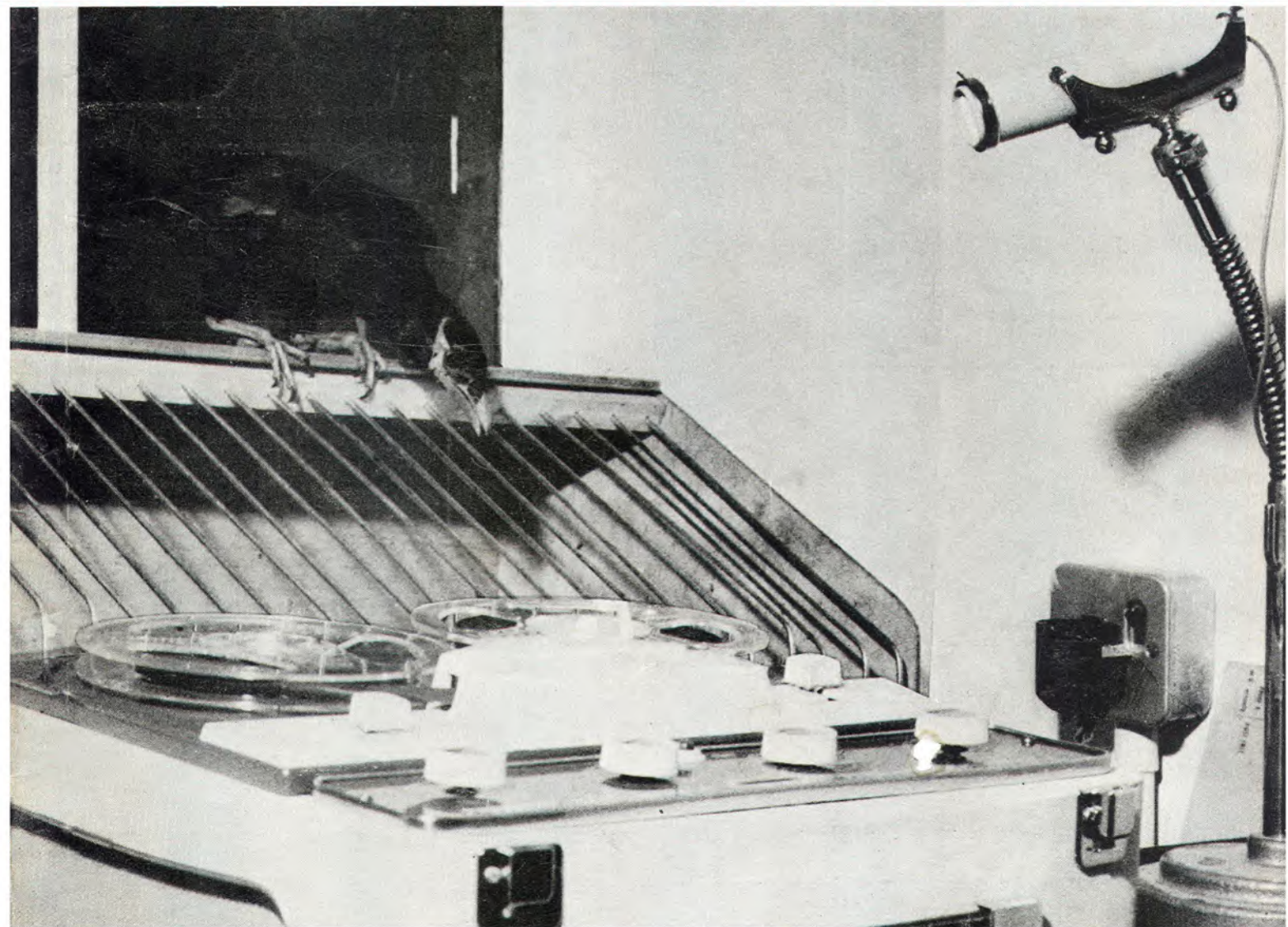


NOVEMBER 1963

TAPE

RECORDING MAGAZINE

1/6



IN THIS ISSUE

- British Amateur Tape Recording Contest 1963 presentation party
- Tape in education
- Microphones: their types and uses
- Drama productions on tape
- Reviews of tape records
- Test Bench report on equipment
- Club news
- News of new products.

*600 feet of Standard **ORIGINALLY 20/-** **NOW 15/-**

*1200 feet of Long Play **ORIGINALLY 35/-** **NOW 25/-**

*2400 feet of Double Play **ORIGINALLY 80/-** **NOW 55/-**

You've never heard it so good!

**These are just three examples of the Mastertape range now available at greatly reduced prices*

M.S.S. RECORDING CO. LTD. ARE PLEASED TO ANNOUNCE THAT THE FULL RANGE OF MASTERTAPE HAS BEEN REDUCED WITH EFFECT FROM THE 1ST OCTOBER, 1963

STANDARD			LONG PLAY			DOUBLE PLAY		
Spool	Length	New Price	Spool	Length	New Price	Spool	Length	New Price
3"	150'	4/6	3"	225'	6/-	3"	300'	9/-
4"	300'	8/-	4"	450'	11/-	4"	600'	17/-
5"	600'	15/-	5"	900'	20/-	5"	1200'	33/-
5 $\frac{3}{4}$ "	900'	20/-	5 $\frac{3}{4}$ "	1200'	25/-	5 $\frac{3}{4}$ "	1800'	44/-
7"	1200'	25/-	7"	1800'	35/-	7"	2400'	55/-
			8 $\frac{1}{4}$ "	2400'	48/-			

EMPTY SPOOLS IN BOXES

3" 4" 5" 5 $\frac{3}{4}$ " 7" 8 $\frac{1}{4}$ "
2/3d 3/-d 3/6d 3/9d 4/4d 5/6d

SPLICING KIT

25/-

Send for free full colour brochure of tape prices and tape recording accessories.

Mastertape

M.S.S. RECORDING CO. LIMITED

COLNBROOK, BUCKS. Tel. Colnbrook 2431



R.82 2-track recorder
R.94 4-track recorder
Each 69 gns. (U.K. only)
Complete with moving coil
microphone and first-class
reel of tape.

introducing the TRUVOX 90

A NEW THOROUGHbred SERIES FROM A FAMOUS BRITISH MARQUE

Clinically professional in every line. Crisply precise in operation. Full and faithful in reproducing sound . . . this sums up the new Series 90—the finest yet from Truvox.

No concessions here to mass-market "styling". No fancy plastic moulding; no pretty-pretty cover fabrics. No "cosmetics" at all. Instead—clean, rugged and functionally austere, the new Truvox looks every inch what it is . . . a thoroughbred instrument for the enthusiast.

For the man who wants a *real* tape recorder; not a gilded toy on the one hand, nor a status symbol on the other.

Among the outstanding features of the Series 90 are:

- * "Piano Key" operation.
- * A cathode follower output.
- * Recording level meter.
- * Positive lock reel carriers.
- * 4 digit counter—instant reset button.
- * Hinged editing panel.
- * 'No-tape' autostop.
- * Mixing facilities.
- * Superimposition.
- * Forward facing Rola-Celestion loudspeaker.
- * 3 tape speeds— $7\frac{1}{2}$ $3\frac{3}{4}$ $1\frac{7}{8}$ ips.
- * 3 motor drive—Papst capstan motor.



PD.93 2-track mono tape unit. PD.97 2-track stereo tape unit.
PD.95 4-track mono tape unit. PD.99 4-track stereo tape unit.
Each 59 gns. (U.K. only) Each 79 gns. (U.K. only).

These handsome self powered tape units, in superb Afrormosia plinths, polyester finished, provide an ideal means of adding tape to the existing Hi-Fidelity system at a very economical price. They can be used with any amplifier at present available and be operated horizontally, vertically or any angle between.

To enable purchasers to make their own personal choice of microphone and tape, we do not supply these items with any tape unit.

THE RECORDER CO.

for best machines on advantageous terms

	Deposit	12 Monthly Payments	Cash Price
	£ s. d.	£ s. d.	Gns.
4-TRACK STEREO/MONAUERAL			
Sony TC 500 ...	11 6 0	8 6 8	106
Ferrograph 424 ...	11 12 0	8 13 2	110
Grundig TK46 ...	10 12 0	7 15 7	99
Telefunken 97 ...	10 0 0	7 9 7	95
Sony 464 CS ...	10 0 0	7 7 10	94
Siemens Mod. 12 ...	9 16 0	7 9 5	93
Philips EL3534 ...	9 16 0	7 4 8	92
2-TRACK STEREO/MONAUERAL			
Brenell STB 1 ...	12 0 0	9 0 0	£120
Ferrograph 422 ...	11 12 0	8 13 2	110
Telefunken 98 ...	10 0 0	7 9 7	95
MAINS TWIN-TRACK			
Brenell 5 Type "M" ...	9 5 0	6 18 7	88
Ferrograph 5A/N ...	8 19 0	6 13 10	85
Telefunken 85 ...	8 15 0	6 10 8	83
Grundig TK41 ...	8 0 0	5 17 11	75
Brenell 5/2 (Meter) ...	7 15 6	5 16 7	74
Brenell 5/2 ...	7 5 0	5 8 8	69
Reps R10 ...	6 4 0	4 12 11	59
Telefunken 95 ...	6 4 0	4 12 11	59
Truvox R82 ...	5 15 6	4 6 8	55
Grundig TK18 ...	4 2 0	3 1 5	39
Truvox 92 ...	7 5 0	5 8 8	69
Grundig TK14 ...	3 13 6	2 15 2	35
Wyndor Trident ...	3 10 0	2 11 11	33
Elizabethan LZ30 ...	3 7 3	2 10 5	32
Ferguson 3200 ...	2 16 6	2 0 10	26

	Deposit	12 Monthly Payments	Cash Price
	£ s. d.	£ s. d.	Gns.
4-TRACK MONAURAL			
Grundig TK40 ...	8 0 0	5 17 11	75
Reps R10 ...	7 5 0	5 8 8	69
Fidelity Major de Luxe ...	3 13 6	2 15 2	35
Philips EL3549 ...	6 12 0	4 17 6	62
Truvox R84 ...	6 4 0	4 12 11	59
Grundig TK23 ...	4 15 0	3 10 10	45
Philips EL3541/H ...	4 12 0	3 5 10	42
Truvox R64 ...	4 2 0	3 1 5	39
Elizabethan LZ29 ...	4 0 0	2 19 10	38
Philips EL3541 ...	3 15 8	2 16 9	36
Ferguson 3202 ...	3 10 0	2 11 11	33
Philips "Star Maker" ...	2 16 9	2 2 7	27
BATTERY			
Uher 4000S ...	9 16 0	7 6 5	93
Ficord 202 ...	7 0 0	5 3 10	66
Butoba MT5 ...	7 0 0	5 3 10	66
Stuzzi Magnette ...	6 4 0	4 12 11	59
Optacord 414/Bat./Mains ...	4 19 0	3 14 0	47
Grundig TK6 ...	6 17 0	5 2 4	65
Philips EL3586 ...	2 12 6	1 19 5	25
TRUVOX HI-FI TAPE UNITS			
TWIN-TRACK			
PD.82 Standard ...	4 4 0	3 3 0	42
PD.87 Stereo ...	6 6 0	4 14 6	63
FOUR-TRACK			
PD.84 Standard ...	4 12 0	3 9 0	46
PD.86 Stereo ...	6 6 0	4 14 6	63

Whatever the time—
Wherever you are—
you're completely independent with the NEW—

The Month's Bright Spot



UHER 4000 S
Price 93 gns.

Ever-ready leather carrying Case—9 gns. extra

4 speeds, 7½, 3½, 1½ and 15 16 i.p.s. Reels size up to 5ins. Push button controls. Remote Control. Combined Record level/Battery Meter Indicator. Operated from rechargeable "Dryfit" storage Battery, or 5U2 batteries, or Mains operated Power Unit. Complete with Dynamic Remote Control Microphone and Sin. Tape.

We will be pleased to demonstrate this fine model or send full details.

Tape Recorders available for hire including Leavers Rich Synchropulse.

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

H.P. also over 18 and 24 months

Open Saturday 6 p.m.—Friday 6:30 p.m.

If unable to call, write for free brochure, or send deposit now for quick delivery

INTEREST FREE TERMS

FREE DELIVERY
PART EXCHANGE

THE RECORDER CO.

FOR ALL MUSIC LOVERS AND HI-FI ENTHUSIASTS

We offer a wide range of different models including Radios, Speakers, Amplifiers and Test Instruments



Hear our Hi-Fi demonstrations at the D.I.Y. EXHIBITION, OLYMPIA, Aug. 30-Sept. 14

Save Money Building Your own Equipment!



TA-IS

TAPE AMPLIFIER UNITS: Models TA-IM and TA-IS. The mono version, TA-IM, can be modified to the stereo version, TA-IS, by the modification kit TA-IC. Special features include bias level control, recording level indicators, printed circuit boards.

TA-IC £6.15.0. TA-IM £19.2.6. TA-IS £24.10.0.



S-33

HI-FI STEREO 6 W AMPLIFIER Model S-33
Only 0.3% distortion at 2½ w/chl. £13.7.6.

DE-LUXE STEREO AMPLIFIER Model S-33H
De-luxe version of the S-33 with two tone grey perspex panel. With higher sensitivity necessary to accept the Decca Deram pick up. £15.17.6.

HI-FI FM TUNER Model FM-4U
Available in two units. Tuning unit (FMT-4U) £12.15.0 incl. P.T.). I.F.-amplifier (FMA-4U) £12.6.0.

Printed circuit for I.F. Amplifier and Ratio detector own built-in power supply, 7 valves. Tuning range, 88-108 Mc/s. Total price £15.1.0.

HI-FI AM/FM TUNER. Model AFM-1.
Also available in two units as above: Tuning heart (AFM-T) £4.13.6 incl. P.T.) and I.F. amplifier (AFM-A) £20.13.0.). Total £25.6.6.

HI-FI STEREO 18W AMPLIFIER Model S-99
Within its power rating, this handsome looking amplifier is the finest available. U/L push-pull output. Printed circuit board construction. £27.19.6.



AM/FM TUNER



S-99

We guarantee that without any previous experience—you can build any of our models.

All orders delivered free U.K. ● ALL MODELS AVAILABLE ASSEMBLED—PRICES ON REQUEST ● Deferred terms available U.K. over £10

EQUIPMENT CABINETS

A range of equipment cabinets is available including kits, ready assembled cabinets or assembled and fully finished cabinets. Why not send for full details free of any obligation?

Prices from £6.19.6. to £29.8.0.

TRUVOX TAPE DECKS.

Models D83-2 D83-4
High quality stereo Tape Decks.
D83-2 2 track for higher fidelity £31.10.0.
D83-4 (identical presentation) 4 track. £29.8.0.



TRUVOX D83



MALVERN



COTSWOLD

COTSWOLD & MFS SPEAKER SYSTEMS
The "Cotswold" is an acoustically designed enclosure 26" x 23" x 14½" with 3 speakers covering the full frequency range 30-20,000 c/s. The "Cotswold" MFS. A minimum floor space model size 36" high x 16½" x 14" deep. Price either model £23.4.0.



STUDIO

COLLARO "STUDIO" TAPE DECK

This stylish tape transcriber is by far the best "buy" in its price range, with 3 speeds 1½, 3½, 7½ i.p.s. £17.10.0.

Without obligation please send me
FREE BRITISH HEATHKIT CATALOGUE
Full details of Model(s)
Name
Address
(Block capitals please)

AMERICAN HEATHKIT CATALOGUE SHOWING RANGE of over 250 models and full details of direct mail order scheme for only 1/- post paid, write to:
DAYSTROM LTD. Dept. T9
Gloucester, England.

SPECIAL STEREO OFFER!



Never before have we or any other Company been able to make such an outstanding offer!!! Due to our ability to purchase large quantities of recorders direct, we are able to pass on to you the tremendous reduction in prices thus achieved. Here are just two of our fabulous offers!!! The world-acclaimed AKAI-M6 rated as being the finest professional type stereo/mono recorder available, coupled with the equally world famous SONY make this an offer that we or anyone else will never be able to repeat. Every recorder is absolutely BRAND NEW in sealed manufacturer's carton complete with full maker's Guarantee. PART EXCHANGES welcomed. Very limited number only available. Write to our MAIL ORDER DEPT. at Stratford, enclosing S.A.E. for illustrated literature and information on this and other wonderful offers. We are also stockists of every leading make of tape recorder and have on display at our showrooms over 250 new and secondhand models. HIRE PURCHASE TERMS available to suit every pocket.

AKAI-M6

89

GNS.

Offered at the unbelievable price of 89 gns. (less microphones) they show a tremendous saving on the official LIST PRICE of £136, making these recorders an unrepeatable bargain!!! There is little need for us to detail this amazing recorder's performance, it is universally accepted as being the finest recorder in its class bar none. Look at the fabulous specification and judge for yourselves. Used by many leading recording studios throughout the world and accepted as a standard by which to judge others. The superb Freq. response ensures that every recording is a masterpiece and the 12 watts undistorted output enables you to enjoy to the full this recorder's amazing capabilities.

TECHNICAL SPECIFICATION

Freq. Response at 7½ in. p.s. 30-20,000 c.p.s. Freq. Response at 3½ in. p.s. 40-14,000 c.p.s. 3 Speeds 3½ in. 7½ in and 15 in. p.s. Wow and Flutter under .07 R.M.S. 7 in. Tapes, Automatic tape stop. Operates vertically or horizontally, Hysteresis Synchronous Motor. Two in line 100% accurate V.U. meters. Precision position indicator. Direct from Head and pre-amp outlets. 4 or 2-track stereo/mono record or playback at turn of tape selector control. Completely independent record/replay amplifier on each channel. Output 6 watts per channel, 12 watts total. Will fully drive two 12 in. speakers. Signal to noise ratio better than 45 db. Cross channel separation better than 80 db. Dimensions 14 in. x 20½ in. x 8½ in.

★★★ **SPECIAL OFFER** AKAI DYNAMIC MICROPHONES OF SUPERLATIVE PERFORMANCE 7 GNS. EACH, 10 GNS. PAIR
HIGH-WIDE RANGE STEREO SPEAKERS

Another wonderful offer is the two perfectly matched speaker enclosures containing in each one 8 in. super high fidelity wide range speaker together with 3 in. co-axial tweeter. Overall Freq. response 40-16,000 c.p.s. Handling capacity 16 Watts. Perfect for either the AKAI or SONY. Speakers in one divisible cabinet matching style and size of AKAI. LIST PRICE £31.10.0 our SPECIAL OFFER PRICE 23 gns. or individually £12.10.0.

23

GNS.
OUR PRICE

SONY 464-CS

This fabulous 4-track Stereo recorder recently introduced by SONY incorporates every latest development. Listed at £99 we are able to offer a limited number at the amazingly low price of 69 gns. (Less Microphones). Look at the impressive Technical Specification. One of the few recorders offering special inbuilt facilities for Sound on Sound. There is no other comparable recorder available today at under £100 and once our existing stocks are exhausted we shall be unable to repeat this offer.



~~£100~~

★★★ **SPECIAL OFFER:** SUPERB SONY DYNAMIC MICROPHONES 4 GNS. EACH, 6 GNS. PAIR.

TECHNICAL SPECIFICATION

Four-track stereo/mono record/replay. Sound on sound, enabling new recording to be made whilst listening to other through either internal speakers or headphones. Ideal for cine use. Two high fidelity speakers. Frequency response, 40-15,000 c.p.s. Two magic eyes. Independent volume controls for record/replay. Tone control. Two speeds 7½ ips. and 3½ ips. Signal to noise ratio 45 db. Weight 37½ lbs. Superb mono/stereo reproduction.

69

GNS.

CITY & ESSEX

T A P E

NOTE.—Our City shop open Monday-Friday, 9-6.
 Closed all day Saturday. Open Sunday, 9.30-2.

RECORDER CENTRES

228 BISHOPSGATE, LONDON, E.C.2 (Opp. Liverpool St. Stn.) BIS 2609
 2 MARYLAND STATION, STRATFORD, E.15 (Adj. Stn.) MAR 5879
 205 HIGH STREET NORTH, E.6 (Opp. East Ham Stn.) GRA 6543

Magnificent 6!

Philips offer you
today's top range
of tape recorders



EL 3586
PHILIPS
NEW
BATTERY
TAPE RECORDER

Records and plays back anywhere, any time—even while being carried. All transistor for economical running and lightweight portability.

25 gns. Carrying case and mains unit available as optional extras

EL 3514
PHILIPS
STARMAKER
MAINS TAP
RECORDER



The first mains tape recorder ever to feature the new, space-saving upright styling. Four track recording and playback.

27 gns.

EL 3541



PHILIPS
FAMILY TAPE RECORDER

This truly remarkable four-track tape recorder incorporates many advanced features. An ideal machine for the family man.

36 gns.

PHILIPS
EL 3541/H
FAMILY DE-LUXE TAPE RECORDER

All the features of the EL3541 plus the added advantage of a leathercloth-covered wooden cabinet.



42 gns.

PHILIPS
EL 3549
4-SPEED HI-FI TAPE RECORDER

This all-transistor, 4-track, 4-speed tape recorder has no equal in the medium price class. Many professional features.



62 gns.

PHILIPS
EL 3534
4-SPEED HI-FI STEREO TAPE RECORDER
—WITH MULTIPLAY

Impeccable stereo and mono sound plus *multiplay*—the feature that permits the combination of many monitored recordings on one track.



92 gns.

See the complete range at your Philips dealer's

ALL BEAUTIFULLY
MADE BY

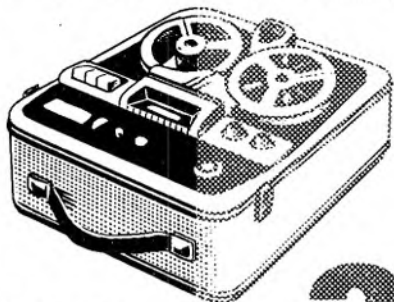


PHILIPS

—THE FRIEND OF
THE FAMILY

PHILIPS ELECTRICAL LIMITED, CENTURY HOUSE, SHAFTESBURY AVENUE, LONDON, W.C.2
(PTR 4327)

IS HALF YOUR TAPE RECORDER



WASTED?

The performance of a portable tape recorder is severely limited by the space available for its internal loudspeaker.

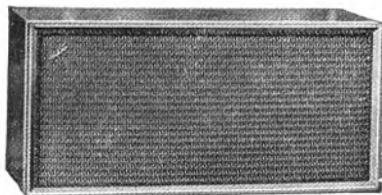
The connection of a high quality external speaker will reveal hidden detail in your recordings, and the Wharfedale PST/8 is an ideal choice.

This unique, patented enclosure design gives optimum results with Wharfedale 8" unit. Impedances are easily matched by fitting the WMT.1 transformer, costing only 13s. 6d.

Descriptive literature sent FREE on request including Cabinet Construction Sheet

WHARFEDALE PST/8

PRICES — CABINET ONLY
£10 10s. 0d., finished in
walnut, oak or mahogany
veneers.
£7 10s. 0d. in whitewood



Recommended
units
8" Bronze/FS/AL
75s. 10d. inc.
10s. 10d. P.T.
Super 8/RS/DD
134s. 2d. inc.
19s. 2d. P.T.

Tel: Idle 1235/6

Grams:
'Wharfedel' Idle
Bradford



**WHARFEDALE WIRELESS WORKS
IDLE, BRADFORD, YORKS**



for the connoisseur

IRISH

You prefer Brittany to Brighton. Hock to highball. Van Gogh to Velasquez. You're choosy as well as selective. Irish is your tape. Irish professional tape has connoisseur advantages precision-engineered into its mirror-smooth surface. The unique Ferrosheen process, by which this microscopically fine surface is obtained, provides exceptional high frequency response due to intimacy of contact between tape and heads . . . head wear is at minimum . . . makes for freedom from head contamination by oxide build-up, considerable reduction in background noise, minimum drop-out. Only Irish tapes have free 'signature binding' kit for authentic library-style filing—simulated Moroccan leather with 23-carat gold foil for simple 'tooling' of title. People like Tandberg recommend Irish. And every Irish tape carries a 100% unconditional guarantee. Your Irish Tape stockist, and other details including technical data, from: A. C. Farnell Ltd., Hereford House, Vicar Lane, Leeds 2. Tel: Leeds 35111.

'IRISH', 'FERROSHEEN' and 'Signature Binding' are registered trade marks of Orradio Industries Inc., Opelika, Alabama.

GREAT NEW SONY SOUND!



SONY TC. 500

TO THE SERIOUS AMATEUR COME THE LATEST, THE FINEST TECHNICAL ADVANCEMENTS IN STEREOHONIC TAPE RECORDING AND PLAYBACK. THE SOUND IS SONY, THE VERSATILITY IS SONY, THE QUALITY IS SONY. THIS IS FOR THE CONNOISSEUR — THE **SONY TC. 500**

106 GNS with 2 Sony F87 Cardoid Dynamic microphones and all accessories.

SONY
RESEARCH MAKES THE DIFFERENCE

Detailed specification of this tremendous Sony tape recorder freely available from the Sole U.K. distributors:

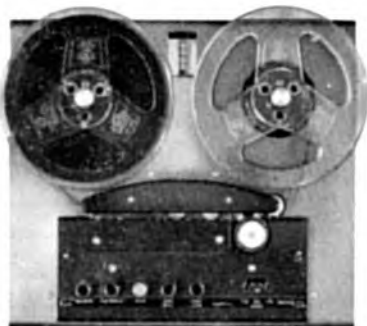


EXTRACTS FROM SPECIFICATION:

Full stereo facilities with independent recording and playback amplifiers, providing professional mixing facilities. Manual cueing, digital tape counter, instant stop, automatic tape lifter. Instantaneous selection of $7\frac{1}{2}/3\frac{3}{4}$ ips. Response — 30-18000 cps at $7\frac{1}{2}$ ips. Harmonic distortion — less than 2% at 3 db below rated output. Detachable speakers for stereo separation.

TELLUX LIMITED
High Fidelity Division
GALLOWS CORNER, ROMFORD, ESSEX

**BRITAIN'S
FINEST
TAPE
DECK**



This is not merely our claim—it is the considered judgment of many leading experts. And now, under our 1963 production programme, there will be more PLANET tape decks available. Prices range from £39 10s. 0d.

- ★ The U1 deck has been designed to give a long trouble-free life and exceptional performance. That is why it is used by many professional studios and why it is the ideal deck for the serious amateur.
- ★ Now we introduce the U1/15, which is identical to the U1 except that it operates at 3½, 7½ and 15 ips. Improved production facilities at our new factory enable us now to accept orders for early delivery.

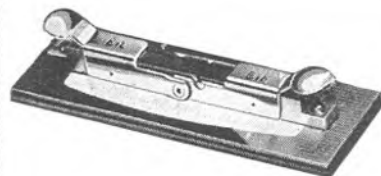
Write for illustrated brochure and independent test reports to:

PLANET PROJECTS LTD.

Goodman Works, Belvue Road, Northolt, Mdd

**BUY A
Bib**

**THE PROFESSIONAL
TAPE SPLICER**



Complete with
razor cutter
only 18/6

—The most reliable and easy to use.

All metal—beautifully plated—compact in size—mounted on flock covered base. Easily and permanently attached to your tape recorder, Ferrograph, Vortexion, Reflectograph and Wearite decks already have fixing holes for the Bib splicer.

Clamps hold the magnetic or leader tapes in the precision cut channel—no danger of damaging the edges—most important with 4 track recordings. Right angle and oblique cutting slots are provided to facilitate editing to a syllable.

The Bib tape splicer saves tape and makes editing a fascinating hobby.

More Bib splicers have been sold in recent years than any other make. It is incorporated in the "Scotch" Tape Accessory Kit and is used by recording studios and broadcasting organisations.

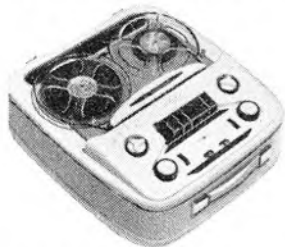
MULTICORE SOLDERS LTD.

MULTICORE WORKS, HEMEL HEMPSTEAD, HERTFORDSHIRE

**Always in stock—
an unrivalled selection of**

- Tape Recorders
- Hi-Fi Equipment
- Tapes
- Microphones

Free demonstrations : Honest advice



**COMPLETE STEREO
TAPE RECORDERS (4 TRACK)**

Sony 521—7½ and 3½ ips	£130.4.0
Akai M6—7½ and 3½ ips	£136.10.0
Pair extension speakers for above	£31.10.0
*Telefunken M97—7½, 3½ and 1½ ips	£99.15.0
*Tandberg Series 7—7½, 3½ and 1½ ips	£97.13.0
Sony 464 CS—7½ and 3½ ips	£98.14.0
Philips EL.3534—7½, 3½, 1½ and 15/16 ips	£96.12.0
OUTSTANDING TWO TRACK STEREO RECORDER M98—SEPARATE RECORD/REPLAY HEADS—ALL FACILITIES... ..	£99.15.0

STEREO TAPE UNITS

*Ferrograph 422 U, 2 track 7½ and 3½ ips	£115.10.0
*Ferrograph 424 U, ¼T playback 7½ and 3½ ips... ..	£115.10.0
*Tandberg Series 6, 2 or 4 track 7½, 3½ and 1½ ips	£115.10.0
Sony 464 (one replay amplifier) 7½ and 3½ ips	£75.12.0

**FOUR TRACK MONO
TAPE RECORDERS**

*Telefunken M.96—7½, 3½ and 1½ ips	£72.9.0
Philips EL.3549—7½, 3½, 1½ and 15/16 ips	£65.2.0
Philips EL.3541—3½ ips only	£37.16.0
Philips EL.3541/H—3½ ips only	£44.2.0
Elizabethan LZ.29 (illustrated)—7½, 3½ and 1½ ips	£37.16.0
Elizabethan Popular 400—3½ ips only	£26.5.0

**TWO TRACK MONO
TAPE RECORDERS**

*Reflectograph Model A (3 head system)—7½ and 3½ ips	£110.5.0
*Vortexion WVVB (3 head system)—7½ and 3½ ips	£110.3.0
*Vortexion WVA standard system—7½ and 3½ ips	£93.13.0
*Ferrograph SA/N (modernised)—7½ and 3½ ips	£89.5.0
*Telefunken 85 "The Classic"—7½ and 3½ ips... ..	£87.3.0
*Telefunken 95—7½, 3½ and 1½ ips	£61.19.0
Elizabethan LZ.30—7½, 3½ and 1½ ips	£33.12.0
Optacord 403 (with monitoring)—3½ and 1½ ips	£47.5.0
Elizabethan Popular 200—3½ ips only	£23.2.0
Sony TC.103—7½ and 3½ ips with built-in medium wave radio	£66.3.0
*Telefunken "Automatic" with automatic modulation control	£52.10.0

**ALSO AVAILABLE—
BATTERY RECORDERS**

*Butoba MT.5—3½ and 1½ ips	£69.6.0
Optacord 414 (inc. Mains)—3½ ips only	£49.7.0
Philips EL.3585—1½ ips only	£25.4.0
Stella ST.470—1½ ips only	£26.5.0

* Microphones EXTRA

HI-FI IN STOCK	TAPES
● Quad	● BASF
● Leak	● Telefunken
● SME	● Philips
● Garrard	● Scotch
● Rogers, etc.	● EMI, etc.

All types of Microphones

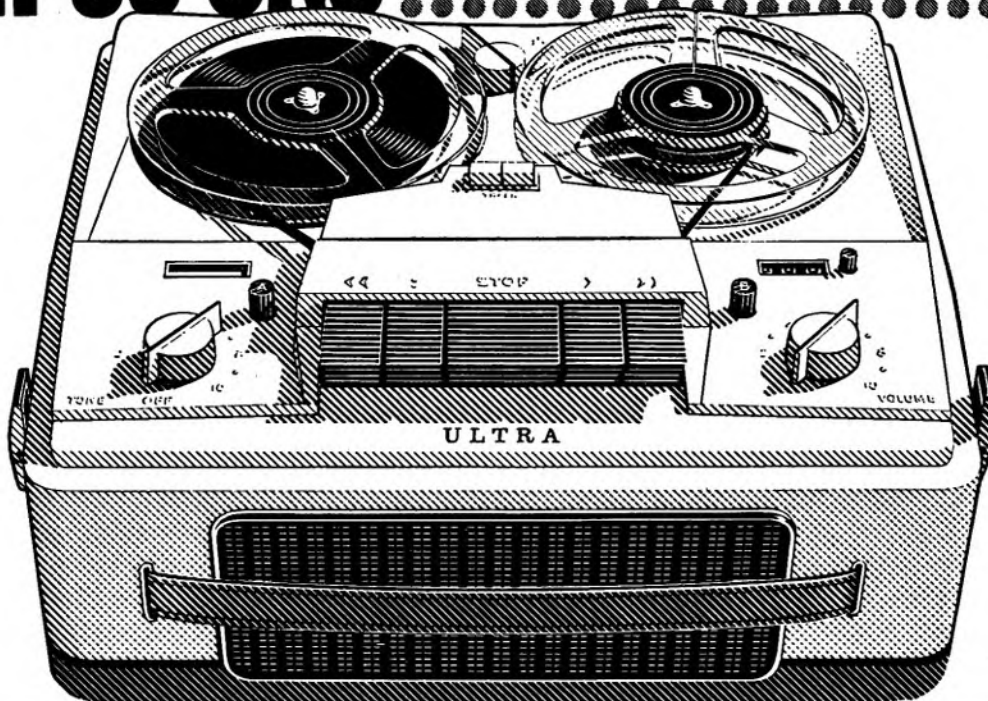
For free delivery—competent demonstrations, good after sales service and the best of Hire Purchase terms call at:—



The Tape Recorder Centre Limited
82 High Holborn, London, WCI.

Open from 9 to 5.30 weekdays—close 12.30 Saturdays
Telephone: CHAncery 7401

**YOU NEVER THOUGHT YOU'D BE
ABLE TO BUY A 2 SPEED/4 TRACK
TAPE RECORDER LIKE THIS FOR
ONLY 33 GNS!!!!!!!!!!!!!!!!!!!!**



Only Ultra could have given you all these fabulous features for 33 gns: the tape economy of 4 tracks and 2 speeds, fascinating 2-track replay, mixing and superimposing effects, instant start/stop button on microphone, programme indicator, radio/pick-up recording and many other facilities. All these in a fabulously styled tape recorder with a choice of cream and coffee or scarlet and grey two-tone leather-cloth finish with exciting satin-silver trim!

Get your dealer to demonstrate it or write for colour folder to

ULTRA

Ultra Radio and Television Ltd
Television House
Eastcote Ruislip Middlesex



The coating rooms at Emitape—strictly taboo for dirt, dust and photographers!

We wanted to show you a picture of the clinically clean conditions under which Emitape is made. But we couldn't get a photographer anywhere near the tape. 'Operators Only' is the rule in Emitape's coating rooms.

WHY THE VETO? Unless your tape is free of foreign particles it won't travel smoothly over the recording head of your tape recorder—and sound quality suffers. Eventually the recording head itself will show signs of premature wear. That's why Emitape are so careful about cleanliness.

EVEN THE FILTERED AIR IS FILTERED. The coating rooms themselves are pressurised with filtered air, which is again filtered before being drawn into the coating machines. It's in this rarefied atmosphere that Emitape makes its reputation for cleanliness.

CELLOPHANE WRAP TAKES THE RAP—NOT THE TAPE. And it's a reputation that has nothing to fear from travelling or storage. Each reel of Emitape is cellophane wrapped. A centre tear-strip keeps the wrap intact until it reaches you—*factory fresh*. Always. And sealed against dust. That's why people who care about performance *and* their equipment use Emitape. Why not come clean and join them?



Cellophane wrap keeps dust at bay

Emitape is 'factory fresh'

E.M.I. TAPE LIMITED · HAYES · MIDDLESEX

Get to know
more about...



The Incomparable
Ferrograph

Post this coupon today for full details

NAME.....

ADDRESS.....

To: **THE FERROGRAPH COMPANY LTD**
84, BLACKFRIARS ROAD LONDON S.E.1 Tel: WATerloo 1981

TAPE

RECORDING
MAGAZINE

Vol. 7 No. 11 November 1963

IN THIS ISSUE

- Tape trends and tape Talk** 18
By the Editor
- Tape in education** 19
Glyn Harris
- Contest prize presentation** 21
- Microphones; their types and uses** 22
James A. Moir
- Test Bench** 25
Luxor MP 424
- Dramatape miscellany** 26
By Perspective
- Complete systems** 27
Robert Hirst
- A sound business** 29
F. J. G. Hodge
- Tape talk** 31
Alan Edward Beeby
- Tape records reviewed** 32
Edward Greenfield
- Popular music on tape** 32
Don Wedge
- New Products** 34
- News from the clubs** 37
- Tape exchanges** 37
- Advertisement Inquiry service** 41

COVER PHOTOGRAPH: The Mynah bird seems puzzled by a persistent "echo" provided by a Fidelity Argyll Major tape recorder. He is listening to himself and another talking Mynah in a recording used for the extensive promotion of Alfred Hitchcocks' "The Birds" which recently had its premiere in London.

"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, London, E.C.4.

Back numbers, if still in print, are available at 2s. 6d. per copy for issues up to November 1959, and 2s. per copy for later numbers.

Address all communications

7 TUDOR STREET, LONDON, E.C.4 FLE 1455

EDITORIAL

Editor,
R. DOUGLAS BROWN

ADVERTISING

Advertisement Manager,
MISS PAMELA DURHAM
Assistant Editor, FRED CHANDLER

Tape trends and tape talk

By the Editor

EARLIER THIS YEAR I promised that we would hold out to the last possible moment in resisting any increase in the selling price of *TAPE Recording Magazine*. We do not like admitting defeat, but the pressures upon us have become irresistible. When printing costs rose by 15 per cent at the beginning of the year, we resolved to absorb the extra costs ourselves, though other publishers increased their selling prices immediately.

Now paper costs have risen by nearly ten per cent and other basic costs have gone up substantially over the past eighteen months.

We are compelled, with regret, to increase the price of the magazine to 2s. as from the next issue.

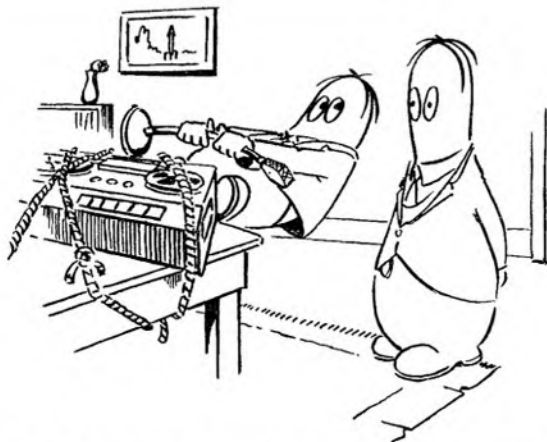
We shall depend in future not upon any price advantage over competitors, but upon a straight comparison of the quality of content. We face this prospect with confidence, for our readers have always shown a remarkable loyalty and our circulation has increased during the past year more rapidly than at any time since we started.

The cost of postal subscriptions now becomes 25s. a year, but existing subscribers will continue to get the magazine at the old price until their subscriptions expire.

Tape tourists

BY THE TIME THESE words are read, two representatives of the Triumph Motor Cycle Owners' Club will have their bikes and their passports in order for a Continental trip. When the prizes in the 1963 British Amateur Tape Recording Contest were presented recently, the Triumph enthusiasts who collected the Emitape Cup for their "Tape of the Year" learned that their prize also included an expenses-paid visit to the International Contest at Liege, Belgium.

LAUGH WITH JEEVES



"Dashed strong erase magnet on this model".

Last year, when they also took the first prize, they were guests at Strasbourg and Mike Avel, who was one of those who went there, declares that that week was one of the most enjoyable and memorable of his life.

I have not yet heard the full programme that has been organised for this year by our Belgian hosts, but I feel confident that it is going to be another memorable occasion. The Belgians were among the first to give full-scale support to the International Contest and both the national radio concern and the audio industry in that country have consistently given generous backing to amateur recording activity.

River trip

THE CLIMAX OF the British Contest this year was a unique gathering—on the Thames. E.M.I. Tape Ltd. this year broadened out the scope of the traditional lunch at which their trophy has been presented. They invited other firms donating trophies—Grundig (Great Britain) Ltd., Cosmocord Ltd., A. C. Farnell Ltd. and Wyndors Recording Co.—to associate themselves with the event and all the prizes were presented at one function.

Prize-winners, judges, representatives of the firms concerned and of the Contest organisers gathered on the Thames steamer *Zodiac* for a cruise downstream under Tower Bridge and beside the docks.

The weather was not perfect—the sun did not shine—but the slight suggestion of mist and the quality of the light gave the trip a pleasant atmosphere. Perhaps an ever greater contributory factor, however, was the champagne which flowed freely above decks!

Peter Wetherill, of E.M.I., recalled that of only three people present who has been at every one of these lunches since the Contest was started in 1957 one was Miss Jo Douglas, who was there to present the prizes.

Jo Douglas's enthusiasm has had a great deal to do with the success of the British Contest. After the river trip, we went to a luxury club on board a boat moored alongside the Embankment and there we ate comfortably and well.

Study weekend

AT THIS GATHERING an idea was born which I regard as of great importance. Efforts are to be made to organise a tape recording study weekend in some conveniently central spot in the Midlands. The idea would be to invite the judges of the British Contest to attend and to give those who join the Study Course an opportunity to hear the best of the recordings submitted in the Contest.

But, in addition, there might be lectures and a brains trust session.

This is the idea that was floated at the gathering on the Thames and which had the enthusiastic support of all those who were present. As and when firmer arrangements can be made, information will be published in our columns.

A tape recorder in the junior school

by GLYN HARRIS

THE ways in which teachers will use the tape recorder in drama will depend upon their basic conception of what drama in junior school terms means. To begin with I think I should make it clear that I find little use for the scripted play at the junior stage: The scripted play demands powers which juniors do not yet possess—and should not be expected to possess.

To appear in a scripted play on a proscenium stage demands an understanding of so many facets of drama that it would be just as logical to expect junior children to attempt calculus in mathematics. In mathematics we begin by giving real meaning to our teaching by practical experience.

Children measure, weigh, add, try to approximate with accuracy and we try to encourage them to absorb an understanding of number and the language of number.

But in drama we so often face them with the final stage immediately. We expect them to characterise, to move confidently and easily, to act with an awareness of both audience and fellow actors without first giving them an essential understanding of drama.

I see our work in the junior field as a period of absorption of dramatic qualities and techniques rather than the time for what must be superficial external performances before an audience. Of course there are special occasions when we must "put on a show," but we should not delude ourselves that this is either sufficient drama for our junior children or that it will produce a real understanding of the art.

The tape recorder can help the teacher to develop many of the techniques involved in drama and in a later article I hope to deal in more detail with the ways in which I have found the recorder a creative ally. In this article I want to put the cart before the horse and write about a finished production. I do so because it shows how an "occasion" can

be approached in a creative way with the children working imaginatively. And I think it illustrates the place of the tape recorder in the scheme of things.

Until recently I was deputy head of a new school—one of London's "glass palaces of education." At the entrance on an outside wall there is an abstract mural designed by Sir John Verney. It is vigorous in shape and colour and basically it depicts children's games and nursery rhymes. Each shape can be interpreted in a variety of ways, and interpreted much more freely and imaginatively by children than by the more inhibited adults.

The mural can be seen from inside the hall, and, working there with a class of children one day, I found it a good starting point for movement. The children leaped, crouched, jumped and rolled in the way they thought each shape would move if it came to life. Some of their interpretations showed a vivid appreciation of the mural's sense of life and movement. From this the idea grew of bringing the mural to life for the inevitable "entertainment" we were asked to present on the day of the formal opening of the school.

After the wonderful freedom of drama in an empty hall the children found it difficult to restrict themselves to the small platform area available. As the pattern of movement developed, the children asked if they could have music to help, but no type of recorded music seemed to fit the abstract shapes, so after discussion we decided to provide our own "music."

Using my tape recorder I had been experimenting for some time with children's reactions in terms of movement to various sounds created by them. This time we worked in reverse, and brought in a new set of children to provide suitable sounds for the "actors" to move to. We appealed for anything from home that would make a noise and delighted parents unloaded a mass of rubble which would have delighted a scrap iron collector's eye—or the late Gerard Hoffnung's Festival Hall Concerts!

The children who were to move had a pretty good idea of the sort of sound which would suit their movement and many cacophonous periods after school were spent as sound makers tried to

satisfy the movers. They were very critical and in the end selected sounds made by twanging steel rulers, rattling coin boxes, whistles, tins being hit by a pencil, and so on, to provide their background.

We had seven movers and seven "musicians." These fourteen met after school on a few evenings and decided on the pattern of sounds required. The movers knew they wanted one basic sound to begin, and then each of the other six sounds came in one after the other until all seven were going strong. One by one the sounds subsided until all was silent again.

The tape recorder certainly earned its keep during this time. Each sound was recorded separately to make sure that on tape it was still the sound desired by the mover. Then began the orchestration of this "musique concrète." I had to step in here because I found the children could not easily judge the pauses between the start of one sound and the entry of the next.

Eventually we had on tape the dramatic pattern we wanted. A simple percussive start; a sound which was the backbone of the piece, and then the steady build up of sound until all the sounds gave way to the reverse pattern. The movement group were then able to operate at any time and in any place where the tape recorder was available.

During this period a chance remark made me realise that there was even more to be extracted from this situation than I had at first foreseen. I heard a child ask her friend what she would do if she really saw the mural coming to life.

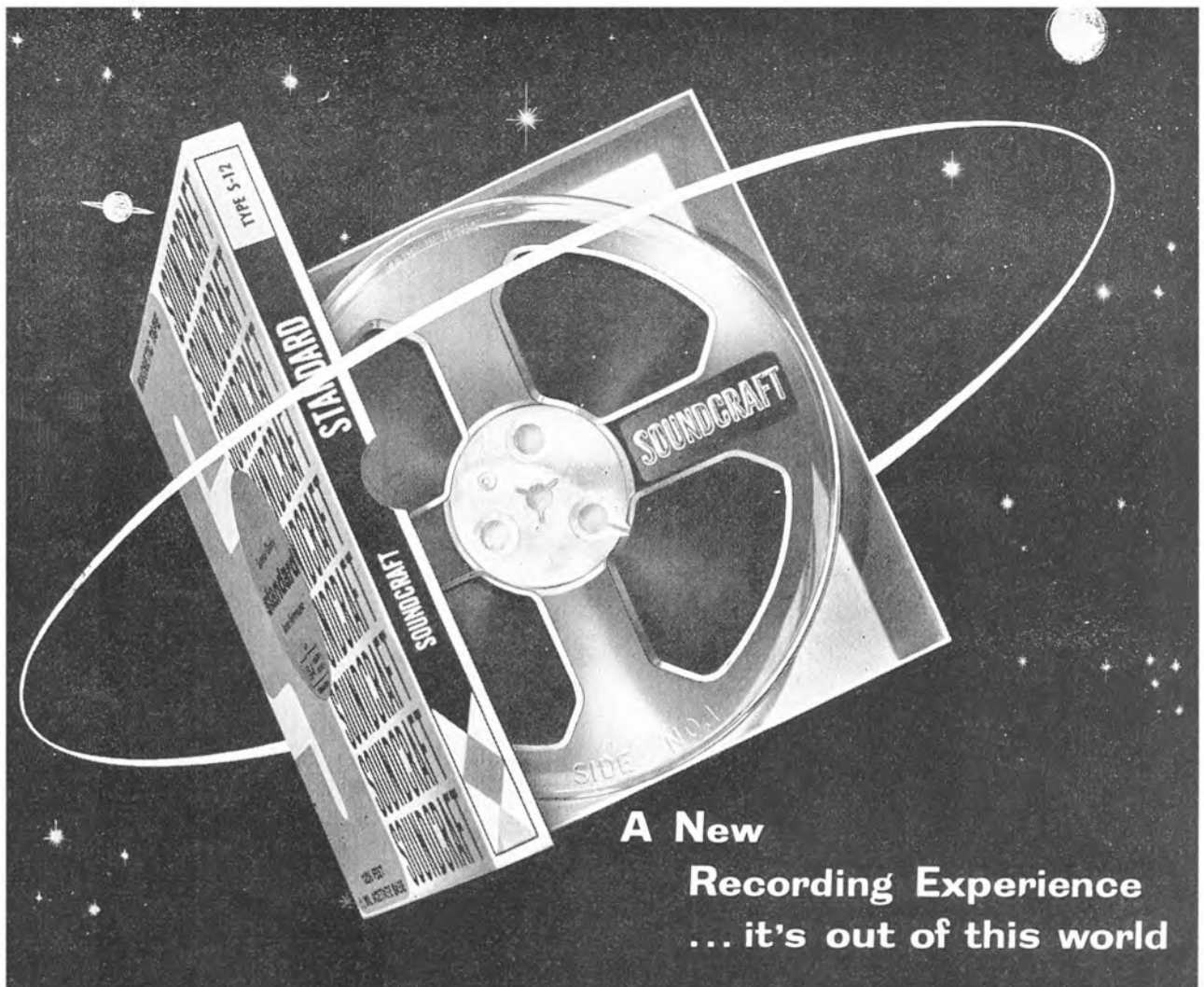
In a drama lesson with a second year junior class that day I posed this question to groups of children as they sat around the microphone; "You are in the playground, you don't know what to do with yourselves. You're fed-up. You decide to go and look at the mural. As you look at it you talk about it and suddenly it comes to life." This was the ideal situation for junior drama. It was rooted in the children's experience and yet gave them scope for wonderful sweeps of imaginative play acting.

All sorts of approaches and ideas arose from this lesson and there was no lack of volunteers to help me after school to prepare a tape. Completely unscripted, but with the very real experience of hearing their own triumphs and shortcomings, the children put on to tape the introductory playlet, and an epilogue as they moved off to tell the head mistress of the strange happenings once the mural had returned to its proper place.

These children were not concerned with the microphone at all, they were acting out a situation which had become very real to them and the resulting tape shows a keen appreciation of the dramatic pause, of a sense of climax, of the necessity of working together and being a member of a "team" rather than an individual performer. All these things were learnt through the medium of the tape recorder—they heard and adjusted without being taught—a much more lasting lesson.

For the performance, which was for me the least important aspect of the piece of work, the "movers" took up a position on the stage, dressed in costumes to help to identify them, both in colour and shape, with the part of the mural they represented. They froze in tableau and the tape recorder came on with the introductory playlet.

(Continued on page 41)



Soundcraft is the tape with the most faithful sound reproduction—the one chosen by the U.S. Government for their Tiros I and II satellites—from the plant that won the coveted Oscar for its oxide coating techniques.

Already well-known British Tape Recorder Manufacturers, such as ELIZABETHAN and MAGNAVOX, use and recommend Soundcraft for their machines.

Why not try Soundcraft tape on your recorder, and hear the difference. The FREE VOUCHER below presents a special opportunity for you and your friends to make this revealing test.

SOUNDCRAFT

the tape that speaks from space

On 3", 5", 5½" and 7" four-spoke reels available on Dupont Mylar and new Soundcraft tri-acetate. All packs colour coded with timing charts and cellophane sealed for protection.

SOUNDCRAFT MAGNETICS LTD., Haddenham, Bucks. Tel. 384 & 422-7 (7 lines).
Manufactured by Reeves Soundcraft Corporation, Connecticut, U.S.A.

**GET A FREE
 'TAPE MAILER'**

A special opportunity to get a SOUNDCRAFT 3" Mailer 150 ft. tape worth 5/11d. absolutely FREE! SOUNDCRAFT have issued a number of their 5½" and 7" Standard-Play tapes with a FREE 3" Mailer tape attached. These specially wrapped tapes will be at SOUNDCRAFT stockists from 1st October, 1963. You pay just for the 5½" or 7" reel but get a 3" Tape Mailer absolutely FREE!

Simply ask for the SOUNDCRAFT Reels with the FREE TAPE MAILER attached! Ask NOW...



CONTEST PRIZE PRESENTATION

PRIZEWINNERS and judges met the award donors during a September river trip, organised instead of the usual Emitape Luncheon to mark the climax of the 1963 British Amateur Tape Recording Contest.

A trip down river and lunch aboard a luxury floating club enabled competitors to meet and discuss their entries and receive their prizes from television producer Jo Douglas, one of the judges.

Our pictorial feature shows (above) a general view of the lunch; (right) Miss Douglas presenting the Emitape Cup for the "Tape of the Year" to Mike Avel while Walter Buchanan, one of his co-producers, holds the Shield awarded by the Federation of British Tape Recording Clubs. Below left, H. J. Walding receives the Grundig Cup for the best schools entry; and, below right, three more Contest winners discuss their entries. Left to right are: John Bradley (Actuality section winner); Peter L. Bastin (Music); and Denis B. Affleck (Technical Experiment).



MICROPHONES: THEIR TYPES AND USES

PART ONE

BY J. A. MOIR

HAVING dealt with the various criteria that must be satisfied if we are to achieve a genuine high fidelity performance, we can now look at the various parts of a record/replay system and discuss their limitations. All sound systems employ a microphone so let us review the many types that are available and see the specific advantages of each type.

POLAR DIAGRAMS

Microphones convert the sound pressure variations into an electrical signal and it might be thought that the main requirement of a good microphone was a flat frequency response. This infers that equally intense sounds at any frequency would produce the same output voltage, the sort of performance we expect from a good pick-up amplifier or loudspeaker. Surprisingly enough this rather obvious requirement is only of secondary importance in a microphone, a polar diagram of the correct shape being much

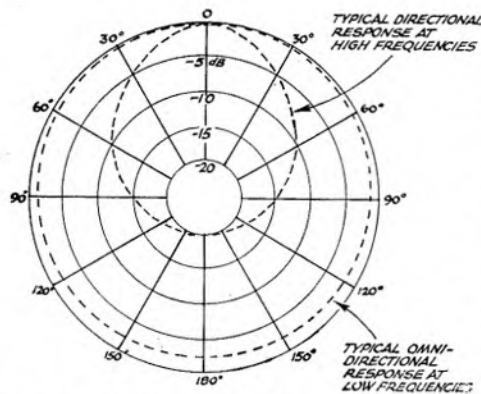


Fig. 1. Typical polar diagram of simple microphones

more important in ensuring a high fidelity performance. We will return to this question of frequency response at a later stage and concentrate on the polar diagram problem for a short time.

Microphones, with a few special exceptions, are not equally sensitive to sounds arriving from different directions. These variations in sensitivity are usually indicated by a polar diagram, a plot of the output voltage that is obtained when a standard sound source is placed in successive positions equally spaced round the microphone.

The polar diagram is drawn on special graph paper consisting of a series of concentric circles, each circle indicating a 5 dB increase in output voltage starting from the centre. The output voltage is generally measured at twelve points thirty degrees apart round the microphone and the results plotted on the diagram in decibels below the value of output voltage obtained when the sound source is on the axis and facing the front of the microphone. Thus zero dB always corresponds to the sensitivity on the front centre line of the microphone.

A simple example is shown in the outer curve of Fig. 1 illustrating the polar diagram of a microphone producing substantially the same output voltage wherever the sound source is placed with respect to the front face of the microphone. When plotted, the result is a circle. Many microphones have this sort of performance at low audio frequencies in the region of, say 100 cps. At 5,000 cps a typical performance is shown by the inner curve, the output at thirty degrees off the axis being five dB down below the output obtained when the source is on the axis.

At first sight it would appear that the ideal microphone would have the same output at all frequencies and for any position of the sound source with respect to the microphone, but this simplicity is completely misleading. Microphones are one eared devices whereas we listen with two ears and as we will see when we come to discuss stereophony, the possession of two ears makes it possible for us to ignore sounds that would otherwise disturb us. When we use one microphone (or several microphones in parallel) on a monophonic system we destroy the capacity to ignore the sounds we do not wish to hear and are forced to listen to everything in the room. This is extremely disturbing, in that it reduces the intelligibility of speech and degrades the quality of music, while it makes a small room sound as full of echoes as a public baths.

These disadvantages can be lessened by using a microphone that responds only to sounds approaching it over a limited angle and pointing the microphone at the source of sound. While this is a considerable improvement over a microphone having a uniform all-round response, it does not solve all the problems. There is considerable difficulty in obtaining a microphone having uniform directivity (the same polar diagram) at all frequencies within the audio range.

It is easy to obtain a microphone that responds only over an angle of, say thirty degrees at frequencies above about 4,000 cps. Indeed it is difficult to avoid this sort of performance even in a cheap microphone, but the same cheap unit will have a circular polar diagram at low frequencies responding equally to sounds from any angle. Thus the microphone will pick up low frequency reflections (the room reverberation) arriving from any angle but will reject the high frequency reflections arriving from any direction other than the front of the unit. Irrespective of the measured frequency response this sort of polar performance always results in poor sound quality particularly in rooms having poor acoustic performance.

Our ideal microphone, at least for monophonic pick up, will thus have the same polar diagram at all frequencies and for most pur-

poses this will be what is known as a cardioid response, see Fig. 2 for example, the microphone having a greatly reduced response outside an angle of about sixty degrees on each side of the straight-ahead position.

Many microphones have what is known as a figure of eight polar diagram responding equally to sounds of any frequency over a restricted angle both in front and behind the microphone. While not ideal, this is a great deal better for most purposes than a unit that responds equally to sounds from any angle (a circular polar diagram) though it will rarely be as satisfactory as a microphone having a cardioid polar response.

In some applications, for example when several speakers must all be picked up by a single microphone, there is need for a unit having a circular polar diagram but in most instances this requirement is met by using a normal microphone turned face upwards. The S.T. & C. 4021 is of this type. For a smaller number of speakers, a figure of eight polar diagram will allow at least four people to sit round it for a discussion, an arrangement that is almost the standard practice in BBC studios.

Basically, the shape of the polar diagram has nothing whatever to do with the type of microphone. Thus, moving coil microphones can be

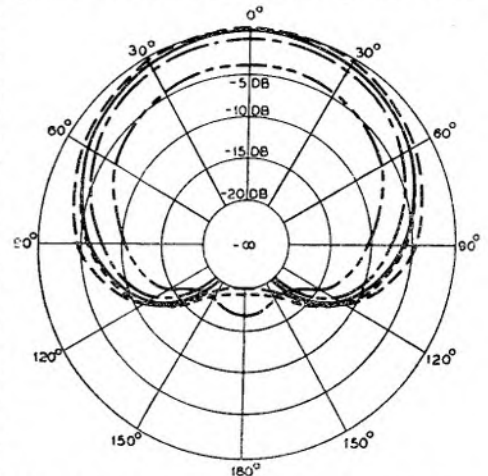


Fig. 2. Polar diagram of cardioid microphone
— (50 cps - - - -) (1,000 cps - . - .) 4,000
cps - - - - - (9,000 cps - - - - -)

made to have any desired form of polar diagram, though it seems inevitable that a unit that has a uniform polar diagram over a wide frequency range will be expensive.

In all simple microphones the shape of the polar diagram is determined only by the size of the diaphragm and the shape and size of the housing in which the diaphragm is mounted. If the diaphragm is large, the polar diagram is likely to be circular at low frequencies and very narrow at high frequencies, the sort of performance indicated by Fig. 1. If the diaphragm is small, the unit will tend to have a circular polar diagram at all frequencies. However, if this approach is relied on, the diaphragm has to be something less than half an inch in diameter if it is to provide a uniform polar diagram up to frequencies in the region of 10,000 cps. As small diaphragms result in a low output voltage, this approach is not a particularly remunerative one for a microphone designer. It has already been suggested that a microphone having a uniform all-round response will produce a second-rate result when used in anything other than good acoustic conditions however "flat" the frequency response. Thus such microphones should be used with caution and understanding.

A large microphone housing used with a small diaphragm will produce the same sort of polar diagram as a large diaphragm, a circular

polar response at low frequencies and a restricted angular response at high frequencies. The fashionable small streamlined casing has advantages other than a good appearance.

Large diaphragms or large housings have other disadvantages in that their use results in a very spiky frequency response to sound approaching from the side.

There are much more sophisticated methods of producing a cardioid polar diagram that are substantially free from the disadvantages of large diaphragm microphones and these will be discussed at the appropriate point. A typical result of this approach is shown by Fig. 2 the polar diagram at several frequencies of the S.T. & C. Type 4033-A. It will be seen that the polar diagram is substantially uniform over the whole frequency range from fifty cps to 9,000 cps.

VOLTAGE GENERATING ELEMENTS

All forms of microphone must include some sort of element to convert the mechanical motion of the diaphragm into a voltage to be applied to the first valve or transistor in the amplifier. Natural selection appears to have resulted in segregation by price; all cheap microphones using Rochelle Salt or a ceramic piezo element, the medium price units are practically all of the moving coil type, while all the very best microphones are of the capacitor type. There is of course some overlap at the price boundaries but this classification generally holds. As the price of a microphone may be anything from thirty shillings to £400, there is also a large difference in performance. Let us take a look at each type, starting with the small piezo types primarily intended for domestic tape recorders and similar applications.

PIEZO MICROPHONES

Suitably cut sections of Rochelle Salt or one of the piezo ceramics have the special property of producing a charge of electricity on the two faces of the slice when it is mechanically deformed by bending or twisting. The forces required to deform the crystal can be produced by a small diaphragm or even by the sound pressure acting directly on the surface of the piezo element. The formation of a bender or twister type of voltage generator from the original Rochelle crystal is illustrated by Fig. 4.

The natural crystal of Rochelle Salt (sodium potassium tartrate) has the shape shown in Fig. 4a. From this a thin slice is cut, the axis of the slice being shown on the sketch of the mother crystal. When two of these slices, suitably coated with a conducting material, are stuck together as shown at 4b, we obtain an element that will produce electric charges on its surface when mechanically distorted. If the two slices are combined as at 4c and deformed as shown by the large arrow, we obtain a bender assembly that produces a voltage. If the slices are assembled as at 4d, a voltage appears on the conductive coatings when the top edge of the pair is twisted and the bottom edge restrained. The bending or twisting is achieved by attaching the diaphragm to the crystal at the appropriate point. A cross-section of a microphone of this type is shown in Fig. 3a.

A radically different method of achieving the required result is merely to cement together two crystal slices exposing the surface of the impinging sound, the sound cell being illustrated by Fig. 3b.

Developments over a long period, principally by Acos in this country, have brought this type of microphone to quite a high standard, while the price is such that the type dominates the domestic market. The response curve is flat within ± 2 dB from about 120 cps to 7,000 cps and the output voltage on the speech of a normal adult is about 1 mV when the microphone is about one foot from the speaker's mouth. Most domestic tape recorders are designed to produce an adequate recording

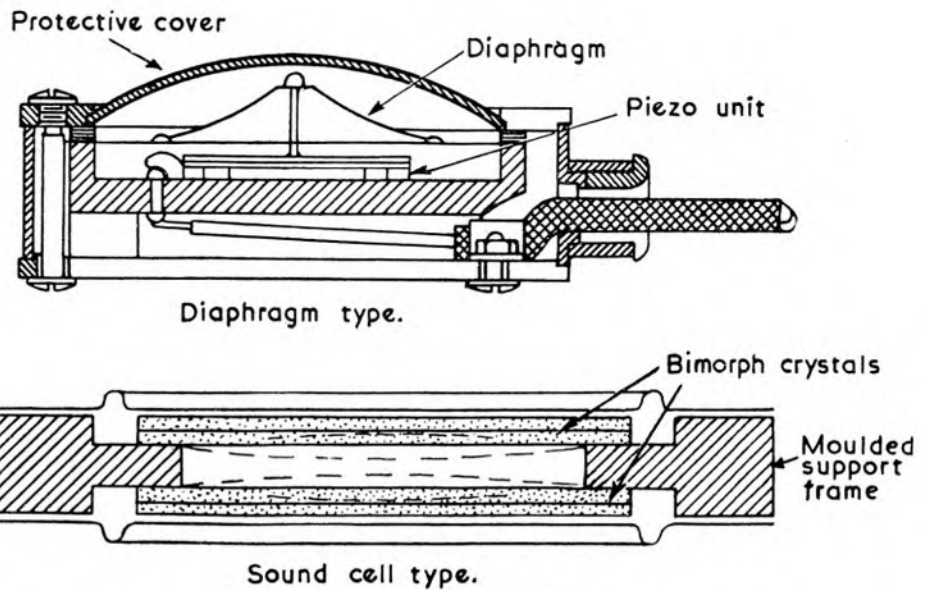


Fig. 3. A piezo microphone

level from a microphone of this type though the speaker may have to be within a few feet of the microphone.

The polar diagram varies widely between the many types but most of them have the characteristics of a small diaphragm pressure operated type, that is, they are omnidirectional at the low frequency end of the range being equally sensi-

Recording Magazine (October 4, 1961) so only a brief summary is repeated here.

Impedance matching in the normal sense does not apply when a piezo microphone is used, the real requirement being that the impedance of the tape recorder input circuit be at least equal and preferably higher than the impedance of the microphone at the lowest frequency of interest. If the microphone is being used primarily for speech, the input lowest significant frequency is as high as about 200 cps and thus the impedance of the tape recorder input circuit should be not less than about one megohm the impedance of a typical piezo microphone at this frequency. An input circuit having an impedance higher than this will improve the bass response while one having a lower impedance will decrease the bass.

The high frequency end of the range is relatively unaffected by the impedance of the input circuit. Capacitance in the microphone cable is not a serious disadvantage but it reduces the output voltage over the whole of the frequency range and does not alter the frequency response. Roughly speaking, the output voltage is halved by a cable having a capacitance equal to that of the microphone. With a typical small piezo unit and the standard type of co-axial cable used for TV aerial leads, the signal voltage will be halved by the use of about twenty to thirty feet of cable. The small diameter co-axial cable often used for microphone leads has a much higher capacitance and five to seven feet will halve the signal voltage.

Hum pickup on the cable is generally not a serious problem with a piezo microphone. The output voltage is relatively high and the microphone unit includes no coils so that magnetic pickup is rarely a problem while the capacitive impedance minimises electrostatic pickup.

Generally about the only precaution that it is necessary to take to ensure an absence of hum is to avoid earthing the shield of the input cable at more than one point. As most of the co-axial cables available have an insulated outer the requirement is not difficult to meet.

I can summarise (but with my tongue in my cheek) by saying that piezo microphones may not provide studio quality but that they meet all the needs of the majority of domestic users. Their high output voltage gives them considerable advantage over alternative types which may provide sound of an intrinsically higher quality but are likely to give a little more trouble in use. Succeeding contributions will deal with moving coil, ribbon and capacitor microphones.

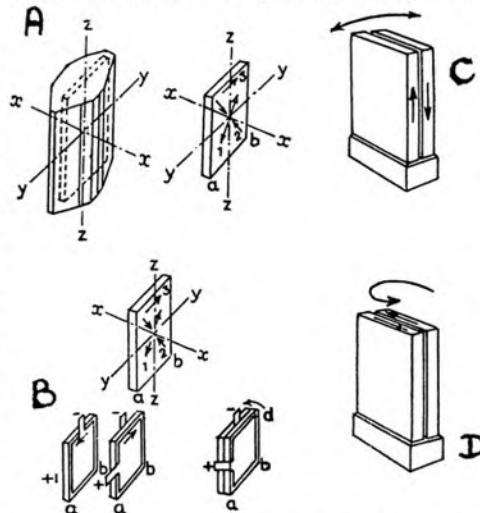


Fig. 4. Construction of bimorph unit of Piezo-electric microphone. (a) Rochelle salt crystal and cutplate; (b) Formation of piezo motors; (c) Bender bimorph element; and (d) Twister bimorph element

tive both back and front but are moderately directional at the higher frequencies. This sort of characteristic is reasonably satisfactory when the speaker is close to the microphone but the low frequency reverberation is accentuated when the speaker stands two or three feet away. Harmonic distortion is not a particularly pressing problem in domestic tape machines and a piezo microphone is perfectly adequate in this respect.

The internal impedance of a piezo unit is that of a capacitor typically about 500-1,000 M μ F and thus the impedance is high at low frequencies and low at high frequencies. This determines the characteristics of the input circuit with which the microphone must be used. For a more complete discussion of the problem readers are referred to an article in *Tape*

CHRISTMAS!



GIVE **Scotch** MAGNETIC TAPE IN THIS **GAY** WRAPPER

Scotch Magnetic Tape is the perfect present for anyone who owns a tape recorder. And all the 5", 5 $\frac{3}{4}$ " and 7" boxes are packed in colourful seasonal wrappings. New lower prices, too!

3M MINNESOTA MINING AND
MANUFACTURING CO., LTD.
3M HOUSE · WIGMORE STREET · LONDON W.1

SPOKEN CHRISTMAS "CARDS" FOR FARAWAY FRIENDS

Why not send truly personal greetings to faraway friends on a Scotch "One Five Special" Inexpensive, at only 5/3 per reel. Runs 15 mins. at 3 $\frac{3}{4}$ i.p.s. Packed in a box designed to be sent through the post.





LUXOR MP424

By John Borwick

THIS new Swedish tape recorder could easily establish itself amongst two classes of users in this country and the United States, where the name Luxor is already known through gramophone record players. In the first place, it is sure to attract the real tape recording enthusiasts by its very full complement of controls and facilities. But it could also appeal to music lovers as an extremely compact source of stereophonic music from tape records.

Manufactured by Luxor Industri Aletiebolay of Motala, the Luxor MP 424 is smaller than average, but heavier than most, which is a clear sign that everything possible has been done to pack high performance into small bulk. It will accommodate seven-inch spools, but the lid will only fit over five-inch reels so that the larger ones have to be stored separately. The controls too, have been crowded into a small area, and there are so many of these that a newcomer to tape recording might be frightened off by them.

THE CONTROLS

Reading from left to right, there is the usual form of three-digit position indicator, a joystick on/off and speed selector for $7\frac{1}{2}$, $3\frac{1}{2}$ and $1\frac{1}{2}$ ips, loudspeaker switch for internal, external or internal-plus-external.

Then there is a three-position tone switch, labelled with a musical treble clef sign, normal, and a bass clef, followed by a track selector switch for tracks 1-4, 2-3 and stereo (which means 1 and 3 together or 4 and 2 together). In the centre of the panel are four push buttons; a safety record button, to prevent accidental erasure, and selector buttons for radio, gram and microphone. Below these are two magic eye volume indicators, one for each channel,

and I found these quite accurate enough to balance the controls prior to a stereo recording by speaking in a central position.

Stereo volume balance is achieved by means of the handy arrangement of volume controls which follows. There is an overall volume control, which operates simultaneously in both channels; but to the right of this are two co-axial knobs, one in each channel. Normally one has these fully faded up, since they are in series with the main ganged volume control. But any lack



of balance on the part of the microphones (or the loudspeakers being used for playback) can be compensated by coming back slightly on the control for whichever channel is more sensitive.

The last control is a joystick play, fast wind, and fast rewind lever. I found this very swift in operation, and interesting features are that it is possible to change speed and tracks, while the tape is still running. The wind and rewind time was 2 minutes 10 seconds for the five-inch reel of tape supplied. During fast winding, the modulation on the tape can be heard faintly on the loudspeakers. This is extremely useful when running through a tape to locate a certain passage of music or speech. The usual objection, of course, is that the high-speed rubbing of the tape against the face of the playback head will cause wear and shorten the life of the head. It is for this reason that practically all domestic and semi-professional recorders have some arrangement which holds the tape off the heads during fast winding. Professional machines have a sliding plate of some kind, so that the operator can override the hold-off mechanism whenever he

wants to locate parts of a recording by ear. The faintness of this monitoring signal on the Luxor suggests that the tape is only lightly in contact with the head, and I have seen no signs of wear during several weeks of use. I am therefore in favour of this facility.

LOUDSPEAKER ARRANGEMENTS

Being a stereo machine, the Luxor has a built-in loudspeaker at each end of the chassis. These give a pleasantly diffused sound which is near enough to real stereo to be a revelation to anyone who has never heard stereo before. And they are quite good enough for checking one's own stereo recordings as far as positioning or movement is concerned.

For serious stereophonic listening, however, external loudspeakers are recommended and the Luxor has a row of output sockets for left and right hand stereo speakers or a combined output for mono. These are mounted in a panel on the front of the machine, together with special sockets for headphones or for taking a low voltage feed to an amplifier or radio. There are also input sockets for gram/radio, mono microphone and stereo microphone.

No microphone is supplied with the Luxor recorder, but the recommended stereo type is the AKG D.88. The input sensitivity is 0.007 volts rms one Megohm, which means that any high impedance microphone type will match the recorder satisfactorily. A variety of types was tried out during the tests, and very little difference was detected in the quality at low frequencies. At high frequencies, however, the Luxor response was of a standard that appeared to merit as good a microphone as one could afford.

PERFORMANCE

The graph of Fig. 1 shows the playback response only at $7\frac{1}{2}$ ips. It will be seen that the maximum treble position of the tone control switch gives excellent reproduction. The normal position gives some loss of high frequencies, and the position labelled bass consists essentially of very severe high frequency attenuation.

Fig. 2 demonstrates the overall response of recording and playing back (through the external loudspeaker socket) using the maximum treble position at all three speeds. The fall in response at low frequencies explains the similarity in the results obtained when listening to the bass notes on recordings made through widely differing microphones.

Except for this slight lack of body, which of course is irrelevant when using the Luxor's own small built-in speakers and can be counteracted when replaying through

(Continued on page 29)

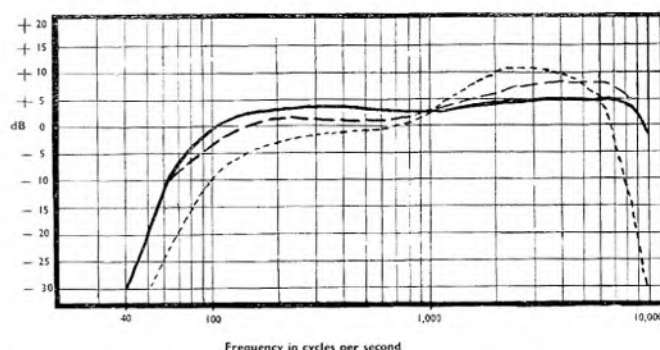
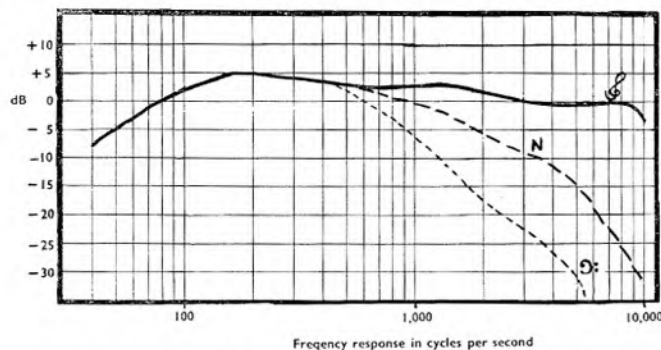


Fig. 1 (left). Playback only response at $7\frac{1}{2}$ ips of the Luxor MP424. Fig. 2 (right). Record/playback with maximum treble response. $7\frac{1}{2}$ ips ———; $3\frac{1}{2}$ ips - - - -; $1\frac{1}{2}$ ips ·····

ARMCHAIR TRAVEL



with **Worldwide Tapetalk**

BRITAIN'S LARGEST & FRIENDLIEST
TAPE EXCHANGE.

S.A.E. for details to:— **WORLDWIDE TAPETALK (T.R.M.)**
35, THE GARDENS, HARROW, MIDDLESEX.

Use Tutor-Tapes To Master Foreign Languages

Full Elementary Course with hand-book ... 3 gns.
New advanced French, German and Italian Courses ... 4 gns.
Comprehensive Course, including text book (well-known Harraps edition) ... 6 gns.



Abridged versions of Shakespearian Dramas.
New Spanish recordings (Sin Palabras, El Folklore Espanol).
New Russian recordings (prose, poems, etc.).
New recordings: "Oxford Progressive English for Adult Learners."
French recordings for the very young.

Special Recordings for
Tape Laboratory Use.

Full details or free demonstration

TUTOR-TAPE COMPANY LTD.

2, Replingham Road, London, S.W.18. Tel: VAN 8787

Tape-to-Disc Services

RAPID Recording Service

78s and L.P.s. from your own tapes. (48 hour service). Master Discs and pressings. Recording Studio. Mobile Recording Van.

Associated Company—

EDUCATIONAL RECORDINGS LTD.

Specialists in Sleep-learning and Audio Learning. Tapes on Mind Management; Positive Personality; Memory Training; How to Pass Examinations. Manufacturers of the "Sleepomatic Unit" to be used with our Sleep-learning tape. Foreign language courses available for sleep-learning.

Brochures on request from:—

RAPID RECORDING SERVICE (Dept., TRG)
21 Bishops Close, Walthamstow, E.17 COP 3889

IF QUALITY AND DURABILITY MATTER

(especially with LPs from your precious tape recordings) consult Britain's oldest transfer service.

If minimum 20 identical copies are required, we can manufacture hard-wearing commercial pressings with your own labels. (Excellent fund-raiser.)

... also consult Audio Supply Association for unbiased information on reliable recording and reproduction equipment to suit your specific requirements. Members receive information on latest products and also benefit from special bulk purchases of tapes, equipment, accessories. (Membership 7s. 6d. p.a.). Please specify requirements. Sixty-page Hi-Fi catalogue 4s. 6d.

SOUND NEWS PRODUCTIONS

10, Clifford Street, New Bond Street, London, W.1. REG 2745.

Dramatape miscellany

The first article in a new series giving guidance on drama in tape recording

By PERSPECTIVE

EVERYONE is familiar with the BBC radio play as a form of drama. Read a stage-play to a tape recorder and you get much the same effect. Perspective, aural dimension and sound-effects, not to mention the more ordinary problems of copyright fees, play-set supplies and choice of equipment.

It all amounts to a new modern hobby—drama tape recording, or "dramatape" for short.

Amateur drama has been divided for years into two main groups. The first group like to stage plays. The second simply wish to read the play in a group. These play-reading groups are extremely popular—more popular than the actual theatricals.

One or two enthusiasts began to tape record their readings some six or seven years ago; and the result was a new form of amateur drama. Today, interest in play-reading is approaching its peak. Public libraries are beginning to stock more and more play-sets—Eastbourne, for example, has no less than 300 sets.

But why the *invisible* theatre? Well, sound itself is an invisible thing. You can't see it or touch it. And enthusiasts like to think of drama-in-sound as an invisible dimension. The charm of this realisation makes you an addict for life. The atmosphere of a drama studio is uniquely relaxing with silently revolving spools, colourful drapes and the air of quiet concentration. But naturally, this only appeals to people with a certain temperament. Drama-in-sound doesn't attempt to rival the amateur stage. It has evolved for a special reason of its own. It is simply that it's an ideal medium for the busy man or woman who wants to act.

Consider the advantages. You don't have to learn any lines. You can perform a scene section by section, and in comfortable seclusion. But the greatest asset is that there are literally no casting problems. Not only can you play more than one part, but you can play anyone of any age or appearance. Casting is by voice alone. The dynamic release this gives your personality is tremendous. Possibly its psychological significance will one day be explored. No producer can fail to notice the fluency that drama recording gives the hesitant newcomer. It's certainly a new threshold for our disabled acquaintances.

Artistically, the tape recorder has put amateur and professional on equal terms of

opportunity. Even the humblest recorder can depict a startling realism, "just like a play on the wireless." Any comparable realism on amateur stage or screen would cost a fortune. You can build a castle or battlefield for nothing more than the tape scanning the recording-head. The effort needed is physically negligible. Our scenery is built from anything that comes to hand—fire-irons, egg-shells, corn-flakes, empty bottles.

But another advantage is that both simple and advanced productions give enormous satisfaction. My Shakespeare scenes are in their second year of orientation. But my group's regular productions are very easy-going. We perform for the private fun of hearing ourselves in a variety of parts. The playback presentations are sandwiched between theatre-excursions and other activities. Yet we can periodically get our teeth into something worthwhile that stays on record for ever.

So this Miscellany will specialise in all topics relating to drama recording. The object of this series is to help you to get the most from a fascinating hobby. We'll cover a wide range of practical hints on both the social and advanced aspects.



"Gloria, Dear—You're crying"

But let's lay one bogey right from the outset. You don't need expensive equipment, nor do you need to be technically minded. The elements of drama-in-sound are, in fact, more easily explained in terms of simple equipment. Then, and only then, will you pick up the know-how for more ambitious equipment.

Productions on tape or disc are welcomed for general comment, but please include return postages and be patient. You might, of course, be quite new to both drama and tape recording; and you might be asking "How do I begin?"

You begin simply by starting! It's just a question of getting a play-set and reading it with a group. The elements of drama-in-sound are then built on this basis. Next month I shall be discussing the plays the various groups are doing.

STORY WITH A MORAL

THE spirit of drama is surely improvisation? We were working on a play some years ago and we needed a

(Continued on page 31)

DESIGNING TO A SPECIFICATION

Complete systems

By Robert Hirst

ONCE the various components such as the amplifier, radio tuner, turntable, etc., have been designed, embodying these into a complete system such as a radiogram has many problems. One such is the effect of cabinet vibration, causing the structure of some valves to rattle or resonate at certain frequencies, taking the form of a continuous note anywhere in the frequency range.

The sections of the equipment mainly affected are valves in the first stage of a high gain amplifier, the tuning condenser of the radio section and sometimes the pick-up arm if inefficient suspension is used when mounting the turntable.

The method of overcoming this is usually concerned with suspension and placing in the cabinet of suspect valves and components. It is common to find the turntable suspended on springs **Fig. 1**. The valve or valves, however, may be mounted in anti-microphonic holders made of rubber, the more resilient the rubber the greater the absorption. The line has to be drawn where the resilience of the rubber allows the valve to move too freely especially in transit causing the connecting wires to break.

The valves and tuning condenser should be mounted well away from the speaker as the air movement due to the cone of the speaker moving to and fro may cause a similar problem. The susceptance of components to this kind of acoustical trouble is known as microphony, some valves being specially designed to minimise this effect.

We may find that even though all these precautions have been taken a low frequency problem may still remain. This is more often than not noticeable whilst the turntable is in use. This is due to the sound output from the speaker being fed back through the cabinet to the turntable and valves, etc., the amount of signal fed back adding to the original input causing an increase in volume, this increase being fed back and so on. The only method of curing this may be by attenuating the bass response of the amplifier.

We can appreciate why in a high fidelity system the speaker is placed in its own cabinet some distance away from the rest of the equipment. Even this on occasions does not cure the problem completely as quite considerable vibration can be transmitted through the floor. On one occasion, at a high volume level, I have even experienced feedback between the speaker and tuner unit due to the vibration of air in the room. Generally speaking, however, judi-

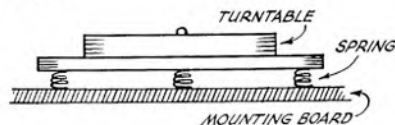
ous siting of the speaker cabinet should offset further trouble.

The problems of a radiogram are usually associated with one designer responsible for producing a completed item ready for production. In a high fidelity system, however, it is quite normal to find that the turntable, radio tuner, amplifier and speaker system are each designed by different designers in separate companies and if they all work to a specification of ± 2 dB we can see that the total variation at any frequency may be as much as six decibels. This doubles a reduction or increase of volume.

This wide variation can only be overcome by making the original specification much tighter. This in itself is not impossible but changes in valves and components due to age, slight wear, or even a minute film of dirt on the face of replay heads can alter a specification to quite a considerable degree. As the figures quoted in a specification should apply through the whole correct working life of a piece of equipment it would be a brave man indeed to quote figures much better than ± 2 dB when referring to standard commercial equipment.

A further more exaggerated example could be heard when we listen to a radio programme through our equipment. If the transmission has been previously recorded, as is quite often the case, discrepancies due to the original microphone and recording equipment, plus the variations in the reproducer and transmitter may be as much as 8 dB, this added to our 6 dB gives us a possible total variation of 14 decibels.

Fig. 1.



It can be seen that taking into consideration the malfunction of some of our ears, tone controls inserted into a system are essential, these being adjusted to suit our individual needs. When all is said and done we should listen to what satisfies, not what is specified.

When one part of a domestic hi-fi system such as an amplifier is being designed, the designer's main problem is the consumer's requirements, the primary question being the kind of inputs and outputs that are likely to be needed. It would be reasonable to assume that the minimum requirements would be three input sockets preferably switched, i.e., microphone (1 m/v), gramophone (100 m/v), and radio (500 m/v); and one output socket for a speaker of 15 ohms impedance.

As the amplifier is usually thought of as being the prime object in a high fidelity system there must be some standardisation in the manufacture of the associated components, such as the radio tuner, pick-up and microphone, so that the input sensitivity may be acceptable no matter what external source is fed into the amplifier. The output on the other hand may be adjusted to suit our requirements by means of volume control.

Whilst discussing design problems and remedies, false impressions as to the simplicity of all these operations may have arisen. This is due mainly to the manner of description that has been used in order to convey some basic knowledge of design procedure without delving into every minute facet.

(Continued on page 31)

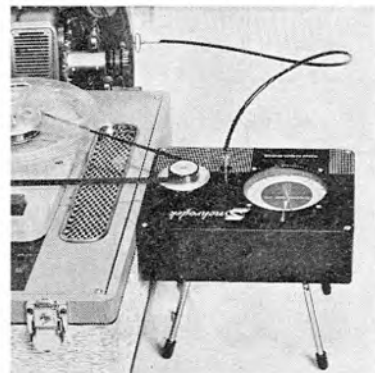
WALLACE HEATON SANYO POCKET TAPE RECORDER



This is an amazing little recorder in great demand, ideal for speech reproduction. Size just over 5in. makes this the smallest recorder of its type. Hundreds have been sold. From the world's largest manufacturers. Complete with integral speaker, earpiece, microphone and case. Send for further details.
Cash Price £11 11s.

Send for our Second-hand Lists on
● Tape Recorders
● Radios, Cine and Still Cameras
**FULL GUARANTEES
PART EXCHANGES**

CINE ENTHUSIASTS 8 mm SOUND WITH THE SYNCHRODEK



—it's so easy—just couple up to your projector and tape recorder—make your recording and you will replay in perfect synchronisation—even lip syn is obtainable with perforated tape. Send for full information.

Price 19 gns.

Now in stock—Tri-onic Baby Alarm
£4.19.6. Tri-onic Intercom £5.19.6.

**93-4 FLEET ST., LONDON, E.C.4.
FLE 9391**

How would you get on to tape the sound of a storm at sea? . . . or a ghost in a haunted house? . . . or a man splashing through a sea of mud?

Answers, in simple language, to these and many other sound effects problems are given by Alan Edward Beeby in

SOUND EFFECTS ON TAPE

the latest in our series of handbooks for the tape recording enthusiast.

PRICE 3s 6d (post free)
(USA \$0.75)

PUBLISHED BY TAPE RECORDING MAGAZINE
AVAILABLE FROM 7, TUDOR STREET, LONDON, E.C.4

Others in the series

ADVICE ON BUYING A TAPE RECORDER

J. F. Ling

2/6 (post free) (U.S.A. \$0.65)

INTRODUCTION TO THE TAPE RECORDER

Charles Langton

3/6 (post free) (U.S.A. \$0.75)

HI-FI FOR THE MUSIC LOVER

Edward Greenfield

3/- (post free) (U.S.A. \$0.70)

TAPE AND CINE

John Aldred

3/- (post free) (U.S.A. \$0.70)

HOW TO RECORD WEDDINGS

Paul Addinsell

3/- (post free) (U.S.A. \$0.70)

LUXOR

A BRILLIANT NEW HI-FI

STEREO TAPE RECORDER

FROM SWEDEN

The first completely self contained 4-track, 3-speed mono-Stereo Recorder on the British Market at a price below anything comparable with it in performance. Built-in stereo speakers and amplifiers as well as all connectors and leads for record and play-back through external equipment.

★ Also MP 424 in two-tone portable case with carrying strap. 77 gns.

PRICE ONLY
74 GNS

MODEL
MP. 423
(IN TEAK)

-
- 1 Track selector
 - 2 Pushbutton panel
 - 3 Master volume control
 - 4 Standby-play-fast forward-fast reverse
 - 5 Individual volume controls for stereo balance
 - 6 Speaker enclosures (only right visible)
 - 7 Recording level indicators (magic eyes)
 - 8 Ground
 - 9 Microphone (stereo) input
 - 10 Microphone (mono) input
 - 11 Phonograph input
 - 12 Radio input, and external amplifier output
 - 13 Earphones
 - 14 Socket for external loudspeaker (mono)
 - 15 Socket for external stereo loudspeaker
 - 16 Socket for external stereo loudspeaker
 - 17 Tape-consumption indicator (cuemeter)
 - 18 Loudspeaker switch
 - 19 Power on/off and speed selector switch
 - 20 Tone switch
 - 21 Tape guide
 - 22 Splicing groove

BRITIMPEX LTD.

Particulars and address of nearest stockist from sole concessionaires in U.K.
16-22 GREAT RUSSELL ST., LONDON, W.1 Phone MUSeum 7600

U.K. DISTRIBUTORS OF TELEFUNKEN VALVES AND COMPONENTS

TAPE TOPICS

A SOUND BUSINESS

By F. J. G. Hodge

SURROUNDED by cymbals, drums, tambourines and tom-toms in an upstairs room of the Johnny Roadhouse Organisation in Manchester, I learned recently about some of the interesting—and unusual—things which can happen during the running of a recording business.

There was the time when the Manchester Corporation Waterworks Department approached the organisation for advice on how to get rid of the seagulls which were polluting the water in the reservoirs. The problem was solved by using mobile recording gear to make on-the-spot recordings of a shot gun being fired into the air, and the screeching of the frightened gulls, and then producing a tape loop of the whole thing. Using a 50-watt amplifier feeding two high-frequency speakers floating on rafts in the middle of the reservoir, the endless tape was played back whenever the gulls started nesting. Within a month the gulls had gone.

Mary, Bill and Johnny are a talented trio who, in addition to the recording side of the organisation, also run a school of music. There, a teaching staff of twenty provide instruction in the modern approach to music on all instruments of the modern orchestra, as well as modern vocal technique.

I learned that tape plays a big part in this work. The new pupils first attempts are recorded and played back to give the learner some idea of how he sounds. It's surprising how many people underestimate their talents, especially vocalists.

A former pupil of the school is Edna Savage—Ray Merrill is another. Johnny Roadhouse, who is the lead Alto-Sax

player in the BBC Northern Dance Orchestra, coaches the advanced pupils and acts in a consultant capacity to the school.

Tapes are recorded at 7½ ips (even 15 ips at times) and used to send to agents and booking managers to give them some idea of the "sounds" a band or artiste makes. Also received for criticism and advice are tapes from would-be artistes. Some are good, some not so good and some are shocking.

A "natural" echo chamber is provided in the 40 x 20 x 9 feet basement, and this is sometimes used to flatter an otherwise insipid voice. There are a number of recording rooms, one sound-proofed, for use by "noisy" pupils and also for special speech recording when the speaker has a low-level voice. Unfortunately when famous guitarist Terry Usher recorded his version of "Andantino" (Minuetto) by F. Sor, they didn't use the soundproof room and on the disc which was cut from the tape (issued under the Decibel Label—another venture of the Roadhouse Organisation) there is a perfect recording of the squealing of a bus as it pulled to a stop outside. Incidentally, copies of this record have gone to the four corners of the earth and no complaints have been received about the squeal.

Bill Roadhouse is the electronics wizard behind the recording scenes and he is responsible for the technical side of the business. He experiments with sound effects, etc. using Reslo Ribbon microphones, M.S.S. disc cutters, a Wearite deck, and various other units and gadgets for getting the best possible sounds on tape.

They don't only put sounds on tape—sometimes they are asked to play back customers' tapes. One day, in the middle of June, a woman and her family walked into the shop. "Please will you play this for me," she said. "This" was a three-inch message tape of Christmas messages recorded by her husband who had been abroad at Christmas time, and it included a special personal message for each member of the family.

More and more people are recording messages to send to absent sweethearts, husbands and wives—and this is where Mary Roadhouse helps. She puts the person at ease, breaks down any awkwardness or embarrassment they may feel about saying such things as "darling" and "love" in front of recording engineers, and helps them to make a perfectly natural recording. The introduction of the three-inch message tape has proved a boon to this side of the business.

A variety of anecdotes are at the fingertips of the trio, including the time they recorded a reply to a scientist who was a member of an Arctic expedition. He had sent a tape filled with messages for all the family and recorded with a background of Husky dogs and other "atmosphere" noises. The whole

family recorded messages back, and they even brought the pet dog along to bark into the microphone. They had received the tape by the last boat out before the big freeze-up, and their reply went back to him on the first boat in after the big freeze-up.

Their commercial ventures also play no small part in the organisation. If you've sat in a cinema and listened to the announcement "There will now be a short intermission. Sales staff will visit all parts of the cinema," etc., it's more than likely that the original tape was recorded at the Roadhouse studios.

During my visit, the telephone had been ringing incessantly—people were booking lessons, others wanted musical instruments, yet others wanted instruments repairing. As I left, the telephone rang yet again—this time it was the Billy Graham organisation making arrangements for a recording session. It struck me that the Johnny Roadhouse Organisation was a sound business in more ways than one.

TEST BENCH

(Continued from page 25)

hi-fi loudspeakers, the quality of reproduction was most pleasing. Stereo separation is excellent, and although the mechanical noise of the motor is just audible at a few feet distance, the reproduced noise is very low indeed.

To sum up, this new recorder from Sweden deserves serious consideration by anyone looking for a moderately priced, versatile yet compact machine of sound mechanical construction and design.

Manufacturer's Specifications

Speeds: 7½, 3½ and 1½ ips.

Recording sense: Four-track, left to right. Maximum spool size: Seven-inch (five-inch with lid closed).

Heads: Standard quarter-track, giving mono, stereo, or simultaneous recording of two independent tracks with individual volume controls for mixing, etc.

Power supply: Switchable for 110-130-150; 220-240-260 volts AC 50 cps.

Audio output power: Four watts mono or twice two watts stereo, or 0.3 volts per channel for external amplifier.

Frequency range: 45-20,000 cps (7½ ips), 50-12,000 cps (3½ ips), 80-6,000 cps (1½ ips).

Input sockets: Mono microphone 7 mV, stereo microphone 7 mV, gram 100 mV, radio 50 mV.

Channel separation: More than 30 dB.

Wow and flutter: 0.1 per cent at 7½ ips.

Dimensions: 14¼ x 11¼ x 6½ inches.

Weight: 28½ lb.

Price: In two-tone plastic covered carrying case, 77 guineas. There is also a teak or mahogany base version, the MP 423, at 74 guineas.

U.K. Distributors: Britimpex Ltd., 16-25, Great Russell Street, London, W.C.1.

CITY & ESSEX

BRITAIN'S FINEST

T A P E RECORDER REPAIR SPECIALISTS

RECORDER CENTRES

228 BISHOPSGATE, EC2 ■ 2 MARYLAND STATION, STRATFORD, E15 ■ 205 HIGH ST. NORTH, EAST HAM, E6

Pick of the **WORLD'S** best!..

a new class
SIEMENS
TAPE RECORDER
for the connoisseur



SIEMENS NORGE Model 12
4 TRACK STEREO ALL TRANSISTOR
HIGH FIDELITY TAPE RECORDER

The world's most experienced professionals have made this brilliant newcomer for you. You will immediately appreciate the technical perfection and ingenuity of this incomparable tape recorder. There are 3 Tape Speeds, 3 Heads-Record, Playback and Erase—with Sound-on-Sound trick recording and many other facilities. The Model 12 has two Hi-Fi speakers built-in. Rewind time is 2 mins. for 1,200 ft. of tape. Weight 35 lbs. Strongly made and finished. Beautiful to hear and see.

The SIEMENS Range comprises

Model 10, 89 gns. Model 12, 93 gns.

Model 14, 87 gns.

12 months' guarantee.



POST COUPON FOR DETAILS TO:

DENHAM & MORLEY LTD.

DENMORE HOUSE
173-175 Cleveland Street, London, W.1
Telephone: EUSon 3656-7

The leading portable
TAPE RECORDERS



BUTOBA MT7 & MT7R

If you're looking for a multi-purpose tape recorder buy a "Butoba." This range of battery operated machines is outstanding for purity of reproduction and is ideal for recording music, speech and bird-song. Easily transportable, "Butoba" will help to make your holiday memorable. You can have the music of your choice wherever you go and, together with your camera, you can bring home tapes which have captured forever the sounds and scenes you have selected to record.

The "Butoba" is truly economical on batteries and there is a mains converter available for home use. High Fidelity range 6 in. oval speaker. Good output. (1 watt.) The MT7R is available with remote control facilities, ideal for dictation in office or car.

The prices of the range are attractive

Model MT7 38 gns. MT7R 43 gns.

MT5 66 gns.

Please send me details of BUTOBA and/or SIEMENS
Tape Recorders

Name

Address

DRAMATAPE MISCELLANY

(Continued from page 26)

"telephone effect." So we consulted an expert. He began by telling us we needed a bass-cut circuit. At that time, none of us knew what he was talking about, all we wanted was something to make a supposed distant-end voice tinny and sharp.

So we got a paper-clip and straightened it out. One end we inserted in the needle-chuck of an old acoustic pick-up (i.e. the pick-up of an old clockwork gramophone). The other end we inserted into the electro-magnet pick-up of a modern disc-player. The wires from this pick-up went to the microphone socket on the recorder.

Our distant-end actor simply spoke into the horn of the old gramophone, and we had our tinny and resonant voice. When the expert heard the result he was pleased. But when we revealed the method he was horrified. We were alarmed, thinking we'd endangered ourselves in some way. But the sole reason for his concern seemed to be that we had an acoustic gramophone on the premises.

"These gramophones," he said, "are out of date and no longer used."

Well, we still use one. It make an excellent spare take-up unit for editing purposes. As for the method described, you can use it to give fanfares and bells etc. an "antique" quality. Historical plays sometimes need it. Just play the effect via the horn. You might need a transformer to match your particular pick-up to the socket; but here's another way if you haven't got the equipment mentioned. Turn down your gain control almost to zero. Then get your distant-end actor to speak through a roll of paper as loudly as he can. Allow the mouth of this roll to impinge directly on the microphone face. The playback effect will be of a very distant "telephone" voice. Discs can be "antiqued" by playing them at full volume into a microphone at this same almost-zero gain.

The moral? There's always a cruder way to do things.

SWEDES AND DRAMATAPE

SWEDISH educationalists seem far more interested in applied tape recording than their English counterparts. This summer, I've been discussing dramatape techniques on Folkuniversitetet-Lund language courses. All told, 118 students attended two four week courses in Sussex—chiefly students of Gymnasium (or sixth-form) level.

Each student was given a well-printed script written by our organiser, James Platt. These included, "Tea time with the Joneses," "Supper-time with the Joneses" and similar titles. Drama recording can so obviously be applied to language-teaching by making the students act in situations. The Folk University of Sweden is a non-profit making concern; it runs 56 such courses in the U.K., plus courses in Germany, Switzerland, France, Austria, Greece, Spain—and Russia. Hints are in the air of definite drama applications, so it will be very interesting to report on the results. More of this anon.

Alan Edward
Beeby's

TAPE TALK

"TARDY TAPESPENDENTS" DEPARTMENT: I'm still getting a fair batch of complaints from readers who have responded to advertisements for tapespondents by sending the first tape themselves—and never seeing it again in consequence! As one ruefully remarked: "For some people, tape recording must be a very cheap hobby, judging by the increasing number who invite one to send a tape, and yet have no intention whatsoever of sending it back."

Reader, A. C. Cleeve Sculthorpe of Warwickshire, for example, tells me that eleven tapesponding colleagues of his have, between them lost *fifty-eight* spools of recording tape in this way. He himself has lost seven. "It's most unfortunate," he writes, "that there is so much dishonesty in such an interesting hobby." I couldn't agree more. In fact, I'll go further and say that it's not merely unfortunate, it's a downright shoddy disgrace! They're a menace, these people, and it's about time they were told so in no uncertain terms.

Then there's the bloke who keeps a tape for months on end, without so much as a word to let you know what's happening. Correspondence by tape is one of the most satisfying pastimes there are, but it also demands that you spare a little time and thought for the poor so-and-so waiting for a reply at the other end. If you're too busy to answer straight away, drop your opposite number a postcard to say so. To ignore one's obligations in this respect is sheer rank discourtesy, and there's no earthly excuse for it.

I've little patience, either, with that other bright merchant who sends back a two-hour tape (which you'd previously *filled*) containing not more than fifteen minutes of "Ums" and "Ers," together with the inevitable and oft-repeated apology for not having made a list. But the best bit of all comes at the end of the tape. You've heard it! "Don't be long sending the tape back, will you? I'm dying to hear all your latest news." Cheeky devils! There's only one solution. If it's your tape that's being used, simply don't reply at all: wait and see whether he's interested enough to contact you again. If it's his tape, send it back clean, enclosing a brief note to the effect that you could find absolutely nothing on the tape from his end worth commenting on.

SOUND EFFECTS WANTED: Can anyone supply the following sound effects on tape (7½ or 3½ ips) which are required for use in amateur dramatic productions by two Midland groups:

(1) African war-drums, war-cries, etc. Must sound menacing. (2) Pistol-shots, followed by bullet-whine. Single bursts preferred. (3) Jungle-noises, such as frogs, crickets, birds, etc. (4) Angry crowd-noise. Booming, jeering, etc.

THE Beeby household boasts among its inmates a dog, a cat and a budgerigar. All three animals have an insatiable

appetite for tape. *Eating* the stuff! No kidding.

The dog will pick up a dropped length from the floor during an editing session; the cat, given the chance, jumps on top of the unit and chews it off the reel, whilst the bird will sneak a short snippet from the block and fly back to its cage with it.

Why? Is there something *in* recording tape which animals find irresistibly palatable? I wonder if readers have had this experience with domestic pets.

WAS intrigued to learn recently (weren't we all?) that a certain Miss K. was sufficiently keen on tape recording as to make a sixteen-hour tape. "Like me to try for an interview?" I said to you-know-who. Fortunately, I'd closed the door before something heavy hit it!

No reward for initiative in this place, you know. Dunno why I bother!

Designing to a specification

(Continued from page 27)

We hope that some insight into the laboratory processes involved will help the consumer to appreciate the sincere effort that is applied to design and production of hi-fi equipment.

A complete tape recorder is usually designed in three sections, one being the tape transport, or "tape deck," the second the electronics and finally the cabinet and presentation, as described in previous articles. It is indeed a brilliant engineer who is capable of all three.

It would appear that the approach to the design of the British tape recorder is quite different to that of any other country. The majority of imported machines are completely designed by one group or factory whereas in this country the tape mechanics are more often than not bought as a complete item, the electronics and cabinet being added by a totally different manufacturing plant.

This method of construction tends to produce an instrument of high quality as each firm in turn is able to concentrate on the perfection of their particular item. Unfortunately this can lead to poor and rather "bitty" presentation as no two designers think along the same lines. For example the tape deck manufacturing company may be in favour of the square razor edged design and the electronic engineering plant could prefer a soft rounded presentation. As the number of tape decks available is limited some clash of personalities is inevitable.

Methods of changing the facia of the mechanical sections may be used. This would, on most occasions, involve considerable expenditure on tooling costs. For example a part costing a few shillings to produce may have an initial tooling cost of two thousand pounds or more, thus decreasing the value for money potential of the equipment just for the sake of presentation. This is just as much a designer's problem as is the mechanical and audible function of any equipment.

When you next enter your radio shop do listen as well as look.



**YOUR LOCAL
DEALER**

In this feature you can check your nearest dealer who is a hi-fi specialist giving expert attention to tape equipment.

LONDON

BARNET : HERTS

St. Albans Road, Barnet

PHILIPS • FERROGRAPH • GRUNDIG
TELEFUNKEN • BRENELL • SONY
ROBUK, etc.

TAPE SPECIALIST CENTRE

Wyndsor Television

BARNET 1769

HI-FI CENTRE

Branch of KINGS ELECTRONICS

178, HIGH STREET, E.17

Walthamstow's Leading
Stockist of all makes of

**TAPE RECORDERS
AMPLIFIERS, TUNERS, etc.**

Free Demonstration in the
comfort of your own home

PHONE AMH 6242 or COP 4488

Lee Electronics

THE TAPE RECORDER & HI-FI AUDIO SPECIALISTS
400, EDGWARE ROAD, LONDON, W.2

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.

All Machines demonstrated for performance on Record and Playback. All leading makes of Hi-Fi equipment from stock

PADDINGTON 5521

**Tape records
reviewed**

**Vivid and CLASSICS
effective
theatre
music**



By Edward Greenfield

GRIEG. Peer Gynt—Incidental Music. Royal Philharmonic conducted by Alexander Gibson. WRC (TT 246), 3½ ips, mono. 29s.

The music Grieg wrote for Ibsen's play "Peer Gynt" is among the most vivid and effective theatre music of all time, and unlike so much that is effective in the theatre, it has transferred itself with equal effect to the concert hall. Grieg himself, selected two suites of four dances each, and these have become standard repertory works. Less well known, are the four remaining numbers, each highly attractive in its way, and all included in this recording. The *Wedding March* is my favourite of all the "Peer Gynt" music, a charming piece with dotted rhythms that snap crisply in a typically Norwegian way. The *Dance of the Mountain King's Daughter*, another of the rare pieces, sounds extraordinarily modern with its use of exotic, almost oriental scales.

Then in *Solveig's Song* this tape gives us April Cantelo singing most sweetly, though I am sorry she decided to use the German text. She also sings in *Solveig's Cradle Song*, another of the numbers usually omitted. Gibson gives fresh atmospheric performances with the Royal Philharmonic. The Orchestra does not quite recapture the magic that Beecham found in this same music, and Beecham for his recording was given the luxury of a chorus for the exciting number *In the Hall of the Mountain King*. But with all twelve numbers, this is the most complete account of the music available, whether on disc or tape. Technically the sound is excellent.

BLISS. Quintet for Clarinet and Strings; Quintet for Oboe and Strings Melos Ensemble of London. WRC (TCM 42), 3½ ips, mono. 29s.

Modern chamber music has a poor time of it in the recording studio. British composers are specially neglected, and a recording like this shows how terribly unjust that position is. These are among the very finest works that Sir Arthur Bliss, the Master of the Queen's Musik, has ever written, and the clarinet quintet deserves to be ranked as one of the outstanding chamber works of the present century.

He wrote it with Frederick Thurston's classical clarinet playing in mind, and in the four movements, the instrument's full technical range is wonderfully exploited. The form is curious in that the meat of the argument comes in the middle two movements—a concentrated scherzo in sonata form and a free-flowing slow movement—

while the outer ones are comparatively light—an opening piece which the composer himself describes as a "conversation" and a humorous light-hearted finale with the clarinet skipping all over the place. This is memorable as well as attractive music, and of how many modern chamber works can one readily say that?

The Oboe Quintet, written for Leon Goossens, is a less ambitious work but equally well suited to the instrument and with plenty of attractive tunes. These performances are definitive. The composer himself directed the recording sessions, and maybe that helped to create the striking atmosphere of vigour and enjoyment which so helps a new listener to appreciate the argument. Gervase de Peyer, the clarinetist and Peter Graeme, the oboist, deserve special mention.

AN EVENING WITH PAUL ROBESON. Paul Robeson singing "Some Enchanted Evening," "Ma Lindy Lou," the Skye Boat Song, the Riddle Song, "Down de Lover's Lane," "Land of my Fathers," "I'll Walk Beside You," "Ma Curly-headed Baby," Trees, the Castle of Dromore, "Just a-wearyin' for you," "Climbing Up," with the Williams Singers. HMV (TA-CLP-1415), 3½ ips, mono. 35s.

This must have been recorded three or four years ago, and it would be idle to pretend that the unique Robeson voice was quite at its richest by that time. But what a wonderful instrument it was still. If ever a bass voice smiled of its very nature, it is Robeson's. Where most dark voices tend to sound sinister and even villainous—think of Chaliapin's or Boris Christoff's—Robeson's reflects the man's own generous nature.

It hardly matters here that the more sustained melodies like *Some Enchanted Evening* and the *Skye Boat Song*, tax the voice to its limit, for Robeson's natural artistry is so compelling. Best of all though are numbers like *The Riddle Song*, where the ease of Robeson's earlier career is again recaptured. The orchestrations and musical direction are by Geoff Love. The recordings are faithful, with Robeson's voice very forward.

More new

POPULAR

tapes

from

America



By Don Wedge

DANCE TEMPO CHA-CHA-CHA. Manuel Rivera and his Orchestra. Crown (ST 123), 7½ ips, 4-track stereo. 55s.

America has provided some good pre-recorded tapes by direct export in the past. Audio Fidelity products were particularly notable. Now a new source of supply has opened up—records from the Californian label, Crown. *Cha-cha-cha* is the best of the first four imported Crown tapes to reach me.

Cha-cha rhythms, though out-dated in the hit parade, are still popular in the ballroom and for front room parties. Their sharp, fluid rhythm is particularly suitable for stereo.

Rivera's record gets off to a good start with *Esperanza* but most of the material is as American as the Stars and Stripes. Even so, in his hands, *Ida* and *The Girl in my Dreams* adapt to the cha-cha beat.

THE ERA OF GLENN MILLER. Members of the Glenn Miller Orchestra. Crown (ST 102), 7½ ips, 4-track stereo. 55s.

Crown here offers an album in the mood of the great Miller band of the early 40's. No performer details are given, except for a brief mention that the record was by members of the leader's orchestra. Rather vague!

On the whole, it is a faithful reproduction of the Miller style and his sound, of course, cannot be heard stereophonically except in such recollections.

Many Miller favourites are included, among them *Serenade in Blue*, *Chattanooga Choo Choo* and *Sunrise Serenade*.

COMPOSITION OF DUKE ELLINGTON AND OTHERS. Orchestra conducted by Maxwell Davis. Crown (ST 110), 7½ ips, 4-track stereo. 55s.

The previous record set out to capture the music of the Miller era. This one covers the longer lasting writings of Ellington and his associates. The sound, too, is close to the Duke's own bands—none of which are available here in stereo tape, of course.

Ellington pops—like *Mood Indigo*, *Take the A Train*—as well as the more involved *Main Stem* and *Jeeps Blues* will please all Ellingtonia lovers, but I am sure they would prefer the real thing with identifiable personnel.

EXOTIC PERCUSSION. Milt Raskin. Crown (ST 115), 7½ ips, 4-track stereo. 55s.

Percussion music is particularly suitable for stereo. Its rhythmic effects, designed almost to supersede melody, destroy a lot of point in mono.

There is a South Sea tinge to this group's offering, and it is one of the best percussion values available on tape.

PLEASE, PLEASE ME. The Beatles. Parlophone (TA-PMC 1202), 3½ ips, mono. 35s.

No group has ever made such a dent on the music scene as this Liverpool quartet. In fact, it is doubtful if anything has made such an impact on the British teenager—and that includes Cliff Richard's emergence all those five years ago.

Please, Please Me is the hit that really started the Beatles on their sensational climb. This record includes no fewer than four hits—*Love me do*, *Do you Want to Know a Secret*, *A Taste of Honey* and *Twist and Shout*.

This is not bad and two others—*Misery* and *Chains*—also own a place in the list of worthwhile pop songs of 1963.

This is the sort of pop music value which will make the tape a must for recorder-owning teenagers. It will be on many Christmas lists.

Although the Beatles have such an overnight success I have a feeling that they will be an important part of the scene for years to come. There will be many more records—even on tape.

Eight of these 14 songs were written by Paul McCartney and John Lennon, both group members. They are prolific writers and there is plenty more to come from them.

CONNIE FRANCIS SINGS MODERN ITALIAN HITS. MGM (TA-MGM C-930), 3½ ips, mono. 35s.

This is a very good way to bring a continental flavour into your home. Connie Francis seems much more at home than on her previously released tape record "Songs to a Swinging Band." She takes such successes as *Al di la*, *Come Prima*, *Romantica* and *Quando Quando Quando*, adds her own blend of tear-jerk and they blend very well.

The record was made in Rome. Connie sings partly in English and there is an effective double tracking of *Come Sinfonia* where she recites a translation over her Italian singing.

THOSE LAZY-HAZY-CRAZY DAYS OF SUMMER. Nat King Cole. Capitol (TA-T 1932), 3½ ips, mono. 35s.

This must be Nat Cole's joke of 1963. The corn really gets too thick.

It works out as near pub music—one of the titles is *There is a Tavern in the Town*. It is not the kind of Cole performance that I like to hear.

CLEOPATRA SOUNDTRACK. Stateside (TA-SL 10044), 3½ ips, mono. 35s.

The first tape release on the Stateside label is the music written and conducted by Alex North for the over-publicised Elizabeth Taylor-Richard Burton-Rex Harrison epic.

For me the film is one big bore from beginning to end. North's music, however, is a redeeming feature. With such slow action, one notices the background music far more than in most films. Its scoring often rises to substantial heights.

Written for the stereo sound systems that go with big screen projection in cinemas, part of its effect is lost on a mono record in the home. Most orchestral records gain from being in stereo and if EMI wants to consider moving into the stereo tape market this would be a good starter.

FIFTY GUITARS GO SOUTH OF THE BORDER. The fifty Guitars of Tommy Garrett. Liberty (TA-LBY 1011), 3½ ips, mono. 35s.

Another record one suspects would have great advantages from being in stereo. Garrett is the brilliant a. & r. director of Liberty Records, probably the fastest growing of the American companies.

His principal contributions as a performer have been a series of albums featuring fifty fretted instruments—mandolins, certainly, and probably banjos as well as guitars.

They make a unique sound and offer pleasant listening with such standards as *Come Closer to me*, *Adios* and *You Belong to my Heart*, as well as the British song which supplies the title: James Kennedy and Michael Carr's composition *South of the Border*.

STRICT TEMPO DANCE TIME. Ernest Wilson Ballroom Ensemble. Saga (STG 8097), 3½ ips, mono. 32s. 6d.

Ernest Wilson was for long associated with Victor Sylvester and brings the same precision and attitude to dance music.

Melody, simple melody, is presented in a series of the four main ballroom dances: quickstep, slow foxtrot, waltz and tango. The tunes, in the main, are well known ones. *Moonlight in Vermont*, *Ebb Tide*, *I'll Remember April*, among them.

However, Wilson, a noted composer of tangos, includes some of his own compositions. *Capa y espada* is particularly notable. Sixteen tunes make very good value.

YOUR LOCAL DEALER

LONDON

- ★ 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)

Leonard G. Francis presents—

SHEEN

TAPE RECORDER CENTRE LTD.

Specialists in Tape Recorders
and Accessories etc.

—THE CENTRE FOR—

FRIENDLY HELP — SALES — SERVICE
HOME DEMONSTRATIONS ANYTIME
—MODELS FROM 19 GNS.—
PRE-RECORDED TAPE: LANGUAGES
DANCE . CLASSICS . JAZZ

CALL—WRITE—PHONE

8 Station Parade, Sheen Lane, Sheen,
London, S.W.14 (next to Mortlake Station, S.R.)
Showrooms: PROSPECT 0985 10 a.m.—7 p.m.

THE SOUTH

HAMILTON

ELECTRONICS

HIGH FIDELITY
TAPE RECORDERS

35 LONDON ROAD
SOUTHAMPTON

TELEPHONE 28622

The tapes reviewed this month are issued by the following companies:

"Crown": Teletape Ltd., 33, Edgware Road, Marble Arch, London, W.2.

"Capitol," "HMV," "Liberty," "MGM," "Parlophone," "Stateside": E.M.I. Records Ltd., 20, Manchester Square, London, W.1.

"Saga": Saga Records Ltd., 127, Kensal Road, London, W.10.

"WRC": World Record Club, Box 11, Parkbridge House, The Little Green, Richmond, Surrey.

YOUR LOCAL DEALER

THE SOUTH

PORTSMOUTH and 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.

299 Commercial Road, Portsmouth
Telephone: 23097
4 New Road, Southampton
Telephone: 27092



TAPE RECORDERS

(Bournemouth) LTD (Exeter)

Southern England's
Biggest Centres for

PHILIPS . FERROGRAPH
GRUNDIG . TELEFUNKEN

BRENNEL . AND ALL LEADING MAKES

Accessories by return

Call, write or phone

THE TAPE RECORDER PEOPLE

874 Christchurch Rd., BOURNEMOUTH Tel. 45096
3 Seamoor Road, WESTBOURNE Tel. 64292
1 Sidwell Street, EXETER Tel. 75779

WORTHING TAPE RECORDER CENTRE

22 New Broadway, West Worthing, Sussex

TAPE AND HI-FI SPECIALISTS

Agents for Vortexion, Ferrograph, Fi-Cord, Truvox, Philips, Revox, Butoba, Wyndor, Elizabethan, Brenell, Loewe-Opta, Grundig, Leak, Quad, Armstrong, Shirley, S.T.C., Reslo.

REPAIRS. TERMS. EXCHANGES.

Telephone: WORTHING 9260

SCOTLAND

GLASGOW

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.

60 ST. VINCENT STREET, GLASGOW, C.2
Telephone: City 3847/8

NEW PRODUCTS

NEW RECORDER RANGE FROM TRUVOX

THREE new recording units, each with two- and four-track versions are announced by Truvox Limited.

The first of the new units is a two-track recorder (R92, below) selling at 69 guineas, with a four-track version at the same price (R94). The 59-guinea PD93 (right) is a two-track mono tape unit (without loudspeaker), with the PD95 as its four-track version. A two-track stereo tape unit, PD97 (four-track, PD99), sells at 79 guineas.

This new 90 series of Truvox machines incorporates three tape speeds, 7½, 3½, and 1½ ips, and accommodates up to seven inch spools. Playing time using long-play tape at the slowest speed is just over three hours per track. Rewind is given as one minute for 1,200 ft. of tape. The quoted frequency response of the series 90 models at the three speeds are respectively 40-17,000 ± 2 dB (30-20,000 ± 4 dB); 40-10,000 ± 2 dB (40-12,000 ± 4 dB); and 60-8,000 cps ± 3 dB. Wow and flutter is given as better than .1 per cent; .15 per cent; and .25 per cent. Signal-to-noise ratio is given as better than 50 dB with hum quoted at 45 dB.

International top tracking standards left to right are employed. Three motors are incorporated, with the drive disengaged in the off position.

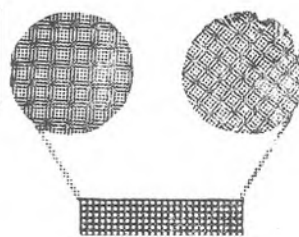
Other specifications include inputs for microphone (1.4 mV at 2.2 M ohms); and for radio or pick-up (150 mV at 500 K ohms).

Among the many features of the 90 series are piano-key operation; meter recording level indicator; Hubloc reel carriers; four-digit rev. counter with spring loaded reset button; hinged editing panel for easy access to heads with splicing groove; tape end



autostop mechanism; facilities for superimposition and mixing; pause control which can be used as inching button on fast rewind; and styling for horizontal and vertical operation.

Printed circuits are employed, for the first time by Truvox, in the recorder and mono tape unit. These models each have an EF86, ECC81, ECC83, ECC82, and an EC25 metal rectifier. The stereo tape units employ two of each of these valves; and the recorder has an additional ECL86. An 8 x 5-inch Rola Celestion speaker is fitted in the recorder only. Power output is rated at



four watts. The output to external amplifier is through a cathode follower, 100 ohms, output voltage variable up to one volt.

The Series 90 recorder measures 17½ x 16½ x 8½ inches and weighs 35 lb. The mono and stereo tape units measure 16 x 16 x 8 inches, and weigh respectively 26 and 29 lb.

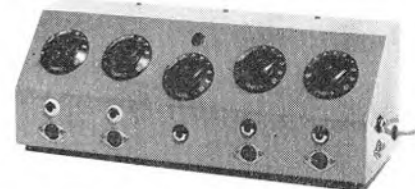
Truvox Limited, Neasden Lane, London, N.W.10.

FOUR-CHANNEL MIXER UNIT ANNOUNCED

A SELF-POWERED four-channel mixer unit is announced by the Esisolder Iron Company. The Esimix Major, a development of the earlier Minor model, has dual inputs and outputs for standard jack and Din plugs. It is also fitted with a Hz monitoring socket and master fader control.

Completely independent and portable, the Major, illustrated below, has an output from a cathode follower providing a nominal impedance of 600 ohms with up to 200 mV for feeding the radio or gram. input of a tape recorder, or high level input to a power amplifier.

Microphone inputs are Hz with a sensitivity of 2 mV. The two high level inputs



are suitable for radio, pick-up, or tape recorder outputs, and have a sensitivity of 100 mV.

External matching transformers for low impedance microphones can be supplied extra. The price is 19 guineas.

Esisolder Iron Co. Ltd., 98, Dominion Road, Worthing, Sussex.

WELMEC INTRODUCE THEIR CHEAPEST MODEL

THE cheapest recorder to come from the Telefunken stable is announced by Welmec Corporation. This is the M55, illustrated below, a two-speed, two-track mono recorder retailing at 43 guineas.

Accommodation for up to 5½-inch spools provides a playing time of 64 minutes per track using long-play tape at the top speed of 3½ ips. The quoted frequency response is 40-16,000 cps at 3½ ips, reducing to 9,000 cps at 1½ ips. Wow and flutter is given as better than .2 per cent. with signal-to-noise ratio as better than 46 dB.

Press-button controls are featured together with extra sensitive braking and tape tension. Other features include pause control, record safety button, three digit rev. counter, auto-



matic tape end stop, connections for earphones, remote stop/start control and extension speaker, tape splicing groove, and a combined tone control.

Inputs are for microphone (2 mV at 2 M ohms); radio (2 mV at 47 K ohms) and 160 mV at 2M ohms. Power output is rated at 2½ watts through the 4.5 ohms loud-speaker socket. Power consumption is approximately 40 watts. The mains supply is 110/127/200/220/240 volts, AC at 50 cycles. Valve line-up includes an EF86, ECC83, EL95 and EM84.

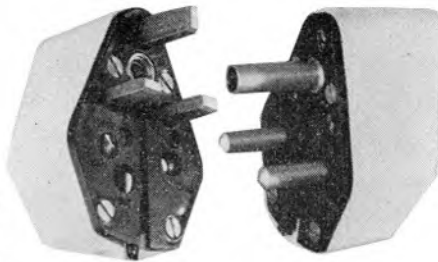
The Magnetophon M55 measures 14½ x 13 x 6 inches. Included in the price is a 5½-inch spool of LP tape, spare spool and recording lead.

Welmec Corporation Limited, Lonsdale Chambers, 27 Chancery Lane, London, W.C.2.

FIVE-IN-ONE PLUG BY NEW FIRM

A FIVE-IN-ONE fused electric plug which will overcome the problem of changing plugs for various sockets has been introduced. The new plug, the Fitall Universal plug has been designed to fit all 13-amp fused, 15 amp and 5 amp, two-pin and three-pin sockets.

Easily adjustable by the layman, the plug features various pins that are extracted from the body of the plug as required. A selector plate allows only the pins required to pro-



trude, and these are held in position by a twist action.

Our photograph shows the plug with (left) the 13-amp square pins ready for use, and (right) the 15-amp round pins ready for use.

Available in three colours, and suitable for industrial as well as domestic use, the Fitall Universal, sells at 11s. 6d. A carton of ten costs £4 6s. 3d.

J. L. Tofts, 305 High Street, Ponders End, Enfield, Middlesex.

TWO NEW MODELS BY LEE PRODUCTS

TWO recent introductions by Lee Products are the Shaftesbury TR802 and TR804 tape recorders.

The TR802 is a single speed recorder operating at 3½ ips. The quoted frequency response is 60-10,000 cps. It will accommodate up to 5½-inch spools, providing a playing time of 64 minutes per track using long-play tape.

Inputs are provided for microphone (1.5 mV into 10 M ohms); radio (1.5 mV into 22 K ohms); and pick-up (75 mV into 1 M ohm). Outputs include low level (500 mV at 22 K ohms); and for an external loudspeaker (three watts at 3 ohms).

The controls are limited to record/play-back, stop, fast rewind, fast forward, and a pause control. Power supply is 200-250 AC, 50 cycles, and the consumption is rated at 60 watts.



It measures 14 x 16 x 6½ inches, and weighs 18 lb. The price is 26 guineas.

Their second new model, the TR804, illustrated above, has an additional speed of 1½ ips and a digital rev. counter. The quoted frequency response at the second speed is 60-6,000 cps and of course the playing time availability is doubled. It costs 33 guineas.

Lee Products (Great Britain) Limited, 10-18 Clifton Street, London, E.C.2.

YOUR LOCAL DEALER

MIDLANDS

Audio Electronics (Midlands) Ltd.

Specialists in Dictation Mcs., Tape Recorders, Inter-Com., Tapes and Accessories

Full After Sales Service on all Equipment

PHILIPS, GRUNDIG, TRUVOX,
ELIZABETHAN, ETC.

203 STAFFORD STREET,
WALSALL.

Tel.: 21086

SOUND BUSINESS

Specialists in
Sound Reproducing Equipment
Stockists of Butoba, Grundig, Sony,
Tandberg, Vortexion, etc.

Backed by a
First-Class Service Department

TYSONIC

W. M. Tyson, M.Brit.I.R.E.
41 Russell St., Leamington Spa
phone 24935

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



TAPE RECORDER CENTRE (Halifax)

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

30 King Cross St., Halifax. Phone 66832



MARK 5 Series 2

Spotlight on quality...

Specification:

4 speeds $1\frac{7}{8}$, $3\frac{3}{4}$, $7\frac{1}{2}$ and 15 ips • frequency correction at all 4 speeds • 3 independent motors • exceptionally low wow and flutter content • double-gapped ferrite erase head to minimise erase noise • narrow-gapped record/playback head to give extended frequency response • pause control • superimpose control • recording level indicator (meter extra) • takes $8\frac{1}{2}$ in. dia. reels • fast rewind (1200 ft. in 45 seconds) • digital rev. counter.

The Mark 5 Series 2 tape recorder is a high quality machine capable of making outstanding recordings.

It is tastefully finished in medium grey with chromed fittings, and designed not only for use as a complete portable recorder but for incorporation into a Hi-Fi installation.

(Deck, amplifier and power unit are available as separate items). A low-level compensated output socket is provided for driving an external Hi-Fi amplifier.

Brenell

BRENELL ENGINEERING CO., LTD
1a DOUGHTY STREET, LONDON W.C.1.
Telephone: HOLborn 7356/8



News from the Clubs

Ayr

Members of the Ayr club visited Sanquhar during August to record the ancient ceremony of the Riding of the Marches. Leaving Ayr early they arrived in time to record the initial ceremony in a drizzling rain and among bedraggled onlookers. The enthusiasts then proceeded to another part of the town to witness the drinking of the Stirrup Cup. Although the rain had stopped a strong wind was now blowing and their recording van became stuck in the mud making it necessary to call on some strong backs to move it back on the road.

The next stop was to record the Cornet's report and the crowning of the Sanquhar Queen. After lunch, the parade with its decorated floats and Pipe Band moved off, and the Ayr members set up their equipment to record the procession from a shop in the High Street. The final item to be recorded was the presentation of the Fancy Dress prizes back at the Square. Despite the numerous setbacks, the outing was thoroughly enjoyed and it is hoped to arrange similar exercises in the near future.

Secretary: S. J. Hourston, 25, Forehill Road, Ayr, Ayrshire, Scotland.

CATFORD

Recent activities of the Catford club included the engagement of a pianist so that recordings of live music could be made by members. Three stereo and seven mono machines recorded a first-class performance of popular music and modern jazz.

At one of the earlier weekly meetings the chairman John Porter lectured on the art of tape exchanges, playing various tapes to illustrate his talk. The evening ended with members recording a tape using his guiding principles, and a competition was set for playback within a fortnight. Each member was given details of a fictitious contact to whom they were to send a ten-minute tape.

Electronic music, with examples from a miscellany of equipment, was demonstrated at another meeting by John Ross. Once again members tried their hands after the lecture. A combined effort by the chairman and secretary provided a "Music for Loudspeakers" evening at an even earlier meeting on August 8. The music was selected to show the range of the equipment, and it varied from percussive recordings to guitars and vocals.

Secretary: B. W. Blakeney, 246, Ardgowan Road, Catford, London, S.E.6.

COTSWOLD

Once again the Cotswold society members have had the privilege of recording the first performance of a new work. This time they taped five pieces specially composed for the Cheltenham Young People's Orchestra. The recordings were made in stereo and mono in Cheltenham Town Hall.

September 1 saw members welcoming two E.M.I. representatives for a talk on professional tape recorder design. Mr. B. Sandford, chief designer of E.M.I., was accompanied by Mr. S. G. Griffiths head of the Broadcast and Recordings Sales Division.

Earlier, the tables were turned on three members of the club when Peter Duddridge, Ernest Morris and Peter Turner found themselves being interviewed on the history and background of the society's monthly programme "Cotswold Roundabout." Answers concerning the selection, gathering, and editing of material provided a four-minute broadcast in the BBC West Region programme "Very much at home."

Peter and June Turner provided the

material for one of the August meetings. When they presented a tape entitled "Magnetic Memory." Some of their earliest recordings, now ten years old, were heard. The items varied from birdsong and Cotswold voices to symphony orchestras, choirs, and organs.

Secretary: Peter D. Turner, Pike Cottage, Frampton Mansell, Stroud, Gloucestershire.

DERBY

A selection of favourite items on tape were played by members at one of the August meetings of the Derby society. This was followed by the monthly recorded quiz, presented by Mr. H. Burton, who also demonstrated head demagnetising. A short recorded talk on hi-fi equipment was also given.

Their AGM was held on August 28. The retiring chairman reported on the many and varied activities of the club during the past year, and then presented the Competition Cup to Douglas Flecknoe who had gained most points in the series of contests.

Secretary: Miss E. Hassall, 52, Richmond Road, Derby, Derbyshire.

GLASGOW

The winter session of the Glasgow club began with a recording being made of a day return visit to Moscow from Renfrew Airport. My initial surprise at reading this opening statement was short-lived when the secretary pointed out that Moscow is also the name of a village in Ayrshire.

Striding into their new season, members have already heard the start of a series of lectures on tape recording techniques provided by technical advisor J. Knowles; and a taped lecture on musique concrete prepared by chairman J. Wood.

Members of the blind magazine team are now searching for material for their future editions. They request the assistance of any club or individual with suitable recordings for their social service.

Secretary: A. McCallum, 9, Glendon Square, Glasgow, E.3.

LONDON

The August meeting of the London club was spent listening to the playback of recordings made during an organ recital in a London church. Ron Tucker then played a recording made at the Dr. Barnado Home to which the club members had donated a tape recorder. The members have an open invitation to visit the children who they have "adopted."

Their September meeting saw members listening to and judging the tape entered in the annual McManus Cup contest. Among the subject titles were Neighbours' children; a live musical item, interview with an interesting personality, and sounds in the home. Tapes were limited to ten minutes duration.

Secretary: Douglas J. Morris, 80, Tangier Road, Richmond, Surrey.

MAIDSTONE

During the recent AGM of the Maidstone club, Peter Ward was elected secretary, in succession to Reg Preston. The past year's activities were discussed, and plans made for their future ventures. Among these are the collection of sounds for a documentary programme on Maidstone, the inauguration of a social service for the sick and disabled; offers of help to local dramatic and repertory companies in the supply of sound effects and technical advice; and an open night for visitors. Plans are also being made to visit local tape recording facilities.

Secretary: Peter B. Ward, 504, Loose Road, Maidstone, Kent.

NORTH MANCHESTER

Since the North Manchester "Sound-trackers" moved to new headquarters in Hollinwood, they have been busy constructing a soundproof studio complete with built-in speaker facilities. An adjoining room will serve as a workshop and control room. Thus occupied, the members have still found time to make some interesting recordings, in-

cluding the Oldham Carnival and Festival, held at Belle Vue.

Regular tape contests are being held, the latest winner was chairman J. B. Cartmill who had interviewed the owner of a haunted house. Their monthly sound journal *Concord* also continues apace providing news and topical items. This is produced by J. McCormack who has also installed his own sound-proof studio in his home. Treasurer Jack Clayton is following his example and building a similar set-up.

Secretary: A. Lomas, 2, Hamer Hill, Chapel Lane, Blackley, Manchester 9.

PAIGNTON

News of a new club in formation at Paignton. The headquarters are situated in the Oakdene Hotel, Dartmouth Road, Paignton. No details were supplied concerning meeting times.

Secretary: Alan S. Heather, 7, Gibson Road, Paignton, Devon.

PRESTON

News of a new club formed in Preston has arrived in this office. Persons interested are invited to write to the secretary for details of membership and club meetings.

Secretary: M. McGhee, 14, Houldsworth Road, Fulwood, Preston, Lancashire.

ROMFORD

Another new club to appear in these pages is the Valence Tape Society established in Romford.

One of their activities was the organising of a stand at the Dagenham Town Show. Interviews were made with the various personnel connected with the show, and these were to be edited into one of the tapes in their programmes for the blind service. Interviews with the Mayor and Mayoress of Dagenham, and prominent political leaders were also obtained.

The members are exploring the possibilities of tape exchanges with the clubs at Ilford and Walthamstow.

Secretary: David Kirk, 58, Ashton Gardens, Chadwell Heath, Romford, Essex.

SOUTH DEVON

Fortnightly meetings after the holidays were resumed by members of the South Devon club on September 11. This particular meeting included a display of all members' equipment—a massive array varying in price from £4 to over £130. The display followed a special meeting at which Mr. Gordon Furneaux was elected secretary.

It was also decided that the club should have an associate membership available to those unable to attend regularly but eligible for extraneous activities of the club.

Earlier in the month, members answered a request from the North London club who required some examples of Devonshire dialect to help a local dramatic group in the production of a West Country play. Members of the Torbay drama group read extracts from the play. These were recorded and sent to London.

A complete programme of meetings is lined up for as far ahead as June 1964. A balance of visiting lecturers, members' programmes, practical sessions and social functions has been aimed at.

Secretary: Gordon Furneaux, 45, Kenwyn Road, Eltacombe, Torquay.

WORLD TAPE PALS

World Tape Pals announce the resignation of John James from the post of U.K. Representative. His place is taken by John N. Davies.

Mr. Davies recently appeared in the BBC's TV programme "North at Six" to talk about WTP activities. Within five minutes of the interview ending an interested viewer was on the telephone inquiring about WTP.

Over the last three years WTP in the UK has more than doubled its strength. At a get-together organised in London Rhona James presented the "Lance Award" for an outstanding educational tape donated to WTP's library by Mr. Bill Kemp of Chesterfield. Mr. Leslie

Wilson of Surbiton received an Award of Merit for the same reason.

During the gathering, Mr. D. S. Cox of Agfa Ltd. gave a demonstration of creative stereo.

UK Representative: John N. Davies, 19, Wythenshawe Road, Sales, Cheshire.

TAPE EXCHANGES

TAPE recorder owners who wish to contact others with similar interests, to exchange news and views by tape are invited to fill in and return the form shown on page 38, giving their name, age, address, special hobby or interest for this section.

Details given here also include speeds and spoon size to be used, name of recorder, and special area to be recorded.

Ashdown, Percy (73). 72, Kingsway, Newton-le-Willows, Lancashire. Experimental electronics, practical construction, light music. 7½, 3½, 1½ ips. 7-inch spool. Audiotron, two-track.

Barelay, Robin (46). 57a, Station Road, Sidcup, Kent. Spiritualism, social work for blind. 7½, 3½ ips. 5-inches. Repts R10, Butoba portable. Eire.

Barrett, F. A. (55). 23, Westbury Road, Walthamstow, London, E.17. Photography, model railways, classical music. 7½, 3½, 1½ ips. 7-inch spool. Sound Studio recorder.

Beal, Arthur (22). 19, Balfour Terrace, Middlesbrough, Yorkshire. Photography, dancing, reading. 3½ ips. 5½-inch spool. Telefunken, UK only.

Binner, John (35). 21, Birchall Avenue, Culcheth, Warrington, Lancashire. French and German languages. 3½, 1½, 15/16th ips. 7-inch spools. Philips EL3549. France and Germany.

Bird, David Arthur (24). 92, Gardiner Street, Gillingham, Kent. Cine and still photography, design, display, most music. 3½ ips. 3-inch spool. Philips EL3542, four-track. Male contacts preferred.

Bloomer, Arthur (52). 43, St. George's Road, Atherstone, Warwickshire. 35mm colour photography. 3½ ips. 5½-inch spool. Telefunken.

Brownrigg, Jack (48). 3a, The Mall, Clifton, Bristol 8, Gloucestershire. Humour, conversation, classical, folk and pop music. 3½ ips. 7-inch spool. Telefunken.

Burgin, William (42). 38, Falstaff Road, Sheffield 5, Yorkshire. Humour, all music. 7½, 3½ ips. 3-inch spool. Brenell Mk 5. Overseas only, letter first please.

Butcher, Barrie (51). 29, Florence Park Road, Cowley, Oxfordshire. 35mm photography, philately, pop music. 7½, 3½, 1½, 15/16th ips. 7-inch spool. Philips EL3549, four-track. UK only, letters not required.

Cleary, John A. (30). 3, School Road, Hale, Altringham, Cheshire. Motoring, all music. 3½ ips. 5½-inch spools. Grundig TK20. Letters not required.

Clelland, James (30). Dean Bank Lodge, Dean Bank Lane, Edinburgh 3, Scotland. Photography, cycling. 3½ ips. 7-inch spool. Philips EL3541, four-track.

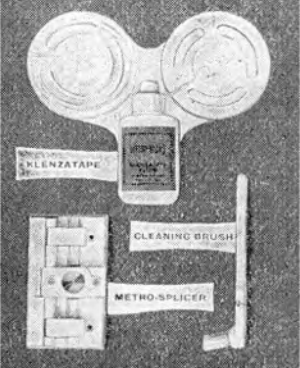
Cooper, Charles (27). 688, Shatto Place, Apartment 27, Los Angeles 5, California, USA. Films, current affairs, fiction, jazz music. 3½, 1½ ips. 5-inch spool. Japanese PT8D. UK.

Docherty, John (22). 17, Virgil Street, Old Trafford, Manchester 16, Lancashire. Films, books, records. 3½, 1½ ips. 5½-inch spool. Ferguson. Female contacts only in USA, Australia, Scandinavia, New Zealand, Germany, France and UK.

Dutton, K. B. (21). Nurses Home, Rubery Hill Hospital, Rubery, Birmingham, Warwickshire. Films, photography, pop music. 3½ ips. 4-inch spool. Philips EL3541. Female contacts preferred in UK, USA and Canada.

(Continued on page 38)

METRO SOUND TAPE RECORDER ACCESSORIES



tape accessories set

Tape Accessory sets carded as shown and containing Klenzatape, Metro-Splicer, Metro-Brush 27/6 each

KLENZATAPE Price per Kit 12/6. Refill fluids 3/11 per bottle*

METRO-SPLICER Splicer Kit complete with Film Emulsion Scraper and Spare Cutting Unit—12/6. Spare Scrapers 1/3 each. Spare Cutting Units 2/6 each.

METRO-TABS 3/11 per set complete with Index.

METRO-BRUSH 2/6 each.

METRO-STOP 17/6 per set.

METRO SOUND MFG. CO. LTD.
19a Buckingham Road, London, N.1
Tel: CLIssold 8506

PRE-SLEEP

STUDY & THERAPY

Two revolutionary new techniques in their respective fields of Academic Learning and Mental Health which have been rendered possible by the invention of the modern tape recorder.

PRE-SLEEP STUDY

is the jet age technique now being increasingly employed by Students of languages and other academic subjects, by Actors learning their parts in plays and Public Speakers with new data to memorise at short notice.

Whether you are good at ordinary methods of learning and memorising or not, this new technique is capable of greatly increasing and improving results.

PRE-SLEEP THERAPY

This new therapy has now assumed a major role in the advancement of Psychiatry and Mind Development, i.e. in the development of human abilities and certainty.

It has the important advantage that it can be practiced by anyone in the privacy of his home at only a fraction of the cost of repeated visits to a practitioner.

Send now for free details of our Pre-sleep Study Recorder, Time Switch, Pillow Speaker, Cassettes, Induction and Language Tapes, and general information of these vital subjects.

PSYCHOLOGY TAPES LTD.

16 Kings College Road, London, N.W. 3 PRLImrose 3314

FRANCIS OF STREATHAM

*Brenell STB/1 Stereo... £120	*Telefunken 97 Stereo... 95 gns.
Akai M6 Stereo ... 130 gns.	*Telefunken 98 Stereo... 95 gns.
*Brenell Mk. V. Model M ... 88 gns.	Truvox Series 60, 1/2 & 1/4 Tr. ... 39 gns.
*Brenell Mk. V. Series 2 ... 69 gns.	Truvox Series 80/2 Tr. ... 55 gns.
Cossor 4 Tr. 1604 2Sp ... 39 gns.	Truvox Series 80/4 Tr. ... 59 gns.
Cossor 4 Tr. 1605 ... 62 gns.	*Vortexion WVA ... £93.13.0
Cossor 4 Tr. 1603 ... 28 gns.	*Vortexion WVB ... £110.3.0
Elizabethan Popular ... 22 gns.	*Vortexion C Stereo ... £148.10.0
Elizabethan LZ. 30 ... 32 gns.	*Vortexion CBL ... £160
Elizabethan LZ.29 ... 36 gns.	Wyndson Trident ... 33 gns.
Ferguson 3200 ... 26 gns.	
Ferguson 3202 2Sp 4 Tr. ... 33 gns.	
*Ferrograph Series V ... 85 gns.	
*Ferrograph 422 or 424 ... 110 gns.	
Fidelity Argyl Minor ... 22 gns.	
Grundig TK14 ... 35 gns.	
Grundig TK18 Magic Ear ... 39 gns.	
Grundig TK23 ... 45 gns.	
Grundig TK40 ... 75 gns.	
Grundig TK41 ... 75 gns.	
*Grundig TK46 Stereo... 99 gns.	
Loewe Opta 403 2S ... 45 gns.	
Philips 4 Tr. "Starmaker" ... 27 gns.	
Philips 4 Tr. 3541/H ... 42 gns.	
Philips 4 Tr. 3549 ... 62 gns.	
Philips 4 Tr. Stereo 3534 ... 92 gns.	
*Reflectograph 'A' 1/2 Tr. ... 105 gns.	
Robuk ... 36 gns.	
*Simon SP5 ... 93 gns.	
Sony Stereo 464 ... 75 gns.	
Sony 1/2 and 1/4 Track 521... 89 gns.	
Stella 4 Tr. 454 ... 38 gns.	
Stella 4 Tr. 459 ... 62 gns.	
Stella 458 2Sp 4 Tr. ... 39 gns.	
*Tandberg Series 6 ... 110 gns.	
*Tandberg Series 7 ... 93 gns.	
*Telefunken 85 de-luxe ... 83 gns.	
*Telefunken 95 ... 59 gns.	
*Telefunken 96 4 Tr. ... 69 gns.	

BATTERY PORTABLES

Philips Portable ... 24 gns.
*Butoba ... 66 gns.
Clarion Phonotrix ... 19 gns.
*Fi-Cord 202 ... 66 gns.
Stella ... 25 gns.
Stuzzi Memo-Cord ... 25 gns.
Loewe Opta 414 Bt./Mns. ... 47 gns.
Uher 4000/s ... 93 gns.
Cossor ... 25 gns.

*Microphone extra

MAINS POWER PACKS

Philips, Cossor, Stella... £5.0.0
Grundig... 8 gns.
Butoba ... 11 gns.
Fi-Cord ... £7.10.0
TRUVOX DECKS with Pre-Amps
PD 82—Standard Twin Tr. £42.0.0
PD 84—Standard 4 Tr. £46.0.0
PD 83—Professional 2 Tr. £48.10.0
PD 85—Professional 4 Tr. £52.10.0
PD 86—Pro. 4 Tr. St. ... £63.0.0
PD 87—Pro. 2 Tr. St. ... £63.0.0

Also by Brenell and Wright and Weaire

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

Hi-Fi Dept.

- MICROPHONES, MIXERS etc.
 - Gramplan Reflector ... £6.0.0
 - Gramplan Ribbon ... £11.10.0
 - Gramplan DP/4 Dynamic £8.0.0
 - Lustraphone Ribbon ... £7.17.6
 - Lustraphone LFV/59 ... £8.18.6
 - Simon 'Cadenza' Ribbon £10.10.0
 - Reslo Dynamic Cardioid £10.15.6
 - Reslo Ribbon ... £10.2.0
 - Reslo Pencil Ribbon ... £8.0.0
 - A.K.G. D.19c. Mic. ... £17.10.0
 - A.K.G. Stereo D.88 ... £19.19.0
 - A.K.G. K.50 Headphones £7.10.0
 - Grundig Stereo Mixer 18 gns.
 - TSL 3 Channel Mixer £2.7.6
- MICROPHONES by ACOS, and TELEFUNKEN All Walgain Products. Brenell and Philips mixers.
- TAPES & ACCESSORIES
 - Standard, Double Play, Long Play and Triple Play in all sizes by all leading makers.
 - Pre-recorded Tapes by Columbia, H.M.V., Saga, Music on Tape, etc. Bib, Bond and E.M.I splicers. Matching transformers. Plugs, sockets, etc.
 - Deflexers by Walgain, Wearite.
- STEREO AND MONO AMPLIFIERS
 - Quad Scott Chapman
 - Tripletone Aveyel Leak
 - Rogers Armstrong B. & O. H.M.V. Pye Eagle
- TUNERS by
 - Quad Rogers B. & O. Chapman
 - Leak Armstrong Pye H.M.V. Tripletone Aveyel
- LOUDSPEAKERS
 - Quad Pye Philips W.B.
 - Colrad Wharfedale Goodmans
 - Tannoy Leak Lockwood
 - Lowther Kef Rogers Mordaunt
- MOTORS, PICKUPS, GARRARD Tannoy
 - Goldring-Lenco Connoisseur
 - Shure Decca Stereo
 - A.D.C. Decca 'Deram'
 - Philips Acos Ronette B. & O. E.M.I. SME Mk. II Ortofon
 - Thorens Pickering Eagle BSR

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

● 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

STReatham 0466/0192

TAPE IN EDUCATION

(Continued from page 19)

At the point where the children hide to watch the strange happenings to their mural, the "noises" began, and each child began moving when he heard his own sound, so that at one point the whole stage was full of vivid shapes and whirling movements. As each noise ceased the shape went back to its original frozen position and when all was still once more, the taped voices of the children were heard as they spoke their epilogue.

You may ask, why not let the children actually speak their lines and the musicians play at the final performance instead of taping the two sections. My answer is that I am interested in encouraging children to be creative. They were being creative as their fertile imaginations produced the introductory playlet. To have written this down and forced children to learn it simply would not have been creative but repetitive. Because of this the final performance could never have achieved the spontaneity of that recorded version, recorded in the full spate of creation.

Similarly the sounds. The value came

in ensuring a listening awareness, a mutual desire to produce exactly the right sound for the job in hand whilst it was still fresh and alive. To have set this down and rehearsed and rehearsed it to the point where it could be produced for a performance would have been time wasting, and to me pointless.

To sum up this particular experience, three main points arise. First, the dramatic value to these junior children lay in their experiments in movement and sound rather than in the actual performance itself. Secondly, this combination of arts served to increase the children's awareness and appreciation of a work of art that is an integral part of the school's design.

Finally it showed how the tape recorder really is a creative force in the school if one can get away from the idea that it is only there to record scripted plays under studio conditions.

Footnote

Readers may be interested to know that the Grundig TK8 on which this "bringing the mural to life" was recorded, was stolen from the school. On the machine was a tiny spool of tape containing a dubbed copy of the strange noises which accompany the "mural." Did the thieves' first playback make them think they had picked a dud, I wonder?

BINDERS

The special binders for *TAPE Recording Magazine* are now available



No more torn covers and dog-eared edges ☆ No more hunting for mislaid copies ☆ Each copy is inserted as received to form a completely bound volume for permanent reference ☆ All pages open flat and effect secure binding with steel bars from first to last copy ☆ Strong board binders covered with rexine with the title printed in gold on spine



PRICE 14s. 6d.
(post free)

Order from:
7, Tudor St., London, E.C.4

ADVERTISEMENT INQUIRIES SERVICE

I should like further information about the

(product) mentioned on page.....of the
..... issue of *TAPE Recording Magazine*.

NAME

ADDRESS

November 1963

I should like further information about the

(product) mentioned on page.....of the
..... issue of *TAPE Recording Magazine*.

NAME

ADDRESS

November 1963

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.

I should like further information about the

(product) mentioned on page.....of the
..... issue of *TAPE Recording Magazine*.

NAME

ADDRESS

November 1963

I should like further information about the

(product) mentioned on page.....of the
..... issue of *TAPE Recording Magazine*.

NAME

ADDRESS

November 1963

I should like further information about the

(product) mentioned on page.....of the
..... issue of *TAPE Recording Magazine*.

NAME

ADDRESS

November 1963

GLOBAL PRODUCTS

A stamped addressed envelope will bring you details of the following equipment:—

“Bulk Tape Eraser and Head Demagnetizer.” “Tape Slicer (All Metal).” (Trade inquiries welcomed.)

Canadian “Bel Cleer” Recording Tape.

Standard. 5" 600' 12/6. 7" 1200' 18/6.

Long Play. 5" 900' 15/-. 5½" 1200' 18/6. 7" 1800' 25/-.

Also Double Play Tape. 7" 2400' 34/-.

Postage 1/- per spool. Three or more post free
13, STANLEY STREET, ROTHWELL, NORTHANTS

TAPE RECORDING AND HI-FI

By the Editor of TAPE Recording Magazine

The best available introductory guide
160 pages, 40 illustrations. 13s. 3d. (including postage)
from Tape, 7, Tudor Street, London, E.C.4

COMPLETE "SLEEPOMATIC" UNIT FOR ONLY £20

Comprising transistorised tape machine, auto time-switch, microphone, batteries, and under-pillow speaker.

INTERESTING FREE BOOKLET

and details of our range of tapes, discs, and equipment gladly sent on receipt of postcard.

(We are the pioneers of Automated Sleep-learning in Gt. Britain)

EDUCATIONAL RECORDINGS LTD., (Dept. T.G.)

21 Bishops Close, Church Lane, London, E.17

Invitation to Sound Reality

With the finest in High Fidelity Sound Equipment
Tape

Disc

Radio

plus a varied selection of furniture to house your choice and the accessories which go to complete the tailor-made set of equipment.

Specialist in High Fidelity Sound.

H. D. KIRK

Stereolectrics

LIMITED

Phone: 23093

150 HIGHER BRIDGE STREET

BOLTON

CUT ALONG DOTTED LINE

POSTAGE
WILL BE
PAID BY
PRINT AND
PRESS
SERVICES
LIMITED

TAPE RECORDING MAGAZINE,
7, TUDOR STREET,
LONDON, E.C.4

BUSINESS REPLY FOLDER
Licence No. ND 922

THIRD FOLD HERE

SECOND FOLD HERE

NO POSTAGE
NECESSARY
IF POSTED
IN GREAT
BRITAIN OR
NORTHERN
IRELAND

FLAP A

FLAP B

FIRST FOLD ALONG THIS LINE

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



The Grampian Ribbon Microphone

Exceptionally wide frequency response—virtually level from 40 c/s to 15 Kc/s—combined with excellent transient response, makes this the ideal instrument for the studio and wherever a high standard of fidelity is essential. Two models are available, each in three impedance sensitivities.

Model GR. 1, having a semi-cardioid response, gives approximately 10 db suppression to high frequencies at the rear face. It is ideal for overcoming problems of feed-back between microphone and speakers.

Model GR. 2, having a bi-directional "figure of eight" sensitivity pattern, discriminates against unwanted side noise both in the vertical and horizontal planes.

Supplied in attractive, padded instrument case, complete with 18 ft. screened lead, swivel holder and connector. **£11.10.0.**

Grampian

30 years' experience in
the manufacture of high-
quality microphones

A full range of accessories is available. Please send for illustrated leaflet. Enquire too for details of the famous Grampian DP4 range of Moving Coil Microphones
GRAMPIAN REPRODUCERS LTD
Hanworth Trading Estate, Feltham, Middlesex. FELtham 2657

● UNRIVALLED PART EXCHANGE FACILITIES

FOR TAPE ENTHUSIASTS

R·E·W

'PLUS FIVE' SERVICE!

A friendly welcome awaits you at our bright new showroom extension. Here you will find a lavish array of equipment at every price level . . . make your choice for immediate delivery, or if you cannot visit us, the fast and friendly R.E.W. Mail Order Service makes it easy for you to enjoy the professional results only possible with an advanced Tape Recorder. Get in touch with us now. We have thousands of satisfied customers and a reputation for generous part exchange, reliability and specialist service.

MACHINE OF THE MONTH

PAMPHONIC REFLECTOGRAPH

Type A 105 gns.

A magnificent new machine with a re-designed amplifier giving improved frequency response at all speeds on both record and playback.

2 Speeds: 3 $\frac{1}{2}$ and 7 $\frac{1}{2}$ i.p.s.

Separate Play-back Amplifier. V.U.M.

Meter. Semi-prof.

No Interest Terms £11 5s. deposit.

12 monthly payments of £8 5s.

Also available on H.P. Terms, 18-24

months to pay.

CASH FOR YOUR TAPE RECORDER

or Hi-Fi. Highest cash offers for good

equipment . . . get in touch today!

Just a few of the machines in stock waiting your inspection—NOW!

FERROGRAPH 5AN...	85 gns.
GRUNDIG TK46 ...	99 gns.
BRENELL Mk. V Series 2 ...	69 gns.
BRENELL Mk. V "M" ...	88 gns.
REVOX Stereo ...	110 gns.
REPS. R.10 2-Track ...	59 gns.
SIMON S.P. 5 ...	93 gns.
TANDBERG Stereo 6 ...	110 gns.
TANDBERG Stereo 7 ...	93 gns.
AKAI Stereo ...	130 gns.
VORTEXION WVA ...	£93.13.0
FERROGRAPH 522-524 ...	110 gns.
SONY Stereo 521 ...	124 gns.
AMPEX Stereo 1273 ...	290 gns.

REMEMBER . . . you're guaranteed a better, faster deal

AT **R·E·W** EARLSFIELD LTD.

Personal callers
always welcome

Write or 'phone Mail Order Dept. "TRM" 266-8 UPPER TOOTING RD., LONDON, S.W.17.

Telephone: BALham 7194-5

A NEW RANGE OF TUNERS by...

224 FM TUNER

Self powered with full provision, including space on the chassis, for simply plugging in an Armstrong Stereo Multiplex Decoder when regular stereo transmissions begin. Featuring precision tuning meter, dual audio outputs with pre-set gain control on each, and exceptional sensitivity. The styling is similar to the 223 Tuner as illustrated.

Price: **£22.10.0**

SPECIFICATION—Coverage: 87-108 M/cs.

Sensitivity: 1.5 μ V for 20 db quieting.

Output: 0-2 volts variable to match any amplifier or tape recorder.

Stages: R.F. Stage, Two IF Amplifiers, Limiter Stage and Foster Seeley Discriminator.

223 AM-FM TUNER (illustrated)

Identical in performance to the 224 above but with the addition of the Medium waveband.

Price: **£28.15.0**

SPECIFICATION—FM Band—as the 224 above.

AM Band—

Coverage: 180-600 metres.

Sensitivity: 5 μ V for 20 db quieting.

Automatic

Variable selectivity: 2 to 8 K/c/s depending on signal strength.

Filter: Built in Hetrodyne rejection filter.

Armstrong

The new 224 FM Tuner and 223 AM-FM Tuner are designed to provide outstanding facilities and performance with any tape recorder or amplifier.



Optional cases of teak and vinyl-hide are available for all models.

222 STEREO-AMPLIFIER—a new Integrated Stereo Amplifier matched in styling and performance to the NEW Armstrong Tuners.

Price: **£27.10.0**

Full descriptive literature available from Dept. No. T.N.T

ARMSTRONG AUDIO LTD. Warlters Road, London, N.7. Telephone: NORth 3213

YOU CAN TALK TO YOUR FRIENDS ANYWHERE IN THE WORLD



ON **BASF** LETTER TAPES SPECIALLY PACKED FOR MAILING



BASF LETTER-TAPE enables you to talk to relatives and friends anywhere in the world. **BASF** insistence on highest quality production makes the Letter-Tape extra sensitive to capture every shade of expression. Delight your friends far away—let them *hear* your news on the 150 feet long-play tape specially made for mailing. The lightweight **BASF** Letter-Tape comes complete with mailing carton and reply labels, and costs only 5/6d.



—SYMBOL OF
AUTHENTIC SOUND

BASF CHEMICALS LIMITED, 5a GILLESPIE ROAD, LONDON, N.5. TEL: CANonbury 2011

