *pauses*. Silence is a most useful ingredient in any sound recording. When reading a script a silence might heighten drama, or it might give the listener time to absorb and understand a statement. Silences seem to be very long when one is standing mute in front of the microphone; on playback they will appear to be very much shorter. The proper use of the pause, or silence, is one of the most useful tools of the script reader.

We need hardly add that if the reader does not himself understand what he is reading he cannot possibly hope to convey any sensible message to his listener. So first study the script carefully to make sure that at least the meaning is perfectly clear in your own mind.

Spontaneity is another quality we try to preserve in the reading of a prepared script. Though being read, a script should not appear to be being read. Spontaneity can be contrived artificially by introducing natural hesitation or pauses. If an unusual word has to be read, why not try pausing just before pronouncing it as though you were trying to think of the right word. This will immediately give the reproduced sound a spontaneous feeling. But if there should be a word that you really can't accept, a word that you would never ever dream of using in real life, then don't hesitate to change it to a substitute. There are certain words that "stick in the gullet" of all script readers—avoid them like the plague. If you don't it will be apparent to the listener that you are mouthing a word that seems to be incongruous to you.

Study the masters at the art of script reading. Listen to an experienced news reader reading the weather forecast. There can be no more dull or uninteresting subject than a British weather forecast. Note how he uses his voice skilfully to attempt to preserve interest and to convey sense and meaning—sometimes even drama—in a simple weather forecast. Try reading two or three paragraphs from the daily newspaper. Try to give them their sense, life and emotion; try to read them so the listener will want to hear you reading them.

One of the greatest masters in the techniques of both writing for the microphone and reading before it, was Dylan Thomas. The book "Quite Early One Morning" is a collection of his actual broadcast scripts. On this page we are privileged to reproduce an extract from one entitled, "Holiday Memory."

Read it first to yourself. Note the beautifully descriptive writing; note the short sentences of the first paragraph. This is not literature, it's writing for the microphone. Note the humour and the satire—consider the possibilities of interpretation.

We have published this extract with the express intention of encouraging our readers to record it. As those of you who have studied "The Law and Your Tape Recorder" will know, the recording of copyright material is an offence. In the present case I am deeply indebted to the Trustees of the copyright of the late Dylan Thomas for permission to print the extract and for kindly offering a dispensation to all my readers who wish to use this material for private study within their own homes only. Under no circumstances may this material be used for public performance or for any purpose other than private research.

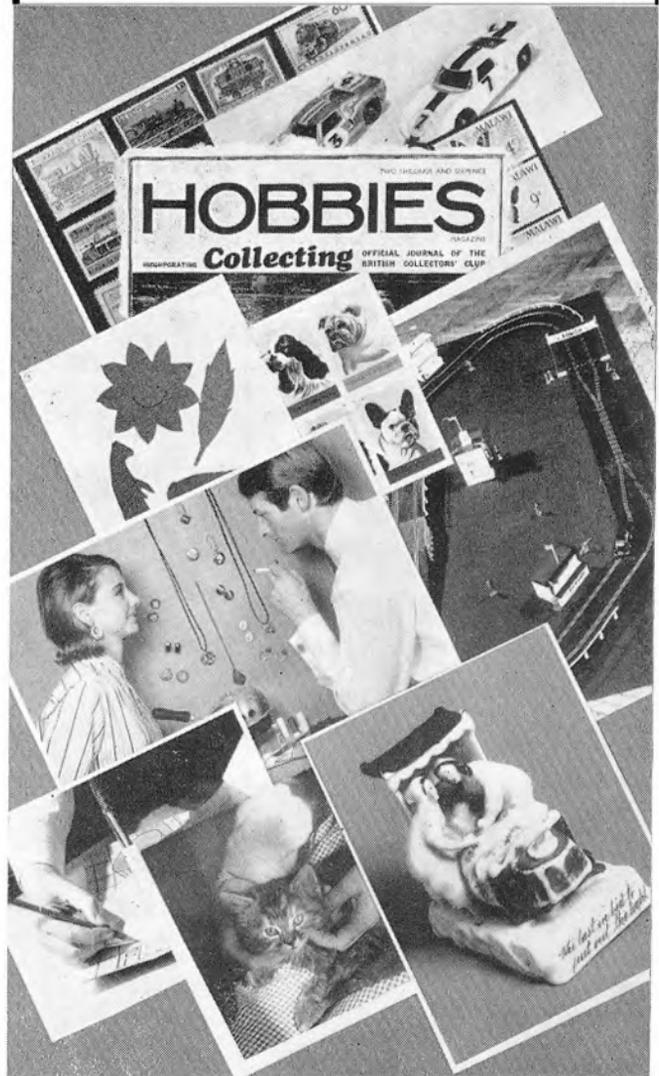
So please do take advantage of this very kind offer. Read it and record it and prove to yourself that reading before the microphone is indeed fun.

WHATEVER YOUR HOBBY OR PASTIME

—YOU'LL FIND IT IN—

HOBBIES MAGAZINE

AND MAKE MONEY AT HOME



A FULL MONTH'S PLEASURE, PROFIT &
RECREATION FOR THE WHOLE FAMILY

Christmas & New Year
Number Out Now—2/6

MICHAEL BARSLEY

Author, Radio and T.V. Producer tells TRM exclusively how he found himself

Recording the Decline and fall of the Orient Express

I HAVE been using battery portable tape recorders longer than any other British reporter. As long ago as 1950 I made a tour of the Far East for the BBC with a Stencil-Hoffman American machine, prototype for the familiar EMI battery portables. I have used them all, from the small cassette job to the lordly, magnificent Nagra.

But this journey on the Orient Express was recorded on an elderly Philips battery operated portable, EL3586. This dear old machine, for which I have an affectionate regard, was already a veteran when I took it on this marathon journey of three days and nights. Intending only to take recordings for my own private use and amusement, there was no talk of using any of the material for serious programme purposes. The EL3586 has a single speed, and that is $1\frac{7}{8}$ inches per second. No sane person would dream of attempting to undertake professional work with such equipment.

For many, many years all broadcasting authorities have regarded a tape speed of $7\frac{1}{2}$ ips as a minimum requirement. If a tape recorded at a slower speed is offered it will probably not even be listened to, let alone considered seriously. Notoriously conservative in their attitude to change (which perhaps is a good thing in many respects), even the BBC are acknowledging the enormous strides of technological progress by exploring the possibilities of using $3\frac{3}{4}$ ips for less critical work. The Corporation's recent decision, a very welcome one, to hold its first amateur tape recording contest based in Manchester, admits $3\frac{3}{4}$ ips as acceptable. This I believe to be a break-through, because from long experience of the slower speeds it is my opinion that $3\frac{3}{4}$ ips has long been adequate, and I look forward to the day when $1\frac{7}{8}$ can form the basis of the kind of personal travelogue which made up the "Orient Express" story.

What really counts in this kind of work is not the cost or quality of the equipment; it's the way in which it is used. Experience is the thing that counts, not money. Never be deterred from undertaking outdoor reportage work simply because you have acquired an inferiority complex about your own equipment. Do as I did—"have a go." On my return home the $1\frac{7}{8}$ ips recordings had to be copied at $7\frac{1}{2}$ ips to facilitate editing and to make it possible for them to be played back on standard BBC equipment. Admittedly there was a little roughness around the edges here and there, but the final tape made recording and broadcasting history, forming the basis of a full 30-minute travelogue broadcast at a peak hour. However immodest I may appear to be I cannot stress too strongly that what counts is the man and not the machine.

The particular recorder—which isn't even the latest model and looks as battered and grimy as an old suitcase—was bought primarily to record the wedding reception of my elder daughter nearly four years ago, the recording being flown to the bridegroom's family in New Zealand. Since then, I've carried my tough little veteran in planes and trains, down

into the scorching deserts of southern Israel, out on to the ski slopes, into the mountains of Corsica and the markets of Morocco. The phrase "Snapshots in Sound" occurred to me some fifteen years ago on the first battery-portable international tour ever made by a British radio reporter round the Far East, and that's the way I've always done my programmes. The parallel is in photography. A cheap camera with very few accessories or stops to worry about can often produce astonishing results because the picture is taken by instinct; recordings are made with the same rapidity. I used ordinary Philips three-inch double play spools, and the standard microphone provided with the machine.

The Channel crossing, on the French ship *Cote d'Azur*, another veteran, was uneventful, though these short sea voyages have often made amusing subjects for recordings (try taking your machine on a day trip to Boulogne!). The real excitement began just before midnight on the dark platform of the Gare de l'Est in Paris, when I saw the magic destination board of the Direct-Orient Express (one of the two successors to the original Orient, which dates back to



The magic of far-away places in the nameplate on the Orient Express in which Michael Barsley travelled to Istanbul. His "History of the Orient Express" appeared in October and is published by Macdonald

1883). It was this sign which James Bond, in *From Russia with Love*, found the "most romantic in the world." Mine contained such names as Vallorbe, Brig, Milano, Venezia, Trieste, Beograd, Dimitrovgrad, Sofia, Pythion, Uzunkopru, Istanbul. . . . I had a first-class single sleeper right through—and my ticket happened to be, believe it or not, No. 00733!

I'd heard that things were certainly not what they used to be on today's Orient Express. There is very little demand for the whole journey, and international railway arrangements since the war have made it impossible for the long-suffering Company whose name runs the length of the coach—*Compagnie Internationale des Wagons-Lits et des Grands Express Européens*, to maintain a proper service, particularly as far as food is concerned. But I was determined to be my own guinea-pig for the experiment.

Recording on a long-distance international train is one of the most fascinating experiences the enthusiast can have. He must genuinely like trains; he must be prepared to stay up half the night to record such foolish things as "The sigh of midnight trains in empty stations"; above all he must be able to judge, to a nicety, the sound-relationship between the noise of the train, and his own and the passenger's voices. The important thing is to know *where* to hold or put the microphone, and to test out the background noise as often as possible. Otherwise, the world is your oyster; the diversity of sounds is infinite; the passengers are often bored and therefore eager to talk.

My early finds were two ladies from Liverpool (my home town too) with broad "scouse" accents who were braving the second-class *non-sleeper* coach. By the end of the journey, poor things, they were scarcely human. Then the conversation with my first Wagons-Lits conductor (we had altogether about four or five different ones along the 1,600-mile route), recording of Customs, and the magic moment of departure into the night, when a group on the platform started to sing the French version of *Old Lang Syne*.

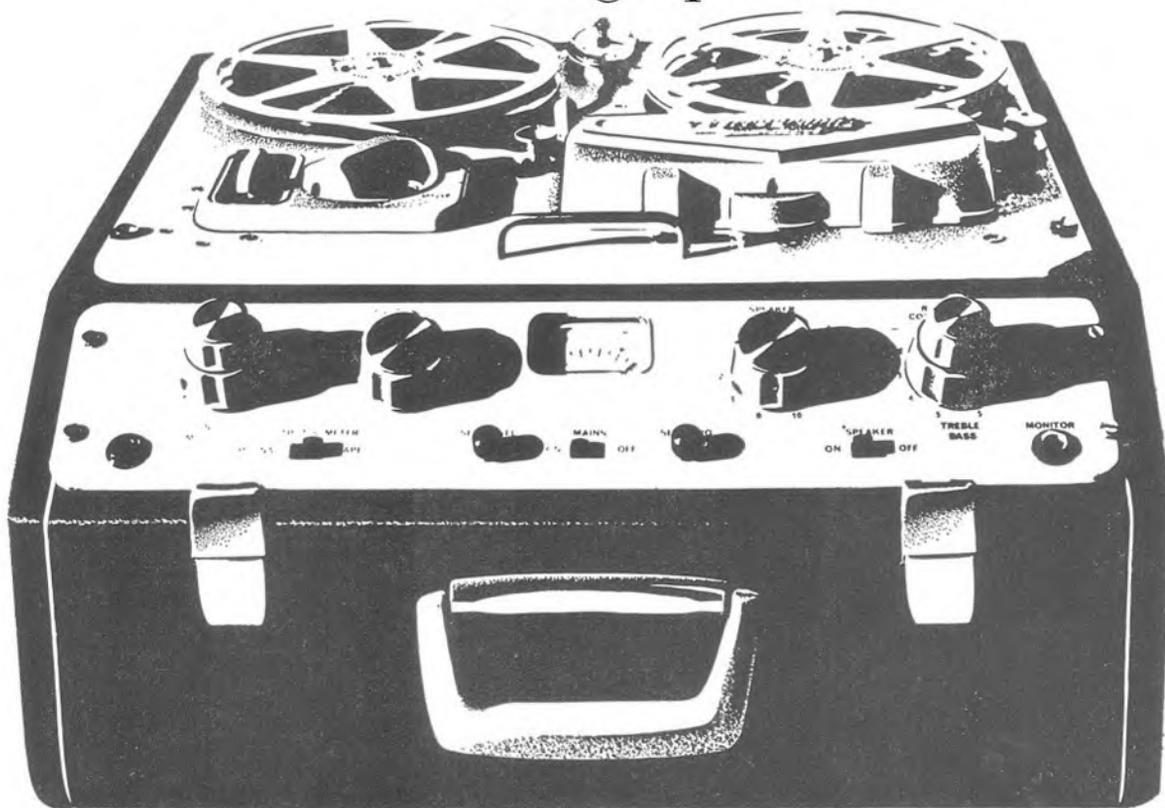
After trundling through the suburbs of Paris (a lovely noise) there was the description of the sleeping cabin, exclusive to me for three days and nights, and costing as much as the first-class fare itself. It didn't look very first-class, and was disappointingly old-fashioned. Thoughts at bedtime make amusing material, but it's important not to go to sleep while burbling on, but to *switch off* the machine firmly.

Early morning in Switzerland; rain on the platform at Lausanne, where the first commuters were waiting; stop at Vevey, where the

(Continued on Page 18)

British
 (only 2% of imported material)
strong
 (many a 15-year-old still in daily service)
silent
 (background – where silence is needed)

That's the incomparable
Ferrograph



Apart from that imported 2% (mainly plywood) and some superbly engineered components from other British sources, most Ferrograph components are made in our South Shields factory. Exemplary quality control at every stage ensures that not only are the black sheep rejected, but also any in doubtful shades of grey.

The result is an instrument of impressive excellence; impressive in its recording fidelity and its reliability through year after year of exacting use.

The Ferrograph is for professionals and the serious amateurs of sound—hardly for those who would buy a Tape Recorder with little more thought than a packet of cigarettes. You will be pleased when you move up into the Ferrograph class.

*Ferrograph models: 631 95 gns • 631H 100 gns • 633 120 gns
 633H 125 gns • 632 126 gns • 632H 132 gns • 634 132 gns
 All models can be supplied with teak sides if required.*

Interested? Then complete and post this coupon to:
THE FERROGRAPH COMPANY LIMITED
 84 Blackfriars Road, London, S.E.1.

- Please send me the FREE illustrated Ferrograph leaflet.
- Please send me the comprehensive 64-page Ferrograph Manual for which I enclose £1—refundable when I purchase my Ferrograph.
- Mono Stereo (Tick items required).

Name _____

Address _____



TM7

Ferrograph

THE INCOMPARABLE TAPE RECORDER

chocolate comes from, and where Charlie Chaplin lives (but it's a bit early for him). The excellent breakfast for 2½ Swiss francs, and the awful announcement that the dining car comes off at Brig. Arrangements beyond there sound very uncertain. The conductor gives me a long, rambling description of the journey (he goes on for about ten minutes flat, but that's the beauty of 1¼ ips) and then says he's leaving the train!

I made a good recording of the entry into the Simplon Tunnel where James Bond was to be shot by the Killer Nash. The sound is certainly big enough to drown quite a lot of shooting, and almost too much for my little machine. I obtained the right balance by holding the microphone under the seat.

Out next into the sunshine and snow to Domodossola—and there's Italy. Just as well no one's in a hurry, for the famous Orient Express, from now on, becomes what one of my fellow passengers, a pleasant young archeologist, called "a little Puddlecombe Puffer."

Lake Maggiore sweeps by like a travel brochure unfolding; one wants a camera, and colour, but instead has to try and put the colour in verbally. No one to listen to what you say—so just say it. Years ago I'd got over the feeling of embarrassment of apparently babbling to oneself, though I've twice been arrested for doing so, long before tape recorders became almost as common as transistors. One was in Pakistan, I remember ("You using devil-box . . . you broadcasting secrets about Pakistan . . . you come to police station"—a nasty moment that) and the other watching the dawn come up on the Nile in Cairo. I happened to be sitting less than 50 yards from a bridge, and the Egyptian policeman thought my American Stancil-Hoffman recorder (one of the earliest battery machines) was a camera. When landing in Saigon one year, I declared it as a camera, since it was night time, and flew off next morning with about two hours' worth of exotic Indo-Chinese sounds.

Milan at last, on time. That vast, echoing station. This was a test for the recorder, but it picked it up splendidly. A miserable picnic lunch in a plastic container; I threw mine out of the window. By this time several of us in the *Wagons-Lits* coach were beginning to get to know each other. Plenty of time to record later. Find out first, and size up your characters. We're all captives of the train. There was a voluble American retired salesman, who was later to blow his top with the Bulgarians ("Commie —! "); a beautiful but shy young girl from Sofia, returning after several months in France and England; and a tough, cheerful nurse from Queensland, trying to get to Basra. An elderly Turkish couple were going home to Istanbul. Why on earth go by train?" I asked. "Well," replied the wife, "We're old people, but we like to be sure of going on living," which was a nice way of putting it.

One of the most amusing recordings was at the frontier station at Poggioreale, on the Yugoslav border. The hold-up lasted about an hour, and though I couldn't find out at the time what had caused it (delay, it transpired, in the arrival of the other *Wagons-Lits* coach for Athens) it was a choice piece of bawling-out in both languages, with the Yugoslav frontiersmen, ugly and sullen in their greatcoats, facing the remnants of the Italians, in smart uniforms with dazzling white gloves. I don't know who won, but I'd have liked to have had Eamonn Andrews there with me, to give a round-by-round commentary! Last thoughts, recorded sleepily at about half-past two in the morning. Put in new tape, ready, played in and tested for waking thoughts. These were mainly regarding complete change of scenery in the early light, the northern Yugoslav plain, very peasant-like, with horse-drawn vehicles, mounds of turnips by the railway side, and the villagers looking like extras from the film of *Doctor Zhivago*. For the men, the peaked cap; for the women, head-scarf. For all, boots. For us passengers, as I recorded at the time, being on this train was rather like being in hospital where patients live mainly for their meals and creature comforts.

The entry into Belgrade, The White City, was admittedly impressive. We were hauled by a smart green-and-yellow diesel, replacing the old German steam locomotive which had lugged us over the border and across the plain. There was a rush for the food man with the trolley on the platform, and the noise of passengers filling water bottles at a sort of trough produced a pleasantly primitive sound. The second-class day coach was immediately invaded by peasants, who squatted in the corridor, blocking everything. When the long-awaited Yugoslav dining car was put on, we favoured *Wagons-Lits* passengers, who were alone able to use it, had to fight our way to get there amid the pandemonium (it's fun recording pandemonium, but it's the most difficult thing to achieve).

Recording meals with the merry clink of glasses is fun, too, but the breakfast was very dull, and we were once told (as if we couldn't guess) that the dining-car was coming off in two hours or so, to go on the Athens line. They scratched up an early lunch for us; more hurdle-jumping, as the American called it, in the corridor. The advantage of a small, light, uncomplicated recorder

is that you can carry it along on such wildly amusing excursions, leaving it running and hoping to pick up some choice noises. Essential to have a directional microphone for this, or all becomes confusion. Best position is to hold it towards yourself, *not* towards the source of the noise. You are wearing soft, sound absorbing clothing; a train interior is hard and bright for sound.

Although there are tapes and lp's of train noises and whistles of most countries, I was determined that all mine would be recorded live, and on the same machine. In the latter part of the unending journey across Yugoslavia to Bulgaria, I was lucky in having an engine driver who was a real artist in using the whistle. There's a wild and rocky gorge called the Dragoman Pass near the border, and there the whoops and echoes are superb. Moreover, all these primitive stations abound in strange sounds unknown to the all-electric, functional modern station.

It was to be our second night without food, but I was almost too excited to notice it. The Yugoslav conductor said he would "get me something near the frontier." I think it was at Dimitrograd. "Something" turned out to be two or three miserable-looking hard boiled eggs, half a salami sausage, a piece of stinking cheese, two loaves as hard as rocks, and a bottle of Bulgarian wine of doubtful origin. I made my most embittered recording, there and then. The great Orient Express, of the Grand Duchesses, the diplomats, the King's Messengers, The Madonnas of the Sleeping-Cars—the whole history which I knew so well—could it really have sunk to this? When the conductor gave me a penknife to cut up the unsavoury mess, I knew it could.

Lilian Medeleva, the beautiful Bulgarian student, said "Why don't you stay overnight in Sofia? My father will arrange it. He's meeting me." I wish I could have done just that. But a story is a story, and has to be carried through from first sentence to last, from first tape to last. I recorded an interesting interview with her, followed by the rapturous reception which she received from family and students at Sofia station. Then it was night again, and I stayed up, too tired to sleep but not too tired to talk into that microphone. We ran for a while through Greece, to Python. There were pitiful cries on the platform as a peasant family, with six children, were refused permission to enter the train (not that there was any room). It's worth waiting up for moments like these. Something of the authentic human drama enters the voice. This is the real stuff of radio reporting, and the treatment which apparently recommended the programme. This could not have been dramatised with actors in a studio. These people were real, caught up in a minor border tragedy, which seemed a major disaster to them. In the background, a wheel-tapper tapped. It all sounded very sinister.

Then the final, almost hysterical day. Uzunkopru Station (where two of the spies from SMERSH were arrested) in brilliant sunshine. Mosques, Muslims, Turkish coffee, a restaurant car so old I think it was probably a converted baggage-wagon; kebab, rose-petal jam, cream cheese, raspberry tea, olives—we fell on it all in wild abandon, and this time I was too preoccupied to pick up the pandemonium. There are limits to a reporter's duties!

About five hours later, drawn at last by a handsome electric loco, we were sweeping past the superb Sea of Marmora, and eventually rounding Seraglio Point and Topkapi Palace, to glimpse the blue Bosphorus and some of the 500 mosques in Istanbul. At times I may have sounded somewhat hysterical—we all did—but it was excusable.

My final recording was made of the incredible din at Sirkeci Station, and a taxi ride across the Galata Bridge to my hotel, the Park. It had all been very exhausting and very exciting—and it all went down, in the first instance, on an old Philips EL3586 at one and seven-eighths inches per second!

PATRICK O'MAHONY & CO., LTD. THE TAPE TO DISC SERVICE

High Fidelity microgroove records made from
your own personal tapes

CONCERTS, POP GROUPS, FOLK-SINGERS, WEDDINGS
DISCOUNTS FOR QUANTITY. For individual records
discounts 5% for 5, 10% for 10, 15% for 15 identical
or assorted records, or
Highest Quality Gramophone Pressings 7", 10", 12"

Please write for free quotation

Records for Folk Clubs, Pop Groups, Schools, Churches,
Societies, our speciality, for prices individual records
see Classified ad. page 32.

Please write and send Tape(s) to:

PATRICK O'MAHONY & CO., LTD.
33, Coxford Road, Southampton. Tel: 75453

99

Emitape 99—the long play tape formulated for 4-track recorders

Emitape 99 has been created by E.M.I., the original and largest British manufacturers of magnetic recording tape, in co-operation with I.C.I. who have produced a special 'Melinex' film base material for this new production.

Emitape 99 has greater strength—perfect tracking at all speeds—and outstanding hi-fi performance has been achieved by the most up-to-date coating techniques.

Three other high quality grades are in the Emitape range:

Standard Play 88 for use at professional tape speeds; **Double Play 100** for more recording time; **Triple Play 300** for maximum playing time on battery portables.

Emitape is supplied in a free transparent two-piece library case originally designed for computer tapes. It gives compact dust-free storage and easy indexing.

Emitape is used nine times out of ten by the B.B.C. All the best dealers are Emitape stockists.

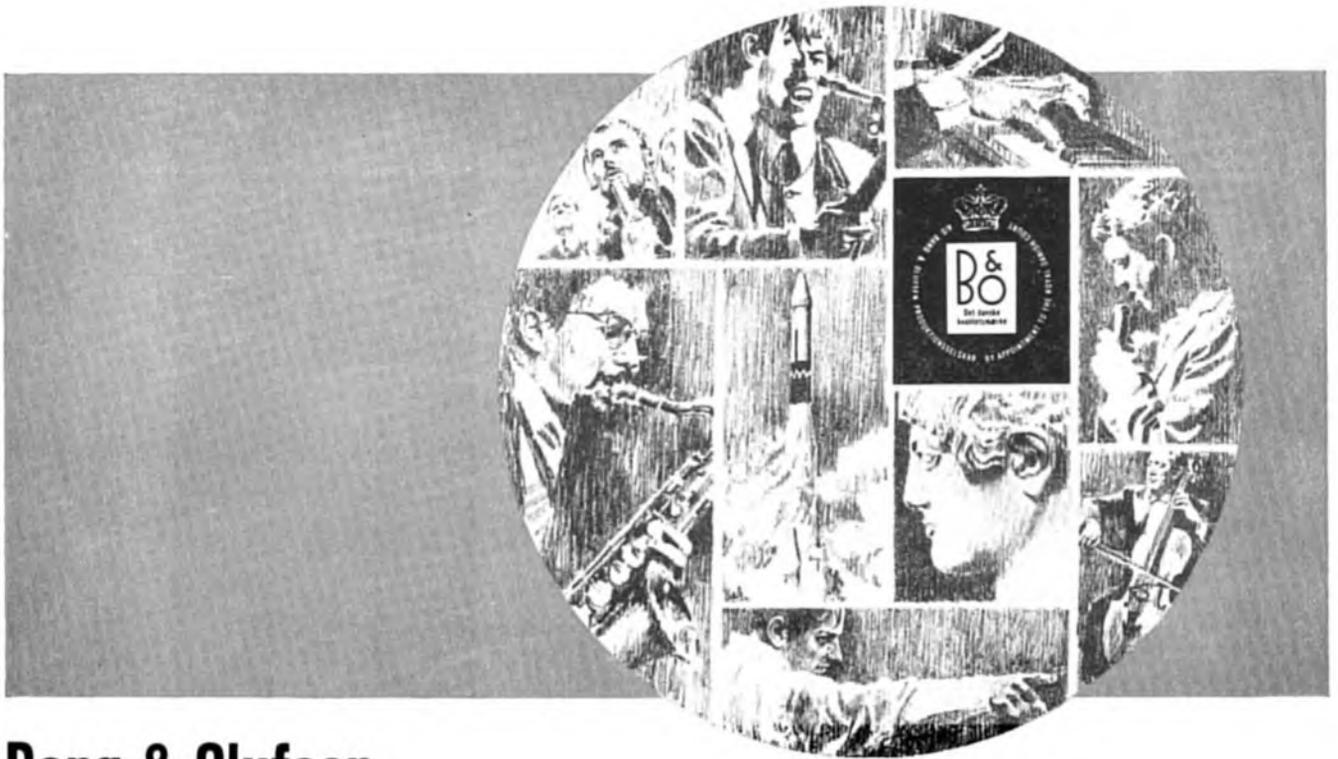


EMITAPE

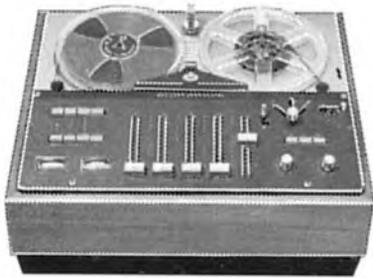
THE MOST ADVANCED MAGNETIC RECORDING TAPE IN THE WORLD



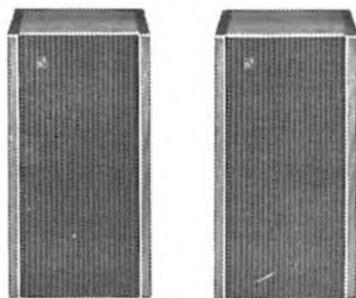
AN E.M.I. GROUP PRODUCT
E.M.I. TAPE LIMITED,
HAYES, MIDDLESEX



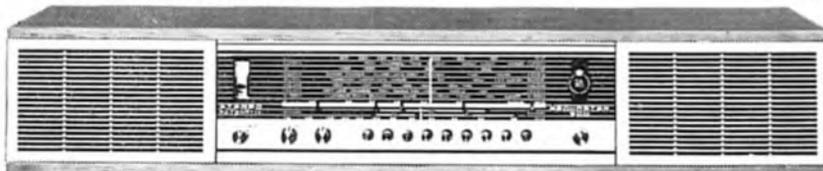
Bang & Olufsen— for those who consider design and quality before price



BEOCORD 2000K. Outstanding semi-professional two track tape recorder. Built-in 4 way mixer section. 125 Gns. Portable version 129 Gns.



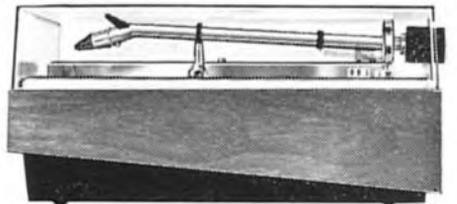
BEOVOX 'B' Type loudspeakers — optimum performance from small dimensions (11" x 5" x 10" approx.). 13 Gns.



BEOMASTER 900K. Table Radio plus 2 x 6 watts High Fidelity Stereo amplifiers. Inputs for gramophone and tape recorder. Teak or Rosewood 66 Gns. Multiplex stereo decoder 6½ gns. extra.

Bang & Olufsen manufacture a comprehensive range of High Fidelity equipment specially designed to meet the needs of the enthusiast. You can hear B & O sound and see the complete range at the best dealer in your town or you can write today for his name and a fully descriptive colour catalogue to the address below.

B&O—Danish Design—Danish Craftsmanship



BEOGRAM 1000V. Stereo transcription turntable unit, mounted on suspended plinth with magnetic cartridge, lowering device and dust cover. 34 Gns.



Bang & Olufsen U.K. Sales Division
Mercia Road, Gloucester. Telephone: Gloucester 26841
London Showrooms:
70-71 Welbeck Street, London W.1.
Telephone: HUNter 2143

CROSS

TALK

By Audios

LIFE, we are told, will be made easier by standardisation. Moves towards standardisation have affected virtually all manufacturing industries; we can now build articles as complex and as diverse as motor cars or houses from standardised components. All of which is very satisfactory and convenient—or is it?

Reader Dominick P. Copinger writes to me all the way from Kilmarnock to point out that all is not sweetness and joy in the realm of standardisation. Quoting directly from his letter, he says:

"In the radio shop in which I am employed life is simplified for us by two pin DIN plugs, three pin DIN plugs, four pin DIN plugs, four pin DIN plugs with key, two different types of five pin DIN plugs, six pin DIN plugs, five pin EIC plugs, 2.5 mm jack plugs, 3.5 mm jack plugs and standard (?) jack plugs. In most cases there are two or three different standard (?) ways to wire the plugs. I am sure I have not forgotten more than half a dozen of the more common types. Thank heaven for standardisation."

This column believes that the sole purpose of any plug and socket is merely to satisfactorily connect one rather insignificant little bit of wire to another. All that really matters is that the connection should be electrically good and mechanically robust. Design should allow sufficient space for properly soldered joints.

But what an absurdly large number of ways there are to make this simple connection. We won't bother to ask if such a diversity of connectors is necessary. Manufacturers might well argue the expediency of using the fittings that suit them, but I think they would find it difficult to prove the need.

And the end result is simply that you or I, the cash customers, are likely to find ourselves in the all too familiar position of holding a jack plug in one hand whilst looking with exasperated frustration at the gaping cavern of a DIN socket to which connection would be impossible without an adaptor.

How much simpler life would be if only agreement could be reached on real standards for connectors in recording and hi-fi equipment. But this is a forlorn

hope. Plugs and sockets will almost certainly continue to present themselves in a confusion of variety of shapes and sizes. Interconnection between different pieces of equipment will become a game of chance with the owner the inevitable loser.

In championing the cause for standardisation of plugs and sockets we are almost certainly backing a three-legged horse that won't even leave the post. What is standard to me, as an all-jackplug man, would be non-standard to you if you are all DIN. The only thing we can really do is to protest strongly against the introduction of any more new "standards."

IN the past I have spoken out in forthright terms against sales gimmickry, particularly when it is applied to recording tape. Plastic roses, we have said with some dignity, belong to the Supermarket along with boxes of detergent. Congratulations then to Adastra Electronics Ltd. for devising a scheme which has far more good sense than gimmickry. I have recently tried to persuade enthusiasts of the wisdom of insuring their equipment. Has this, I wonder, inspired Adastra to offer up to £25 free insurance cover on recorders to purchasers of their Sychrotape? A large number of owners are probably quite unaware of the fact that adequate insurance for all the items of their equipment, including microphones, can be provided by reputable companies at very low premiums. The risk of theft is probably greater today than ever it was, and tape recorders are a favourite commodity amongst the light-fingered gentry. Adastra have performed a service in drawing attention to this regrettable but undeniable fact.

TRM readers are renowned for their response to pleas for assistance. I have one here to which I would draw your special attention. It is from William Carr, of the Department of Modern History, Sheffield University, Sheffield 10. Mr. Carr writes:—

"The Society for the study of labour history, President Professor Asa Briggs, and the Trade Union, Labour Co-operative-Democratic History Society, President George Woodcock, are conducting an exploratory survey to try and establish the whereabouts of any recordings of speeches by the late Aneurin Bevan, M.P. On behalf of the Societies I would like to appeal through your columns to readers who possess recorded material, or who know the whereabouts of such material, to get in touch with me.

If possible I would also like to know whether individuals or organisations possessing such material would be willing to let us examine it. I can assure readers that every care would be taken of material loaned to us for the purpose of investigation."

I have no doubt that Mr. Carr will take the greatest care of any material that is entrusted to him, and I hope that some of my readers will be able to be of help. If you should have any information about any Aneurin Bevan recordings please write in the first place to Mr. Carr at Sheffield. One of the great disadvantages of magnetic recording equipment is its ability to erase. The value of historic recordings is so often not appreciated until many years after they have been taken. I bitterly regret having erased a great deal of interesting material of

my own in the past. What a wonderful library of recordings many of us would own if there had been no erase head on our equipment. Mind you, we should be quite a lot poorer too.

I HAVE a report on a highly successful Ferroglyph Festival of Sound which was held on November 9-10 in the hi-fi studio of Charlesworth of Crewe Ltd. A two-hour recorded music recital was offered to a full house on each of the two evenings. The programme consisted of live recording, creative recording and pre-recorded tapes.

Another Ferroglyph Festival of Sound is planned for January 17-18 at Wigan, in co-operation with H. Plumb & Son, a local dealer. At the time of going to press final details for accommodation have not been fixed, but those wishing to apply for free entry tickets should contact either H. Plumb & Son or the Ferroglyph Co. Ltd. Alternatively, if you care to write to me I will see that your letter is passed to the Festival organisers.

Events of this kind are, as I know myself only too well, conceived out of a spirit of enthusiasm rather than a wish to sell anyone anything. They deserve the very strongest support and I am sure they will get it.

MY own recording activities seem to have had a bias towards cathedrals lately. During the month I recorded part of a brilliant choral programme at a recital in Rochester Cathedral. The performance of the choirs, there were two taking part, was exemplary, and the sound recorded is at times breath-takingly beautiful.

After quite a considerable amount of experience of this kind of work I am now thoroughly convinced of the wisdom of using a single omni-directional microphone. I am also convinced it should be suspended—if at all possible—above the sound source. On this occasion I was using my favourite omni, Sennheiser MD211. It's easy to say "suspend the microphone," but in a building as large as a cathedral it invariably creates difficult problems. We spent at least a couple of hours struggling with long ladders before we managed to secure a cord line across the width of the nave at a height of some twenty or thirty feet. On ventures like this I consider a successful result to include not only good quality recorded sound but also getting the mic crew safely home without broken bones. At times recording can be a perilous occupation.

I was experimenting with the new Scotch Dynarange tape on this particular job, using their long play type 203. Described as a "low noise" tape my first reactions to the 15 ips recording taken on Vortexion equipment are very favourable indeed. I am going to report on this tape in some detail later; if the spool is allowed to lie dormant for a few weeks we can get some idea of its resistance to the print-through effects. As a high coercivity tape it should be ideally suited to recording at slow speeds, so I shall also experiment with some 3½ ips recording as well.

Whilst at Rochester I happened to comment to the verger on the recording I had done earlier at Southwark Cathedral. This gentleman, who is a great character with a very ready wit, answered: "Oh, Southwark! Well, of course, that's quite a new church!"

Speaker Sense from LOWTHER

VERY FEW PEOPLE are able to reproduce and enjoy fully the quality of their recordings.

Lowther's specialised drive unit/folded horn combination gives full frequency and power range from a modest output stage because of its conversion efficiency.



Ask your local Tape Centre to connect a Lowther Acousta to your tape recorder —

**HEAR THE
DIFFERENCE
FOR YOURSELF**

Further details from:

THE LOWTHER MANUFACTURING CO.

**St. Mark's Road,
Bromley, Kent.**

L. E. WATTS of Jordan Watts Ltd. contributes to "On The Fringe" with expert advice about

HI-FI LOUDSPEAKERS

THE purpose of the tape recorder is to capture and preserve intact auditory experiences, to release them later in the form of reproduced sound. Every step forward in the painstaking progress of tape and tape recorder development has had but one aim in view, that of attaining a recording as accurate and as distortion-free as technical skill can make it.

The standard of recording today is often far superior to that of the playback facility provided in the machine. To be portable a tape recorder must be reasonably light in weight and compact in size. It cannot house a loudspeaker system capable of spanning the entire audible range of sound frequencies. The type of loudspeaker fitted in most recorders has been selected to suit the size of the case, to match the amplifier, and provide the best results under restricted conditions. At most this can only really provide a convenient on-the-spot playback facility for checking and monitoring. To hear all the recording a high fidelity loudspeaker is required.

The improvement in tonal quality, the reduction of distortion and the rich, full-bodied, natural sound brought out through a good loudspeaker is immediately apparent. Once so heard the deficiency of the built-in loudspeaker is never again acceptable.

During the record/playback sequence original sound is converted into electrical impulses, amplified, registered magnetically on the tape, and then in playback subjected to the reverse process. At each of these many stages some degree of loss or distortion will inevitably occur and the quality of the final result must depend to a large extent on the sum of all those separate influences. But more particularly it will be influenced by the effect of the poorest component in the chain.

SHEER LISTENING DELIGHT - the JORDAN WATTS JUNO

HIGH FIDELITY
LOUDSPEAKER SYSTEM

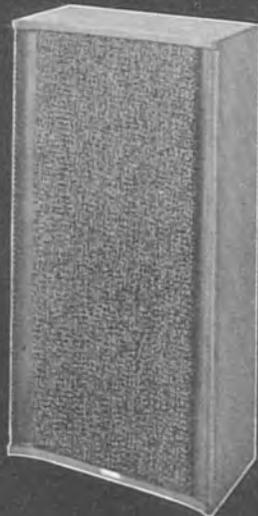
Never before has such wonderful sound reproduction been possible — rich smooth bass right down to 40 c.p.s. and the cleanest most natural higher frequencies you have ever heard — from a slender reflex enclosure only 24 inches long. Frequency range extends beyond 20,000 c.p.s.

Power handling 12 watts rms. Impedance suitability 3-5 ohms or 7½-16 ohms Teak/Vynair finish. Weight 30 lbs.

Price (U.K.) £24. 10s

JUNO — one of the many fine Loudspeakers made by:
JORDAN WATTS LIMITED
Benlow Works, Silverdale Road,
Hayes, Middlesex.

Distributors:
BOOSEY & HAWKES
(Sales) LIMITED
Deansbrook Road, Edgware,
Middlesex. Tel: EDGware 5581



JORDAN-WATTS LOUDSPEAKERS - THE VOICE OF HIGH FIDELITY



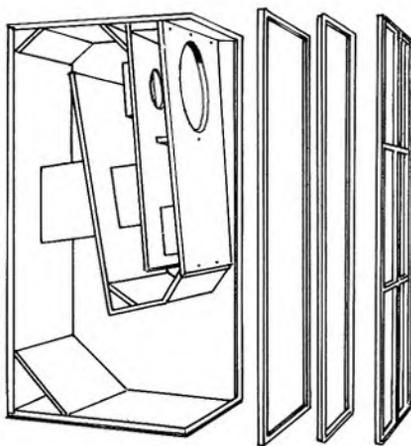
These three Jordan-Watts enclosures appear to be similar. Actually the one on the left is the Jumbo infinite baffle, and in the centre is the Juno reflex. These are both directional speakers. On the right is the Jason folded column, which is omni-directional. Jumbo is a bookshelf miniature, Jason is the largest.

If the loudspeaker is inadequate for its task, it sets the limit on final performance regardless of the quality of preceding components. Far too often the choice of loudspeaker is affected by reasons other than acoustic merit, usually because of commercial considerations. The standard of modern recording equipment is so high, even amongst the medium- to low-priced machines, that a high fidelity loudspeaker is essential if one is to actually hear all the sounds registered on the tape.

It has become customary to divide audio equipment generally into two classes; high fidelity and commercial. Although the term high fidelity is widely applied today we still have not achieved its literal meaning, "exactly corresponding to the original." The differences between commercial and high fidelity equipment lie in the distortion content and frequency coverage, the ratio of which

is directly related to listening fatigue. We do not tire of original sounds—even though we may at times dislike the manner in which a work is rendered—but most ears are sensitive to distortion and dislike listening to poor quality reproduced sound.

The choice of loudspeakers is a very personal thing to which rigid general rules cannot be applied. Bear in mind the need to select a speaker that does not overload the amplifier, remembering that smaller speakers usually require more power to produce the same sound output as larger speakers. Conversely, a loudspeaker must be chosen that will not itself be overloaded by the amplifier. We also need to make sure that the loudspeaker has a low distortion factor and that it has a bass frequency limit which can be developed in the room where it is to be used. For example, frequencies below 50 Hz (cps) cannot be generated in a room smaller than about 12 ft. long because the half wave length of 50 Hz (cps) is 11.2 ft. This distance is also the standing wave resonance at 50 Hz (cps), an effect which may make it desirable to use a loudspeaker system tuned to a higher frequency. Low bass notes of half wave lengths longer than the room are heard more prominently outside that room, a physical fact that does not usually delight the neighbours.



A diagram showing constructional details of the Lowther Acousta folded horn enclosure. The design and construction of cabinet work is precisely calculated to suit the speakers it will contain. High Fidelity reproduction is just not possible if one uses "any old box."

In the choice of a loudspeaker a qualified hi-fi dealer should be called upon to advise and to recommend the most suitable model for your own listening conditions. When he and we speak of "loudspeaker" in this connection we mean the combination of a driving unit or units and enclosure forming a complete system. The three most popular types of conventional enclosure are reflex, infinite baffle, and labyrinth. Another type of loudspeaker, becoming increasingly popular but which operates on a completely different fundamental principle, is the electrostatic speaker.

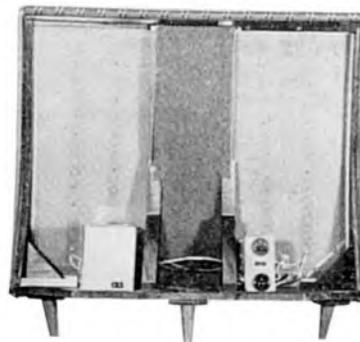
The reflex enclosure is comparatively small. It derives its name from the duct or vent in the cabinet which permits radiation from the rear of the cone, that is from within the enclosure, to add to the output of the drive unit. By the use of proper design a reflex enclosure should be able to reproduce low frequencies in inverse, instead of direct, proportion to the size of the cabinet. As well as smoothing out the fundamental resonance of the driving unit it supplements the sound output around the resonant frequency. A reflex enclosure must be correctly designed for the driving units contained within it.

Infinite baffle enclosure systems are less efficient than reflex in the lower frequencies, but are less critical in terms of dimension and often reproduce a cleaner sound. The principle of the "baffle board" is one of the earliest concepts for high quality sound reproduction. The purpose of the board was not to resonate itself, but to prevent radiations from the rear of the cone passing to the front and thus having a cancelling effect. The larger the board the more efficient was its operation. The modern infinite baffle unit contains no baffle board in the old-fashioned sense at all; it comprises an enclosure which, when properly designed and made, effectively seals off the rear of the drive units from the front. Infinite baffle units must therefore be airtight. The term arises because in theory at least the enclosure operates as if it were a baffle board of infinite dimension. The attenuation of bass frequencies, which are absorbed in the box, makes this type of unit desirable for people living in flats and apartments.

The labyrinth enclosure is a development of the horn speaker. In fact they are described as folded horns or folded columns. This type of design gives efficient bass transduction but practical problems of horn mouth size, which is related to really low frequency reproduction, limits their popularity.

The electrostatic loudspeaker has become a commercial proposition only during the last few years. The principle of operation had been known for quite a long time but complex problems of

design had to be overcome. The first in the field was the Quad, manufactured by the Acoustical Manufacturing Co. Ltd. of Huntingdon, and this is probably the best known example of the type available in this country today. The conventional type of loudspeaker operates through the action of a "moving coil," literally a coil which is caused to move within a magnetic field. The electrostatic speaker utilises the condenser principle; a pair of precisely manufactured and aligned metallic plates receive a polarising voltage, and movement (sound) is induced by changes in capacitance as the signal from the amplifier is fed in. Having good directional effects coupled with an excellent low distortion factor and transient response, they provide very high quality sound although there is much less flexibility in the design of the unit than there is with the moving coil type.



With its back covers removed, the Quad Electrostatic reveals its very different approach to the problem of reproducing top quality sound. The "condenser plates," in two pairs, occupy all the space on either side of the centre piece.

Two other considerations, especially for the reproduction of stereophonic sound, are those of directional or omni-directional loudspeakers. This is really a matter of personal preference, although within the confines of domestic living conditions no speaker is purely directional because much of the sound reaching the ear is reflected by walls and ceiling. This does not necessarily detract from the sound because almost all the original music we hear includes reflections and reverberations set up within the concert hall itself. Opponents of the directional speaker concept in stereophonic sound dislike the constant awareness of two distinct sound sources. By using omni-directional systems these merge into one total envelope of sound throughout the room. The type of loudspeaker chosen should depend very much on the individual and on the layout of the room.

The listening room itself plays an important part in the quality of the sound which can be heard there. The bathroom baritone makes good use of standing waves and reverberations to convince himself of his operatic ability, only to be cut down to size when he steps outside into the irregularly-shaped—no standing waves—carpet-damped area of the landing. Disappointing though this may be to the soap opera enthusiast, the truer sound is the one on the landing because the bathroom is acoustically poor and over-emphasises certain frequencies by bouncing these back and forth in phase between reflective parallel surfaces. Such effects would be very tiresome in a room used for listening to music and so usually we take some action, either by chance or by knowledge, to reduce them. In an acoustically "bright" room, that is one with large reflecting areas, it would be beneficial to hang heavy curtains or some other sound-absorbent covering on the wall facing the speaker or speakers. The area of carpeting could be increased, the furniture moved, and the speakers could be tried in different positions, including diagonally if a standing wave problem exists. Projections from walls or ceiling will help to break up the pattern.

Where a room is heavily furnished with fabric upholstery and drapes there is little echo or reverberation. High frequency sounds are considerably absorbed, thus causing unbalance. This is described as being acoustically "dead." The solution is obvious.

The performance of any loudspeaker will therefore differ from room to room and it follows that the results heard in a dealer's demonstration room may not be the same as those heard in your own home. However, a loudspeaker of very low distortion will always prove its superiority, and this essential requirement should always head the list of features to be sought.

Do not be misled by the quantity of sound—many cheap loudspeakers make more noise in the middle frequencies than do expensive ones—judge only on quality. That a thing of beauty is a joy for ever is true also of loudspeakers. It is false economy to buy an inferior one, only to be dissatisfied and eventually have to change it for the one that should have been obtained in the first place. The most expensive are not necessarily the highest in sound quality.

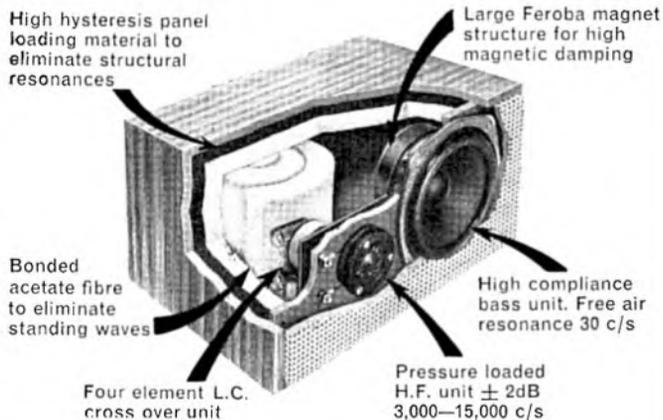
You will probably live with your loudspeakers for many years, so it is wise to choose them with great care. Learn all you can about them in general and make your final choice from personal knowledge and from actually hearing them in your own home if at all possible.

Celestion Studio Series

The Ditton 10



The most advanced compact 10 W high fidelity loudspeaker system available



- Size only 12 $\frac{3}{4}$ " x 6 $\frac{3}{4}$ " x 8 $\frac{1}{4}$ "
- Power Handling Capacity 10 watts r.m.s.
- Overall Frequency Response 35-15,000 c/s.
- Impedance 3-4 ohms and 15 ohms
- Available in Walnut or Teak (3-4 ohm model in Teak only)

PRICE £19. 6. 0. Inc. P.T. (Plus 5/7d. surcharge)

For full technical information please write for Leaflet G1

CELESTION LIMITED

Ferry Works, Thames Ditton, Surrey
Telephone: 01-398 3402

GD 230

VIDEO NEWS

THERE has been a great deal of speculation in the trade press as to the probable future of video recorders in the domestic market. One person who has been actively engaged in this direction is Mr. Geoffrey Smith of Debenhams Electrical and Radio Distribution Co. Ltd. Debenhams are the distributors of the Sony domestic VTR and Mr. Smith has been energetically demonstrating this equipment to Tape Clubs.

Amongst clubs he has visited is the North London in conjunction with Teletape of Edgware Road and the Cotswold Tape Recording Society.

We have a report from the Cotswold Club which clearly indicates their interest and enthusiasm. It is interesting to note that we have news of similar demonstrations of VTR equipment being given to a Recording Club in South Africa. Video tape recording is going to become an international medium in precisely the same way as audio recording is today.

Every month we learn of new developments. Our own practical tests with VTR all contained an awful warning. Although it was possible to obtain a "still" picture on the screen, this could be held only for a few seconds as otherwise the rotating head would wear through the tape. It is now disclosed that the Agfa-Gevaert Company are producing Agfa Magneton Video Recording Tape from which stills have been held for up to sixty minutes without damaging either the head or the tape itself.

One manufacturer who is reported to have backed out of the domestic market is Ampex. They are reported in an American journal as categorically stating that they see no future in the domestic market for video recorders and they are going to confine their activities to the more professional class of equipment. Are Ampex right or wrong? Many big firms wish they knew the answer.

When comparing Video with cine it will be found that each has its own peculiar advantages and disadvantages. The first great advantage of video is the ability to record sound simultaneously with vision. This means that synchronisation is not only possible—it is virtually impossible to avoid! Against this we must set the fact that video is as yet only available in black and white, whereas cine is usually in full colour these days. Cine film tends to be expensive; video tape, although not cheap, can be used over and over again.

The cine camera is small in size, light in weight, and can be used without any auxiliary equipment. The video camera *must* be used in conjunction with the video machine—which is relatively heavy and bulky. The video machine *can* be used for recording favourite television programmes—the cine camera cannot.

And last but not least, cost. At £500 video equipment cannot possibly be said to be cheap. One can start with cine at a fraction of that price; but many cine enthusiasts own equipment to the value of at least £500. Video may be expensive for me, just as it may be too expensive for you; but be quite sure that there are amateurs who either *can* afford or will *make* themselves afford the necessary outlay, which, after all, is less than one would spend on a motor car.

Private individuals in this country have never been backward in experimenting with new means of expression. This is precisely what video recording is—it is an entirely new medium of expression in which new skills of performance and interpretation will be required. No-one, manufacturers, retailers, magazines or private readers can afford to ignore it, even though they might not be able to afford to buy it.



NEW
Size 15
SOLDER DISPENSER
For transistors, printed circuits, small components. 21 ft. coil of 60/40 alloy, 22 s.w.g. in dispenser for quick, easy soldering. **3/- each**



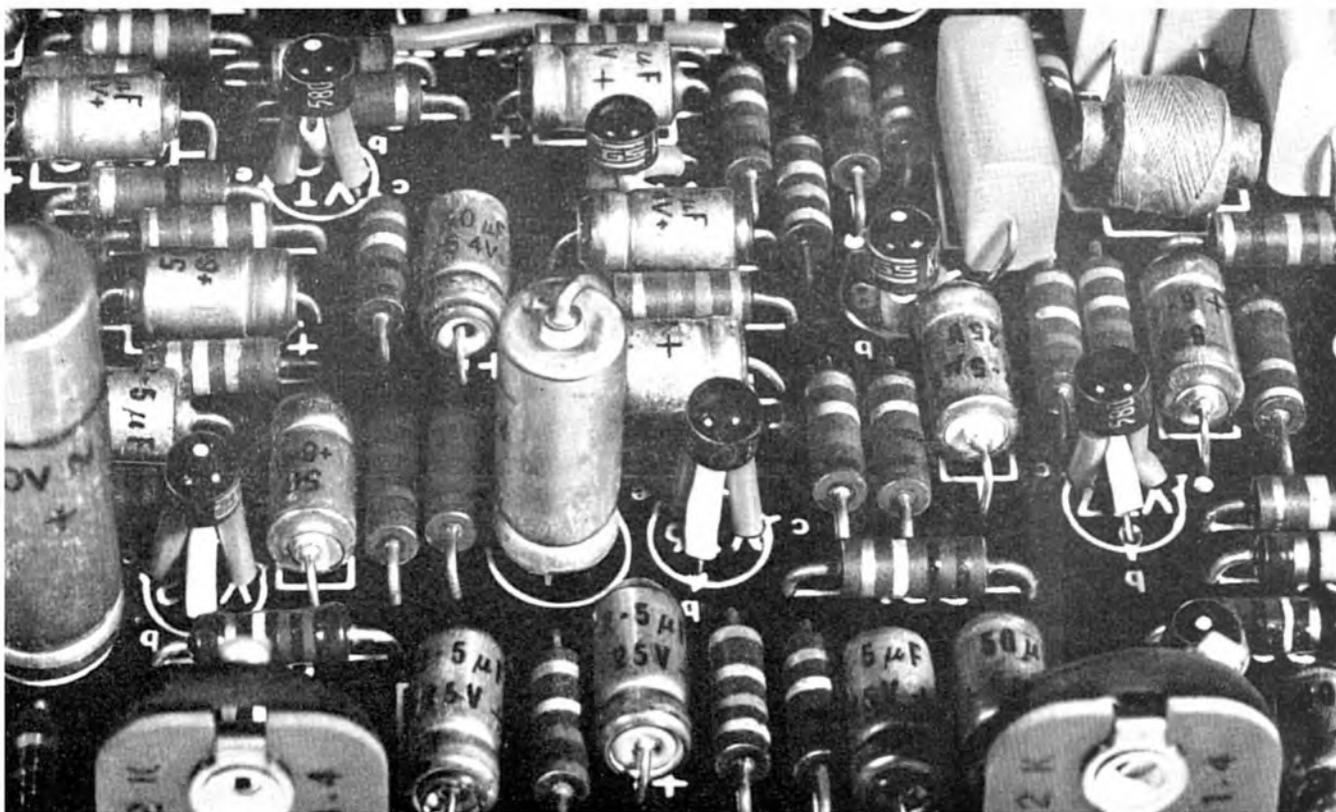
Bib PROFESSIONAL RECORDING TAPE SPLICER

Complete with razor cutter

A handy precision tool for quick and accurate editing—no wastage or post editing clicks. Pays for itself by using up all your odd lengths of tape. Chrome plated. **18/6 each**

Obtainable from High Fidelity and electrical shops or write to:
MULTICORE SOLDERS LTD., HEMEL HEMPSTEAD, HERTS.





Can you spot the vital part that singles it out as a Truvox?

Here's a clue. It makes for true fidelity recording. Superior sound reproduction. Maximum reliability. Enables complete compatibility with all other makes of first-class audio equipment. And permits a price tag that's not as high as you might expect. Got it? Right! *The Truvox Touch.* The touch that means controlled quality — British through and through. Quality of design.

Quality of components. Quality in skill and craftsmanship. *The Truvox Touch* is Progress too. The constant awareness of advanced developments — all incorporated in the Series 100 range. Truvox, the name you know you can trust. Visit your Truvox stockist soon and ask to see his range of Truvox sound equipment. He'll be glad to answer any questions.



The Belgravia 100. 2 track or 4 track. All solid state electronics. 5 watts output. 8"x5" loudspeaker. V.U. meter. Separate record and play back amplifiers. Source/tape monitoring facilities. Teak cabinet. **93 gns.**



Standard Recorders R 102 (2 track) R 104 (4 track). All transistor solid state circuitry. Separate record and play back amplifiers. 3 heads. 3 motors. Tape/source monitoring. **89 gns.**



Stereo Tape Units PD 102 (1/2 track) PD 104 (1 track). All transistor solid state circuitry. Full stereo facilities include tape/source monitoring and twin V.U. meters. 3 motors. 3 heads. **105 gns.**



Stereo Amplifier TSA 100. All transistor solid state circuitry. 15 watts per channel output. 5 input positions. Special tape/source switch. **49 gns.**



FM Tuner, FM 100. Britain's most advanced tuner. Solid state circuitry. Full stereo multi-plex facilities 'slide-in' decoder available. **32 gns.** inc. tax. Plus 10% surcharge 9/2d.

Loudspeaker LS120 (not illustrated) A compact, teak wood cabinet speaker using the latest, fully enclosed infinite baffle principle. **19 gns.** inc. tax. Plus 10% surcharge 5/9d.

Write to K. C. Smith for 12 page full colour brochure and complete technical specifications of the Series 100 audio products.

only Truvox can build you a **TRUVOX**

TRUVOX LIMITED · NEASDEN LANE · LONDON NW10 · TELEPHONE: DOLIs Hill 8011

YOUR LOCAL DEALER

LONDON

Lee Electronics

THE TAPE RECORDER & HI-FI AUDIO SPECIALISTS
400, EDGWARE RD., LONDON, W.2 (PAD 5521)

London's leading Stockists of High-Fidelity
and Audio Equipment. Many bargains in
new and reconditioned equipment.

SEND FOR FREE LISTS OF RECORDING
TAPES, RECORDERS, AMPLIFIERS, ETC.



APPOINTED B. & O. AGENTS

- ★ TAPE RECORDER HIRE
- ★ TAPE TO DISC 78 & LP
- ★ RECORDING STUDIO
- ★ TAPE RECORDER REPAIRS
- ★ SALES—EXCHANGES

MAGNEGRAPH

1, Hanway Place, London, W.1.
Tel.: LANgham 2156

Masseys Centre of Sound

West London's Hi-Fi Tape Recorder Specialist
—Demonstration Room with Comparator

APPOINTED FERROGRAPH DEALER

**AT
CHISWICK, W.4**

Accessories, All Kinds—Servicing—Pre-Recorded
Tapes Mono/Stereo
121-123 High Road—10 a.m.—7 p.m.

◀ TEL: CHI 2082 ▶

(not closed for lunch)

**TAPE RECORDER HI-FI CENTRE
(SHEEN) LTD.**

— The Centre for —

FRIENDLY HELP—SALES—SERVICE
DEMONSTRATIONS ANY TIME—ALL PRE-
RECORDED TAPES—STEREO—MONO
LANGUAGES—DANCE—JAZZ—SHOWS
CLASSICS, etc.—2 and 4 TRACK—STOCKISTS
OF ALL MAKES AND MODELS OF RECORDERS
AND HI-FI—Add sound to your movies with
Synchrodek—WE ARE STOCKISTS OF
SYNCHRODEK

TERMS—EXCHANGES, ETC.

3/4 STATION PARADE, SHEEN LANE,
SHEEN, LONDON, S.W.14
(Opposite Mortlake Station, S.R.)

Showroom: PROspect 0985

9 a.m.—6 p.m.; Fridays 9 a.m.—8 p.m.

Tape records reviewed

THE SPOKEN WORD ON TAPE

THE PARABLES read by Sir Michael
Redgrave. World Record Club T2370
½ track mono 29s. 6d.

To coincide with our feature on reading
before the microphone we searched for pre-
recorded tapes of the spoken word. The
only one we could find was this reading
of the parables by Sir Michael Redgrave
published by World Record Club.

It is an excellent example of reading
techniques—it would be either impertinent
or heresy to comment condescendingly on
the value of the script itself! The pub-
lishers note says, quite rightly, that every-
body likes a good story and that the parable
is a special kind of story. Michael Red-
grave's job was to "put over" the biblical
parables as good stories that you and I
would like to hear. Thanks to his reading
skill he succeeds brilliantly.

This is an ideal recording for all who
desire to speak before the microphone.
Additionally it will be loved by children and
appreciated by the elderly. As a change
from pre-recorded music, as an object lesson
in speaking and as a beautiful rendering
of some very, very old stories this is a
recording upon which one cannot really put
a price label. I cannot imagine anyone
would be disappointed with it.

RAVEL IN FOUR VOLUMES

RAVEL. Complete Orchestral Works—
Vol. I. Boléro, Rapsodie Espagnole,
La Valse. The Paris Conservatoire
Orchestra conducted by André Cluytens.
Angel ZS 36108, 4-track stereo, 7½ ips,
75s.

It is not difficult to guess why the pub-
lishers chose Ravel as the composer for a
complete orchestral works on tape. His
orchestral output was sufficiently limited
to fit nicely on four 7 in. spools, and the
popularity of certain of his works would
ensure success for the issue. For the same
reason the very first work on the first tape
is, of course, *Boléro*, followed by *Rapsodie
Espagnole*.

A pity that Ravel, who died as recently
as 1957, should be remembered by so
many for the popularity (notoriety?) of his
exotica, of which he himself was perhaps
least proud. If, however, this popularity
has motivated the publishers to produce
this collection, then it will have served an
excellent purpose. The reviewer tends to
regard yet another version of *Boléro* or
Rapsodie Espagnole with resignation. These

works must be regarded in the context of
contemporary composition at the time they
were written. *Boléro* was not only a
shameless appeal to emotion, but it was
also a statement of rebellion. If one has
the patience to listen with innocent ear and
open mind, the work assumes a great deal
more importance than the slick superficial-
ity with which it is too often credited.

The Spanish Rhapsody might be re-
garded as a logical progression, followed
equally logically by *La Valse*. The record-
ing standard is up to the usual quality
expected of E.M.I. imported records with
the "New Biononic Process" star on the
front of the box. It is an admirable thing
to collect a composer's complete works, and
this is made easy by the Angel issue of
four tapes.

Volume I, the only one I have yet heard, is
obviously designed to whet the appetite for
the other three. This it does most success-
fully—I hope too many people do not give
up before their collection is complete.

ENJOYMENT OF LIGHTER CLASSICS

OVERTURES & SYMPHONIC DANCES.
The Hollywood Bowl Symphony
Orchestra conducted by Felix Slatkin.
Capitol Y2P 8614, 4-track stereo, 3½ ips,
110s.

This recording opens with the *Tchaikov-
sky 1812 Overture*. One would have thought
that with this work all the big guns
(although the Hollywood Bowl Symphony
Orchestra lacks the reality of cannon)
would have been fired.

However, with supreme artistry the pub-
lishers follow it with what I suppose must
be the only acceptable work after the 1812
—*Suppé's Light Cavalry Overture*. In much
the same mood we continue on Side I with
Rossini's Overture to William Tell, conclud-
ing with *Suppé's Poet and Peasant*. This
list of titles accurately indicates the "popu-
lar" level of the album which includes
Symphonic Dances from Tchaikovsky,
Greig, and of course, *Khachaturian* with
the *Sabre Dance*.

Frankly popular in its appeal and frankly
dramatic in the choice of items, this tape
does in fact bring a new light to bear on
some too well worn themes. The *Light
Cavalry Overture* is hardly a masterpiece of
composition, but it is only musical snobbery
that refuses to admit the place of *Suppé*
in the music lover's library. Perhaps I have a
personal bias towards both the *Light
Cavalry* and the *Poet and Peasant*. I can
vividly recall hearing both of them for the
first time seated in front of the bandstand
on a windy promenade at Eastbourne. That
was in the late twenties, but I'll bet next
year the trumpets of the *Light Cavalry* will
again be heard over the sound of the
breakers and the ice-cream vendors.

To the unsophisticated this recording
could serve admirably as an introduction
to the lighter classics—to the sophisticated
it could serve as a salutary warning on the
dangers of too much cleverness. I shan't
play this tape too often; the constant repe-
tition of these works has led too easily to
them being dubbed "hackneyed," but when
I do play them it will be with enjoyment.

Besides the works already mentioned the tape includes:—

- Tchaikovsky Waltz* (from "The Sleeping Beauty, Op. 66");
Kabalevsky: Galop (from "The Comedians, Op. 26");
Grieg: Norwegian Dance No. 2;
Weinberger: Polka (from "Schwanda, the Bagpiper");
Ravel: Pavane for a Dead Princess;
Glère: Sailor's Dance (from "The Red Poppy, Op. 70");
Bizet: Farandole (from "L'Arlésienne Suite, No. 2");
Massenet: Navarraise (from "Le Cid, Act II");
Delibes: Pizzicato Polka (Pizzicato Polka (from "Sylvia");
Saint-Saens: Baccanale (from "Samson and Delilah").

THE CHARM OF THE BAROQUE

THE BAROQUE CONCERTO. Virtuosi Di Roma. Conducted by Renato Fasano. Angel ZS 36153, 4-track stereo, 7½ ips, 75s.

How fortunate the publishers issue this delightful tape in a 7½ ips version. The subtlety of tone of harpsichord, strings and woodwind undoubtedly requires the faster speed to do it justice. To do less than justice to this charming selection of early 18th century music would be a sin.

Opening with *Vivaldi's Concerto in D Major, Op. 10, No. 3* ("The Goldfinch") the flute of Pasquale Rispoli performs miracles of virtuosity. As an exflautist of great enthusiasm but negligible ability, I deplore the rarity with which this instrument is heard at its best. All the more pleasing then to find this tape beginning with "The Goldfinch."

As a nice contrast this is followed on Side 1 by Renato Zanfani, Oboe, playing *Concerto in C Minor, (?) Alessandro Marcello*. The juxtaposition of these two works enables delightful comparisons to be made between the two very different instruments—hence the appreciation of the recording speed.

Side 2 begins with the *Concerto in A Minor for Four Harpsichords and Strings, BWV 1065, J. S. Bach*, a well-known transcription from the tenth concerto of Vivaldi's Opus 3.

Here the quality lets us down. The sound has at times a rather odd, "boxed-in" colour and the stereophonic effects are obtrusive and unstable.

Finally we conclude with the Adagio only from *Leonardo Leo's Concerto in A Major* with Benedetto Mazzacurati at the cello.

To me one of the great delights of 18th century music lies in the ability of modern recording and reproducing techniques to endow the delicate tracery of fine instrumental sound with reality and presence. The rendering of the Bach Concerto tended to spoil my enjoyment of the whole, but this is unreasonable when the rest of the tape was so good. An appreciation of Baroque music is definitely "with it" today—I suspect that this recording will find its way into a great many libraries.

PLEASURE— OR ENDURANCE

THE BEACH BOYS. Pet Sounds. Capitol (TA-T 2458), 3½ ips, twin-track mono, 35s.

On this tape there are no fewer than thirteen numbers of The Beach Boys. Such an album must either be a test of the listener's endurance or a feast of pleasure, depending entirely upon personal preferences. Included in the list are popular items such as *Sloop John B* and *God Only Knows*. These serve to show off the group's ability to produce hits—they also serve to demonstrate the group's inability to produce thirteen numbers to this high standard.

From my point of view the test of endurance was exhausting, but to another the feast of joy might be overwhelming. If it is, I should like to meet him.

Recording quality is fair; there is an odd, "out-door" acoustic present in some of the numbers which is technically interesting but musically distracting.

A TONIC FROM NINA & FREDERIK

NINA AND FREDERIK. An Evening at the Albert Hall. Columbia TA-SX 6077, half-track mono, 3½ ips, 35s.

This recording of one of Nina and Frederik's performances at the Royal Albert Hall has many established favourites, and they are all treated in the party fashion. At first the preponderance of audience applause annoyed me; as the tape went on I couldn't help warming to the occasion and thoroughly enjoying the artistry of the two performers with as much enthusiasm as if I had been one of the applauding multitude.

We must admit that Nina and Frederik are superb artistes of the entertainment world: they know precisely how to do it, and they know exactly how to put it over. In this recording they demonstrably both do it and put it over.

My favourite on the tape is the very funny English parody of "Baby it's Cold Outside" where both Nina and Frederik show themselves to be masters of satirical humour. Unfortunately a trace of distortion persists throughout the length of the tape—apart from this, recording quality is excellent when one considers it was taken "live."

Also included in the album are, on track 1—*That's My Song, Maladie D'Amour, The One on the Right is on the Left, There but for Fortune, Mr. Noah, The Old Maid Song* and *There's a Meeting Here Tonight*, and on Track 2—*Norwegian Wood, Flute Solo, Mes Enfants, Hole in the Bucket, Hebrew Song, Daddy What If . . .*, and *Time for Man Go Home*.

If you want cheering up don't take a pep pill, try Nina and Frederik. And if they should become a habit they won't do very much harm.

The tapes reviewed this month are issued by the following companies:
"Angel," "Capitol," "Columbia," E.M.I. Records Ltd., 20, Manchester Square, London, W.1.
"W.R.C.": World Record Club, Box 11, Parkbridge House, The Little Green, Richmond, Surrey.

YOUR LOCAL DEALER

LONDON

WIMBLEDON'S TAPE RECORDER CENTRE

ALL LEADING MAKES IN STOCK

Ferrograph - Telefunken - Loewe Opta - Saba - Wyndor Philips - Grundig - Ferguson - Brenell - Truvox - etc. P.e.-Recorded Tapes: Mono & Stereo - Microphones - Accessories.

● BARGAIN OF THE MONTH
FI-CORD 202A
ONLY 39 GNS.

TEL-LEE-RADIO

220 THE BROADWAY,
Wimbledon, S.W.19. LIBerty 4946

THE SOUTH

SOUTHAMPTON

Tape Recorder Specialists

APPROVED AGENTS FOR—
PHILIPS - GRUNDIG - FERROGRAPH
VORTEXION, ETC.

- ALL MAKES OF TAPE RECORDERS SUPPLIED
- ACCESSORIES AND HI-FI EQUIPMENT
- PART EXCHANGES AND SECOND-HAND MACHINES
- PROMPT AND SKILLED SERVICING

RECORDING MACHINES LTD.

79 Queensway, Southampton

Telephone: 27092

THE SOUTH WEST

TOM MOLLAND LTD.

Invite you to visit their well-equipped Demonstration Theatre and compare all the leading makes of Hi-Fi and Tape Equipment at

102 CORNWALL ST., PLYMOUTH

Telephone 69282/3

Immediate delivery to ALL Areas

SUBSCRIBE TO TRM

and receive your monthly copy by post for 1 whole year (12 issues). Send 25s. (USA \$3.75) by postal order or cheque today.

25/-
U.S.A.
\$3.75

TO: TAPE RECORDING MAGAZINE
7, TUDOR ST., LONDON, E.C.4

Name

Address

YOUR LOCAL DEALER

THE NORTH

**CUSSINS &
LIGHT LTD.**

YORK'S LEADING RADIO
TV & ELECTRICAL STORE

Visit our First Floor
TAPE RECORDER
CENTRE

LARGEST RANGE
OF RECORDERS
& ACCESSORIES
IN THE NORTH

**KING'S SQ.
YORK**



CHESHIRE

CHARLESWORTH'S
OF CREWE LTD.

**Tape Recorder
and Hi-Fi Specialists**

HEAD OFFICE:
14 HIGHTOWN, CREWE. Tel. 2535
TECHNICAL DIVISION:
19/21 LUDFORD ST., CREWE

**TAPE RECORDER
CENTRE (Halifax)**

stock all the best tape re-
corders and hi-fi equipment.
Agents for Revox, Tandberg,
Ferroglyph, etc. Demonstra-
tions by expert staff. Two years'
free service on recorders over
£35.

30 King Cross St., Halifax. Phone 66832

**THEATRE ORGAN
DISCS and TAPES**

ORGAN OF THE MONTH CLUB
brings out a new Theatre Pipe Organ
record each month.
Our discs are playable on Mono or Stereo
equipment. Approx. 38 minutes playing
time 31/6d.

7½ i.p.s. 4 track stereo tapes 41/7d.

Full details from:

CONCERT RECORDING
P.O. BOX 2,
ROTHWELL, KETTERING, NORTHANTS

NEW PRODUCTS

**A 3 OHM
VERSION
OF THE DITTON 10**

THE well-known Ditton 10 compact speaker by Celestion Limited is now offered in a 3 ohm version. This new model, which is available in teak, has been developed especially for owners of good-quality tape recorders and audio enthusiasts wishing to obtain a greater output from their transistor amplifiers. The 3 ohm model has a performance identical to that of the 15 ohm version and has been styled to complement recorders with the new "Scandinavian" look, as illustrated below.



Measuring only 12¼ x 6¼ x 8¼ inches, the power-handling capacity is said to be 10 watts rms and the overall frequency response is quoted as 35 to 15,000 Hertz (cps). It incorporates separate bass and high-frequency drive units together with a four-element LC crossover. Available as from December 1, the cost is £19 11s. 7d.

Celestion Limited, Ferry Works, Thames Ditton, Surrey.

**AMPEX
2100 SERIES**

A NEW series of professional quality stereo tape recorders for home use featuring "bi-directional" recording (the ability to record and playback in both directions) and sound mixing in addition to automatic reversing and threading has been announced by Ampex.

The new Ampex 2100 series is designed to record and play in both directions, providing up to four hours of high quality stereo recording without changing reels. It also incorporates the highly successful automatic reversing and simplified threading features previously introduced with the Ampex 2000 series.

Solid state electronics, vu meters, three-speed operation, 1½, 3½, and 7½ ips and dual capstan drive are other features. The fourth head necessary to permit bi-directional recording is included. A single-jack stereo-phonetic plug is top mounted for easy access.

Sound mixing is possible with the 2100 series in the monaural mode. Two sound sources may be recorded on a single monaural channel simultaneously. These may be two stereo channels from tuner or gramophone, two microphones, or a combination of one microphone and one tuner or gramophone input.



The 2100 series is available in any of three models: Model 2153 as an uncased deck with stereo pre-amplifier; Model 2163 as a portable recorder with stereo pre-amplifiers and power amplifiers, complete with one Ampex 2001 dynamic microphone and dust cover; Model 2165/3, which is the same as 2163 but with an oiled walnut case. The price of the 2163 shown above is £227 15s.

Ampex International, 72, Berkeley Avenue, Reading, Berkshire.

**NEW STYLING
FROM TRUVOX**

TRUVOX announce the release of a new model in their series 100 range of equipment, the Truvox Belgravia. This is the first time that Truvox have given a name as well as a model number to a recorder, and following normal Truvox practice, the model will be available in two-track or four-track, the model numbers being respectively RB102 and RB104.

The Truvox Belgravia features a solid wood teak finish cabinet with slotted loud-speaker grille and is illustrated below.



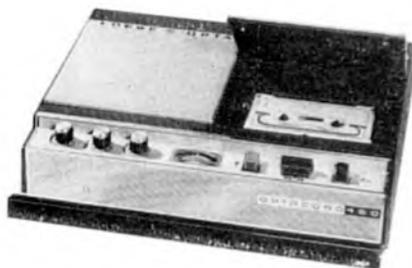
Advanced electronics include solid state silicon all-transistor circuitry. The deck facilities offered by the Belgravia are identical to those available on the standard R102 and R104 recorders from the present series 100 range.

Developed primarily for the man who wishes to take advantage of Truvox design and at the same time wishes to enhance his home with a tape recorder that blends into any room setting, the price is 93 gns. for either model complete with 7-inch spool of tape and all other accessories including a moving-coil microphone.

Truvox Limited, Neasden Lane, London, N.W.10.

A UNIVERSAL CASSETTE PORTABLE

THE new Optacord 450 is a universal recorder for battery/mains operation, the power-pack being incorporated within the machine, and is shown below.



The mechanism will not accept standard quarter-inch tape, but is designed for use with the new Philips' cassettes. It incorporates separate controls for playback volume, record level, and tone. The record level indicator also indicates battery condition, and a safety device prevents accidental tape erasure. Jacks are provided for external speaker and headphone, the built-in speaker is switchable.

Frequency response is said to be 50 to 8,000 Hertz (cps). Battery operation requires the use of 5, 1.5 volt cells. Connection to a motor car battery 6 volt or 12 volt or directly to main supply is also possible. The weight is 6.6 lb., and the cost 39 gns.

Highgate Acoustics, 71/73, Great Portland Street, London W.1.

DOING IT YOURSELF?

RESPONDING to the interest in do-it-yourself, one of Britain's largest electronics companies, Standard Telephones and Cables Limited, has entered the radio and electronics hobbies market both at home and abroad. Trading through the name of Electroniques (Proprietors S.T.C. Ltd.), a new service is offered to hobbyists covering the rapid supply of a vast selection of equipments, test sets, modules, components, tools and accessories—over 1,000 items in all. The broad scope of the range will cover the most sophisticated professional items to the cheapest components of good quality available.

Complementing this service will be a 600-page "Hobbies Manual" designed to assist all builders of equipment, whether keen beginners or experienced experimenters, in their construction projects. Containing all salient details, including prices of all items offered plus a large number of useful

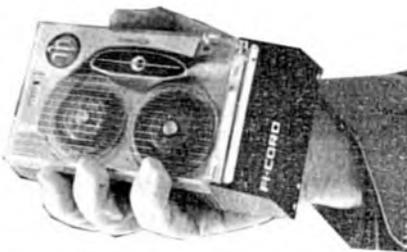
circuits and construction tips, this manual is available price, 10s. 6d. post free direct by post from:

Electroniques (Proprietors S.T.C. Ltd.), Edinburgh Way, Harlow, Essex.

FI-CORD'S BATTERY DICTATING MACHINE

THE famous name of Fi-Cord appears on their new Fi-Cord 300 dictating system shown for the first time at the Business Efficiency Exhibition, Olympia, 1966.

The machine is pocket sized, battery operated, and Swiss precision built. Fitting into the palm of the hand for a firm, non-slip, easy grip, as shown in the photograph, it measures only 6½ inches by 3¼ inches by 1½ inches, and weighs only 25 oz. The built-in dynamic microphone is coupled to an automatic record level system, but volume on playback can be adjusted to meet individual needs over the built-in speaker, accessory stethophones or amplifier speaker. A lightweight portable amplifier can be attached to the Fi-Cord 300 for higher volume level. Driven by a standard long life mercury 1.4 volt battery, the capstan motor is electrically governed at a constant speed of 1½ ips. The recording medium is special, quarter-inch, triple play tape.



The Fi-Cord 300, in two tone grey finish, carries a world-wide guarantee and costs £63.

Fi-Cord International Ltd., Charlwoods Road, East Grinstead, Sussex.

TUNING UNIT WITH VOLUME CONTROL

THE Britimpex Signalmaster Mk 2 tuner, 6085, has only a slight outward difference in appearance from the Signalmaster Mk 1, as is shown in the illustration below. It differs in circuitry as it provides AFC, volume control, and aerial sockets for optional use with co-axial or two-pin telescopic aerial.



Since the output level, which is said to be completely free of hum, can be adjusted by the volume control, it is a valuable auxiliary equipment for tape recorders and hi-fi systems generally. Operating on batteries, the power consumption is said to be 10 mA which gives approximately 120 hours of useful life at the rate of about four hours daily. The cabinet is hand-made in solid teak, and the price is £21 16s. 5d. which includes £3 5s. 5d. purchase tax.

Britimpex Limited, 16/22, Great Russell Street, London, W.C.1.

IMPORTANT NOTICE Introducing Heinrich Hertz

Many readers may not have heard of Hertz, a German scientist who lived from 1857 to 1894. He was concerned primarily with the development of wireless waves, and is credited with having made the very first experimental transmission from one side of his laboratory to the other.

Much of his work was devoted to the study of wave forms which were then not properly understood. In fact he described what we would call wireless waves as "the out-spreading of electrical force."

When we ourselves refer to the frequency of a sound today we speak of so many cycles per second (cps), or kilocycles per second (kcps). This terminology is not generally used throughout the world. Many countries refer to frequency as so many Hertz (Hz) or kiloHertz (kHz). The unit Hertz is another way of saying cycle per second, and the frequency of, say, 500 cps could equally well be written as 500 Hz.

This publication, by agreement with other specialist publications in the same field, will from this issue dated January 1967, be referring to frequency as Hertz and not as cycles per second.

This is being done in the interests of uniformity, since most continental and transatlantic publications have already adopted this terminology as standard. For the sake of clarity we will, for a few months only, always include in brackets the letters cps after Hz and the letters kcps after kHz.

We cannot stress too strongly that the change is only one of terminology. 1 Hertz equals 1 cycle per second; 1 kiloHertz equals 1 kilocycle per second. It is always difficult to accept a unit of measurement with which one is not familiar. On the other hand we cannot, as one of the leading technological countries, afford to be the "odd man out." We feel sure our readers will accept this change and will rapidly become accustomed to speaking in Hertz instead of cycles per second.

REDUCTIONS IN B & O PRICES

Bang & Olufsen UK Sales Division announce reductions in the prices of the following models:—

	OLD PRICE gns.	NEW PRICE gns.
Beolit 600 Portable Radio	28	25
Beolit 611 de luxe Portable Radio	35	33
Beolit 800 Portable Radio	46	39
Beomaster 900RG de luxe Radiogram	185	169
Beocord 2000K de luxe Tape Recorder	135	125
Beocord 2000T de luxe Tape Recorder	139	129
Beocord 1500 de luxe Tape Recorder	105	97

FRANCIS OF STREATHAM

MAINS TAPE RECORDERS

*Ampex 800 Series	£127.10.0
*Ampex 1100 Series	£149.10.0
*Akai 1710	79 gns.
*Akai X-300	190 gns.
*Akai 910	62 gns.
*Akai M8 Stereo	136 gns.
Akai 355 Stereo	239 gns.
*Beocord 2000	119 gns.
*Beocord 2000 de luxe	135 gns.
*Beocord 1500	89 gns.
*Beocord 1500 de luxe	105 gns.
*Beocord 1000	69 gns.
*Brenell STB2	£150.0.0
*Brenell Mk. 5 M Series 3	93 gns.
*Brenell Mk. V Series 3	74 gns.
Elizabethan LZ32	32 gns.
Elizabethan LZ34	34 gns.
Ferguson 3218	34 gns.
Ferguson 3222	35 gns.
Ferguson 3216	49 gns.
*Ferroglyph 633	120 gns.
*Ferroglyph 631	95 gns.
*Ferroglyph 632 Stereo	126 gns.
Fidelity Playmatic	28 gns.
Grundig TK400 2sp. 4 Tr.	47 gns.
Grundig TK14L	37 gns.
Grundig TK17L	43 gns.
Grundig TK18L	39 gns.
Grundig 23L Auto	49 gns.
Grundig TK140	38 gns.
Grundig TK120	29 1/2 gns.
Philips 3556	62 gns.
Philips 3558	42 gns.
Philips 3553	36 gns.
Philips 3552	24 gns.
*Revox 736	124 gns.
Sony TC260	97 gns.
Sony 250A Deck/Pre-amp	57 gns.
Sony 200	72 gns.
Sony 600	127 gns.

Stella 463	39 gns.
*Tandberg Series 6	110 gns.
*Tandberg Series 8, 2 Tr.	54 gns.
Tandberg Series 12	105 gns.
Telefunken 203	69 gns.
Telefunken 201	44 gns.
Telefunken 200	39 gns.
*Telefunken 85 de luxe	83 gns.
*Telefunken 204 Stereo	106 gns.
*Truvox PDI02	93 gns.
*Truvox PDI04 Stereo	89 gns.
Truvox R102	76 gns.
Truvox R104	79 gns.
Truvox R40	44 gns.
Uher Hi-Fi Special	129 gns.
*Uher 724L	75 gns.
*Vortexion WVA, 3 speed	£96.7.0
*Vortexion WVB, 3 speed	£115.10.0
*Vortexion CBL Stereo	£172.0.0
*Van der Molen VR4	59 gns.
*Van der Molen VR7	39 gns.
*Uher 784 Royal	129 gns.
*Uher Hi-Fi Special	129 gns.

BATTERY PORTABLES

Akai X-IV, 4 Tr. Stereo	131 gns.
Cossor 1621	26 gns.
Grundig EN3 Notebook	23 gns.
Grundig TK6L	73 gns.
Grundig C100	39 gns.
Loewe Opta 408	39 gns.
Loewe Opta 416	51 gns.
Loewe Opta Cassette	39 1/2 gns.
Philips EL3301	26 gns.
Philips 3586	27 gns.
Sanyo Auto	22 gns.
Sanyo Batt./Mains	36 gns.
Stella 472	27 gns.
Telefunken 300	49 gns.
Telefunken 301 4 Tr.	54 gns.
Uher 4000L	103 gns.

*Microphone extra

LEADING STOCKISTS OF EQUIPMENT FOR TAPE and HI-FI

... and NO EXTRA FOR CREDIT TERMS

- ★ Minimum Deposit
- ★ No Interest or Service Charges on H.P. up to 18 months
- ★ Free Service during Guarantee Period

Prices subject to alteration as announced by manufacturers

MAINS POWER PACKS

Philips, Stella or Cossor	£5.12.0
Uher 4000, with cell	18 gns.
Telefunken 300, with cell	£15.17.0

TAPE DECKS by Brenell, Wearite. TAPE-TO-DISC and Copy Service.

MICROPHONES, MIXERS, etc.

Hammond Condenser M100	29 gns.
AKG D14S	£10.0.0
AKG D119	£20.10.0
AKG D19C	£17.10.0
AKG K50 Headphones	£7.10.0
Eagle Mixer	£3.3.0
Grampian Reflector	£6.15.0
Grampian DP 4 Dynamic	£8.5.0
Grampian Ribbon	£11.10.0
Grundig Mixer (Stereo)	18 gns.
Philips Preamp	£6.10.0
Reslo Ribbon	£12.2.0

Also in stock: microphones by ACOS, BEYER FILM INDUSTRIES, TELEFUNKEN, etc.

DEFLUXERS by Wearite, Walgain

PRE-RECORDED TAPES

by Columbia, H.M.V. and all E.M.I. labels, Crown, Phonoband, Eagle, etc.

TAPE SPLICERS by Bib, Bond, E.M.I.

Matching transformers, plugs, sockets, etc.

STANDS of all types. TAPES

Hi-Fi Dept.

- AMPLIFIERS (mono & stereo)
 - Quad Scott Tripletone
 - Leak Rogers Cadet Mk. III
 - Armstrong B. & O. Pye
 - Truvox
- TUNERS
 - Quad Rogers B. & O. Leak
 - Armstrong Pye Tripletone
- LOUDSPEAKERS
 - Quad Pye W.B. Wharfdale
 - Goodmans Tannoy Leak
 - Lowther Kef Rogers Elac
 - S.H.B. Tandberg B. & O.
 - Truvox Ditton
- MOTORS, PICKUPS
 - Garrard incl. Thorens
 - AT6, 401, etc. Tannoy
 - Golding Shure
 - Connoisseur Ronette
 - Decca Sonotone
 - Transcriptor B. & O. BSR
 - Philips SME Mk. II
 - Ortofon Pickering
 - Acos ADC

All types of Diamond and Sapphire styli, stereo and mono. Microlifts, Garrard, Goldring, Acos Pressure Gauges Disc Preener, Acos Dust Bug

● CABINETS—Record Housing and GKD

Please note our only address as below

169-173 STREATHAM HIGH ROAD, LONDON, S.W.16

Between St. Leonard's Church and Streatham Station
OPEN ALL DAY SATURDAY—1 p.m. Weds.

STreatham 0466/0192

● FREE CAR PARK, Prentis Road



Universally acclaimed as the world's finest cartridge.



SPU SERIES
SPU-T/E Elliptical diamond
£23.16.6 (Tax Paid)

NEW S15 SERIES
S15-T/E Elliptical diamond
£32.7.1 (Tax Paid)

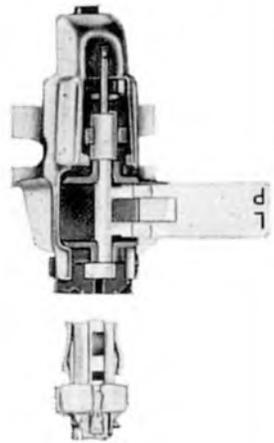
TD 150 SERIES

A different approach to top performance. TD 150 features 2 speeds (33 1/3 and 45 r.p.m.). Low speed double synchronous motor with unique belt drive system for completely silent operation. TP 13 Professional Pick-up Arm incorporates lightweight low-mass plug-in shell with patented lateral and horizontal adjustment for optimum tracking position and many other features. The TD 150 is available separately or with the TP 13 arm as an integral unit. Both can be supplied on slim-line design plinth as illustrated or without plinth for easy mounting into Hi-Fi Cabinet.



TD 150 (Motor) £20.19.6 (Tax Paid)
TD 150B (Motor with plinth) £24.7.4 (Tax Paid)
TD 150A (Motor and TP 13 Arm) £31.9.3 (Tax Paid)
TD 150AB (Motor, arm and plinth) £35.7.2 (Tax Paid)

High Fidelity Stereo Ceramic Cartridges



The Sonotone 9TA series offers superior quality at low cost. Currently fitted to over 100 models by the major manufacturers of high quality equipment.



Full specifications on request.
metrosound (sales) ltd.
bridge works, wallace rd.,
london n.1. can 8641/3

The only heavyweight thing about this portable recorder is its performance

(even the price is lightweight!)

You may find other recorders that are lightweight in portability and price, but they're usually lightweight in *performance*, too. Not Philips Model EL3586. It combines comfortable portability (8 lb.) and low price (26 gns.) with the fine performance you generally expect only in mains-operated machines. Features include: twin-track recording/playback at 1½ ips; over 3 hours playing time; wide frequency response; tone control; all-transistor amplifier for maximum battery economy; simple push-button operation. For its other advantages read the report in this magazine, then try it out at your Philips dealer's.



PHILIPS PORTABLE TAPE RECORDER Model EL3586
26 gns. complete with tape, empty spool, microphone, recording lead.



PHILIPS – the friend of the family

Philips Electrical Ltd.,
 Century House,
 Shaftesbury Ave., London, W.C.2.

“Q-CORD”

Now available less accessories at only

27 gns.

Also with all basic accessories at

33 gns.

For one month only **SPECIAL INTRODUCTORY OFFER.**

FREE with each machine purchased if this advert is sent with the order.

A complete head cleaning/tape lubricant kit worth £1 2s. 6d.

The finest machine under £40. AC bias/erase Bogen heads, 4¼" spools, 3¾ ips, only 5 lb. in weight, operates in any position, lid on/off. P.A. system built in.

If you are thinking of buying a first class portable the “Q-Cord” is the answer, delivery free in U.K. 6 months F.O.C. guarantee on parts, NO LABOUR COSTS.

TAPE and PEN PALS

A **UNIQUE** service catering for people all over the world with all kinds of interests and hobbies. For full details of **International Membership** please send a stamped and addressed envelope to:

BUREAU BRITANNIA (TR)
 13, SYCAMORE GROVE, RUGBY, WARWICKSHIRE

Disc and Tape Library Recording Developments offer loan facilities of their thousands of Discs (45's, 78's, LP's) and Tapes. WE WILL PRODUCE PROGRAMMES of your choice (Pop, Classical, Comedy, Background, Party) with or without introductions. Your own tape used if required. ALSO FULLY EQUIPPED STUDIO (300 sq. ft.) for solo, group orchestral, choirs, etc. All inquiries to: **75, Cramlington Road, BIRMINGHAM 22A.** (Telephone: GRE 3779).

SLEEP LEARNING AND THERAPY

TIME SWITCHES with large clear 24-hour dial, 3 ons and offs **£4-12-6**. **PILLOW SPEAKERS** high intelligibility, only 4" square, matched to impedance of recorders, **£3-3-0**. **ENDLESS TAPE CASSETTES:** 15 mins. cycle at 3½ **£5-5-0**; 10 mins. cycle **£3-12-6**; 8 mins. cycle **£2-17-6**. (Double at 1½). **INFORMATION & GUIDANCE TAPE** (3 gns) covers whole field of Learning and Therapy with demonstrations how to make your own tapes. **INDUCTION TAPE No. 1** (3 gns). Vital necessity for use in learning any subject. **INDUCTION TAPE No. 2** (3 gns) for therapy. Equally vital where these revolutionary techniques are to be used for removing illnesses, disabilities, personality weakness, etc. Send now for **FREE LITERATURE and FULL LIST** with details of the optimum Tape Recorder for the job to: **THE INSTITUTE OF SLEEP-LEARNING** Dept. TRM, 16 KINGS COLLEGE RD., LONDON, N.W.3. PRImrose 3314

The Berean Forward Movement

(NON-DENOMINATIONAL)

Loan of over 1,000 reliable expositions of the Bible available on tape (3¾ ips) for cost of postage only. For Bible Study groups or private meditation. Supporting literature also available. Details from: P. C. Sefton, 22, Filey Road, Reading, Berks.

CLASSIFIED ADVERTISEMENTS

Rate.—One shilling per word: box numbers, 2s. 6d. extra. Payment with copy, which should be sent to Advertising Department, "TAPE Recording Magazine," 7, Tudor Street, London, E.C.4.

VACANCIES

SERVICE ENGINEERS for Tape, Projection and Hi-Fi Equipment. Good remuneration, pension scheme, special benefits. Reliable, experienced and conscientious applicants only. Write Head Office, JOHN KING (FILMS) LTD., Film House, East Street, Brighton.

FOR SALE

BLACKBURN has Lancashire's leading Hi Fidelity/Tape Recorder stockists and Electronic Engineers at HOLDINGS AUDIO CENTRE, MINING LANE/DARWIN STREET, BLACKBURN (Tel. 59595).

GEVAERT new boxed Recording Tapes: 600 ft. (5½ in. spool) at 9s. each or 6 for 50s. GRUNDIG 2-transistor Pre-amplifiers suitable for boosting microphones and tape head monitoring —listed at 4½ gns.—OFFERED NEW and boxed at 57s. 6d. each. LEE ELECTRONICS, 400, Edgware Road, W.2. PADDINGTON 5521.

NATIONAL RQ.115 BATTERY RECORDER. 7½ in. x 7½ in. x 2½ in. LEATHER CASE, MAINS ADAPTOR. Cost £46, ACCEPT £26. 61, Argyle Road, ILFORD, Essex. VALENTINE 0466.

EDUCATIONAL

HYPNŌPEDIA = SLEEP-LEARNING. Apply to THE AUTHORITY in Great Britain for details of research and equipment. Free Advisory Service (Panel of Consultants) for Members. THE SLEEP-LEARNING ASSOCIATION, 14, Belsize Crescent, London, N.W.3. Tel.: SWI 6160.

MAGNETIC TAPE

A UNIQUE TAPE BUY! Top brand 7 in., 2,400 ft., 25s.; 5½ in., 1,200 ft., 15s.; P & P: 1 at 2s., 2 at 2s. 9d., 3 to 6 at 3s. 6d. BARGAINS in all sizes. S.A.E. for list. E. C. KINGSLY & Co. Ltd., 93, Tottenham Court Road, LONDON, W.1. EUSTON 6500.

NEW EQUIPMENT

CASH DISCOUNT on most famous makes of Tape Recorders, Hi-Fi equipment, Cameras and Typewriters, to Club Members. Join England's largest Mail Order Club now and enjoy the advantages of bulk buying. Send 5s. for membership card, catalogues, price lists, and ask for quotation on any item. C.B.A. (DEPT. AD), 370, ST. ALBANS ROAD, WATFORD, HERTS.

TAPE RECORDERS. SAVE FROM 30 per cent to 60 per cent on the original price. Large stocks of second-hand, new, shop-soiled machines. All guaranteed. Obtainable on our NO INTEREST TERMS. Best part exchange allowances on your existing equipment. CALL, WRITE, PHONE today for free list. Quotation and details. Our Mail Order covers the whole country.—R. E. W. Earlsfield Ltd., 266, Upper Tooting Road, London, S.W.17. BALHAM 9174-5.

TAPE DUBBING

E.R.S. RECORDS: TAPE/DISC. Vari-groove High Level Recordings with WIDE FREQUENCY RANGE. Top quality pressings. 162, SHIRLAND ROAD, LONDON, W.9.

J. & B. RECORDINGS. Tape/disc. Mobile unit. Quality recording. 14, Willows Avenue, Morden, Surrey. Mitcham 9952.

JOHN HASSELL RECORDINGS. Tape-to-Disc Service using latest high level disc-cutting system. Quality pressings made. Studio with Bechstein Grand. Mobile unit. 21, Nassau Road, London, S.W.13. RIVERSIDE 7150.

TAPE-TO-DISC RECORDING. Finest professional quality. 10-inch LP—42s. (32 mins.), 12-inch LP—48s. (45 mins.), 7-inch EP—21s.

40 ft. RECORDING STUDIO. S.A.E. for leaflet to DEKROY Sound Service, High Bank, Hawk Street, CARNFORTH, Lancs.

TAPE TO DISC by PATRICK O'MAHONY & CO. LTD. High Fidelity gramophone records made to your own requirements from TAPE, RADIO, and TV SOUND. Highest Quality Pressings: Mobile unit 10-inch LP (32 mins.), 35s.; 7-inch EP (15 mins.), 20s.; 7-inch POP (6 mins.), 16s. SPECIALITY 45s. Full editing facilities, 5s. per record, pop 45s. free. Post & Package, 2s. 6d. TAPES of any size, speed, track, stereo or mono. Fully professional RECORDING STUDIO and staff; qualified musicians for sound control balance. Associate of Professional Recording Studios Ltd. 48-hour return postal service. QUALITY PRESSINGS, QUANTITY DISCOUNTS. S.A.E. for brochure: 30 BAKER STREET, LONDON, W.1. (Tel.: WELbeck 0441-2 and Southampton 75453.)

RAPID Recording Service. Records made from your own tapes (48-hour service). Master discs and pressings. Recording Studio—Demo discs. Mobile recordings, any distance. Brochure from: 21, Bishops Close, E.17.

TAPE RECORDS

Every pre-recorded tape available in Britain is listed in the complete TELETAPE catalogue at 1s. 6d. post free.

Vast selection of Mono and Stereo tapes. Send now for your copy by return to: Mail Order Dept., Teletape Ltd., 11, Redvers Road, London, N.22, or call at our Marble Arch or Shaftesbury Avenue Showrooms.

AMERICAN 4-TRACK STEREO TAPES are CHEAPER from DUBLIN. Only 2s. 6d. for Harrison catalogue listing all the American releases, prices, etc. Write for details. MUSIC U.S.A., 201, Pearse St., DUBLIN 2, Ireland.

TAPE EXCHANGES

FRIENDLY FOLK ASSOCIATION, Torquay (Est. 1943). Social introductions, Pen-friends, Book-lovers, Stamps, Photography. Tapesponding. Members 100 countries.

Join TAPEMATES INTERNATIONAL and exchange tapes with friends throughout the World. Club and recording booths 6p.m.-10.30 p.m. Tuesdays, Thursdays and Saturdays. 6, Holland Park Avenue, London, W.11.

Make interesting new friends UK and overseas, all ages. Join Victory Club, 34, Honeywell Road, London, S.W.11. Details free. Established 20 years.

CALLING our hundreds of WORLD-WIDE TAPE STATIONS. Seasonal Greetings and Happy Talking in 1967. WORLDWIDE TAPETALK, 35, The Gardens, Harrow. YOU too can open a Tape Station! Particulars free.

MISCELLANEOUS

HIGHEST CASH PRICES offered for good quality Tape Recorders and Hi-Fi. See our advert., page 471 this issue. R.E.W., 266-8, Upper Tooting Road, London, S.W.17.

JEAN'S INTERNATIONAL CORRESPONDENCE CLUB. Queen St., Exeter. All ages. Write for free brochure. (T/C).

PUBLICATIONS

A CURIOSITY? A COLLECTOR'S PIECE? Now available limited reprint edition of very first issue of TAPE Recording Magazine (Feb., 1957). 2s. 6d. (USA \$0.65) POST FREE. Cheque or postal order to TAPE, 7, Tudor St., London, E.C.4.

IF YOU WANT a sturdy BINDER for your TAPE Recording Magazine issues there's one specially made for them. Two-tone green simulated leather finish, gold-stamped title on spine. Each magazine can be inserted as received. An ideal gift. 14s. 6d. post free (16s. 3d. outside UK). Remittance with order to: Print & Press Services Ltd., 7, Tudor St., London, E.C.4.

TAPE YEARBOOK 1966 edition. Only tape recorder annual published. Lists available, tape recorders, decks, microphones, etc., and includes specifications and prices. Also lists TAPE CLUBS under area headings and much more helpful information to the Amateur and Professional Recordist. Price 7s. 6d. post free. Cheque or postal orders to TAPE, 7, Tudor St., London, E.C.4.

THE LAW and Your Tape Recorder by Andrew Phelan, Barrister-at-Law. Excellent NEW booklet which interprets many aspects of UK Law for tape recorder owners. 3s. 6d. post free. Remittance with order to: PRINT & PRESS SERVICES LTD., 7, Tudor St., London, E.C.4.

NOW IN ITS SECOND REPRINT, Alan Beeby's informative handbook SOUND EFFECTS ON TAPE. Invaluable to all dramatists and recording enthusiasts. Tells in practical terms not only what to do but also how and why. 3s. 6d. post free. Remittance with order to Print & Press Services, 7, Tudor St., E.C.4.

YOU OUGHT to send for a copy of "Psychology and Whisper Teaching" to York House, New North Road, Huddersfield (5s. 9d. post free).

TAPE EXCHANGES

Harrison, John Wilfrid (28). 48, St. Wilfrid's Road, Standish, Wigan, Lancashire. 35mm photography, hi-fi, electronic organ, camping, hiking. 7½, 3½, 1½ ips. 7-inch spool. Truvox PD104 and PD 82. Four-track stereo tapes only.

Hawke, David (23). 232, Welland Park Road, Market Harborough, Leicestershire. Scottish country dance and Irish Ceilidh music. 7½, 3½ ips. 7-inch spool. Truvox R92.

Hayward, William (32). 73, Randolph Street, Carlton Road, Nottingham. 8mm cine photography, classical and pop music. 3½ ips. 5-inch spool. Cossor, four-track. London, Overseas.

Herbert, Frank (41). 22, Aristotle Road, London, S.W.4. 8mm cine and 35mm slide photography, music. 3½ ips. 7-inch spool. Balmoral recorder. Male contacts only.

Hickin, Michael (20). 26, Gilman Street, Hanley, Staffordshire. Guitar-playing. 3½ ips. 5-inch spool. Fidelity Arystl Minor.

Hopwell, Brian (26). 59, Whitmore Drive, Moor Nook, Preston, Lancashire. Space exploration. 7½, 3½ ips. 7-inch spool. Sony TC500, stereo. USA, Europe.

Hunt, Derek L. (35). 64, Middleton Hall Road, Kings Norton, Birmingham 30, Warwickshire. 8mm. cine photography, most music. 7½, 3½, 1½ ips. 7-inch spool. Truvox, four-track. Male contacts only.

Iredale, John (38). 9, Ingfield Avenue, Dalton, Huddersfield, Yorkshire. Motoring, reading. 7½, 3½ ips. 8½-inch spool. Ferrograph Series 4, Philips battery portable. Yorkshire, Lancashire, Herfordshire, North Wales.

Jones, Roy (35). 142, Winsley Road, Bradford-on-Avon, Wiltshire. 7½, 3½ ips. 7-inch spool. Akai, four-track stereo. Male contacts only. Germany.

Johnston, George J. (38). 61, Benhill Avenue, Sutton, Surrey. Stereo recording, photography, travel, music. 3½, 1½ ips. 5½-inch spool. Ferguson 3208, four-track. Letters not required.

Jones, William Arthur (38). 21, Malton Grove, Tunstall, Stoke-on-Trent, Staffordshire. Photography, ornithology. 7½, 3½, 1½ ips. 7-inch spool. Philips and Elizabethan recorders.

Knight, Derek (40). 82, Worting Road, Basingstoke, Hampshire. Short-wave radio, travel, cricket, current affairs, jazz and classical music. 7½, 3½, 1½ ips. 7-inch spool. Robuk RKA.

Leeson, Anthony (30). 19, Beechwood Avenue, Bournemouth, Hampshire. Philosophy, psychology, organ music. 7½, 3½ ips. 7-inch spool. Philips recorder. Male contacts only.

Macpherson, C. (36). 62, Anderson Avenue, Aberdeen, Scotland. Short-wave radio. 3½ ips. 5½-inch spool. Grundig TK14. Germany, Holland.

Marshall, Bernard (37). 469, Toller Lane, Bradford 9, Yorkshire. Shooting, fishing, antiques. 7½, 3½, 1½, 15/16 ips. 7-inch spool.

INDEX TO ADVERTISERS

Advertiser	Page
Ampex (Gt. Britain) Ltd.	7
Bang & Olufsen UK Sales Division	20
B.A.S.F. United Kingdom Limited	21
Berean Forward Movement	31
C. Braddock Limited	31
Brooklyn Trading Co. Ltd.	33
A. Brown & Sons Limited	35
Bureau Britannica	31
Celestion Limited	24
Charlesworth's of Crewe Ltd.	28
Concert Recording	28
Cussins & Light Limited	28
Daystrom Limited	6
Educational Recordings Limited	33
Elstōne Elec. onics Limited	4
E.M.I. Tape Limited	19
The Ferrograph Co. Limited	17
Francis of Streatham	30
Global Products	33
Gramplan Reproducers Limited	11
Highgate Acoustics Limited	8
Hobbies Magazine	15
Institute of Sleep Learning	31
Jordan-Watts Limited	22
K.J. Enterprises	35
Kodak Limited	5
Leda Tapes	33
Lee Electronics	26
The Lowther Manufacturing Co.	22
Magnegraph	26
Massey's Centre of Sound	26
Metrosound Manufacturing Co. Limited	30
Minnesota Mining & Manufacturing Co. Ltd.	Back Cover
Tom Molland Limited	27
Morhan Exporting Corporation	35
Multicore Solders Limited	24
NuSound	3
Patrick O'Mahony & Co. Ltd.	18
Philips Electrical Limited	31
The Recorder Company	8
Recording Developments	31
Recording Machines Limited	27
R.E.W. (Earlsfield) Limited	6
The Tape Recorder Hi-Fi Centre (Sheen) Ltd.	26
Sony UK Sales Division	9
Tape Recorder Centre (Halifax)	28
Tel-Lee-Radio	27
Truvox Limited	25
Vortexion Limited	14

GLOBAL PRODUCTS

Pre-recorded **THEATRE ORGAN** Tapes
Buddy Cole, Harry J. Jenkins, Harold Hunt,
Stanley Whittington, Jack Helyer, Vic Hammett
and others. **3 3/4 ips, 2 track**



S.A.E. for the list of pre-recorded tapes and accessories

Mail Order ONLY

Trade inquiries welcomed

P.O. BOX No. 1, ROTHWELL, Kettering, NORTHANTS

INTERNATIONAL BRAND TAPE

Finest quality American made Tape—at lowest ever prices! Fully g'reed

3 in. Message tape, 150 ft.	2/6	5 1/2 in. Long play, 1,200 ft. Acetate] 12/6
3 in. Message tape, 225 ft.	3/9	7 in. Standard play, 1,200 ft. Mylar... 12/6
3 in. Message tape, 300 ft.	7/6	7 in. Long play, 1,800 ft. Mylar... 19/6
3 1/2 in. Triple play, 600 ft. Mylar... 10/-		7 in. Double play, 2,400 ft. Mylar 25/-
5 in. Double Play, 1,200 ft. Mylar... 15/-		7 in. Long play, 1,800 ft. Acetate 15/-
5 in. Long play, 900 ft. Acetate... 10/-		7 in. Triple play, 3,600 ft. Mylar... 50/-
5 in. Standard play, 600 ft. PVC... 8/6		Post 1/- per reel—4 reels & over Post Free
5 in. Triple play, 1,800 ft. Mylar... 35/-		Clear Plastic Spools (empty): 3" 1/6,
5 1/2 in. Double play, 1,800 ft. Mylar 22/6		4" 2/-, 5" 2/-, 5 1/2" 2/3, 7" 2/6, Post 6d.

BROCKLEY TRADING CO., (Dept. TM), 378 Harrow Road, Paddington, London, W.9. CUN 9530

LEDA RECORDING TAPE

THE ULTIMATE IN TAPE VALUE! British made to full specification. Leaders Trailers and Stop Foils on all types 5" and above. Strong, attractive hinge-lid boxes.

GUARANTEE. If you do not agree that the quality of this tape is as high as any you have ever bought (irrespective of price!) we will immediately refund your money and return postage costs.

Standard Play (P.V.C.)			Long Play (P.V.C.)			Double Play (Polyester)			Triple Play (Polyester)		
3"	150'	2/3	3"	225'	3/-	3"	300'	4/3	3"	600'	8/9
4"	300'	3/9	4"	450'	5/-	4"	600'	8/3	4"	900'	12/6
5"	600'	8/3	5"	900'	9/9	5"	1200'	15/3	5"	1800'	22/6
5 1/2"	900'	10/-	5 1/2"	1200'	12/3	5 1/2"	1800'	19/3	5 1/2"	2400'	28/6
7"	1200'	12/3	7"	1800'	17/3	7"	2400'	21/9	7"	3600'	38/6

P.&P. 2/- per order. We also stock a wide range of accessories, all at lowest-ever prices S.A.E. list.

LEDA TAPES (T), 30 BAKER STREET, LONDON, W.1

"PIONEERS IN SLEEP-LEARNING"

THE COMPLETE PORTABLE SLEEP-O-MATIC UNIT

Comprising two speed transistorised tape recorder, auto time switch, under pillow speaker and microphone. Price £27 10s., p. & p. 7s. 6d. Batteries 5s. extra. Mains Power Pack 50s. extra.

Specialists in Sleep-Learning and Audio Learning, tapes on Mind Management; Positive Personality; Memory Training; How to Pass Examinations, etc.

Free booklet of the above equipment, list of tapes and discs sent on receipt of postcard.

EDUCATIONAL RECORDINGS LTD.

Dept. T.R.M., 121, Bishops Close, Church Lane, London, E.17

ADVERTISEMENT INQUIRIES

SERVICE

I should like further information about
Messrs 's advertisement
on page..... of TAPE Recording Magazine
about..... (product)
NAME.....
ADDRESS.....

January 1967

This is a special service for readers of "TAPE Recording Magazine." It enables you without cost to get fuller information about those products in which you are particularly interested. Fill in one coupon below for each inquiry, with your name and address in block capitals in each case. Then cut out the whole of this section, following the dotted line, fold as indicated overleaf and post to us.

should like further information about
Messrs 's advertisement
on page..... of TAPE Recording Magazine
about..... (product)
NAME.....
ADDRESS.....

January 1967

I should like further information about
Messrs 's advertisement
on page..... of TAPE Recording Magazine
about..... (product)
NAME.....
ADDRESS.....

January 1967

I should like further information about
Messrs 's advertisement
on page..... of TAPE Recording Magazine
about..... (product)
NAME.....
ADDRESS.....

January 1967

should like further information about
Messrs 's advertisement
on page..... of TAPE Recording Magazine
about..... (product)
NAME.....
ADDRESS.....

January 1967

ONLY ENGLISH ANNUAL TO DEAL EXCLUSIVELY WITH TAPE RECORDING SEND NOW FOR USEFUL 1966 EDITION

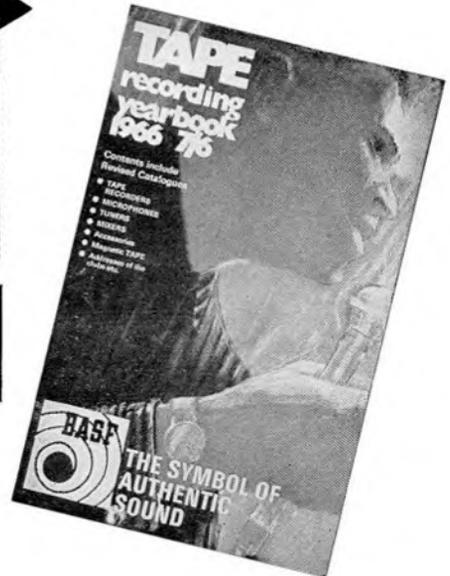
Fill-in & Post this Coupon with Remittance Today! 

To: **TAPE Recording Magazine, 7 TUDOR STREET, LONDON, E.C.4**
 Please send me.....copy(ies) of TAPE Recording YEAR BOOK 1966, at 7s. 6d.
 (U.S.A. \$1.25) per copy POST FREE. I enclose remittance.

NAME

ADDRESS.....

.....

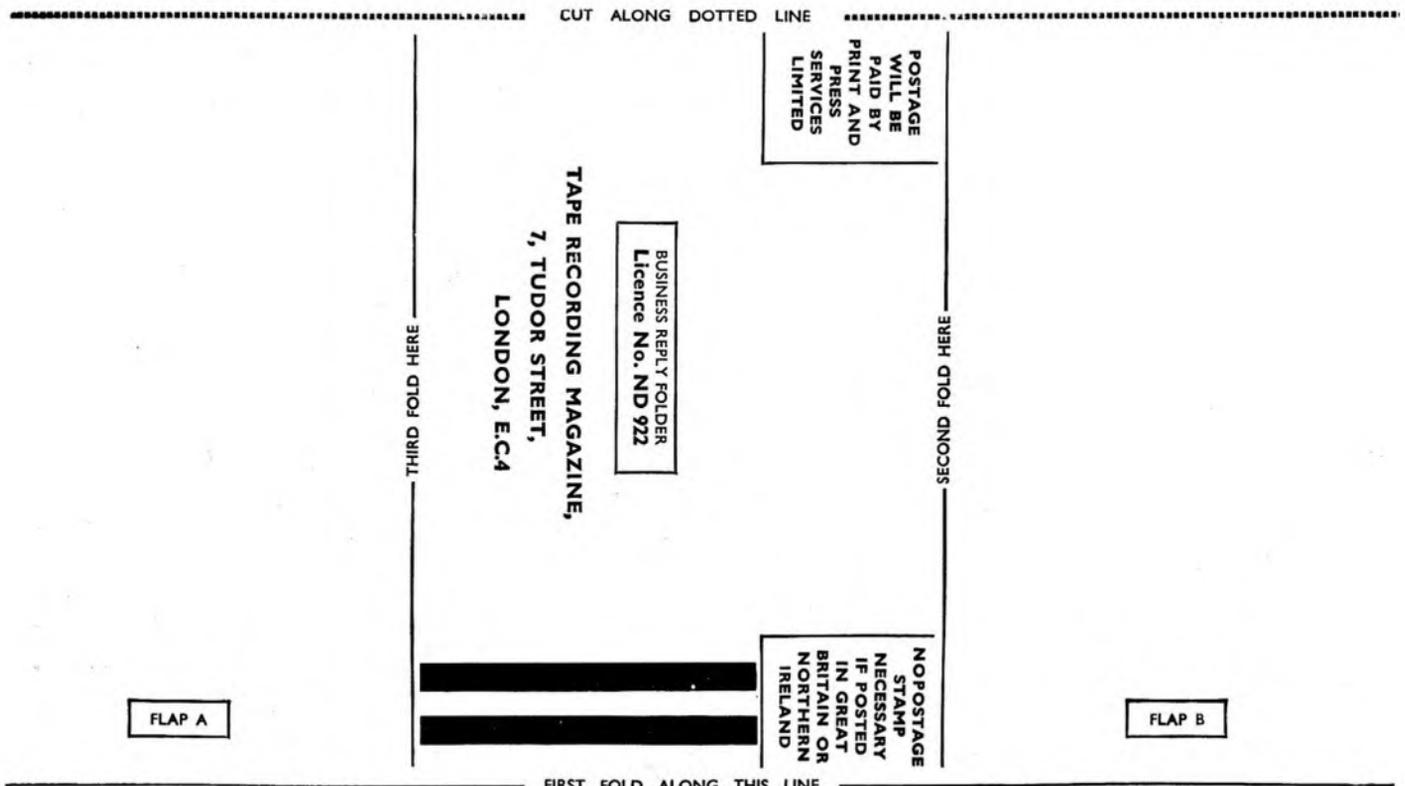


TAPE YEAR BOOK the Recordist's Reference

PRICE
7/6

- ★ The only available up-to-date comprehensive catalogue of TAPE RECORDERS on the market with full specifications, price, etc., plus photographs.
- ★ Review of tape developments during the past year.
- ★ Manufacturers, dealers and Club Secretaries' addresses.
- ★ GLOSSARY of technical terms, "at-a-glance" tabulated catalogues of microphones, tuners, mixers, and associated accessories; Magnetic Tape Charts, etc.

On sale at bookstalls or direct from publishers using coupon above



Fold along lines as indicated and then tuck Flap A into Flap B

K. J. ENTERPRISES

BRITAIN'S PREMIER MAIL-ORDER
RECORDING TAPE SPECIALISTS
IMMEDIATE 24 HOUR SERVICE ON ADVERTISED LINES

SEND TODAY AND SAVE!

● NEW AMAZING OFFER! ● AGFA TAPE—HALF PRICE!

Another bulk purchase of 5,000 reels of this world renowned Polyester Tape enables us to repeat our half price offer. Brand new, with full leader, stop oil and polythene sealed.
1200' on 7" reel. Normally 35/-. OUR PRICE 19/6. P. & P. 1/6d.
Three reels for 55/6, Six reels for 105/- post free. Boxed add 1/- per reel.

GRUNDIG TAPE 40% Off

Brand new, fully guaranteed, Premium Grade Magnetic Tape. Complete with the specially designed Grundig Plastic Tape Storage Cassette (Except 7" size which is in Manufacturers' Cardboard Boxes). Full leader and stop foil at both ends, and suitable for use with all makes of tape-recorder.

DON'T MISS THIS RARE OPPORTUNITY. SEND NOW!

TYPE	DESCRIPTION	LIST PRICE	ONE	THREE	SIX
GL18	1800' L/P 7" reel	50/-	29/6	86/-	165/-
GL15	1200' L/P 5 1/2" reel	35/-	22/6	65/-	125/-
GS15	900' S/P 5 1/2" reel	28/-	17/-	49/-	93/-

Post and Packing 1/6d. for single reels. OTHERWISE POST FREE!

ILFORD TAPE NEAR HALF PRICE

A bulk purchase of premium grade, top quality POLYESTER MAGNETIC TAPE from one of the world's foremost experts in film coating technology. With FULL LEADER stop foil, Polythene wrapping, and in original manufacturer's boxes. Available in long-play base only at these BARGAIN PRICES!

	ONE	THREE	SIX
900' on 5" reel. List price 28/-	16/6	48/-	90/-
1800' on 7" reel. List price 50/-	28/6	84/-	160/-

Please add 1/6 p. & p. for single reels. Otherwise POST FREE!

TRIPLE PLAY TAPE—HALF PRICE!

A large purchase from a famous world renowned manufacturer enables us to make this unique half-price offer. Brand new, fully guaranteed, premium grade Polyester Base Tape with FULL LEADER and stop foil. In original maker's boxes and polythene wrapped at these EXCEPTIONALLY LOW PRICES!

	LIST PRICE	ONE	THREE	SIX
450' on 3" reel	22/-	12/-	35/-	66/-
600' on 3 1/2" reel	27/6	14/6	42/6	82/6
900' on 4" reel	39/-	20/6	60/-	117/-
1800' on 5" reel	66/-	34/-	101/-	198/-
2400' on 5 1/2" reel	90/-	46/-	137/-	270/-

Post and Packing 1/6. ORDERS OVER £3 POST FREE

SCOTCH MAGNETIC TAPE AT NEARLY HALF-PRICE!

Over 3,000 REELS of top quality MAGNETIC TAPE, double coated, SCOTCH made to the best possible specification and intended for the electronic industry. This type of tape is rarely, if ever, offered for domestic consumption and is unobtainable elsewhere.

THIS UNREPEATABLE OFFER REMAINS OPEN ONLY WHILE STOCKS LAST! DON'T DELAY—SEND NOW!

SCOTCH (150 D/C) Polyester L/P, 900' on 7" reel. ONLY 15/6, p. & p. 1/6. Three reels for 45/-, post free; six reels for 84/-, post free. Boxed, add 1/- per reel. Can be supplied on 5 1/2" reels at special request.

Don't forget our other ACCESSORY BARGAINS!

Tape Head Demagnetiser, essential for any enthusiast! Ready for immediate use. Fully guaranteed. Worth 50/-.....Only 27/6 P. & P. 1/6
Tape Splicer, fully auto., no razor blades. Worth 32/6.....Only 16/6 P. & P. 1/6
Deram Stereo Transcription CartridgeOnly 75/- Post free
Gevaert Tape 600' 5 1/2" reel (boxed)10/6 (p.p. 1/6)
or 3 for 30/- post free

International Polyester Tape 2,400' 7" reel (boxed)Only 25/- P. & P. 1/6
Boxed 8 1/2" Zonal Reels3 for 15/- post free

SEND FOR LISTS OF OTHER TAPE AND HI-FI BARGAINS

K. J. ENTERPRISES. (Dept. T), 7 MASONS AVENUE, WEALDSTONE,
MIDDLESEX (OPPOSITE HAPROW & WEALDSTONE STATION)
HARROW G395 (CLOSED P.M. WED. & SAT.) REFUND GUARANTEE

NOW Only from IRISH!



FREE 30" color coded leader and 30" trailer plus metal reversing strip with every 3, 5, 5 3/4 and 7" reel. Identify tapes easily. Saves wear and tear. Gives you extra usable tape footage. Automatically reverses tape on equipped machines.

plus these additional benefits

- Signature Binding — handsome simulated leather with gold writing foil to index contents.
- Every reel of Irish tape is unconditionally guaranteed.
- Irish — pioneers and still a leader in magnetic tape design and manufacture. You can't buy a better quality tape.
- Every reel of Irish tape specially treated with Ferro Sheen® process for an extremely smooth surface. Minimizes tape head wear.

AND NOW AVAILABLE

Irish Video Tape for home, industry and educational use.

Irish lubricated tape for CARtridges and endless loop applications.

MORHAN EXPORTING CORP.

458 Broadway, New York, N.Y. 10013 • Cable Address: Morhanex

TAPE RECORDER COVERS



Smart, waterproof cover to give complete protection to your tape recorder. Made from rubberised canvas in navy, wine, tan, grey and bottle green with white contrasting pipings, reinforced base, handy zip microphone pocket and name panel.

Philips 3534	...	...	87/-
.. 3548	...	...	79/6
.. 3549	...	...	79/6
.. 3585	...	...	57/-
.. 3514	...	...	66/-
.. EL3515	...	...	57/6
.. EL3541/15	...	...	57/6
.. 3541H	...	...	72/-
Cossor 1602	...	...	57/6
.. 1601	...	...	63/-
.. 1604	...	...	79/-
.. 1605	...	...	84/-
Stella ST455	...	...	63/-
.. ST454	...	...	57/6
.. ST458	...	...	79/-
.. ST459	...	...	84/-
Saba 2305	...	...	79/6
Elizabethan LZ29	...	...	66/-
.. FT.1	...	...	75/-
Brenell Mk. 5	...	...	77/-
.. 3 star	...	...	69/-
Robuk RK.3 & RK.4	...	...	67/6
Sony 521	...	...	90/-
Ferrograph	...	...	80/-
Revox F model	...	...	84/-
Optacord 412, 414 & 416	...	...	63/-
Truvox 92 & 94	...	...	99/-
Tandberg 72, 72b, 74, 74b,	...	...	62, 62b, 64, 64b
.. (hard case)	...	...	£7/1/8
.. Soft case	...	...	£5/12/6
.. 92 (hard case)	...	...	£7/1/8
Grundig TK.1	...	...	49/6
.. TK.5	...	...	55/-
.. TK.6	...	...	67/6
.. TK.8	...	...	63/-
.. TK.14, 18 & 23	...	...	59/6
.. TK.14L, 17L, 18L,	...	...	67/6
.. TK.400 & 23L	...	...	52/6
.. TK.20	...	...	55/-
.. TK.24	...	...	55/-
.. TK.25	...	...	60/-
.. TK.30	...	...	63/-
.. TK.35	...	...	66/-
.. TK.40 & 41	...	...	82/-
.. TK.46	...	...	63/-
.. TK.55	...	...	75/-*
.. TK.60	...	...	63/-*
.. TK.830/3D	...	...	35/-
.. Cub	...	...	65/-
Telefunken 85	...	...	55/-
.. 75/15 & 76K	...	...	69/6
.. 95 & 96	...	...	63/-
Philips EL3538	...	...	63/-
.. EL3542	...	...	70/-
.. EL3536	...	...	70/-
*Without pocket.	...	...

A. BROWN & SONS LTD.

24-28, GEORGE STREET, HULL

Tel.: 25413, 25412

Test it yourself:
**Keep the quality
at half the speed!**

NEW
LOW NOISE
Dynarange
Scotch Magnetic Tape

CHECK THESE ADVANTAGES OVER CONVENTIONAL TAPES :

- remarkable new magnetic oxide coating greatly reduces background noise
- signal-to-noise ratio improved by 3 to 5 db
- increased dynamic range
- improved frequency response, particularly in the higher frequency range
- magnetic oxide 'rub-off' reduced to a minimum.
Your tapes last longer and so does your recording head.
- embodies all the advantages of Superlife

AVAILABLE IN STANDARD PLAY (TYPE 202): 5"; 5½"; 7".
LONG PLAY (TYPE 203): 5"; 5½"; 7"; 8½".

Write for price list and full technical information to: Minnesota Mining & Manufacturing Co. Ltd, 3M House, Wigmore Street, London, W1. Telephone HUNter 5522.

3M and SCOTCH are trademarks of Minnesota Mining and Manufacturing Company.



Recommended by

3M
COMPANY

AKAI • Ferrograph • REVOX

- once you've tried it, you'll recommend it too.