

DECEMBER 1966

2¹/₂

TAPE

RECORDING MAGAZINE

IN THIS ISSUE RECORDING DRAMA

A How-to-do-it feature

- RADIOPHONICS
- SCRIPTWRITING
- PRODUCTION
- RECORDING TECHNIQUES

ALSO

On The Fringe Hi-Fi Notes;
Tape Glossary;
Video News; Tape Record
Reviews; New Products

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





Which microphone for you?

Microphones mean different things to different people. The fairground barker wants something robust and durable. The P.A. engineer wants clarity of speech. The commentator at a motorcycle scramble wants the microphone to exclude

background noise. The recording engineer of a gramophone company insists on the highest possible fidelity; the TV sound engineer has to have high quality but the microphone must be small and attractive for in-shot pictures. The STC range of high-quality microphones caters for all these requirements—and more.

Learn how much more by **visiting our stand in Room 249 at the Audio Fair** or write, 'phone or telex Standard Telephones and Cables Limited, Electro-Mechanical Division, West Road, Harlow, Essex. Telephone: Harlow 21341. Telex: 81184.

world-wide telecommunications and electronics

STC

BRITAIN'S LARGEST SPECIALISTS

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

- HIGHEST PART EXCHANGES
- OVER 100 MODELS ON DISPLAY
- INTEREST-FREE TERMS
- UP TO 2 YEARS' FREE SERVICE

HIGHLY RECOMMENDED



SONY TC260



**BRENELL
Mk. 5M**



UHER 4000L

SONY TC260 A brilliant new 4 track stereo model. Separate record and playback volume controls. Bass and treble controls. V.U. meters. Automatic tape stops. 7" Tape. 2 speeds. Superb Hi-fi quality. Complete incl. 2 dynamic microphones, fantastic value at **95 gns.**

TRUVOX R104 A first class quality mono tape recorder. All transistorised amplifier. Freq. 30-17,000. 3 Speeds. 7" Tapes. V.U. Meter. Mixing facilities. Auto tape stops. Locking pause control. 4 Watts. 3 Heads. Before and after record monitoring facilities, etc. **79 gns.**

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

SPECIAL OFFERS!

B & O STEREO MASTER Brand new 89 gns.
AKAI M69 Inc. mic. As new 39 gns.
TELEFUNKEN 85KL As new 39 gns.
PHILIPS EL3534 Stereo Inc. mic. 55 gns.

FERROGRAPH 632 A complete stereo record/replay pre-amplifier unit with inbuilt monitoring amplifier included. For the perfectionist who is only content with the finest possible performance. 3 speeds. 3 Heads. 4 Pre-amplifiers. Auto tape stops. Mixing. V.U. Meter etc. **126 gns.**

SONY TC250A The finest value for money. 4-track stereo tape record/replay preamplifier unit. Incorporates the latest Sony tape deck. 2 V.U. meters. 7" tapes. 2 speeds. Separate record/playback controls for each channel. For the budget-conscious Hi-fi enthusiast. **59 gns.**

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

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

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

GRUNDIG TK6 A handsome high quality battery/mains portable by the world famous company. 2 Tracks. 2 Speeds. Freq. 50-13,000. 4 1/2" Tapes. Meter for recording and battery level. Includes superb dynamic microphone. A portable recorder with big machine performance and quality. **69 gns.**

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

SPECIAL OFFERS!

FI-CORD 202A Brand new, few only 39 gns.
TRUVOX R64 Inc. mic. 18 gns.
SIEMENS I2 Stereo As new 39 gns.
GRUNDIG TK60 Stereo Perfect order 49 gns.

VORTEXION CBL. A superb complete stereo record/replay recorder, employs the latest Wright & Wearie 3 speed tape deck. 3 Heads. Two 4 watt amplifiers. Mixing. Before and after record/replay facilities. A recorder for those wishing to obtain professional results. **£172**

WYNDSOR VANGUARD

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

B & O 2000 The most comprehensive fully transistorised stereo recorder available. Its facilities are too numerous to list. Available in 2 or 4 track and suitcase or table model versions. A recorder for those wishing to purchase the finest available. **119 gns.**

BRENELL Mk 5 III A well proven mono recorder basically unchanged but highly developed over many years. 4 Speeds. 4 Watts. 2 Tracks. 8 1/2" Tapes. Super-imposing facilities. Monitoring. 3 Motors. An extremely well made and thoroughly reliable design of high performance. **74 gns.**

HOURS OF BUSINESS

HIGH HOLBORN:
Monday to Friday 9 a.m. to 6 p.m. Saturday 9 a.m. to 1 p.m.

BISHOPSGATE:
Monday to Friday 9 a.m. to 6 p.m. Closed all day Saturday.
Open Sunday 10 a.m. to 2 p.m.

KING'S CROSS, STRATFORD, LEWISHAM, EAST HAM:
Monday to Saturday 9 a.m. to 6 p.m. Halfday Thursday.

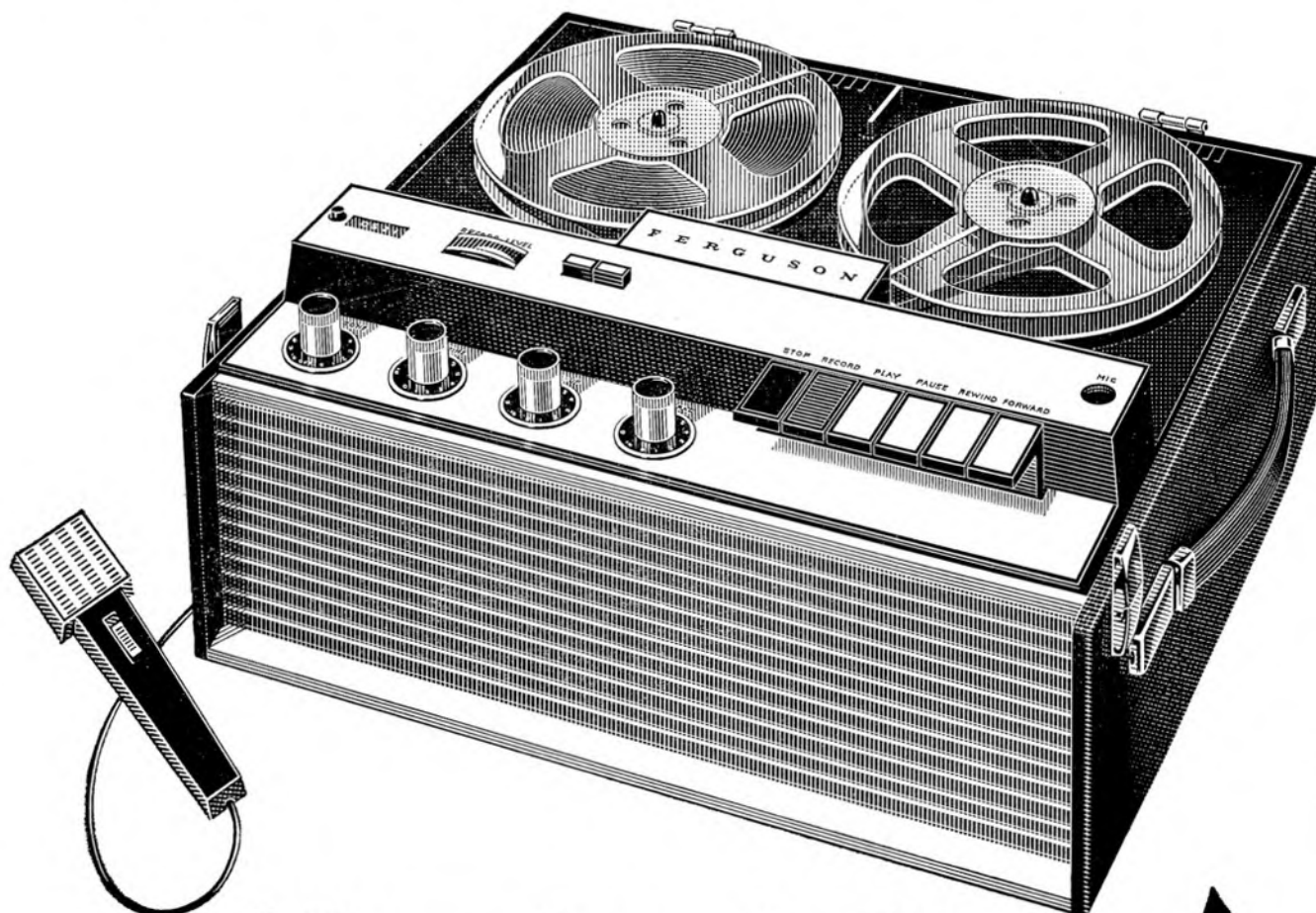
CHAncery 7401
TERminus 8200
BIShopsgate 2609
LEE Green 2399
MARyland 5879
GRAngeWood 6543

* **TRAVEL FREE TO NUSOUND** *
* To all our customers residing outside the Greater London *
* Area we offer a unique Free Travel facility. For full de- *
* tails by return, write to our Head Office: 191, Plashet *
* Road, London E.13. *

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

NUSOUND TAPE RECORDER CENTRES

Look at all the features on Ferguson's new 'professional' tape recorder—



...and it costs only 44gns

**GREAT
ENTERTAINMENT
VALUE**

Just look at the big-price features on this new low-cost Ferguson Model 3214 tape-recorder: three speeds, four tracks, 7" self-threading spools and up to 17 hours playing time per reel of double-play tape (8½ hours on the tape supplied). This is the recorder with the real professional touch: mixing facilities, two-way tape inching, double-track replay for special effects pause key, remote control microphone, and interlocking keys to prevent accidental

erasure. The output is 3 watts feeding into a 7" x 4" speaker with a frequency response of 40 c/s to 18 Kc/s at 7½ i.p.s.; 40 c/s to 14 Kc/s at 3½ i.p.s.; and 40 c/s to 7 Kc/s at 1⅞ i.p.s. Leathercloth covered wood cabinet with silver-trim panels, Beautifully designed and beautifully finished. With 1200 ft of free long-play tape, remote control microphone, and connecting leads.

Great, great value. Great entertainment, too.

FREE! Post this coupon now for full details of the Ferguson Tape Recorder range.

TO: FERGUSON DIVISION
Thorn House·Upper Saint Martin's Lane·London, WC2

NAME _____

ADDRESS _____

TM

FERGUSON MODEL 3214

ONE OF THE RANGE OF 26 HOME ENTERTAINMENT PRODUCTS MADE BY FERGUSON: TELEVISION · RADIOGRAMS · RECORD PLAYERS · TAPE RECORDERS · TRANSISTOR RADIOS
See the full range at your local dealers or send for free colour leaflet. To: Ferguson Division · Thorn House · Upper Saint Martin's Lane · London, W.C.2.

EMI Musicassettes

**1⁷/₈ I.P.S. 4 TRACK
MONO-STEREO
COMPATIBLE
TAPES**



**a
★
star
studded
first
issue**

Black & White Minstrels
"Magic of The Minstrels"

Semprini
"Magic Hour with Semprini"

Palm Court Orchestra/Leopold
"An Evening at The Palm Court"

Shirley Bassey
"Shirley Bassey"

Acker Bilk
"Stranger on the Shore"

Cliff Richard
"Love is Forever"

Eartha Kitt
"Love for Sale"

Joe Loss
"Go Latin with Loss"

Hawaiian Hula Boys
"Hi Fi in Hawaiian"

Russ Conway
"My Concerto For You"

Shadows
"Sound Of The Shadows"

Manuel's Music of the Mountains
"Exotica"

Pepe Jaramillo
"Mexican Fiesta"

Matt Monro
"I Have Dreamed"

Mrs. Mills
"Mrs. Mills' Party"

Silvester Strings
"More Great Show Tunes"

Garry Blake
"Sound Like Swingin' "

Big Ben Hawaiian Band
"Blue Hawaiian Skies"

Norrie Paramor
"Shadows in Latin"

Melachrino
"World's Greatest Melodies"



THE GREATEST RECORDING
ORGANISATION IN THE WORLD

E.M.I. RECORDS (THE GRAMOPHONE CO. LTD.) E.M.I. HOUSE, 20 MANCHESTER SQUARE, LONDON W.1.



Beware! This one is Wild!

It's Ampex 1100: the professional recorder with an amateur price

Just produced by Ampex, world masters of Audio equipment, the 1100 is packed with exciting features. Features that make this professional standard stereo recorder a pleasure to use, a revelation to hear. It loads the tape *automatically*, reverses *electronically*, and the unique dual-capstan drive keeps precise tape tension without pressure pads, without wow and flutter, even at the slowest speed.

No frustrating warm up with your 1100. It plays instantly. Perfectly. Because all its electronics are solid-state. Tantalum capacitors and Silicon transistors tremendously increase overall reliability and performance. Weight and service problems are minimised.

Punish it. It can take it. Over a third of the weight is rugged die-cast aluminium frames. So alignment is critically precise. And precision lasts a lifetime. The 1100 is the portable that can take rough handling. And still run silk smooth. An air-tight warranty sees to that. So does our name. Ampex.

Thrilling voice . . . lovely body. The 1100 not only looks good, it sounds good too. Compare it with live sounds; the truth is obvious. Compare it with other recorders; it's so much better the difference is embarrassing.

Most men will never handle a machine this good. What about you? Be warned, it will drive you wild. It's the professional recorder with an amateur price. From: £149. 10. 0.

AMPEX

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

Record it . . . and hear the play-back simultaneously on the Brenell Mk5 Type M



—and be sure it sounds superb!

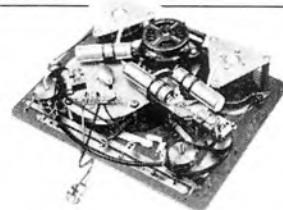
Loudspeaker tape monitoring, enabling you to check and adjust your recording as it is being made, is only one of the assets of this outstanding recorder. All the features the discriminating recordist has come to expect from Brenell tape recorders are here—and many others, too. Four speeds (frequency response 40-20,000 c/s at 15 i.p.s.), mixing, superimposing, hinged deck, pause control, safety erase lock, 8 $\frac{1}{4}$ " dia. spools, etc. The price ? 93 gns.

For the stereo enthusiast there is the STB2, £150.

Write for illustrated leaflet TRM 12

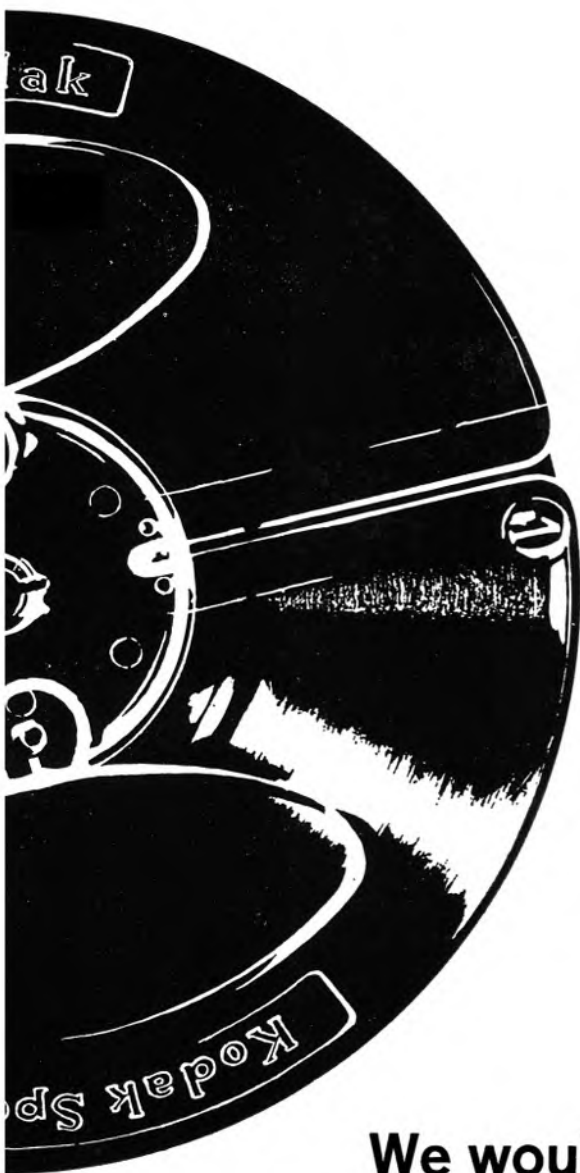
Brenell

BRENELL ENGINEERING CO. LTD., 231-5 Liverpool Road, London, N.1. NORTH 8271
GD 611



**The key to
Brenell's leadership
—The Mark 5 Series 3 Deck**

Used on all Brenell models mono and stereo. Provision for 4 heads. Four tape speeds. Wow and flutter content below 0.10 at 7 $\frac{1}{2}$ i.p.s. Fast rewind and 8 $\frac{1}{4}$ " dia. reel accommodation. (Version available to take up to 10 $\frac{1}{2}$ " NAB reels) Price £34.0.0.



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

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

You **have** to be best.

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

We did.

And we can prove it.

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

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

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



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

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

Name.....

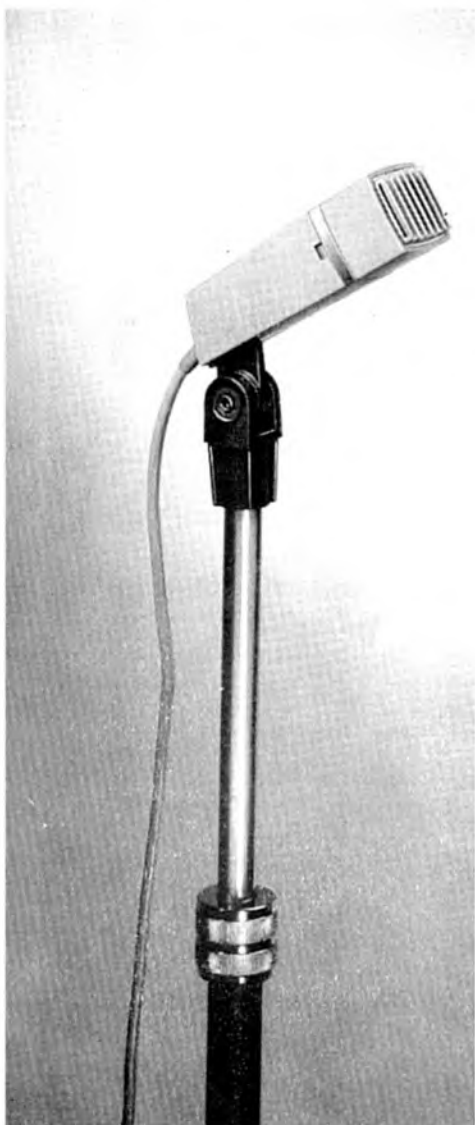
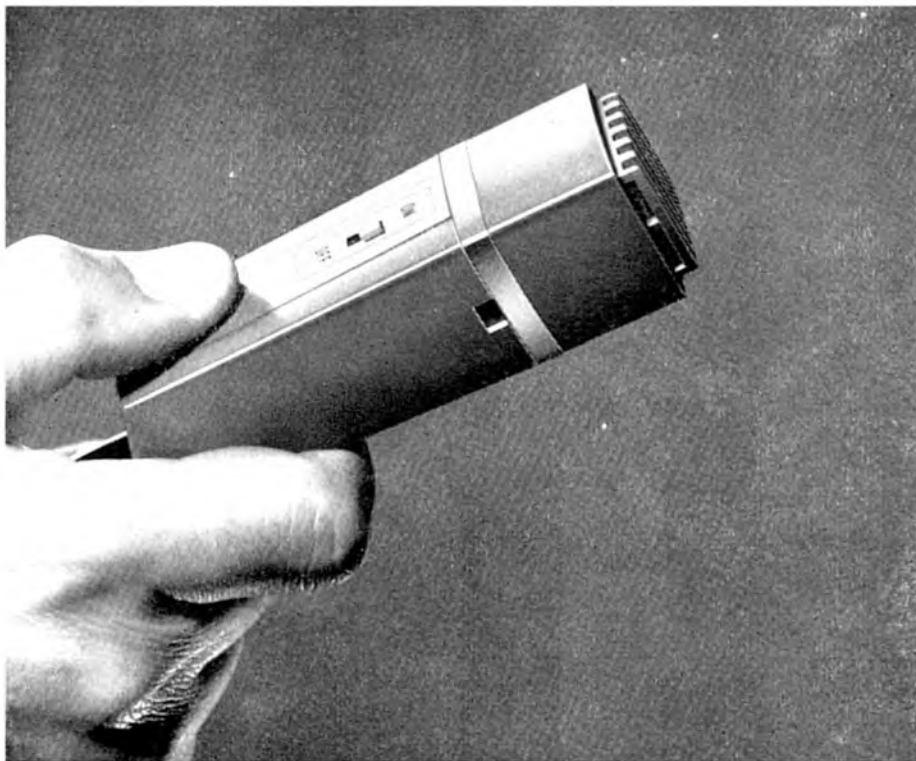
Address.....

.....

.....

TRM

'Kodak' is a registered trade mark



NOW
4-microphone versatility



from one quality kit

The Philips EL 7500 is a unique conception — a microphone and accessories cleverly designed to give you four configurations which cover every use — and to save you money, it's a kit.

A high grade moving coil insert, transformer and switch are housed within the clean lines of a most attractive but durable case. The basic unit makes a very efficient, lightweight hand microphone; slip-on accessories immediately adapt it to a floor stand or a neck-sling mike, or support it from the smart, functional table stand.

The EL 7500 is engineered by Philips and backed by many years of experience in manufacturing moving coil microphones.

The kit comes absolutely complete with all components and materials, while the profusely illustrated instruction book makes assembly easy and fast for anyone with basic soldering ability. The transformer can be connected to give 50k Ω , 500 Ω or 200 Ω impedance.

The EL 7500 has a good frequency response; with omnidirectional characteristics, excellent sensitivity and unique versatility, it's the ideal general purpose microphone for the enthusiast who wants something a little better for recording, public address or amateur radio.

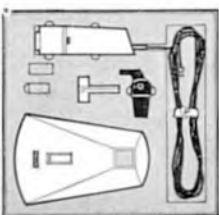
The kit is as well engineered as the microphone. Components are located in an attractive, shaped moulding — and the box is designed for simple modification into a permanent storage case after the microphone has been assembled.

Best of all, it's inexpensive. With no assembly time to pay for, the EL 7500 is offered at only £7.7.0.

See one at your dealer's now.

PETO SCOTT
sound and vision

PETO SCOTT LIMITED
ADDLESTONE ROAD, WEYBRIDGE, SURREY
Telephone: Weybridge 45511





Poor little rich boy!

When you've got a name like Akai you've got a problem. Everyone knows your family. The big expensive stereos. Then you come along. All the family attributes. Superb engineering. Fantastic sound reproduction. Except for two things. You're Mono. And you don't carry the big price tag the others do. That's the problem. How to persuade people (a) that you're a blue blooded number one Akai and (b) that price is no judge of quality.

Tell them this. Tell them you've the same deck as the Stereos. 4 track or 2 track; 2 speeds - $7\frac{1}{2}$ i.p.s. and $3\frac{3}{4}$ i.p.s. Response 40-12000 - ± 3 db. at $7\frac{1}{2}$ i.p.s. Built-in speaker or monitor headphone. 3.2 watts output. P.A. system amplifier isolated from deck; can be used separately or together. Mixing facilities provided; VU meter; 3 digit counter; pause control. Tell them that, then invite them to their dealers to hear how you sound.

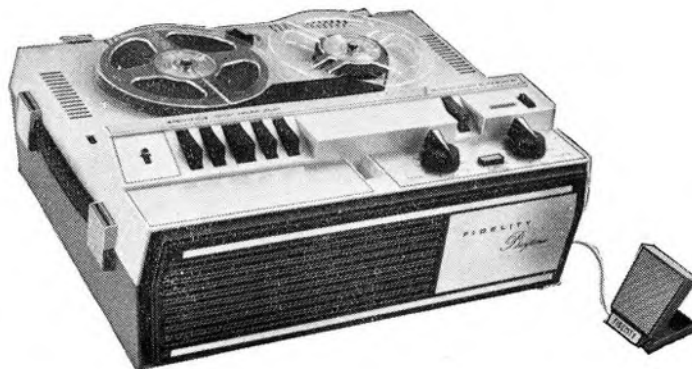
That'll convince them. And then tell them the price. An Akai for only 62 gns. The way you say it it'll sound like you're doing them a favour!

The Akai 910 Mono

 **PULLIN**
PHOTOGRAPHIC
(A Company within The Bank Organisation)

12 reasons why you will be delighted with Fidelity's sensational new Tape Recorder

1. It has three recording/playback speeds— $1\frac{7}{8}$ i.p.s. for economic speech recording, $3\frac{3}{4}$ i.p.s. for all general purposes, $7\frac{1}{2}$ i.p.s. for higher quality of music reproduction. *And* the choice of speeds permits playback of tapes recorded on most other machines.
2. It has a grouped 'keyboard' of mechanical controls for fast, sensitive, positive response to finger-tip pressure.
3. It has a pause control—invaluable when making tapes for slide synchronisation or for dubbing to magnetic stripe.
4. It has a digital tape position indicator (with instant re-set by press button) for rapid location of recorded effects, musical themes, etc.
5. A super-imposition facility allows, without any 'mixing' complications, the easy addition of a commentary to music and/or effects already recorded.
6. It has two inputs—one for optimum use of the microphone provided, and one for direct recording from radio, gramophone, second tape recorder, amplifier, etc.
7. It has an output socket for a separate loudspeaker which can be placed near the projection screen for realism. (The internal speaker is then automatically muted).
8. It has a 'monitor' socket (at high impedance) which is 'live' on both record and playback. Thus one can (a) listen (on headphones or separate amplifier) to what is being recorded, (b) record on tape whilst simultaneously 'feeding' a magnetic stripe projector or other amplifier or tape recorder, (c) dub on to magnetic stripe any material already recorded on tape, at the same time listening, so that sound/picture synchronisation is easily checked, (d) feed a playback signal to the "Synchroslide" type of synchroniser *without silencing the speaker*.
9. Electronic controls—tone, volume, superimpose—are designed and grouped for fast easy use with minimum possibility of error.
10. It has the reliability and excellent performance expected of all Fidelity Tape Recorders.
11. Whilst being particularly attractive to slide and cine enthusiasts, it also caters for all domestic purposes and can be operated simply by anybody in the family.
12. At 25 gns. for the twin-track model, or 27 gns. for the four-track model (microphone, tape and jack lead included) the Fidelity PLAYTIME represents quite outstanding value for money which is possible only because FIDELITY make and sell more of any single model of tape recorder than any other U.K. manufacturer.



FIDELITY PLAYTIME

3-Speed tape recorder (Twin-track) **25 gns**
(Four-track) **27 gns**

Prices include microphone, tape, take-up spool and jack lead.



**FIDELITY RADIO LTD., OLAF ST.,
LONDON W.11. TEL: PARK 0131**

TAPE RECORDERS · TRANSISTOR RADIOS
RECORD PLAYERS · RADIOGRAMS

TO FIDELITY RADIO LTD., OLAF ST., LONDON W11

Please send me a brochure describing the latest
Fidelity Tape Recorders, Record Players, etc.

NAME Mr./Mrs./Miss

ADDRESS

I am interested in the "Playtime" as a second machine for re-recording etc.

TRM a "primary" machine for general work

TRAILING LEADS CAN BE EMBARRASSING



SO DON'T LET THIS HAPPEN TO YOU use the Reslo radio microphone

A complete system consisting of a microphone (lavalier neck suspension type allowing unrestricted movement), a low power pocket transmitter for carrying on the person, and a sensitive high performance receiver, providing the audio signal for the associated amplifier and loud-speaker sound system. The purpose being to provide a high quality but *wire free link* between the microphone user and the sound reinforcement installation. Approved by the Post Office.



Radio microphone type MMD 1

Transmitter type R.M. 16



RESLOSOUND LIMITED

Reslo Works, Spring Gardens, London Road, Romford, Essex. Telephone Romford 49087

K. J. ENTERPRISES

BRITAIN'S PREMIER MAIL-ORDER RECORDING TAPE SPECIALISTS
IMMEDIATE 24 HOUR SERVICE ON ADVERTISED LINES
SEND TODAY AND SAVE!

NEW AMAZING OFFER! AGFA TAPE—HALF PRICE!

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

GRUNDIG TAPE 40% Off

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

DON'T MISS THIS RARE OPPORTUNITY. SEND NOW!

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

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

ILFORD TAPE NEAR HALF PRICE

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

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

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

TRIPLE PLAY TAPE—HALF PRICE!

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

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

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

SCOTCH MAGNETIC TAPE AT NEARLY HALF-PRICE!

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

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

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

Don't forget our other ACCESSORY BARGAINS!

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

International Polyester Tape 2,400' 7" reel (boxed) Only 25/- P. & P. 1/6
Boxed 8 1/2" Zonal Reels 3 for 15/- post free

SEND FOR LISTS OF OTHER TAPE AND HI-FI BARGAINS

K. J. ENTERPRISES. (Dept. T), 7 MASONS AVENUE, WEALDSTONE, MIDDLESEX (OPPOSITE HAPROW & WEALDSTONE STATION)
HARROW Q395 (CLOSED P.M. WED. & SAT.) REFUND GUARANTEE

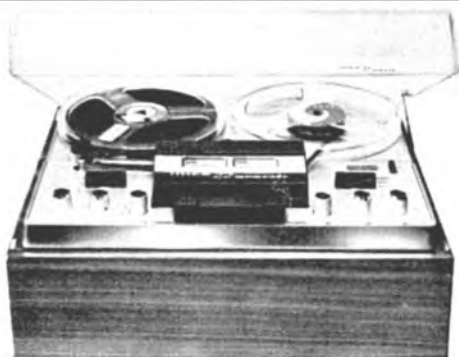
UHER

a range of tape
recorders to satisfy
every amateur and
professional
enthusiast



4000 REPORT L

A battery portable that offers you virtually every facility of a mains-operated recorder—with many exceptional new features. Four tape speeds provide an infinite variety of recordings. Price (incl. microphone and tape) 103 GNS.



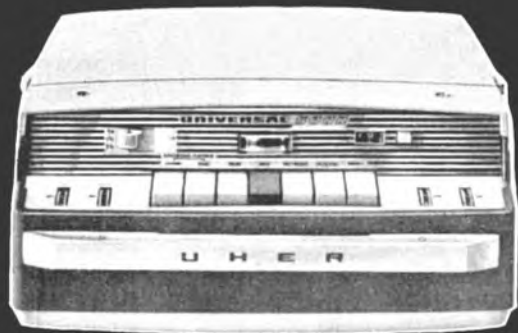
22/24 HI-FI SPECIAL

In many ways quite unique, this recorder meets the most exacting demands of a home sound studio. The Hi-Fi Recorder with a Test Certificate and Original Frequency Response Curve sheet for Hi-Fi systems. Price: 129 GNS.



724 L STEREO

A new, four track, all mains recorder priced at only 75 gns—and specially designed to meet the demand for an instrument particularly easy to understand and to operate.



UNIVERSAL 5000

An ideal dictation machine and recorder ensemble for professional and business use. Three tape speeds, exceptional handling comfort and high tonal quality. Price: 95 GNS.



784 ROYAL STEREO

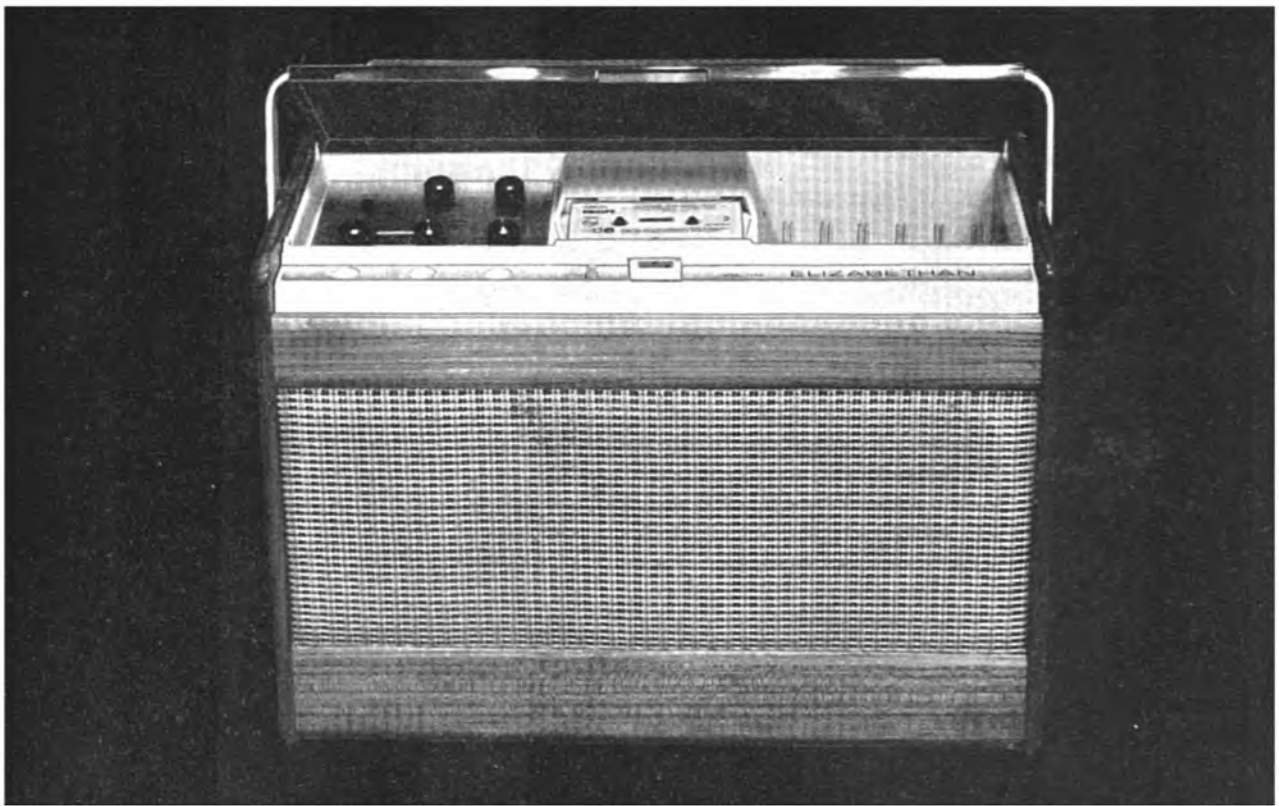
One of the most versatile recorders in the world with a fascinating range of recording possibilities. A high-quality stereophonic model featuring a simple knob control with eleven different functions. Four track Price: 129 GNS.

Quality production of tape recorders is the sole manufacturing aim of the UHER works. Specialisation has led to outstanding developments. UHER was the first to apply printed circuit technique to tape recorders and among the first to transistorize its entire range. The simple obsession of UHER manufacture—tape recorders for all purposes and to meet every professional and amateur demand—has won universal recognition for the superb quality of these fine instruments. Write for full information.

BOSCH LIMITED

205 GT. PORTLAND ST.,
LONDON, W.1.

Phone: L ANgham 2672-5



NEVER in the history of tape recorders a machine that looks and sounds like this!

Tall and handsome, cassette loaded and with a wonderful depth of sound (it has a 10 inch round Hi Fidelity speaker). And *only* the fabulous new Elizabethan LZ 612 allows you to slip a 90-minute programme from the top pocket of your jacket—or your handbag—and be listening to it at over 5 watts output, literally in the next second. No wonder this unique machine was the sensation of the Radio Show. Just study its advanced features . . . but better still, go to your Elizabethan dealer . . . hear it . . . and judge for yourself!

- Completely portable, mains/battery and car supply operated.
- Furniture style solid teak acoustic cabinet.
- Specially developed 10 inch round Hi Fidelity speaker.
- Separate bass and treble controls.
- Full mixing facilities via independently controlled inputs.

- Straight through amplifier monitoring providing 'listen while you record'.
- Separate mic, radio and gram inputs.
- Record/battery level indicator meter.
- 90 minutes per cassette playing time.
- 5½ watts output ■ Supplied complete with microphone, tape cassette and leads. **LZ 612 45gns.**

the Sound alone tells you it's

elizabethan

SEE AND HEAR THESE OTHER ELIZABETHAN MODELS, TOO!



LZ 9102T 27 gns
Compact portable battery operated cassette loaded tape recorder weighing only 3 lb.



LZ 32 (twin track) 32 gns
LZ 34 (four track) 34 gns
Brilliant 3-speed mains operated 2 and 4 track recorders.



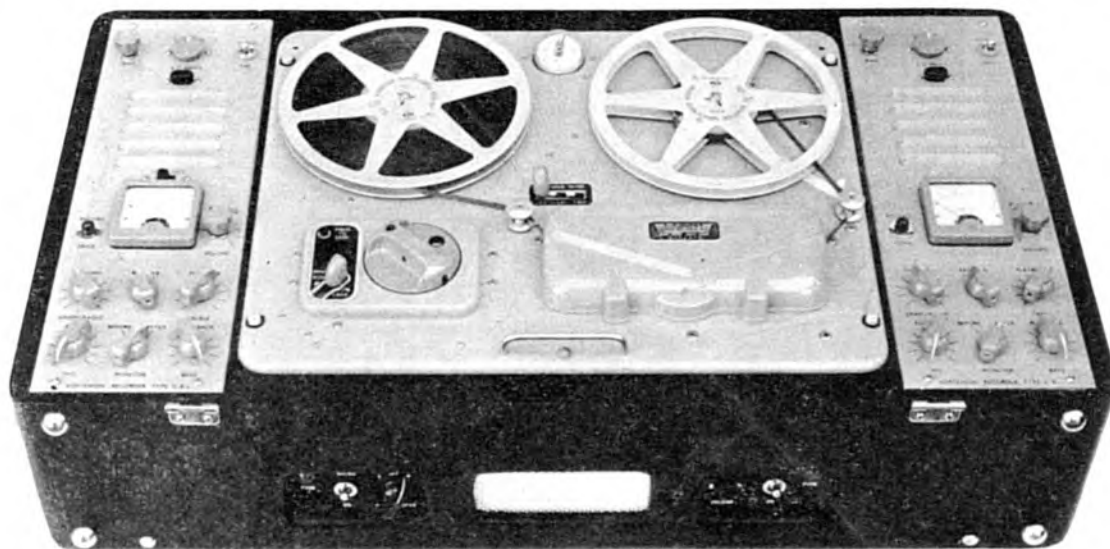
LZ 102 49 gns
Fully transistorised 4 track 3-speed mains operated recorder with outstanding performance.



LZ 711 75 gns
Complete portable mains operated stereophonic tape recording system for the creation of professional quality tapes.

Vortexion *quality equipment*

TYPE C.B.L. TAPE RECORDER



Here is a versatile stereophonic recorder which has no equal in its price group.

IT CAN record monaurally or stereophonically with its own mixed inputs from Gram, Radio or other sources and from high grade low impedance balanced line microphones. With good microphones, etc., the result is a suitable master for disc manufacturers. "Before and After" monitoring is provided together with adjustable metered bias for perfection.

IT CAN also make a recording on one track and then transfer it to the other track while measuring and listening to it and adding one or two more signals also metered. A special PPM type meter is now used.

IT CAN repeat the process and transfer this combined signal to the first track with one or two more signals. Composers use it for this purpose. One track may have music or commentary and the other cueing signals or commentary and either may be altered without the other.

IT CAN playback stereophonically or monaurally with its own amplifiers of $3\frac{1}{2}$ watts each.

Speeds $1\frac{7}{8}/3\frac{3}{4}/7\frac{1}{2}$ i.p.s. Price **£172 0s. 0d.**

Speeds $3\frac{3}{4}/7\frac{1}{2}/15$ i.p.s. Price **£180 0s. 0d.**

The Vortexion W.V.B. is a high quality monaural machine with "Before and After" monitoring. The recording inputs are a high sensitivity socket for moving coil or ribbon microphone and a high impedance socket for radio, etc., either of which can be selected by a switch. Superimposing and echo work can be done and the playback has reserve gain for abnormal requirements. This model cannot be converted for stereo playback, but it is a thoroughly reliable machine for the engineer specialising on monaural work.

Speeds $1\frac{7}{8}/3\frac{3}{4}/7\frac{1}{2}$ i.p.s. Price **£115 10s. 0d.**

Speeds $3\frac{3}{4}/7\frac{1}{2}/15$ i.p.s. Price **£128 0s. 0d.**

The Vortexion W.V.A. is a monaural machine which has a performance equal in sound quality to the other models. It possesses all the features of the W.V.B. except for "Before and After" monitoring, Dubbing and Echoes. The recording being made can be heard on the internal loudspeaker as in the W.V.B. and C.B.L. The controls are uncomplicated.

Speeds $1\frac{7}{8}/3\frac{3}{4}/7\frac{1}{2}$ i.p.s. Price **£96 7s. 0d.**

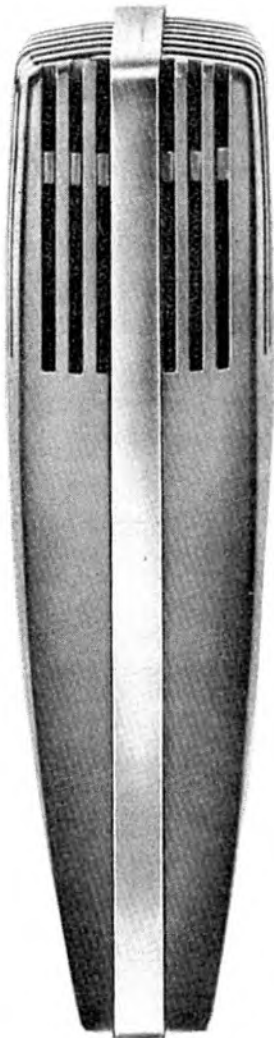
Speeds $3\frac{3}{4}/7\frac{1}{2}/15$ i.p.s. Price **£107 3s. 0d.**

All tape recorders have adjustable bias controls, low impedance mic. inputs for unlimited lengths of cable, highly accurate position indicators and meters to measure recording level and bias.

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

Telephone: LIBerty 2814 and 6242-3-4

Telegrams: "Vortexion London S.W.19"



MD 411

The new
super - cardioid
microphone by

Sennheiser

Convert your bathroom into a recording studio.
Almost possible with the ultra-directional MD411.

Cuts out background noise and room echoes; the smooth flat frequency response gives professional close-up sound in domestic surroundings. Developed from the famous Sennheiser studio microphones to meet the Hi Fi standard DIN 45 500.

Integral triple impedance transformer matches to **any** type of recorder.



£13.9.0

With table stand, floor stand adaptor and zip-up cushioned case complete



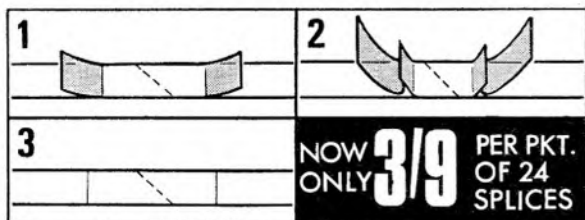
Audio Engineering Ltd

33 Endell St. London WC2. TEM 0033

It's as easy
to edit a tape
as cover a cut—
when you

DRY SPLICE

Dry-Splice is as simple to use as sticking plaster—and in fact that's just how Dry-Splice works. Like sticking plaster, Dry-Splice needs no glue; it can be used at once, there's no waiting to dry. If you've got a splicer already, you can use it to Dry-Splice. But you don't really need it—the free applicator supplied with every pack will do the job perfectly well. Whether you're editing or repairing, you can confidently use Dry-Splice on every kind of tape, to give you a firm permanent join, quickly and easily.



**Get Dry-Splice
from your
usual supplier
or
send for FREE trial**

For Free trial supply, send stamped, addressed envelope to
LENNARD DEVELOPMENTS LTD
7 SLADES HILL ENFIELD MIDDLESEX TELEPHONE: KEATS 0601

DRY SPLICE

TAPE

RECORDING
MAGAZINE

Vol. 10 No. 12 December 1966

IN THIS ISSUE

- A Report on the International Recording Contest** 444
By the Editor
- The Work of the B.B.C. Radiophonic Workshop** 445
Recorded Drama 446
By Harold Rottesman
- The Art of Scriptwriting** 448
By R. Douglas Brown
- Tape recording techniques** 450
Denys Killick
- On the Fringe** 453
- Cross Talk** 455
By Audios
- Glossary of tape terms** 457
Harry Mack
- Video News** 459
- Tape Record Reviews** 460
- New Products** 462
- Tape Exchanges** 466
- Tape Bookshop** 472
- Advertisement Inquiries Service** 473

Cover Photograph: *The role of the producer is of paramount importance, especially in recording drama. It's not an easy job, as can be seen in this picture of an actual rehearsal of The Dominant Factor by Denis Gilbert. Script reader Ann Lloyd-Jones receives some positive advice from producer Philip, in real life her brother-in-law! The microphone is a Sennheiser MD 411 cardioid.*

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

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

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

Address all communications
7 TUDOR STREET, LONDON, E.C.4

EDITORIAL

ADVERTISING

FLEet Street 1455

LUDgate 9088

Editor,
R. DOUGLAS BROWN

Managing Editor,
DENYS G. KILLICK

Advertisement Manager, VIVIENNE GOODING

Tape trends and tape talk

By the Editor

IT WAS A feature of this year's International Recording Contest that the awards were evenly spread among almost all the countries participating. Britain's special achievement was to take first place in the Schools Section. A tape made by Robert Corfield, of Manchester, featuring children from two local schools and titled "Wendy and Elisabeth," carried off the award of 250 Swiss francs offered by the Swiss Radio station at St. Gallen.

Additionally, in the Technical Experiment class the British tape "Grandfather's Chronoclasm"—first prizewinner in the Novice Amateur section of the British Contest—gained a special second-place award—ten BASF tapes, valued at about thirteen guineas. These were handed to Ken McKenzie, of Sunderland, when he visited London to collect his British Contest awards.

The Mono Grand Prix tape this year was produced by Lucien Wasmer, a Swiss amateur at present living and working in Mexico, who entered a "Panorama of popular Mexican music." The Stereo Grand Prix went to Svend Nielsen, of Denmark, for an entry called "The Magic Band," an extremely clever montage in the Technical Experiment category. Swiss amateurs this year produced the "best national selection." For the rest, the top prizes went to Holland in the compositions class, to France for documentary, to Belgium for monophonic music, to Germany for stereo music, to France for Actuality, and to Czechoslovakia (competing for the first time) for Technical Experiment.

How did the other British entries fare? In the mono classes, Peter Bastin was sixth out of seven entries with a tape called "The Macedonian War Machine;" D. Chatterton was eighth out of ten in the Documentary section, with "Emergency;" Miss M. Buchanan was third out of four in Actuality; and, among stereo classes, John Shuttleworth was sixth out of 14 in the Music section.

We may, then, summarise the situation as Britain holding her own, but with plenty of scope for further improvement!

THE ORGANISATION of the event by our Dutch hosts was impressive. The sessions of the International Federation of Sound Hunters took place in a splendid new congress building in Amsterdam and the CIMES judging in a most interesting modern studio of the VARA radio at Hilversum.

Not only were all technical facilities excellent and organisation first-class; the hospitality, in quality and quantity, was on a scale rarely equalled in any other country. Many members of the Nederlandse Vereniging voor Geluid en Beeldregistratie played their part in this result, but their President, Edouard van Heese, was clearly the organising genius, as well as being (as always) the friendliest and most amiable of hosts. This year there was a record attendance of the wives of delegates and judges and Mrs. van Heese organised a special programme for them.

I know something about the problems of organising an International conference and contest. It involves very hard work over a long period. It also costs a lot of money. A FICS-CIMES event, properly organised, requires at least £2,000, so that the support not only of the radio in the host country, but of the industry as well is imperative.

In Holland, Philips filled an appropriate role this year and the Dutch organisations of the Gevaert-Agfa, BASF and 3M concerns played their part, with backing from the Dutch Radoma company and the amateur federation. It was a notable co-operative effort which, I think, and hope, will have good results for tape recording. I know of at least half-a-dozen radio programmes, due for transmission in the next few weeks, based upon the 1966 CIMES, and these are bound to stimulate wide public interest in the hobby.

THE INTERNATIONAL Federation has taken two steps this year to stimulate growth. The necessary organisation has been created to secure greater press publicity and to publish a bi-monthly newsletter; and a special committee is now to contact organisations in countries not yet affiliated. This committee will start by examining applications in hand from Italy, Austria and Australia.

With Herr Heinz Runge, of Germany, re-elected for his second year as President, and Dr. Jan Mees, of Holland, settled into what everyone hopes will be his permanent position as Secretary-General, FICS now has a sharp cutting edge and should make real progress.

Next year's event will be in Berlin, and the Czechoslovakian delegation attending in Amsterdam issued a tentative invitation to Pilsen for the 1968 Contest. Incidentally, I was able to gather a lot of fascinating information about the development of tape recording as a hobby in Czechoslovakia, which I hope to publish here next month.

THE 1966 CIMES coincided with the tenth anniversary of the Dutch amateur association—and also with the 75th anniversary of the Philips firm.

There were clubs in Holland before 1956, but in that year they came together to form what was then the Dutch Sound Hunters' Association. At the moment, the Association has over 1,650 members and it hopes for a total of 2,000 before this year is out.

This year there has been a significant change. A survey has shown that only a minority of the members are interested in participating in recording contests, but that more than half of them make sound tracks for 8-mm film and transparencies or exchange tapes with contacts overseas. So the name of the organisation has been changed—to "Dutch Association for Sound and Picture Recording" and a new class was added to the Dutch 1966 national contest for transparencies with accompanying sound-track.

One of the most important factors, I think, in stimulating this activity in Holland is the regular transmission by the VARA station of programmes directed at amateur recording enthusiasts. There is a popular Saturday morning general-interest programme in which the sound hunters have their own seven-minute spot each week, and there are also instructional programmes of 20 to 30 minutes each month.

On the association's tenth birthday Joop Smits, who is in charge of these programmes, came on the air at 10 a.m. to announce a special contest. He listed certain recordings to be collected during the day, gave general instruction, and encouraged over 100 amateurs to go out into Amsterdam with their recorders to take part. At 5 p.m. they reported at a central venue, were given 30 minutes to edit, and their finished tapes were then judged.

Wilhelm Gluckert, of Mainz, who flew up from Germany for the weekend to take part, carried off the first prize!

RADIOPHONICS

A TRM REPORT ON THE WORK OF THE
BBC RADIOPHONIC WORKSHOP



Using a simple editing block and razor blade, Delia Derbyshire edits a musical note on tape while Desmond Briscoe consults the score. A typical working area at the Radiophonic Workshop

Photograph by courtesy of the BBC

THE art of sound radio is the art of recorded sound. The fact that radio programmes are transmitted by wireless wave is coincidental. Some sound programmes are broadcast live, others are pre-recorded on magnetic tape for subsequent transmission. Whatever the circumstances of the broadcast the end product is the same. The listener hears his programme seated in the comfort of his own home: the sound he hears is produced by the loudspeaker in his receiving equipment.

We play back our own recorded tapes under precisely the same conditions. The listener is seated at home and the sound is produced by the loudspeaker in the tape recorder. There is no difference at all from the listener's point of view. The programme producer in a sound studio, together with his engineer, faces precisely those problems as you and I when we work at home with our domestic equipment.

Of course the professional broadcasting organisation has many facilities at its disposal which are denied to amateurs; none is more interesting than the BBC Radiophonic Workshop. The function

of the workshop is modestly, but truthfully, described by its genial organiser, Desmond Briscoe, as, "a service department." By this he implies that the Radiophonic Workshop does not exist to produce original works in their own right. Its purpose in life is to provide other programmes with tailor-made, specialised "effects." Opened in 1958 it is the first of its kind in this country. Significantly it is the very existence of the tape recorder that makes radiophonics, as we know them today, possible.

The first aim of the workshop was to experiment in abstract sound in order to broaden the canvas of radio drama. There had been many attempts to use musique concrete and electronic music as incidental effects in dramatic productions. Their lack of success was frustrating, and it was realised that essentially this type of sound or music needs to be made specifically for a particular programme.

One of the first dramatic experiments was the production of "All that Falls," by Samuel Beckett, first broadcast in 1957. Most of the action comprises a monologue, which in effect is a script reading by a single voice. To give movement to the action the sounds of natural footsteps were recorded to indicate walking. From the rhythm of the footsteps an abstract sound rhythm was developed. By association of

ideas the feeling of walking and movement was immediately produced in the listener's mind as soon as this abstract rhythm was introduced in the programme. This is a very simple, but typical, example of the manner in which the workshop operates and how its ideas develop.

All the sounds made in the Radiophonic Workshop are produced by electronic manipulation on tape. Manipulation of natural sounds is usually described as musique concrete, whereas sounds derived from electronic generators are described as electronic music. As both classes of sounds are destined to be altered and manipulated to suit the effect required there is really no point in distinguishing between the two.

Once a sound has been recorded it can be subjected to various treatments. It can be filtered, removing some of the frequencies. This means nothing more than playing back and re-recording whilst adjusting the tone controls on the playback machine. The speed can be changed, either by reduction or increasing; sometimes the speed is continuously varied in either direction. As a continuously variable speed is the last thing in the world the amateur desires in his recording equipment this is of necessity a somewhat difficult effect to obtain. In the workshop the BBC use a specially modified Leavers-Rich equipment giving very accurate speed changes away from the standard. One of the early Reflectograph machines has a variable speed facility and these can sometimes be picked up second-hand for round about £25. The effect of changing speed is not only the obvious one of altering pitch, but it will also change the quality of the sound.

Other simple manipulations include reversing the sound, superimposing the sound on itself, or repeating it after a timed delay. Endless loops are made of rhythmic patterns and re-recorded. The rhythm may be changed by cutting and splicing, new loops formed and new recordings in length taken. Rhythmic patterns may be superimposed, one on top of the other at different speeds. Artificial reverberation and other technical tricks can be brought into play.

This may all sound to be a hopelessly confusing and random business. The contrary is in fact true. At the BBC techniques have reached the point where the technicians' control over the sound elements is so precise that they are now in danger of producing uninteresting results. Artistic merit is not achieved by producing perfect and precise sound patterns; the engineers have to deliberately introduce controlled imperfections "to humanise" the production.

All the sounds composed and created in the workshop have to do a specific job. They are designed to create an atmosphere or to illustrate a meaning. The sounds exist, not as a demonstration of technical wizardry, but as a secondary component to the spoken word which heightens and intensifies the dramatic situation.

The actual process of composition is one of intense and deliberate thought, the object being to interpret the action in the manner the producer has in mind and to conceive the abstract ingredients of emotion, atmosphere or movement in equally abstract

terms of sound. At this stage much freedom is given to the individual radiophonic worker who will write his composition on music manuscript paper. This is likely to be completely unintelligible to an outsider. Each worker has his own peculiar form of shorthand involving figures of frequencies, formulae, and duration diagrams. The method used depends upon the individual and on the type of commitment. The real work of translating these rough notes into actual sound then follows. If a new sound is to be used then this has to be explored before the composition can start.

When the work is completed the producer is invited to visit the workshop again to hear the result. There then follows discussion on interpretive meaning, and the sounds may well be modified to suit programme requirements. If the production is complex the radiophonic worker may attend as an adviser in the sound studio when he will work in the closest co-operation with the producer and the cast.

Originally developed for use in conjunction with sound radio, the radiophonic workshop now does even more work for the BBC television services than for sound. Again the aim is always to help in communication. Although abstract sounds may in themselves be pleasant or decorative they are of no value if they do not support the programme material. As soon as we think of sound to be used in conjunction with a visual image, such as in television or cine applications, we are really dealing with a medium which differs considerably from the "pure" sound of sound radio or ordinary tape recording. Although television today forms a large part of the radiophonic workshop output we will leave more detailed discussion of this part of their activities to a later date. Within the organisation of sound radio the workshop has undertaken tasks for every department of the BBC from religious broadcasting to light entertainment. It is surprising to note that of the 200 commitments during 1965, the largest proportion were for educational programmes at all levels.

When live sound is recorded for subsequent manipulation by the workshop a specially equipped studio is used. In normal recording practice a completely "dead" acoustic is one of the worst possible conditions, but in radiophonics this is ideal. So the radiophonics studio is a small room with its walls completely lined with sheets of upholsterers' plastic foam. This material has been found to be very successful as a sound absorbing agent. As the colour is a rather vile green, the foam is discreetly hidden behind full-length orange curtains.

By recording under these conditions the engineers can obtain on tape the true sound required without any reverberant effects. If such are needed then they are deliberately added, precisely as required, as part of the electronic manipulation.

There are three separate working areas, each of which contain a number of fixed speed recorders together with the specialised variable machine referred to earlier. More cutting and splicing of tape is carried out in these rooms than anywhere else in the country, but this is all done on simple editing blocks fixed to the deck of each recorder. The tape is cut with an ordinary razor blade and conventional splicing tape used.

Besides the standard recording equipment each of these three areas contains an array of complex equipment such as ring modulators, electronic generators, and specially designed "key" mixers. Finally each area is equipped with its own mixing desk which

includes full remote control facilities for all the equipment so that one operator can work unaided.

This array of expensive professional equipment is impressive. But I talked at some length with Mr. Briscoe about the practicability of amateurs attempting this work in their own homes. What he had to say was more than encouraging from the amateurs' point of view.

The workshop itself was first brought into existence by a small band of enthusiasts. Much of the work they did was carried out in their own spare time and their equipment was limited to domestic type machines such as Brenell and Ferrograph—several of these can still be seen in the workshop. Mr. Briscoe explained why their present equipment must be as sophisticated and expensive as it now is.

The workshop is a department of a professional organisation; time is money. Every task undertaken has to be fitted into a rigid work timetable and it must be completed with the minimum expenditure of staff time. The extreme specialisation of equipment has been primarily designed for no other reason than to save time. Almost without exception the work done could be attempted with a large measure of success by amateurs using normal domestic machines. Working in this way, however, the one essential ingredient is patience. Some of the jobs undertaken by a single operator in the workshop, and perhaps accomplished within a very short space of time, might take the amateur many hours to perform. Nevertheless, if carefully done the end product might well be indistinguishable from the professional version.

The world of sound is so full of possibilities that to the inexperienced—and indeed to the experienced as well—the prospect can be frightening. If we are to undertake our own radiophonics we have to cultivate the wild jungle of random sound and harvest a logical pattern of selected ingredients. My own personal opinion is that this is one of the most difficult parts of the job.

If we create some interesting or dramatic radiophonic effects, and then write a script around them, we are putting the cart before the horse. Although this is certainly the easiest way to do it, it is not likely to be successful. By their very nature our radiophonics would be random and our production would be artificially designed to suit.

The correct sequence of operation is to work as the professionals do starting with a script and developing the radiophonic ideas from it.

Just because radiophonics can be dramatic there is a great danger of allowing them to run away with the entire programme. Great discipline is needed to keep them firmly in their place as nothing more than an aid to the interpretation of the action. Any effect, however brilliant, that attracts the listener's mind away from the dramatic incident must be ruthlessly discarded.

By working in this way there is not the slightest reason why the amateur should not make use of all the exciting potentials of radiophonics. And please do remember there are no copyright complications whatsoever—your own radiophonics will be your own original composition, and you are free to do with them whatever you wish.

DRAMA

RECORDED DRAMA IS AN ART
HAROLD ROTTESMAN
DESCRIBES HIS APPROACH
TO PROBLEMS OF SCRIPTING
CASTING AND PRODUCTION
STARTING WITH FIRST THOUGHTS
ON FACILITIES AND ABILITIES

WHATEVER the producer is able to do with cast, music and effects, the essence of radio drama (like all other drama) lies in the human conflict expressed in the script. A good script is no excuse for sloppy production; but technical brilliance of acting and effects will never compensate for a banal script.

Choosing the right script is therefore of the first importance. Yet before that decision can be made, you must assess your resources. What acting and technical talent have you? What studio facilities? How much money is available

for tape? Have you access to a sound-effects and music library? How much editing skill and experience have you? How much time for rehearsal, recording, and editing?

The wider your resources, the greater your experience, and the more time and money you have available, the more complicated and ambitious your production can be. Conversely, the beginner with one tape recorder and microphone and a free evening should not attempt a full-scale production.

(Please turn to page 449)

IT STAYS PUT!



The Ferrograph Series 6 Model 'T'

A teak sided tape-recorder designed particularly as one module of a hi-fi installation.

There was a time when a tape-recorder was something you moved from room to room, and stored in a cupboard when you weren't actually using it.

Ferrograph have developed an alternative.

They decided that now people build hi-fi equipment into existing cabinets, or make it a part of stylish shelf-fixtures, a well-designed non-portable was needed—a tape-recorder designed particularly as one module of a hi-fi installation.

Result: Ferrograph model 'T' with teak sides—a piece of furniture that will not only compliment your excellent taste, but give the quality recording for which Ferrograph are famous.

For those people who still want portability—all current models are also available as portables.

Ferrograph
the incomparable tape recorder

Model 631 'T'
Monophonic
95 gns.

Model 633 'T'
A monophonic
instrument for
the connoisseur
120 gns.

Model 632 'T'
Conventional
(2 track) Stereo
126 gns.

Model 634 'T'
4 Track
(2 x 2 track)
Stereo 132 gns.

Interested? Then complete and post this coupon to:

THE FERROGRAPH CO. LIMITED
84 Blackfriars Road, London, S.E.1.

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

Name _____

Address _____



TM4

Perhaps the best advice I can give is to consider first what your available acting talent is likely to be. It is usually easier to choose a script to suit your actors than to find actors to fit your script. I once wanted to use an exceptionally gifted boy actor, Robert Powell, now adult and professional, after making hundreds of BBC radio appearances from the age of 15. After reading dozens of short stories I chose to adapt and produce D. H. Lawrence's *The Rocking-Horse Winner*, the central character being a boy. On the other hand, having already chosen Thurber's *The Thirteen Clocks* for an Oxford University Experimental Theatre Club production, I almost despaired of finding a suitable voice for the important role of the Narrator, auditioning countless actors who were talented but not "right for the part."

With your talent in mind, and a small cast is a good idea for your first production, you can go ahead and look for a script. There are three sources; either you can adapt a short story or a stage play, or you can choose a published radio script, or you can write your own.

The last possibility is clearly the most exciting, and creatively the most satisfying. Here you can fully exploit available resources and talent, and also express your own imaginative ideas. To adapt a short story is the next best thing, because some creative effort is involved—you will need to write some original dialogue to cover passages of narration, description, or thought. You may need to transpose the order or location of some scenes and some cutting and rephrasing of dialogue may be necessary in order to make it more "speakable."

Adapting a two-act or three-act stage play is not recommended for reasons of length; one-act plays that are well-written are very few. Those that do exist are rarely ideal radio material because they cannot, having been written for the stage, exploit the freedoms that radio gives—freedom of location and freedom from conventions of stage "realism."

To produce a published radio script may seem the most obvious course, yet there are very few of worth in published form. The best are rather long and technically involved for the amateur (for instance, Louis MacNeice's radio dramas or of a feature like "Under Milk Wood").

PREPARING THE SCRIPT

Whichever course you steer, there are certain guiding principles to follow. Never forget that the listener cannot see the actors and has to imagine the scenery. Two or three characters in any one scene is an ideal number. If you have more, ensure that their voices are so well contrasted that they are easily distinguishable, and that a character does not remain silent for too long, or the listener may forget his presence.

You can move from one location to another as speedily and as quickly as you like in radio, with one proviso—that the listener knows where you're going. You can move from Piccadilly Circus straight to the Sahara, to the inside of a submarine, to outer space, to inside a man's head, to Wigan Pier, to the Royal Festival Hall, to a chip-shop . . . anything goes. But do ensure in the script that your dialogue and effects backing leave the listener in no doubt at all about the location. A few words towards the end of a scene suggesting where the next is likely to take place (once known

as a "signpost") is usually enough to free the listener from doubt. If necessary, confirm with a word or two early in the next scene. The more subtly this is done, the more credit you get.

The script, in its final form, should be duplicated, typed in triple-spacing, speeches numbered, music and effects indented. Allow one copy each for members of cast, sound crew, director, secretary, and a number of spares.

AUDITIONS AND REHEARSAL

Whether you audition before or after choosing your script, audition with great care. Always audition "on microphone," whenever possible in a separate listening-room or control room. There is really no substitute for hearing a voice coming "cold" out of a loudspeaker, quite divorced from the actor it belongs to. BBC control rooms have glass windows giving a view into the studio, but many producers draw curtains or blinds when auditioning. They don't want to be distracted by the appearance of the actor or actress, something which has nothing whatever to do with his or her radio talent and suitability for a certain part. Judge on voice alone.

Rehearsals may begin straight "on microphone" if you wish, though inexperienced players or people working together for the first time may react better to one or more preliminary "table rehearsals," sitting round with the director away from the microphones and equipment. The less experienced your cast, the more rehearsals you will need. Three short sessions spaced over a number of days are usually more valuable than a single long session.

Before assembling your cast have separate technical rehearsals to make sure equipment is all working correctly and that your technical people are fully conversant with whatever is required of them. Courtesy apart, actors do not generally react very well towards long periods of waiting whilst technical problems are sorted out. Their energy evaporates and their performances deteriorate.

PRODUCTION

The biggest difference in technique between amateur and professional BBC productions in which I have taken part is that the professional producer has the studio, technical facilities and staff to enable him to record the entire production continuously. The amateur often cannot do this, and must record in sections, perhaps a scene at a time.

The advantages of the "bit-by-bit" technique are that mistakes matter less, later "double-tracking" is possible to effect the superimposition of extra effects, voices or music and less sustained effort is demanded of cast and technicians. The disadvantage is the loss of tension and continuity that uninterrupted recording affords. Cast and producer may lose the rhythm and shape of the play, and this will not be obvious till the final production is edited. By this time, re-recording may not be possible. In *The Rocking-Horse Winner* recorded in sections, it was not until the finished version was complete that it became painfully clear that the music links, added at the final stage, were far too long, breaking the flow of the drama. If it had been recorded in one piece, this fault would have been detected in rehearsal. For the greatest excitement I would recommend continuous recording. But until you have attained a certain degree of proficiency it also produces the greatest strain.

TECHNICAL FACILITIES

There are two technical facilities that radio drama cannot, in my opinion, dispense with. One is the mixer and the other is the control room separated from the studio, necessitating the use of "talk-back" equipment.

The mixer enables music and effects to be brought in, held, and faded out at any predetermined level in relation to the voices and to one another. It has not inappropriately been compared to the painter's palette, for with an artist in control it can be used to create sound "pictures" of rare beauty, depth and "colour," as in the BBC radio productions of Trevor Hill.

The mixer is an instrument of infinite virtuosity and flexibility. You can demonstrate this to yourself even with only a handful of music and effects records. Play about with them, mixing then fading, listening to various effects and examining how they are produced. The mixer gives to the man with a sensitive ear complete control over the final balance of sound, and its potentialities should be used to the full. Even with only four channels, really complex sound pictures can be created.

The separate control room is indispensable. There is no other way in which you can adequately judge the final effect of your sound before you tape it. A microphone notoriously, but often also gloriously, "does things" to a voice, and you want to know in advance what these are. You want to know whether your actors are in correct "perspective," whether voices, music and effects are correctly balanced, whether extraneous background noise is present, whether the acoustical resonance of the studio is appropriate to the dramatic location. None of these judgments is possible when you are in the studio with the cast. You *must* be in a separate room, where you are free to listen in rehearsal to the final blend of sound that is going to go on to your tape, and be free, too, to give instructions to your sound crew.

The final control over acoustical background that the BBC have in their new drama studio, comprising not only various live and dead areas but refinements like built-in telephone kiosk, water-tank and spiral staircase, is not available to most amateurs, but some attempt at verisimilitude should be made. Do not, for instance, have your cast play an outdoor scene standing several yards away from the microphone in a resonant sitting-room or hall. At least get them as close to the microphone as dramatic perspective and distortion will permit, so that reflection from studio walls is reduced. If your script calls for a scene in a church or public hall, find some way of adding sufficient echo to lend conviction to the scene.

Although a few basic principles should be observed, there is no special mystique about radio work, as Frank Gillard said recently in public. Anyone can achieve successful results, provided he has a genuine interest in the medium, sensitivity, patience, willingness to experiment and a will to succeed.

LEDA TAPES' ADDRESS

Would club secretaries wishing to take advantage of the offer of Lafayette tape at trade prices please write to: *Leda Tapes*, 30, Baker Street, London, W.1. It is regretted that the address quoted in our last month's issue was incorrect.

Programme analysis

IN this series we have discussed recording generally and the means by which recordings may be taken. We must now introduce the word *programme*. The term might appear to be pretentious—in fact it is the only true description that can be applied to any complete job of recording work. When we set about taking a recording, however important or insignificant it might be, we are actually “producing a programme.”

The concept of the programme implies a combination of many techniques, the less important of which is—in my opinion—that of the recording engineer. A study of the chart will show the various component parts of a programme and their relationship one to another.

When we listen to a programme (playback of tape) we should be able to do so dispassionately, distinguishing between the quality of the recording and its actual content. The chart is shown as a family tree with the word *programme* at its head. The various factors comprising the overall programme have been divided on the two sides under the sub-headings *content* and *quality*. These two aspects are linked by the word *location*. There is often a significant relationship between the location in which a recording is taken, such as on a street corner or in a public hall, and the sound quality of the recorded tape. Limitations of location have to be overcome by recording techniques as far as is possible and then accepted.

Content v. quality

It may appear to be heresy to suggest in these columns that the programme content is more important than the recorded quality. Consider, however, a superbly recorded programme whose content is worthless. No audience will ever listen to this tape seriously. It must always be remembered that the “public” has been conditioned into appreciating content, originality and performance critically, whilst accepting good recorded quality as a matter of course.

If, on the other hand, we have a programme whose content is brilliantly original with outstanding performance it will be accepted appreciatively in spite of some losses on the technical side. If the recording quality should be really bad then the item can probably be recorded again with better equipment.

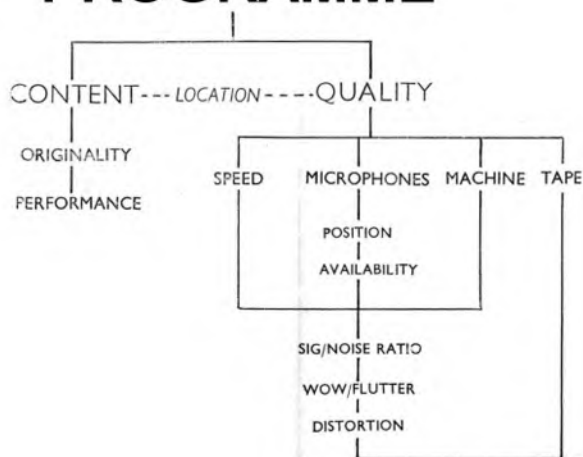
Within certain limits the achievement of quality in sound recording is related to the efficiency of the equipment, and therefore to its cost. Most of the factors listed under the heading of quality in the chart could be crossed through and £ s. d. substituted.

The same does not hold good on the other side of the chart. We cannot purchase originality across the shop counter. It costs us nothing and yet it is one of the most illusive qualities to incorporate in a recording. Originality is borne as an idea and takes shape as simple pencilled notes on a sheet of paper. The cost must be measured

TAPE RECORDING TECHNIQUES

IN THIS IMPORTANT ARTICLE CONTINUING OUR TAPE RECORDING TECHNIQUES SERIES DENYS KILICK DISCUSSES PROGRAMME STRUCTURE AND A PRACTICAL APPROACH TO PROFESSIONAL METHODS THAT CAN BE PRACTISED UNDER HOME CONDITIONS

PROGRAMME



in mental effort and application, not in pounds sterling. Let no one be deceived into believing they are incapable of expressing original thought; it's a case of some do but most don't.

On the quality side of the chart it will be noted that *speed* and *machine* are linked together. We have already shown how the recording speed will affect the overall quality of sound recorded, and this will also be affected by the actual efficiency of the tape recorder itself. The link between the two exists because the speed used will naturally depend upon the speeds available on the equipment owned. The chart then shows the *signal to noise ratio*, *wow and flutter* and *distortion* as derivatives of the speed/machine combination. In practice distortion can be induced in a recording by poor technique but in the sense in which it is included here it is considered as an inescapable part of the recorded programme, originating from the equipment itself.

As the actual brand of *recording tape* used is also going to affect quality this is shown as linked to the various distortion factors. We saw from our last article how the *microphone* is of vital importance to the quality of any live recording. *Positioning* is critical and will also affect overall quality. Under some circumstances microphones cannot be positioned as we might wish. These are instances of “location” specifically linked to “content” affecting “quality.” To keep things on a practical basis it is essential that the actual *availability* of microphone equipment should be taken into account.

It's excellent practice to use this chart to criticise and evaluate existing programme material—either your own or transmissions on sound radio. We can learn so much from other peoples' successes and failures, just as other people can learn from ours. If all our work is guided by these precepts we shall find that we do less recording in terms of quantity, but its quality will be greatly increased.

The content/quality chart for programme analysis shows the relationship between various aspects of the same recording

A practical approach

All that has so far been said has been from the theoretical point of view. How do we reduce theory to practice? Considering the amateur, working under domestic conditions and limitations, how can first experiments be undertaken in serious programme production? Complex issues can always be reduced to their basic fundamentals and so we will proceed on the assumption that we are dealing with the simplest of all recording situations based on the most common of all domestic circumstances, namely, that of one man, one machine and one microphone.

The simplest application of this combination is surely that of the recorded or broadcast talk. Examples of this kind of programme material can be heard in “Woman's Hour” and various other B.B.C. features. And yet how many amateurs in their home recording achieve the quality standards (by reference to our chart of course!) of the broadcasting authorities? The answer is very few.

The reason for the disparity in quality is to be found in the professional approach by the professionals, compared to the relatively haphazard approach of the amateur. The amateur's complaint is usually related to his equipment which is naturally less costly and therefore less efficient. But this is where we come back to the statement that content is more important than recorded quality, and yet content might cost us absolutely nothing. At the same time this should never prevent us from ever failing to extract the maximum possible quality from our own equipment—and how many do that?

TAPE RECORDING TECHNIQUES

Even in a simple project such as recording a single voice reading a script the professional approach is of the utmost importance. Let's imagine what would happen if we went to a B.B.C. studio to record a short talk. Firstly, we should have a properly prepared type-written script—not a jumble of illegible scrawlings on an odd sheet of paper. Secondly, we should be under the guidance of a programme producer. Yes, the professional approach is to regard each recording as a "programme" and to appoint a producer literally to produce it. Where is the producer at home?

Thirdly we should be seated in a proper recording studio with the microphone suitably arranged in position. At home we probably have to eject the dog from our favourite chair before we can even sit down. Fourthly there would be proper separation between the recording equipment and the microphone; the recorder would be in the control room and under the supervision of a recording engineer. As we record our talk we don't give a thought about actual technical problems in the control room.

The contrast between professional and home conditions is only too obvious. At home we have no producer, no studio, no control room. Whilst we try to read with one eye on the script, the other eye tries to watch the record level indicator. Knowing that separation between microphone and machine is desirable we now find we have to do a ridiculous two-way stretch to reach the recording controls whilst still maintaining our speaking position. And when we play back, can anyone really be surprised if quality is degraded to its lowest ebb, or if originality can only be awarded to feats of physical agility?

Even under home conditions a minimum of two, but preferably three, people are required to take a simple recording of a single voice. The personnel are: 1. Producer, 2. Engineer, 3. Script Reader. The producer heads the list because he is the most important member on the scene. On his shoulders lies the entire responsibility for accepting or rejecting material, for judging its suitability for recording and for ensuring that the script reader performs precisely to his requirements. If this programme is a failure we shall blame the producer, no one else. No programme can be produced without a producer. In emergency he might also perform the function of recording engineer, but this is not desirable.

I have listed the functions of the producer, but if we consider only one, the guiding of the reader through his script, it will serve to show how he can influence the final result.

The first essential for the producer is not only to know what he wants but to be able to demonstrate it to his reader. It's not the slightest use a producer saying, "don't read the first sentence like that" if he can't then demonstrate how he wants it to be read. It might be thought that this is simple; only the illiterate cannot read. Nothing could be further from the truth.

Take any page from any book, read it aloud in front of the microphone and play it back. Are you satisfied with the result? There will be few honest affirmatives. The question is so large and so important that we shall devote the whole of next month's article to the problems that may be encountered in "simple" script reading, and how they can be easily overcome.

Studio requirements

Separation between script reader and tape recorder is sufficiently important to warrant a little trouble to contrive it. If a high impedance microphone is being used on a short cable one can do little more than

establish the optimum position in the room for the microphone and reader, and then arrange for the recorder to be as far away from that point as the microphone lead will allow. Wherever possible a low impedance microphone should be used (together with matching line transformer if the output is to be fed to a high impedance input on the machine) and the cable can then be run into an adjacent room.

When deciding which room will serve as the studio and which the control room we should give first consideration to the requirements of the studio. If you live in a busy, urban area, consider the use of a room as far removed from outside noise interference as possible. This usually involves the use of a room at the back of the house. Next consider the acoustics in the room. Walk about the room clapping your hands sharply and listen to the sound produced. A very resonant room will produce a definite "echo" to the hand clap; a dead acoustic will give a much duller, lifeless sound.

We have seen from the experiments suggested last month how wide the difference is between the two extreme conditions. A judgment on which room to use and whereabouts to position the microphone in that room, can only be formed from long experience or by the comparison of a number of short, test recordings.

Co-ordination

Co-ordination between producer, script reader and engineer is as essential as it is difficult to accomplish under domestic conditions. Wherever possible a system of signalling lamps should be installed so the script reader knows when to start by the illumination of a coloured lamp. Such a system can easily be rigged up to operate from the household mains electricity supply, but there is a danger of switching making clicks register on the tape. If this trouble is experienced it can be overcome by using a 12 volt lamp powered by an ordinary 12 volt battery.

In emergency the writer has used all kinds of unorthodox communication systems. The least efficient but most amusing is to tie a length of string around the reader's ankle and lead it under the door, around the skirting and into the control room. The string is then given a sharp tug to indicate positively to the script reader when to start. On one memorable occasion the string got jammed, I gave it an enormous yank, and the poor reader was dragged half way across the room.

A "talk back" system enabling the control room staff to speak to the studio personnel without dashing physically from room to room is a great advantage. If an extra microphone, amplifier and loudspeaker is available it can easily be rigged up, but care must be taken not to induce feed-back effects. An efficient, but illegal, talk back system can comprise a pair of "walkie talkie" radio transceivers, the one in the studio switched permanently on to receive, and the one in the control room brought into operation in the transmit mode only when a remark has to be addressed to the other room. It must be stressed, however, that this is illegal and therefore punishable by law unless an appropriate GPO licence has been issued.

A great deal of time and thought should be devoted to studio and control room arrangements. The more care given to these preparations the better will be the quality of the final recording.

99

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

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

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

Three other high quality grades are in the Emitape range:

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

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

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



EMITAPE

THE MOST ADVANCED MAGNETIC RECORDING TAPE IN THE WORLD



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

ON THE FRINGE

STANDARD text books refer to the amplifier as "the heart" of any high quality sound reproducing system. The purpose of the amplifier is to accept signals in the form of electrical impulses from auxiliary equipment such as a tape recorder, a gramophone pick-up or a radio tuner, and to amplify those signals with sufficient power to drive a loudspeaker.

As an isolated piece of equipment an amplifier is of no use at all. It must be provided with the sound source that is to be fed into it, and with the loudspeaker it will drive.

On the face of it an amplifier might appear to be a rather dull and uninteresting piece of expensive ironmongery, contributing nothing to the original sound. In fact the contrary is the case; without a good amplifier it would be impossible for us to properly reproduce, via the loudspeaker, all the sounds on tape, disc or radio. As for its adding nothing to the original sound, that is the earnest prayer of every conscientious manufacturer.

One of the things we demand of an amplifier is that it should accept the original signal fed into it, amplify it, and pass it to the speaker without any other change taking place. A simple definition of distortion is any change that occurs to a signal other than a change of amplitude. If, therefore, our amplifier does anything other than amplify it could be said, in general terms, to be distorting. And the sad truth is that all amplifiers, without exception, make some change in the signal however small or insignificant that change might be. The amplifier that is literally distortionless has not yet been either designed or manufactured.

A Compromise

As so often happens in the audio world we have to look for a compromise. If perfect amplification is impossible, it must be possible to assess quantitatively the amount of imperfection that should be regarded as acceptable; to the purist *acceptable* is synonymous with *inaudible*!

Many years ago Harold Leak, of H. J. Leak Ltd., set the standard by producing an amplifier with 0.1% harmonic distortion. The development of this amplifier was a notable achievement of which the firm is rightly proud. The words "Point One" were included in the trade name of the equipment, and the performance of other amplifiers was referred to by comparison to the point one figure. Today a figure better than 0.1% for harmonic distortion is entirely practical, although the additional cost in producing an inaudible effect would not be worthwhile.

This figure, however, applies only to "harmonic distortion," or the production

of high fidelity sound reproduction "on the fringe" of tape recording — or is it just another aspect of the same subject?

We believe good quality sound to be an essential part of recording, so we now discuss the amplifier

THE HEART OF THE SYSTEM

of spurious tones in multiples of the original fundamental. Worse things can happen to our signal as it passes through the amplifier. It may suffer from *intermodulation distortion*, which occurs when one frequency tends to impose itself or modulate another. In conventional amplifiers there is a general relationship between harmonic and intermodulation distortion, the latter being about four times the former. So if we keep harmonic distortion well below audible levels or around the 0.1 per cent figure, intermodulation at about 0.4 per cent will still be inaudible.

Linear Response

A good amplifier should have, as nearly as possible, a linear response. In other words, as with all sound reproducing equipment, the frequencies fed in should be reproduced in precise proportion at the output, without either attenuation or emphasis of the high or low ends of the scale. We might be forgiven for imagining that our only concern is with the audio frequency range, that is from about 30 to 20,000 cycles per second. The problem is actually more complex. Not only does the ability of the amplifier to reproduce frequencies well above the audio range affect the overall quality of the sound, but the subjective response at the speaker as heard by the listener will change radically with changes in the listening level. Known as the Fletcher-Munson effect this can easily be shown by experimenting with any reproducing equipment at home. Listen to any piece of music having a good range of tones at a fairly loud volume level. Turn down the volume until the sound is only just audible. The original sound will have been round and full with plenty of bass; at the reduced level all low frequencies will have disappeared and you will be left with a thin, tinny sound.

The frequency response of an amplifier is often quoted as two sets of figures. The first combination, usually 20 to 20,000 cps being regarded as the audio range, and the second combination, usually 10 to 50,000 cps is included to embrace the sub- and ultra-sonic range. Now these figures are quite meaningless unless they are tied to

some specific limits, which might be quoted as plus or minus 0.2 dB for the narrower, audio band, and plus or minus 0.5 dB for the overall band. The wider these tolerances the less linear will be the response of the amplifier.

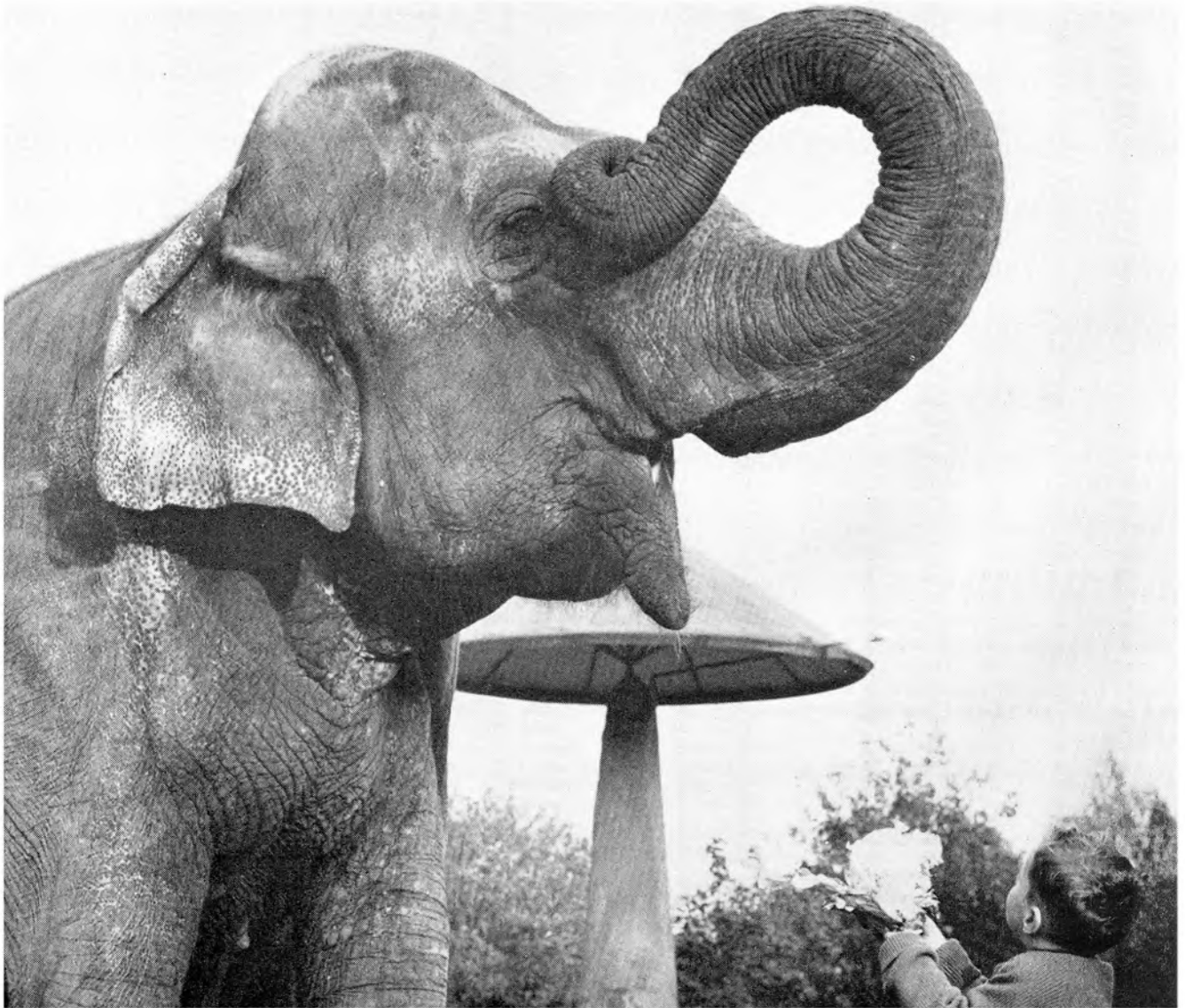
Power Output

One reason why the amplifier is given pride of place in a hi-fi system is because the power available at the output will limit the choice of loudspeaker it can drive. The power of an amplifier is quoted in watts, and loudspeakers are quoted as having so many watts power handling capacity. In theory, at least, the two should be matched.

We might expect to find that the larger speaker requires the greater power to drive it. This would be true if all loudspeakers were of roughly equivalent efficiency. Paradoxically many large speaker units are very much more efficient than smaller ones; the popular bookshelf units tend to be the least efficient of all. The less efficient the speaker the more power will be needed to drive it. At the last Audio Fair one manufacturer of both speakers and amplifiers was happily driving his own miniature speaker unit, rated at eight watts power handling capacity, with his own fifteen watt amplifier. That same amplifier would have driven a large corner reflex unit equally satisfactorily.

Ten watts output used to be regarded as the conventional domestic norm. Today the tendency is for amplifiers of higher rated power to be used. There are advantages, in that distortion increases sharply as output rises above a certain level; a powerful amplifier used with "the wick turned well down" is likely to be more efficient in this sense than a less powerful model which has to be driven full blast.

A thought on which to close. Amplifiers, generally speaking, are expensive, bulky, heavy things. They are expensive, heavy and bulky because they need to be to do the job they were designed to do. By comparison the amplifier which is an integral part of any complete tape recorder is a primitive and inadequate arrangement. Good reproduction of sound *depends* on a good amplifier.



Bring home an elephant

in this handy container:

Get out on location with the fantastic Grundig TK6L portable tape recorder! Mains or battery operated, this machine is ready for action any time, any place. With the specially designed auto accessory, even a car or boat power supply can be used. The TK6L captures living sound—wherever you are. Superb Grundig engineering means a professional performance—with a dynamic range of 50dB, and a frequency response of 50-13,000 c/s at 3 $\frac{3}{4}$ i.p.s. The 6" x 4" speaker punches out a big life-size sound, with precise clarity.

Twin track, two speed (1 $\frac{7}{8}$, 3 $\frac{3}{4}$ i.p.s.), the TK6L has sockets for radio, record player, second tape recorder and extension speaker. Other features? Six smooth piano-key controls, temporary stop,



the Grundig TK6L

digital position indicator, and monitoring while recording. A newly developed Grundig DC motor, fully electrically controlled and stabilized, provides excellent reliability and freedom from noise. All this for 73 gns. The Grundig TK6L—portable high fidelity.

GRUNDIG

Please tell me more about the Grundig TK6L, and send your 32-page colour catalogue illustrating new Grundig recorders, radios and stereograms.

Name _____
(Block letters, please)

Address _____

Post to Grundig (GB) Limited, London, S.E.26

TRM 2

CROSS

TALK

By Audios

THERE is, to my mind, no greater thrill than recording the massive sound of a great church organ as it accompanies a well-trained choir. Some years ago I was privileged to record in Southwark Cathedral and last week I was delighted to have another opportunity of working in this magnificent building.

The occasion was the Festival of Gregorian Plainsong, in which the service is unusually interesting from a recording point of view. Two choirs take part, one in the choir stalls and the other arranged in a group immediately in front of the chancel steps. During the second half of the service one of these two choirs moves around the cathedral in procession as it sings, alternating verses with the stationary choir.

This provided a moving sound source—always a tricky problem from the recording point of view. The object of the exercise was to take a recording which would satisfactorily convey an authentic impression of the dimension and resonance of the cathedral itself, but also to convey the movement of the processional choir.

As an experiment we suspended a single, omni-directional moving coil microphone (actually a Sennheiser MD211) about thirty feet above the main choir. As they were themselves standing immediately beneath the cathedral tower it meant that our microphone was just below the tower opening. In other words it had above it a massive resonating column of air formed by the tower itself.

Results were dramatically successful. The microphone reproduced faithfully both the wide range of frequencies of the organ and also rendered the spatial perspective of the voices in a truly delightful manner. The machine used was a Vortexion WVB6 running at 7½ ips.

This recording involved some most interesting problems of technique. I cannot recommend too strongly that readers should take advantage of every opportunity of recording works of this kind.

* * *

*I*N these columns last month I referred to the "crash proof" flight recorders used in aircraft. I commented that my own machine had once been accidentally blown over in a gale of wind and had suffered no damage.

Now there is an awful tale to tell. The same machine that was used in Southwark Cathedral, a brand new Vortexion WVB6, has been accidentally dropped down a flight of eighteen stone stairs. It bounced and crashed in a sickening manner from stair to stair, finally turning somersault on the half-landing. The lid burst open, the locks were wrenched off and the hinges were buckled. Pathetically I carried it home like an injured child.

But here comes the twist to the end of the tale. On arrival home it was plugged in and it worked! After a thorough test of all functions, record, playback and fast wind in both directions, no fault could be found. At least one would expect to find the capstan spindle bent, giving heavy wow. Even this hadn't happened.

This might be regarded as a tribute to the manufacturers, Messrs. Vortexion Ltd., and Messrs. Wright and Weaire Ltd., who make the deck. However, it must be pointed out that neither they, nor this magazine, nor I can accept responsibility if anyone decides that throwing downstairs is less trouble than carrying. . . .

* * *

TALKING of Wright and Weaire Limited I was interested to learn that their Ferrograph model 631H has been installed in the new nuclear submarine "Resolution" recently launched by Her Majesty, The Queen Mother. As a maritime nation we can be justly proud of our fine ships and it is fitting that they should carry equally fine recording equipment.

In case you haven't heard about it, Ferrograph Festivals of Sound are being held in various parts of the country during the coming season. These festivals are arranged in co-operation with dealers and one of the next will be on November 30 in conjunction with Campkins Audio of Cambridge. Designed to promote interest in both recording and pre-recorded music, these festivals are well worth a visit if one should be held in your vicinity.

SELLING coils to Newcastle is hardly likely to involve a profitable enterprise—or so one would think. The latest news from Ilford describes just such a sale.

By what must be a superb piece of salesmanship, coupled with technical superiority, the British firm of Ilford have contracted to sell more than one million pounds' worth of 35 mm. fully coated magnetic recording film to the United States of America, where the principal customer is the Todd-AO Corporation.

Famous for their 70 mm. wide screen films, and for the high fidelity stereophonic sound recording system used in the production of many famous films, the Todd-AO Corporation is known throughout the world for the quality of its work. Congratulations to Ilford on this valuable addition to our export.

* * *

AS Christmas draws nearer one sometimes looks vainly for signs of traditional goodwill. Every year the sound of the cash register is heard more loudly than the sound of the church bells. Profit is the motive.

So how pleasant it is to report on an enterprise devoid of profit, devoted to the realisation of closer contact between separated families. The well-known firm of Currys Limited, retailers of electrical appliances, offer a free service to anyone who has a relative in the Royal Navy, Royal Marines, Women's Royal Naval Service or the Royal Naval Nursing Service.

Any member of the public may go to any branch of Currys Ltd. and record a short personal message, which may include the choice of a piece of music. Completed tapes will be sent by the firm to H.M.S. Collingwood, and from there they will go to local broadcasting stations throughout the world. The closing date is December 2nd and all expenses are met by the firm. To one organisation at least the success of their Christmas trading will not be measured only by sales returns. To them, and to all other commercial concerns who remember the true sentiments of Christmas, this column sends its sincerest best wishes.

* * *

A WELL-KNOWN wit recently commented that stereophonic sound must be better on tape than on disc. The trouble, he asserts, arises from the "hole-in-the-middle" effect. After all, if a stereo disc didn't have a "hole-in-the-middle" it couldn't be played . . . (Ouch!)

MAGNETIC-TRL-90-TAPE

Brilliant new range of fine quality Recording Tapes made for us by famous British Manufacturer to full specification, complete with leaders, trailers and stop foils. FULLY GUARANTEED—ABSOLUTELY UNBEATABLE VALUE

Triple Play (Polyester)		Double Play (Polyester)		Long Play (P.V.C.)	
3in.	600ft. 12/9	3in.	300ft. 5/9	3in.	225ft. 4/3
4in.	900ft. 17/6	4in.	600ft. 10/9	4in.	450ft. 7/6
5in.	1,800ft. 23/9	5in.	1,200ft. 15/9	5in.	900ft. 11/6
5½in.	2,400ft. 29/9	5½in.	1,800ft. 19/9	5½in.	1,200ft. 13/9
7in.	3,600ft. 39/9	7in.	2,400ft. 23/9	7in.	1,800ft. 18/6

SPECIAL ECONOMY PACKS—STANDARD QUALITY P.V.C. (no Leaders, etc.)

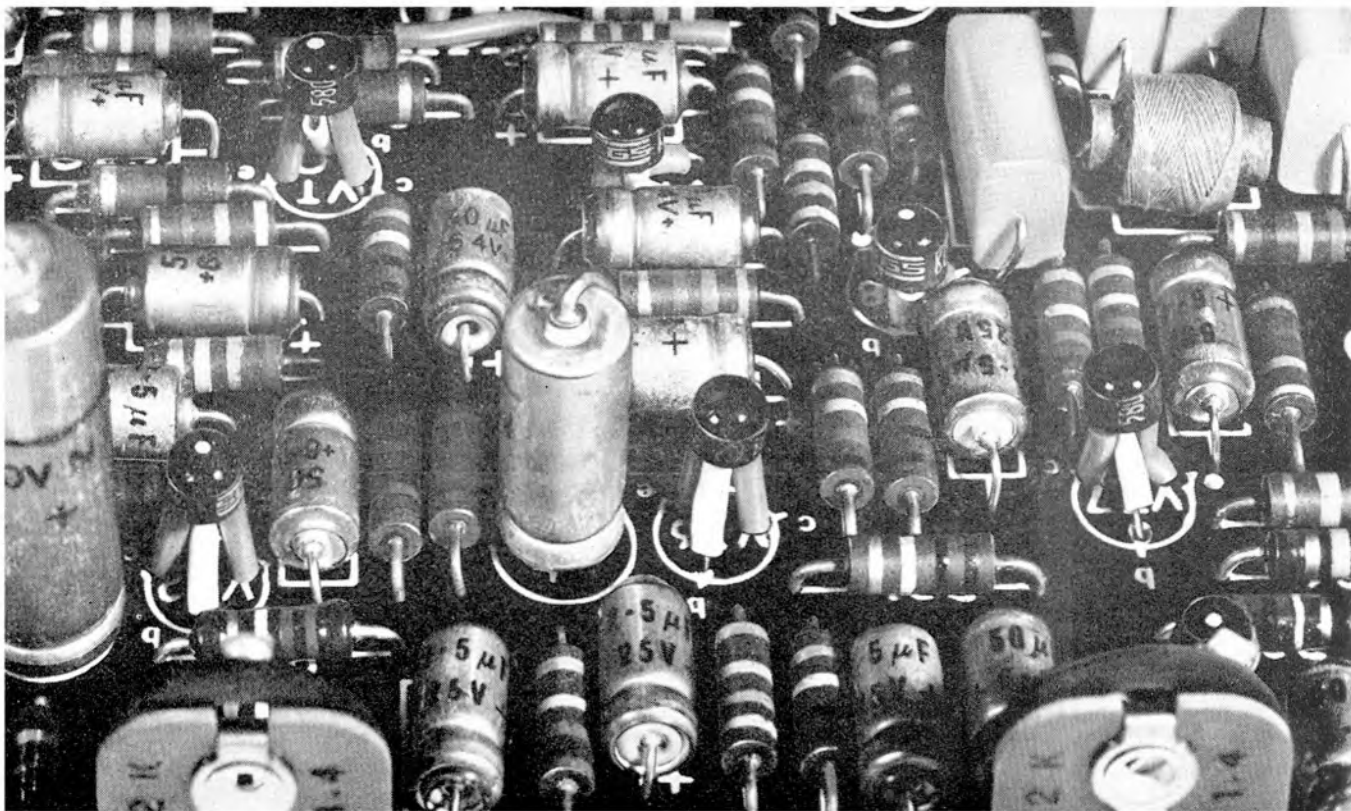
Long Play		Long Play		Double Play	
3in.	225ft. 4 for 9/9	5½in.	1,200ft. 2 for 21/-	5½in.	1,800ft. 2 for 34/-
5in.	900ft. 2 for 15/9	7in.	1,800ft. 2 for 26/-	7in.	2,400ft. 2 for 42/-

Please add 1/6 per order postage and packing.

NASH HOUSE ELECTRONICS

NASH HOUSE, NEW STREET, WORCESTER

Tel.: 26316



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

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

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



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



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



Stereo Tape Units PD 102 (2 track) PD 104 (4 track). All transistor solid state circuitry. Full stereo facilities include tape/source monitoring and twin V.U. meters. 3 motors. 3 heads. **105 gns.**



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



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

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

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

only Truvox can build you a **TRUVOX**

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

A glossary of tape terms— part 10 BY HARRY MACK

SOUND-ON-SOUND.—Method of re-recording one track of a multi-track tape on another track, usually while listening to the original recording. For example, a recording *A* can be made on track 1 and another *B* on track 3 (in the same direction and parallel to it). Then, by using the sound-on-sound facility, the recording *B* can be played back while the section of the tape recorder coupled to track 1 is switched to "record" but with the erasure eliminated. Recording *B* is then superimposed on *A*, i.e. added to it, but neither is erased. Adjustment of relative levels gives a new recording *C* on Track 1, which can then be switched to re-combine with recording *B* on track 3, using sound-on-sound, to give a composite *A+B+C*. In this way a whole "orchestra" of sound can be built from fundamental tones.

The advantage of the system for dubbing is that the copy source is retained and can be monitored while recording. For example, a song can be matched to background music from another source. The disadvantage, for dubbing, is that the two signals are parallel on the tape and time differences cannot be obtained. Two machines are necessary for complete dubbing. In practice, also, repeated dubbing causes increasing deterioration in the quality of the recording. It is essential that the original recording be made with as little background noise as possible.

The track on which the recording is being added is known as the "master track." By using a headphone monitoring system, both the secondary track and the master can be heard while dubbing.

Some authorities prefer to distinguish between "sound-on-sound," adding a signal to an existing recording, and "sound-with-sound." The latter denotes synchronising two tracks and adding one to the other.

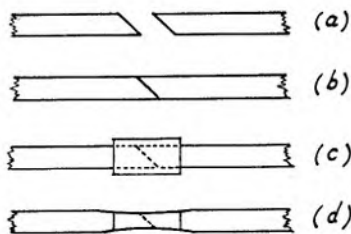
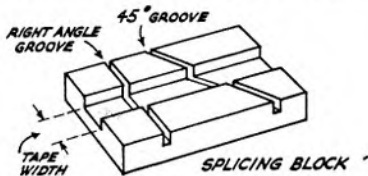


Fig. 2. A simple splicing block, showing tape channel, 45° and 90° cutting slots. (a) The tape is cut at 45°. (b) The cut ends are butted together. (c) Splicing tape is applied to the backing. (d) Surplus tape is trimmed leaving a slight "waist" (exaggerated in the diagram).

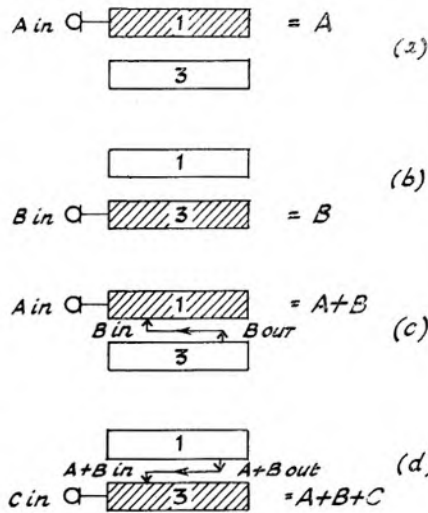


Fig. 1. Sound-on-sound.

- (a) Track 1 recorded with signal *A* in normal 4-track mono mode.
- (b) Signal *B* recorded mono on track 3.
- (c) Signal *b* played back whilst signal *A* is recorded. The Sound-on-sound facility allows mixing of the two signals at the input of channel *A*, and records as *A + B* on tape.
- (d) Similarly, the combined signal can be re-recorded on track 3 whilst a further signal is fed in, giving a resultant *A + B + C* on the tape.

SPLICING BLOCK is the recommended method of making a good splice. The tape is laid in a recessed channel and held firmly by a clamp at each side of the cutting groove (Fig. 2). A guillotine blade is then used to make a clean cut, the unwanted section of the tape is removed, the splicing tape fitted to the recording tape backing and the edges trimmed to make a slightly convex "waist" which prevents cut edges from seizing in the head channel.

A diagonal cut, usually at 45 degrees, gives a more gradual transition and prevents clicks which can occur with a straight cut. A good splice should be quite inaudible.

It is advisable to use non-ferrous scissors when jointing by hand, but a splicing block usually has a good steel blade to facilitate a clean cut. Some tape recorders have splicing blocks or channels formed on the head cover or top plate.

As splicing entails cutting the whole tape, it is applicable only to single-track working for editing.

SPOOL.—The receptacle on which the tape is wound. Domestic spools are generally 3, 5 or 7 inch diameter, made of aluminium or plastic, with the tape wound on a hub between two flanges. The centre of the spool has a hole with three slots, allowing correct location on the spool carrier of the machine.

Variations of spool size are obtainable, and semi-professional machines may employ 8½-inch or even 10 or 11-inch spools, such as studio machines use. Many of these spools are single-sided. The centre mounting of the professional spool may be the so-called "European" centre, a fairly large rectangular slot. Adaptors can be fitted to mount these spools on "normal" carriers. The N.A.B. centre dimensions, used in America, also differ from the British, and adaptors have to be used.

The end of the tape may be held on the spool hub either by passing it through a slot and winding the tape on itself, by looping into a central hole or slot, or by clamping with a special sprung fitting.

Self-loading spools have a solid flange (not slotted or with cut-out holes) and small protrusions on the inner side of the flange near the hub. The tape is held across the interior chord of the flanges to seat near the hub and the rotation of the spool traps the tape and holds it on itself as the winding begins. Some machines have the take-up spool completely covered, with only an open slot in which the tape is thus held, trapped and wound.

* * *

SPOOL CARRIER.—The circular drum with central spigot on which the spool is held and supported. Its diameter should be greater than the central "land" of the spool for correct support. Often, the spool carrier is part of the drive system, being clutch-driven or directly mounted on the motor spindle of a three-motor machine. It may also be used as a brake drum and an auxiliary winding pulley for such purposes as tape position indicator drive, etc.

Correct level of the spool carrier is essential to prevent the tape edge rubbing the inside surfaces of spool flanges during winding. Correct mounting of the carrier in the vertical sense is also required for steady winding and to eliminate uneven spooling. Often, the carrier seats on a separate spindle or hub, mounted in a bush or bearing attached to the main deck. The friction point needs attention here, to prevent binding.

* * *

SPOOL DRIVE.—A method of tape transport not often used because of speed irregularity. The take-up spool is used as spooling agent, driven directly from the motor. No capstan is needed, but tape speed depends on the diameter of tape wound.

* * *

SPURIOUS PRINTING. (See also **PRINT-THROUGH**).—The effect of signals being magnetically impressed on adjacent portions of tape. This is the effect of magnetic induction, and its cause can be excessive spooling or heat. Factors affecting spurious printing are principally heat, tape thickness and recording level, and to a lesser extent, time. Print-through increases linearly with the logarithm of the time of contact, other factors being constant.

Scotch

MAGNETIC TAPE

CHRISTMAS GIFTS PAGE



Polaris. Actual size 16 1/2 x 14"

Yours for less than one third actual price

The perfect Christmas Present—beautiful authentic colour prints of the space wonders of the world. Specially painted for 3M by Oleg Stravrowsky, they represent the Tiros weather satellite, the Mariner space research vehicle and the Polaris 2,500 mile ballistic missile. The prints are framed in white painted wood, ready for immediate hanging—and each picture can be yours for just 7/6 (and 2/- p & p), plus a tartan tab from any reel of 'Scotch' Magnetic Tape. See a sample picture at your local 'Scotch' stockist.

How to get
MORE FUN
from your
tape recorder for
only 3/6

A book of hilarious scripts by ace-writer Peter Cagney to give you hundreds of ideas for commercials, plays and films. It also shows you how to make your own sound effects. Here's fun for all the family—available from many stationers or direct from 3M Company.



Tape Albums make perfect gifts

Every tape enthusiast knows that albums are the perfect way to store their tape library. Luxuriously bound in green leatherette with real gold block lettering, each album contains one reel of 'Scotch' Magnetic Tape plus a spare pocket for a second. Included with the album are self-adhesive labels for spine and pool identification. Available in 5", 5 3/4" and 7" reel sizes.



Minnesota Mining & Manufacturing Co. Ltd., 3M House, Wigmore Street, London, W.1. Telephone: HUNter 5522
3M & SCOTCH are trademarks of Minnesota Mining and Manufacturing Company

VIDEO THE LATEST NEWS AND VIEWS REPORTED EXCLUSIVELY

BY T.R.M.

THE development of domestic video recording equipment has been reported fully and exclusively in our last two issues. But the availability of equipment immediately poses the interesting, if contentious, question "in what way will it best be used?"

The argument has been opened by Dr. H. F. Lunn of the Department of Physiology at Guys Hospital Medical School. He writes as follows:

"I would like to challenge your article on video tape recording for amateurs. You are expecting the main objective for amateurs to be a 'programme' along BBC lines. How horribly conventional! I see it more as a chance of us seeing ourselves and our family as we really are.

Switch on as baby crawls and walks, as someone comes to the door, during a party game or a rehearsal of amateur dramatics. How do we look when we are just ourselves? Leave the camera on the group—don't fiddle with pan and tilt and keep filling the screen with a beautiful (or not so beautiful) face.

This to my mind offers much more hope of success than out-BBC-ing the BBC, who are pretty good at the game after so much practice.

The other purpose is to analyse group discussions, committee meetings, etc. Can we see what we did at that point? Why did we waste so much time not coming to a conclusion? And so on . . .

So many visual cues would be available by the use of this new medium. I am hoping to use video tape recording increasingly for research into learning methods in medicine and am not unduly worried or alarmed by the difficulties. Like so many of the Gremlins of the sound taping days, they are bothersome but not insuperable. I am looking forward to these low priced machines promised in January."

This letter opens an entirely new field of discussion. We may not own video equipment yet—but that does not prevent us from thinking and planning ahead. Are Dr. Lunn's remarks original or are they reminiscent of very amateur cine techniques? Will cine techniques be successfully applied to video recording? In the professional world the "small screen" is treated very differently to the "large screen." VTR equipment is not portable in the way a 8 mm cine camera is. In some respects it is less versatile but in many others it is very much more versatile. The exploration

of these possibilities will be followed with interest in these pages in the future.

On the technical side commercial development is continuous. Peto Scott Ltd. now announce they have perfected a compatible video tape recorder, the ET2610 which will sell at £945. Featuring a new band width of 3.2 megacycles it is designed to give better picture quality; it has a tape speed of 10 inches per second and will record 405 and 625 line pictures without modification or switching.

In playback the picture may either be viewed on a special monitor screen or the signal could be fed to any domestic television set which has been suitably modified to accept it.

Compatibility in terms of video recording does not mean compatibility between all makes of machines; it does mean, however, that any tape recorded on this new type of Peto Scott equipment can be played back on another like machine. This in itself is a considerable accomplishment, opening up many possibilities for video tape recording in domestic and institutional applications.

Radio Rentaset Limited are another company offering VTR equipment. Their machine, selling at £736, may either be purchased outright or alternatively can be leased. This division, a part of the Radio Rentals Group, has established at Swindon a studio equipped with cameras, monitors, VTR's, etc. This complete studio is available to authorities and organisations who wish to examine the potential of the various items and to operate them under working conditions. Applications to use this studio can be made to the company at Relay House, Percy Street, Swindon, Wiltshire.

SCRIPTWRITING from page 448

may be the backbone of the programme. In such a case I think you should transcribe on to paper every word spoken on the tapes and sub-edit and "shape" it. Art can thus improve on nature—but, of course, you have to be an artist!

Not all the desirable cuts and re-arrangements you mark on the script will prove to be possible, when you come to edit the tape and must match level and background acoustic.

Whether drama-tape or documentary, you must get the various components into some sort of order in your mind at the earliest opportunity. Don't be ambitious at the beginning. It is best to concentrate first on a simple and limited exercise.

For example, you might script a farewell scene at a big airport; two characters, a man and a woman, fond farewells to a background of aircraft noises, and one mysterious phrase slipped into the conversation:

"And don't forget, darling, if the man in the green hat is there, fly straight on; don't leave the plane at Rome at any price."

Once you have got a first-class recording of this—probably only about forty second duration—you can go on more confidently to fit it into the context of the story.

And now will be soon enough to tackle a detailed working script. The way you set it down on paper isn't really important, so long as you and your recording assistants and cast are given all the information they need. It is useful to number each section of speech. So your script might open:

FX—church bell tolling . . . after eight seconds fade in sound of carriage wheels and horses' hooves . . . hold for 12 seconds, then fade in:

1. *FIRST MAN*—The boys are staying away from this show. (Fade out FX) No one there, I think, except the relatives. But they didn't send all those flowers.
2. *SECOND MAN*—They all love Danny, now he's gone. Four second pause.
3. *FIRST MAN*—We've got to get to Lynda . . . tonight.

And so on. It is useful to indicate timing on the script, either total duration at the end of each page or an indication of each minute elapsed at the appropriate points.

When the script is complete, read it through aloud and discover where it can be improved. Sleep on it, then do the same thing again.

Then you can start recording. Remember that your script is intended to help, not to inhibit. If something first-rate turns up on the tape unexpectedly change the script to accommodate it.

A script is a blueprint, an interim expression of creative imagination. Never let it get in the way of the final overall result as you have conceived it in your imagination. Improvise whenever you feel impelled to do so. A good script will not necessarily lead to a good tape, but if you can produce a good tape *without* a good script, you have genius!

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

High Fidelity microgroove records made from
your own personal tapes

CONCERTS, POP GROUPS, FOLK-SINGERS, WEDDINGS

Speciality 45 R.P.M. Records

(For price list see Classified advertisement Page 466 under Tape to Disc)

Highest Quality Gramophone Pressings 7", 10", 12"

Please write for free quotation

**Records for Folk Clubs, Pop Groups, Schools, Churches,
Societies, our speciality**

Please write and send Tape(s) to:

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

TAPE and PEN PALS

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

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

YOUR LOCAL DEALER

LONDON

Lee Electronics

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

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

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



APPOINTED B. & O. AGENTS

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

MAGNEGRAPH

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

Masseys Centre of Sound

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

AT
CHISWICK, W.4

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

◀ TEL: CHI 2082 ▶

(not closed for lunch)

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

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

3/4 STATION PARADE, SHEEN LANE,
SHEEN, LONDON, S.W.14
(Opposite Mortlake Station, S.R.)
Showroom: PROspect 0985

9 a.m.—6 p.m.; Fridays 9 a.m.—8 p.m.

Tape records reviewed

**AMPEX SET THE VERY
HIGHEST STANDARDS**

**A BRILLIANT NEW
LIBRARY COMMANDS
ATTENTION**

**HAYDN. String Quartets Op. 77 No. 1 in
in G Major, No. 2 in F Major.
Amadeus Quartett. Ampex (DGC 8980)
1/4-track stereo, 7 1/2 ips, 75s.**

**DON COSSACK CHOIR. Serge Jaroff.
Ampex (DGC 6457), 1/4-track stereo, 7 1/2
ips, 75s.**

If Ampex is regarded as synonymous with quality in the world of tape, then it might be said that Deutsche Grammophon hold the equivalent exalted position in the realm of disc. When I learned that a completely new library of pre-recorded tapes was to be offered for sale in this country as a result of collaboration between the two, I could hardly wait to receive a review copy.

When the two tapes listed above arrived, I set up the best reproducing equipment immediately available. This comprised a Revox recorder, Quad amplifier and pair of Quad Electrostatic speakers. If the promise of quality suggested by the names on the label had been really kept, I was determined not to miss it.

One gets rather tired of reading blurbs on pre-recorded tapes suggesting that the listener is about to undergo a completely new experience—too often the experience is one of disappointment. In the case of Ampex there was no statement, exaggerated or otherwise, as to the standards of quality to be anticipated. Beginning with the Haydn I prepared to criticise.

In the course of my career I have had to listen to numberless commercial recordings, both tape and disc. My immediate reaction to the opening phrases of the first quartet was that I had probably never heard better. Here we have superbly clean sound in unobtrusive stereo. The performance of the Amadeus Quartett, who coax the most subtle gradations of tone from their instruments, is excellent, and nothing appears to have been lost in the recording. I will make up for the manufacturer's modesty by categorically stating that this recording, compared to many other pre-recorded tapes, does indeed offer a new experience to the discerning listener.

I have said "discerning" deliberately—it would be a sin for such fine sound to be lost in poor quality reproducing equipment. The brilliance of attack, an elusive quality often lost in string recordings, calls for top quality speakers. But when it is reproduced properly it is a joy beyond price.

This, then, is a tape for the connoisseur; it will be a delight to own and will hold pride of place in any collection. By producing work of this quality the firm of Ampex will do much to establish tape as a serious, if not superior, medium for pre-recorded music.

The Don Cossack Choir recording is perhaps not quite up to the Haydn in terms of pure quality, although direct comparison between such dissimilar items is obviously not possible. Thoughtfully the publishers include a leaflet giving the English translations of the fourteen songs performed, amongst which is the famous Russian rendering of The Creed.

The unmistakable harmonies of the Russian choir come over very well; traditional rhythms command the listener's feet to dance. Altogether an exciting and invigorating tape to be thoroughly recommended. The realism and presence is almost good enough to produce heaps of snow around the speakers.

Two small criticisms of Ampex pre-recorded tapes. Firstly, such fine music deserves the protection of a polythene bag within the tape box, and secondly I was very sorry to note that Ampex have followed the deplorable example of other firms by neglecting to use leader tapes. What a pity to spoil such fine ships for such an insignificant ha'p'orth of tar.

**ROSTROPOVITCH GIVES
THE MASTER'S TOUCH**

**MELODIC QUALITY TO
TEAR AT THE HEART**

**PROKOFIEV. Sinfonia Concertante. Ros-
tropovitch with Royal Philharmonic
Orchestra, conducted by Sir Malcolm
Sargent. WRC (TCM 81), 29s. 6d.**

The names on the label, Prokofiev, Rostropovitch, and Sir Malcolm Sargent are so impressive as to warrant the finest recording techniques. In this case World Record Club do not let us down. With unobtrusive background noise the orchestral brilliance has been carefully maintained. In particular the tonal quality of the solo cello has been preserved, although balance with accompaniment is at times questionable.

Regarded as Prokofiev's last major work, the Concertante was originally written for Rostropovitch himself. This performance is therefore of academic interest to all serious students of music, quite apart from the sheer pleasure it will give to the less dedicated.

Of great technical interest, due to the inevitable comparisons that will be drawn between this work and the composer's only other cello concerto, this recording should have a place in every classical library. When virtuosity and personality meet as they do in Rostropovitch, the fusion of attributes is likely to produce performances that will one day acquire historic, apart from musical, value. Need one say more?

On the same tape there is a performance of Rachmaninov's *Vocalise Op. 34, No. 14* by Rostropovitch with Dedyukhin, piano. The melodic quality of this short work can tear at the heart-strings and forms a delightful compliment to the Concertante. Desperate relatives vainly searching for low-priced—but magnificent—Christmas presents need look no further.

A WORTHWHILE MUSICAL EXPERIENCE

BEETHOVEN. Piano Concerto No. 3 in C Minor Op. 37. Solomon with The Philharmonia Orchestra, conducted by Herbert Menges. WRC (TT 540), 29s. 6d.

The opening of this tape, which carries a heavier background noise level than I care to hear, is disappointing. This is a pity because Solomon's rendering of this popular concerto is well worth hearing. The magnificence of the music makes one forget minor recording imperfections.

There is a nice balance between soloist and orchestra, particularly in the second slow movement, but the long, sustained piano notes could not fail to betray the slightest trace of wow, so you have been warned. The difficult passages of the third movement are interpreted with the mastery associated with the name of Solomon, and round off the whole work to confirm the validity of a worthwhile musical experience.

On the same tape there is a performance of the *Sonata No. 2 in F*. Unfortunately the lack of orchestral accompaniment has the effect of drawing attention to recording imperfections which are bound to detract from the listener's enjoyment. However this would not deter me from acquiring this tape as the concerto alone makes it excellent value for money.

NOSTALGIA FROM THE CINEMA ORGAN

BRYAN RODWELL at the Organ of the Granada Cinema, Clapham Junction. Global 6682, 3½ ips, ½-track mono, 20s. plus 1s. postage.

The organ of the Granada cinema is well-known and well-loved by many listeners to BBC sound programmes. The selection of items on this tape was presumably intended to show off both the instrument's versatility and the performer's virtuosity. There is certainly something of the big cinema sound to be heard, although I do feel that an elusive quality has been lost; perhaps it's the noisy consumption of sweets and ice-cream so well remembered from the cinema of the thirties.

As I have said in respect of other brands of pre-recorded tape, it is rather naughty to distribute these without the courtesy of leader tapes. Perhaps it was only my review copy that was despatched in such a naked state.

For those who have an affection for the Wurlitzer Organ, or for those who look back on a ninepenny seat in the first six rows with nostalgia, this tape should prove satisfying in spite of a marked lack of technical brilliance in the original recording.

The album includes *Sweet Georgia Brown*, *Don't Blame Me*, *Lover*, *Sophisticated Lady*, *Ain't Misbehavin*, *When Somebody thinks you're Wonderful*, *Honeysuckle Rose*, *Toy Trumpet*, *Jet Journey* and *Malaguena*.

LISTEN IN AS AN ARTIST CREATES

HINES '65. Earl Hines, piano. WRC (TT 539), 29s. 6d.

This remarkable tape will provide a satisfying shot-in-the-arm for jazz addicts, particularly those hooked on the Earl Hines' brand of individualistic interpretation.

I greatly deplore the performance of jazz before large audiences in great concert halls. If jazz is an art then it is an intimate art, best practised in intimate surroundings. Similarly if jazz is an art then Earl Hines is undoubtedly a great artist.

In this recording the soloist performs—"creates" would be a better word—in the intimate environment of a private studio without even the intrusion of accompanying instruments. His genius for improvisation freely extends from the score to the vocal throughout the repertoire which includes, *My Blue Heaven*, *I Know a little Bit*, *Serenade in Blue*, *I Know that You Know*, *If I could be with You*, *Hunting*, *Hines '65*, *The Midnight Sun will Never Set*.

This recording is full of unexpected humanity. The voice mike was deliberately held at recording level to catch every sound from the artist as he suffered the pangs of creation. The publisher's blurb states that an extraneous noise that occurs in the rendering of "Hines '65" was caused by a whisky glass falling into the piano after travelling some six or seven inches on the vibrations set up by the left hand. The quality of the recording is so good that I believe it, just as I believe in Earl Hines.

HOLLY AT THE PARTY?

THE HOLLIES. *Would you Believe?* Parlophone (TA-PMC 7008), 3½ ips, twin-track mono, 35s.

This mixed bag of numbers has something for everyone, from the pop beat of *I am a Rock* and *I can't let go* to the pathos *Oriental Sadness* and the bathos of *Fifi the Flea* and dear old *Stewball*, the horse who lived exclusively on the hard stuff. Other numbers on the tape are *I take what I want*, *Hard, hard year*, *Sweet little Sixteen*, *Take your Time*, etc.

Personally I find too much of the pop beat of The Hollies to be monotonously dreary, but this is delightfully set off by the lighter numbers where a surprising sweetness of sound is achieved. I don't see how this tape could fail to be a success at a party because of the mixed ingredients there should be something to please every guest. If I am proved wrong it will be entirely your own fault for extending an invitation to such a misanthropic individual. Happily the recording quality is quite good too.

The tapes reviewed this month are issued by the following companies:—
 "Amplex": Amplex Great Britain Ltd., Acre Road, Reading, Berks.
 "Global": Global Products, PO Box No. 1, Rothwell, Kettering, Northants.
 "Parlophone": E.M.I. Records Ltd., 20, Manchester Square, London, W.1.
 "W.R.C.": World Record Club, Box 11, Parkbridge House, The Little Green, Richmond, Surrey.

YOUR LOCAL DEALER

LONDON

WIMBLEDON'S TAPE RECORDER CENTRE

ALL LEADING MAKES IN STOCK

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

BARGAIN OF THE MONTH

FI-CORD 202A ONLY 39 GNS.

TEL-LEE-RADIO

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

THE SOUTH

SOUTHAMPTON

Tape Recorder Specialists

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

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

RECORDING MACHINES LTD.

79 Queensway, Southampton

Telephone: 27092

THE SOUTH WEST

TOM MOLLAND LTD.

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

102 CORNWALL ST., PLYMOUTH

Telephone 69282/3

Immediate delivery to ALL Areas

SUBSCRIBE TO TRM

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

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

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

Name

Address

.....

.....

YOUR LOCAL DEALER

THE NORTH

**CUSSINS &
LIGHT LTD.**

YORK'S LEADING RADIO
TV & ELECTRICAL STORE

Visit our First Floor
TAPE RECORDER
CENTRE

LARGEST RANGE
OF RECORDERS
& ACCESSORIES
IN THE NORTH

**KING'S SQ.
YORK**



CHESHIRE

CHARLESWORTH'S
OF CREWE LTD.

Tape Recorder
and Hi-Fi Specialists

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

**TAPE RECORDER
CENTRE (Halifax)**

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

30 King Cross St., Halifax. Phone 66832

**THEATRE ORGAN
DISCS and TAPES**

ORGAN OF THE MONTH CLUB

brings out a new Theatre Pipe Organ
record each month.

Our discs are playable on Mono or Stereo
equipment. Approx. 38 minutes playing
time 31/6d.

7½ i.p.s. 4 track stereo tapes 41/7d.

Full details from:

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

NEW PRODUCTS

**A VERSATILE
STEREO RECORDER
JUST RELEASED
BY DYNATRON**

FEATUREING complete "Multiplay," the new STR 1 tape recorder from Dynatron Radio Limited, illustrated below, is a four track stereophonic recorder with all-transistor circuitry designed in an advanced modular construction. Mains powered, it is fitted to a teak veneered wood plinth with a clear plastic dust cover.



The STR.1 incorporates a dual channel record/playback amplifier, with individual level controls and meters which in conjunction with separate record and playback heads provides complete multiplay facilities. Erase heads are fed from a low distortion push pull high frequency oscillator and an audio output of 3 watts per channel is provided to feed separate speaker units.

The three speed tape transport system, incorporating a large capstan fly wheel driven by a Papst motor operated by push keys, is designed to ensure low wow and flutter figures. The deck will accommodate seven-inch reels and utilises a relay controlled end-of-tape automatic stop. A facilities panel is incorporated, with input socket for radio and gramophone, and output sockets for headphone monitoring and external loudspeakers.

The new ST.1 has a mains voltage of 195 to 250 volts, 50 cps, power consumption of 50 watts and tape speeds of 7½, 3½, and 1½ inches per second. The claimed frequency response is fifty to 18,000 cycles per second, fifty to 10,000 cycles per second, and fifty to 6,000 cycles per second respectively. Wow and flutter is said to be 0.15%, 0.16% and 0.2%, with signal to noise ratio minus 52 dB weighted.

Record level indicators are two moving coil meters and the programme indicator is a four digit counter. The stop/start button gives instant stop, start and pause, and a combined push button parallels both amplifier channels. Tone controls are separate bass and treble push buttons, with track transfer for multiplay, record and mix.

Measuring 15 inches by 13¼ inches by 6¼ inches the STR.1 will retail at 79 guineas complete with 7-inch reel of tape, spare reel, and moving coil microphone.

Dynatron Radio Limited, St. Peters Road, Furze Platt, Maidenhead, Berkshire.



**A SENNHEISER MIKE
DESIGNED SPECIALLY
FOR AMATEUR
CONDITIONS**

SENNHEISER ELECTRONIC have developed a new, low cost, cardioid dynamic microphone, the MD411, as illustrated. Specially designed for home use, the response is attenuated at the sides of the instrument as well as at its back. This design refinement is intended to assist the user when working in unsuitable acoustic conditions by reducing the effect of room reverberation to an even greater extent than might be anticipated when using an ordinary cardioid microphone.

It is stated by the distributors, Audio Engineering Ltd., that in order to keep the cost down the manufacturers have allowed a little wider tolerance on the frequency response than would be permitted for a broadcasting microphone; it is, nevertheless, controlled to meet the hi-fi standard DIN 45 500.

An important feature of this microphone is its built-in triple impedance transformer. High impedance, 25,000 oms, is available for direct connection to valve operated tape recorders; medium impedance, 800 ohms, for direct connection to transistorized tape recorders; low impedance, 200 ohms, for connection to recorders having a low impedance transformer coupled input.

The microphone comes complete with a table stand, floor stand adaptor, and zip-up cushioned case at a retail price of £13 9s. 0d.

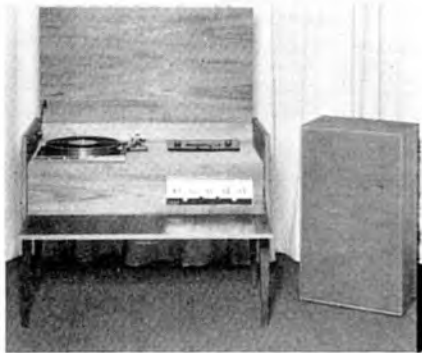
Audio Engineering Ltd., 33/35 Endell Street, Shaftesbury Avenue, London, W.C.2.

**DESIGN
FOR
LIVING?
NEW HI-FI FURNITURE**

A new compact cabinet for hi-fi equipment is announced by Design Furniture Limited. Christened the EQC 18 it has been evolved from the results of a design competition organised earlier this year.

Accommodating the majority of popular hi-fi equipment it is also particularly suitable for transistorized units. The motor

board and amplifier top are interchangeable from left hand to right hand, and can be mounted in any position—flat, stepped or sloped. The EQC 18 is made in Design Furniture's own factory at Banbury and is finished in a choice of two standard natural wood veneers—walnut with rosewood for the front, or natural oiled teak. Standing 27½ inches high (including 14½-inch legs) it is 36½ inches wide and 18½ inches deep. The approximate retail price is £25.



Also shown in the illustration is the S33 speaker enclosure which follows the current trend towards smaller, more compact speaker enclosures. It is of sufficient cubic capacity to give a satisfactory response from many of the popular speakers available and can be obtained in a choice of three natural wood veneers—natural oiled teak with peat muraweave baffle, and walnut or mahogany with Bay muraweave baffle. It stands 27 inches high, is 16 inches wide and twelve inches deep. Its cost is approximately £11.

Design Furniture Ltd., Calthorpe Manor, Banbury, Oxfordshire.

AN ORIGINAL CASSETTE RECORDER WITH FULL MIXING FACILITIES BY ELIZABETHAN

THE new LZ612 tape recorder, made in Britain by Elizabethan Electronics Ltd., is claimed to be unique in its design and ahead of comparably priced equipment anywhere in the world for quality of performance.

The output, approaching 6 watts, is made possible by the "vertical" design which allows a larger, more powerful and more effective speaker to be employed. It also means that the tape recorder, measuring only 17½ inches by 12½ inches high by 7½ inches deep, can be accommodated on a windowsill or narrow shelf. Its slim lines are shown below.



Weighing only 18 lb., battery or mains operated, it is fully portable and can be used outdoors. Said to have a record-replay response of 50 to 8,000 cps plus or minus 3.5 dB, its signal to noise ratio is quoted as better than minus 50 dB. Independent mixing in the record mode is available between microphone and radio/pick-up channels whilst the same facility is available to mix both inputs with the tape playback in playback mode. The deck has been designed to accept the new Philips cassettes which offer a playing time of sixty minutes with the C60 cassette or ninety minutes with the C90. The loudspeaker is a 10-inch unit by Goodman and a separate bass and treble tone controls are provided. The cost is 45 gns.

Elizabethan Electronics Ltd., of Crow Lane, Romford, Essex.

SOLDERING TROUBLES? A COMPLETE KIT FROM ANTEX SHOULD HELP TO CURE THEM

NEW from Antex Ltd., of Grosvenor House, Croydon, is a complete soldering kit containing everything the keen hobbyist or radio and electronics amateur needs for successful soldering—particularly when fine precision work is required.

The kit consists of a durable and rigid plastic "tool box" with a lift-off "see through" cover, designed not only to keep everything to hand but also to serve as an iron stand whilst the iron is in use. Contained in this tool box is an Antex model CN 240 volt 15 watt precision miniature soldering iron, as used in electronics workshops and factories all over the world, fitted with a 3/16ths of an inch nickel plated bit. Two spare interchangeable bits (5/32nds and 3/32nds inch) are also provided to enable a wide variety of jobs to be undertaken, together with a reel of resin core solder, a cleaning pad, and a handy heat sink for soldering up transistors, etc.



A most useful addition to the kit is a handy 36 page illustrated booklet on "How-to-solder," which gives a great deal of information based upon the long experience of Antex Ltd. in this field, for both amateur and professionals. All components of the kit fit neatly into place, with ample room for the iron to be stored complete with mains plug. The price of the Antex precision soldering kit is 49s. 6d. complete and it is obtainable from department stores, radio and electrical shops and tool and hardware dealers.

Antex Ltd., Grosvenor House, Croydon, Surrey.

DRY-SPLICE PRICE REDUCTION

DRY-SPLICE, now an established tape accessory product, has been selling so well that the manufacturer has been able to reduce the retail price from 4s. 11d. per packet of 24 to 3s. 9d. as from the 1st September, 1966.

Lennard Developments Ltd., 7, Slades Hill, Enfield, Middlesex.

PHILIPS PRODUCE DO-IT-YOURSELF MICROPHONE KIT

RADIO "hams" and tape recording enthusiasts who are looking for a sensitive, versatile omni-directional microphone and enjoy a spot of do-it-yourself will welcome the first kit-mike by Philips, available from Peto Scott of Weybridge.

It takes approximately three hours to assemble and costs 7 guineas.



The kit contains everything needed to assemble and use the microphone, including a stand for table or desk use, and a cord and clip for wearing around the neck. The microphone can also be hand held, hung from an overhead bracket or fitted on to a professional stand. The mic. has an unobtrusive on-off switch on one side.

Directions for assembly are illustrated, step by step, in a well-designed booklet.

Peto Scott Ltd., Addlestone Road, Weybridge, Surrey.

Grampian

for good

SOUND EQUIPMENT

GRAMPIAN REPRODUCERS LTD
Hanworth Trading Estate, Feitham, Middlesex.

FRANCIS OF STREATHAM

MAINS TAPE RECORDERS

*Ampex 800 Series	£127.10.0
*Ampex 1100 Series	£149.10.0
*Akai 1710	79 gns.
*Akai X-300	190 gns.
*Akai 910	62 gns.
*Akai M8 Stereo	136 gns.
Akai 355 Stereo	239 gns.
*Beocord 2000	119 gns.
*Beocord 2000 de luxe	135 gns.
*Beocord 1500	89 gns.
*Beocord 1500 de luxe	105 gns.
*Beocord 1000	69 gns.
*Brenell STB2	£150.0.0
*Brenell Mk. 5 M Series 3	93 gns.
*Brenell Mk. V Series 3	74 gns.
Elizabethan LZ32	32 gns.
Elizabethan LZ34	34 gns.
Ferguson 3218	34 gns.
Ferguson 3222	35 gns.
Ferguson 3216	49 gns.
*Ferrograph 633	120 gns.
*Ferrograph 631	95 gns.
*Ferrograph 632 Stereo	126 gns.
Fidelity Playmatic	28 gns.
Grundig TK400 2sp. 4 Tr.	47 gns.
Grundig TK14L	37 gns.
Grundig TK17L	43 gns.
Grundig TK18L	39 gns.
Grundig 23L Auto	49 gns.
Grundig TK140	38 gns.
Grundig TK120	29½ gns.
Philips 3556	62 gns.
Philips 3558	42 gns.
Philips 3553	36 gns.
Philips 3552	24 gns.
*Revox 736	124 gns.
Sony TC260	97 gns.
Sony 250A Deck Pre-amp	57 gns.
Sony 200	72 gns.
Sony 600	127 gns.

Stella 463	39 gns.
*Tandberg Series 6	110 gns.
*Tandberg Series 8, 2 Tr.	54 gns.
Telefunken Series 12	105 gns.
Telefunken 203	69 gns.
Telefunken 201	44 gns.
Telefunken 200	39 gns.
*Telefunken 85 de luxe	83 gns.
*Telefunken 204 Stereo	106 gns.
*Truvox PD102	93 gns.
*Truvox PD104 Stereo	89 gns.
Truvox R102	76 gns.
Truvox R104	79 gns.
Truvox R40	44 gns.
Uher Hi-Fi Special	129 gns.
Uher 724L	75 gns.
*Vortexion WVA, 3 speed	£96.7.0
*Vortexion WVB, 3 speed	£115.10.0
*Vortexion CBL Stereo	£172.0.0
*Van der Molen VR4	59 gns.
*Van der Molen VR7	39 gns.
*Uher 784 Royal	129 gns.
*Uher Hi-Fi Special	129 gns.

BATTERY PORTABLES

Akai X-IV, 4 Tr. Stereo	131 gns.
Cosor I621	26 gns.
Grundig EN3 Notebook	23 gns.
Grundig TK6L	73 gns.
Grundig C100	39 gns.
Loewe Opta 408	39 gns.
Loewe Opta 416	51 gns.
Loewe Opta Cassette	39½ gns.
Philips EL3301	26 gns.
Philips 3586	27 gns.
Sanyo Auto	22 gns.
Sanyo Batt./Mains	26 gns.
Stella 472	27 gns.
Telefunken 300	49 gns.
Telefunken 301 4 Tr.	54 gns.
Uher 4000L	103 gns.

*Microphone extra

LEADING STOCKISTS OF EQUIPMENT FOR TAPE and HI-FI

... and NO EXTRA FOR CREDIT TERMS

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

Prices subject to alteration as announced by manufacturers

MAINS POWER PACKS

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

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

MICROPHONES, MIXERS, etc.

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

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

● DEFLUXERS by Wearite, Walgair

PRE-RECORDED TAPES

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

TAPE SPLICERS by Bib, Bond, E.M.I. Matching transformers, plugs, sockets, etc.

STANDS of all types. TAPES

Hi-Fi Dept.

● AMPLIFIERS (mono & stereo)
Quad Scott Tripletone
Leak Rogers Cadet Mk. III
Armstrong B. & O. Pye
Truvox

● TUNERS

● QUAD ROGERS B. & O. Leak
Armstrong Pye Tripletone

● LOUDSPEAKERS

Quad Pye W.B. Wharfedale
Goodmans Tannoy Leak
Lowther Kef Rogers Elac
S.H.B. Tandberg B. & O.
Truvox Ditton

● MOTORS, PICKUPS

Garrard incl. Thorens
AT6, 401, etc. Tannoy
Goldring Shure
Connoisseur Ronette
Decca Sonotone
Transcriptor B. & O. BSR
Philips SME Mk. II
Ortofon Pickering
Acos ADC

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

● CABINETS—Record Housing and GKD

Please note our only address as below

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

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

STReatham 0466/0192

● FREE CAR PARK, Prentis Road



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

at such competitive prices.

favourable deferred terms over £10

TRANSISTORISED FM STEREO DECODER

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

Kit £8.10.0 Assembled £12.5.0

Send for full details.



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

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

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

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

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



TRANSISTOR FM TUNER

● TAPE EQUIPMENT

Pre-Amplifier (MONO) TA-IM

Kit £19.18.0.

Assembled £28.18.0.

Pre-Amplifier (STEREO) TA-IS

Kit £25.10.0.

Assembled £35.18.0.



Model D93-2 ½ track } Stereo either model
Model D93-4 ¼ track } £36.15.0

TRUVOX D-93 TAPE DECKS

MAGNAVOX—363 DECK—3-speed Mono
2 track. £13.10.0.; with TA-IM Kit, £31.5.6.



D-93

Without obligation please send me

FREE BRITISH HEATHKIT CATALOGUE

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

Name

Address

(Block capitals please).....

T.12

● RADIO TUNERS for better recordings.

Heathkit tuners offer outstanding performance at lowest cost.

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

Total price Kit £16.8.0. (incl. P.T.).

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

Total price Kit £27.5.0. (incl. P.T.).

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



FM TUNER

● STEREO MONO AMPLIFIERS

A wide range available including:—

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

Kit £39.10.0. (less cabinet). Walnut veneered Cabinet, £2.5.0. extra.

9 x 9 watt Stereo Amplifier, Model S-99. Within its price range an outstanding integrated amplifier. Kit £28.9.6. Assembled £38.9.6.

3 x 3 watt Stereo Amplifier, Model S-33H. A low-priced unit, ideal for use with the Deram cartridge. Kit £15.17.6. Assembled £21.7.6.

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

● LOUDSPEAKER SYSTEMS AND SPEAKERS

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

Cotswold or MFS Systems

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

Either model: Kit £25.12.0.; Assembled £33.17.0.

SSU-1 Low Cost System

Frequency range 40-16,000 c/s. 2 Loudspeakers. Size 23" x 11½" x 11½" deep. Kit £11.17.6. (incl. P.T.), legs 14/6 extra.



BERKELEY

M. Order prices quoted include delivery U.K.

THE HEATHKIT LONDON CENTRE

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

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

We hope that you will visit us there.

DAYSTROM LTD. Dept. T.12, GLOUCESTER

SONY REVOX REPS
 WYNDSOR PHILIPS FERROGRAPH GRUNDIG
 UHER TELEFUNKEN AKAI
 BANG & OLUFSEN
 ELIZABETHAN FERGUSON TANDBERG

whatever the make

this is the name

THE RECORDER CO

★ INTEREST-FREE H.P. TERMS

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

Just Released

AKAI Model I710 3 SPEEDS (15 i.p.s. optional).
 4-TRACK STEREO. 2 BUILT-IN-SPEAKERS 5" x 7".
 2 VU METERS. 7" TAPES. OUTPUT 5 watts per
 channel. VERTICAL OR HORIZONTAL USE.
 INCOMPARABLE VALUE. 79 GNS.

	Deposit £ s. d.	12 Monthly Payments £ s. d.	Cash Price Gns.
MAINS 4-TRACK			
Fidelity Playtime ...	19 19 0	1 11 6	27
Ferguson 3222 ...	12 5 0	2 0 10	35
Grundig TK140 ...	13 6 0	2 4 4	38
Philips EL3558 ...	14 14 0	2 9 0	42
Ferguson 3224 ...	15 8 0	2 11 4	44
WyndSOR Vanguard ...	20 13 0	3 8 10	59
Philips EL3556 ...	21 14 0	3 12 4	62
MAINS 2-TRACK			
Ferguson 3220 ...	8 15 0	1 9 2	25
Grundig TK120 ...	10 6 6	1 14 5	29½
Tandberg 823 ...	18 18 0	3 3 0	54
Brenell Mk.5/3 ...	25 18 0	4 6 4	74
Brenell Mk.5/3 'M' ...	32 11 0	5 8 6	93
Ferrograph 631 ...	33 5 0	5 10 10	95
Ferrograph 633 Connoisseur ...	42 0 0	7 0 0	120

STEREO/MONO

Philips EL3312 ...	16 16 0	2 16 0	48
Sony TC250A ...	19 19 0	3 6 6	57
Philips EL3555 ...	26 5 0	4 7 6	75
Akai I710 ...	27 13 0	4 12 2	79
Sony TC260 ...	33 19 0	5 13 2	97
Tandberg Series 12... ..	36 15 0	6 2 6	105
Truvox PD104 ...	36 15 0	6 2 6	105
Beocord 1500 ...	36 15 0	6 2 6	105
Revox 736 ...	44 9 0	7 8 2	127
Beocord 2000K ...	47 5 0	7 17 6	135
Beocord 2000T De Luxe ...	48 13 0	8 2 2	139
Akai X-350 ...	66 10 0	11 1 8	190
Akai X355 ...	83 6 4	13 17 9	239

BATTERY

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

THE RECORDER CO

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

VAN DER MOLEN

4 track tape recorder

Model VR7
 only

39 gns

- 4 track - 3 speeds
- 8" elliptical speaker
- 3½ watts output
- mixing - 7" spoils
- magic eye
- wooden cabinet
- British Made



VAN DER MOLEN LTD. 42 Mawney Rd., Romford, Essex. 'phone 41904.

CLASSIFIED ADVERTISEMENTS

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

VACANCIES

LONDON BOROUGH OF EALING EDUCATION DEPARTMENT

LABORATORY STEWARDS required at EALING TECHNICAL COLLEGE, St. Mary's Road, Ealing, W.5, for language/recording laboratories. Duties include maintenance of tape recorders and associated equipment, preparation of duplicate recordings, care and supervision of tape library. Salary: Miscellaneous Grade IV, £780—£880 per annum, including London weighting.

Apply immediately to the Registrar at the College (Tel. No. GEO 4111).

E. J. COPE-BROWN,
Town Clerk.

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

FOR SALE

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

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

E.M.I. PROFESSIONAL UNUSED TAPE—Long Play—3,600 ft. HIGH-CHUTE LTD., 359, OXFORD STREET, W.1 (GRO 7288).

BRENELL MK.5 TYPE "M" RECORDER with matching GRAMP-PIAN D.P./4 MICROPHONE, New, little used, £60. Box 470.

TAPE EXCHANGES

BELOW are listed tape recorder owners wishing to contact others with similar interests.

Vernon, Godfrey (36). 50, Stonor Park Road, Solihull, Warwickshire. Photography, motoring, music. 3½, 1½ ips. 5½-inch spool. Ferguson 3202. Asia, USA, India.

Waters, E. G. (47). M4, 218, Portland Road, South Norwood, London, S.E.25. Swing, big band, 30's and 40's music. 7½ ips. 7-inch spool. Stern-Mullard tape deck.

Wetman, Norman (34). 164, Henconner Lane, Leeds 13, Yorkshire. 7½, 3½, 1½ ips. 7-inch spool. Wyndor Victor, England, Germany.

Webb, Peter (42). 15, Blackmore Road, Tiverton, Devon. Short-wave radio, writing, music. 3½ ips. 5½-inch spool. Grundig TK18. Overseas only.

GRUNDIG T.K.6 Battery/Mains Portable Recorder complete with MICROPHONE. New, very little used. £40. Box 471.

TELEFUNKEN M.200. ½ track, solid state as new. cost £40 19s. Quick sale. £28. F. Newham, 14, Emlyn Road, London, W.12. Tel.: SHE 2140, evenings.

MISCELLANEOUS

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

NEW EQUIPMENT

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

HAVE YOU HAD DETAILS OF MY INEXPENSIVE RMS FLUTTER-METER? Also available on hire. Leaflets on request. V.H.M., 35, VILLERS ROAD, WATFORD, HERTS.

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

EDUCATIONAL

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

MAGNETIC TAPE

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

Webster, Anthony (29). 7a, Ranelagh Road, W.chester, Hampshire. Photography, electronic organ. 7½, 3½, 1½ ips. 8½-inch spool. Ferrograph 631, Akai 345, Vortexion. Female contacts preferred. British Isles.

West, John (35). 64, Westfield Road, Birmingham 14, Warwickshire. 8mm cine photography, travel, folk music. 7½, 3½, 1½ ips. 7-inch spool. Robuk RK4. Spain, France, USA.

INDEX TO ADVERTISERS

Agfa-Gevaert Ltd. Back cover	
Ampex (Gt. Britain) Ltd. 431	
Audio Engineering Ltd. 442	
Bang & Olufsen U.K. Sales Division. 467	
Berean Forward Movement 473	
Bosch Limited 439	
Brenell Engineering Co. Ltd. 432	
British Radio Corporation (Ferguson Div.) 429	
Brockley Trading Co. Ltd. 473	
A. Brown & Sons Ltd. 470	

TAPE DUBBING

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

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

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

TAPE-TO-DISC RECORDING. Finest professional quality. 10-inch LP—42s. (32 mins.), 12-inch LP—48s. (45 mins.), 7-inch EP—21s. 40 ft. RECORDING STUDIO S.A.E. for leaflet to DEROY Sound Service, High Bank, Hawk Street, CARNFORTH, Lancs.

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

TAPE EXCHANGES

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

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

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

AMERICAN TAPE EXCHANGES. We come new Tapespondents, from United Kingdom and Europe. Enquiries: William Goodall, 43, Treverton Tower, London, W.10.

TAPE RECORDS

AMERICAN 4-TRACK STEREO TAPES are CHEAPER from DUBLIN. All lab. ls and prices from Harrison ca. lough at 2s. 6d. Details: MUSIC U.S.A., 201, Pearse St., DUBLIN 2, Ireland.

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

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

PUBLICATIONS

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

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

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

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

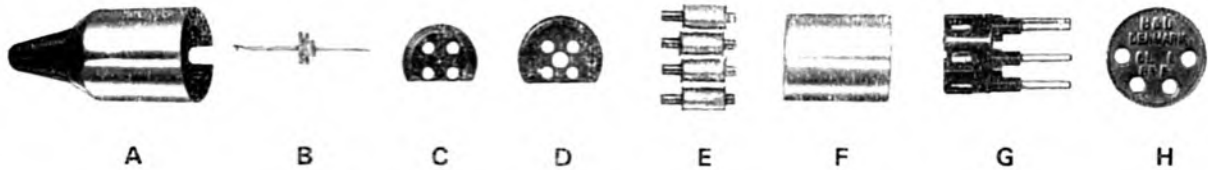
NOW IN ITS SECOND REPRINT, Alan Beeby's informative handbook SOUND EFFECTS ON TAPE. Invaluable to all dramatists and recording enthusiasts. Tells in practical terms not only what to do but also how and why. 3s. 6d. post free. Remittance with order to Print & Press Services, 7, Tudor St., E.C.4.

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

Bureau Britannia. 459	Tom Molland Limited 461
Charlesworth's of Crewe Ltd. 462	Morhan Exporting Corporation. 470
Concert Recording 462	Multicore Solders Ltd. 448
Cussins & Light Ltd. 462	NuSound 427 and 475
Daystrom Limited 464	Nash House Electronics 455
Elizabethan Electronics Ltd. 440	Patrick O'Mahony & Co. Ltd. 459
Elstone Electronics Limited 471	Peto Scott Electrical Instruments Ltd. 434 and 435
E.M.I. Records Limited ... 430 and 468	Pullin Photographic Ltd. 436 and 469
E.M.I. Tape Limited 452	Rapid Recording Service 473
The Ferrograph Co. Ltd. 447	The Recorder Company 465
Fidelity Radio Limited 437	Recording Developments 448
Francis of Streatham 464	Recording Machines Ltd. 461
Global Products 473	R.E.W. (Earlsfield) Ltd. 471
Gramplan Reproducers Ltd. 463	Resolusound Limited 438
Grundig (G.B.) Limited 454	Sheen Tape Recording Centre Ltd. 460
Institute of Sleep Learning 448	Sony U.K. Sales Division 428
K.J. Enterprises 438	Standard Telephones & Cables Ltd. 426
Kodak Limited 433	Tape Bookshop 472
Leda Tapes 448	Tape Recorder Centre (Halifax) 462
Lee Electronics 460	Tel-Lee-Radio 461
Lennard Developments Ltd. 443	Tempo Tape Limited 470
Lustraphone Limited 448	Truvox Ltd. 456
Magnagraph 460	Van der Molen Ltd. 465
Massey's Centre of Sound 460	Vortexion Limited 441
Metrosound Manufacturing Co. Ltd. 470	
Minnesota Mining & Manufacturing Co. Ltd. 458	

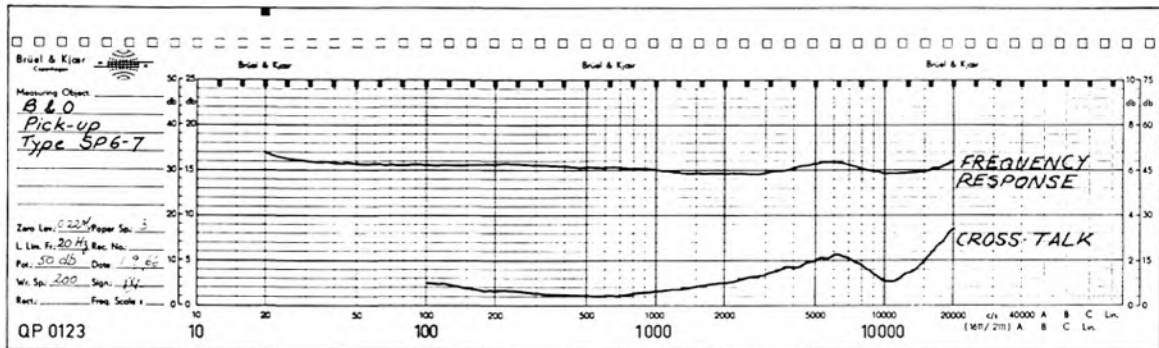


B & O - for those who consider design and quality before price



These components make the
B & O Cartridge the accepted leader in its field.

- | | |
|---------------------------------------|--|
| A Main housing | E Four coils |
| B Stylus assembly with cross armature | F Anti hum shield |
| C Armature mounting | G Rear coil mounting and socket assembly |
| D Front coil bearer | H Rear cover |



This graph proves it.



The B & O SP6 magnetic cartridge has been designed to provide as nearly as possible the perfect link between the gramophone record and the main amplifier. The diamond stylus is set at the B & O pioneered and now accepted standard of 15° from the vertical. Type SP8 is available with elliptical stylus. It employs a symmetrical micro-cross armature for excellent stereo separation with minimum cross-talk. Push-pull design reduces harmonic distortion to a minimum. Result: A superb instrument capable of the highest fidelity. Frequency response: 20 c/s - 20 kc/s ± 2.5 dB. Output: 7 mv per channel at 5 cm/sec. Channel separation: better than 28 dB at 500 c/s. Stylus pressure: 1-3 gms. Compliance: 12 - 15 x 10⁻⁶ cm/dyne. Moving mass: approx. 1.5 mgms. Load: 47K ohms. Mounting: standard 1/2" centres (SP6 and 8) or Plug in fitting for B & O arm (SP7 and 9). Weight: approx. 10 gms. Stylus diameter: .0007" Elliptical: .0007" x .0002". Price SP6 and 7 £8.8.0d. SP8 and 9 £14.14.0d.

A graph showing the response characteristics is packed with every SP8 cartridge.



B & O also make the Beogram transcription deck, the Beocord range of Tape Recorders, Beomaster integrated Tuner amplifiers and high quality Beovox pressure chamber loudspeakers. Write or telephone today for comprehensive colour catalogue to:—

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



3 1/4 I.P.S.
TAPE RECORDS
FROM YOUR
RECORD
DEALER NOW

FOR THE
PRESENT
EMI
HAVE THE
WHOLE
FAMILY
TAPED...

JOE LOSS
Dance to the Top Pops
H.M.V. TA-CLP 3582



ROBERT AND ELIZABETH
Theatre Cast
H.M.V. TA-CLP 1820



THE SEEKERS
Come the Day
COLUMBIA TA-SX 6093

HERMAN'S HERMITS
Both Sides of
COLUMBIA TA-SX 6084

BACH CHOIR
Family Carols
COLUMBIA TA-SX 1794

BEACH BOYS
Beach Boys Concert
CAPITOL TA-T 2198

SLIM WHITMAN
A Travellin' Man
LIBERTY TA-LBY 3079

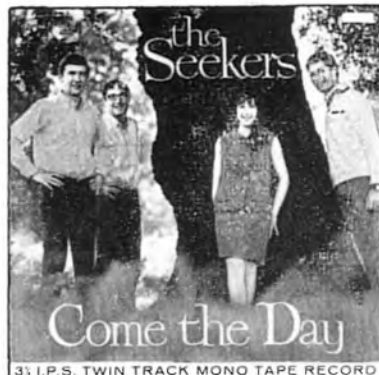
CHER
Cher
LIBERTY TA-LBY 3081



JIMMY SMITH
Hoochie Coochie Man
VERVE TA-VLP 9142

DOCTOR ZHIVAGO
Sound Track
M.G.M. TA-MGM C.8007

HANK WILLIAMS
In Memory of
M.G.M. TA-MGM C.8020



THE GREATEST RECORDING ORGANISATION IN THE WORLD

E.M.I. RECORDS (THE GRAMOPHONE CO., LTD.) E.M.I. HOUSE, 20 MANCHESTER SQUARE, LONDON W.1.



the competition

18,000 cps at 7½ ips
12,000 cps at 3¾ ips
6,000 cps at 1⅞ ips

21,000 cps at 7½ ips
18,000 cps at 3¾ ips
10,000 cps at 1⅞ ips

the Akai M8

the secret is in our unique Crossfield Head

The Akai M8 will give you up to 4 hours of true high-fidelity stereo recording from a standard 1200 ft tape. At 7½ ips it will give you a response of 40 to 21,000 cps ± 3 db, which is about 3000 cps better than conventional equipment. And at slower speeds its response compared to other equipment is even better.

How is it done? The secret is partly in Akai's unique Crossfield Head. On conventional recording heads the bias current tends to erase the higher frequencies. On the Akai Crossfield however the bias current is fed into a separate head opposite the recording head in such a way that it

can't interfere with the higher frequencies. This makes possible true high fidelity recording at much slower tape speeds than normal.

What else has the Akai M8 got? Vertical centre speakers. Sound on sound. Biased to receive FM Multiplex stereo broadcasts. Automatic shut off. High speed forward and rewind. Four speeds. Hysteresis synchronous motor. Vertical or horizontal operation. Tape cleaner. Not bad for 136 gns? (And if you're already set up with an amplifier/speaker system, you'll want the compact X-100D deck version at only 99 gns.) For full specifications just send the coupon.

AKAI  **PULLIN**
PHOTOGRAPHIC
(A Company within The Rank Organisation)

To: Pullin Photographic,
Dept. TRM 12,
11 Aintree Road, Perivale, Middx.
Please send me details of the
Akai M8 and Akai X-100D

Name _____

Address _____

NOW Only from IRISH!



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

plus these additional benefits

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

AND NOW AVAILABLE

Irish Video Tape for home, industry and educational use.
Irish lubricated tape for CARtridges and endless loop applications.

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

TAPE RECORDER COVERS



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

Philips 3534	...	...	87/-
" 3548	...	...	79/6
" 3549	...	...	79/6
" 3585	...	...	57/-
" 3514	...	...	66/-
" EL3515	...	...	57/6
" EL3541/15	...	...	57/6
" 3541H	...	...	72/-
Coscor 1602	...	...	57/6
" 1601	...	...	63/-
" 1604	...	...	79/-
" 1605	...	...	84/-
Stella ST455	...	...	63/-
" ST454	...	...	57/6
" ST458	...	...	79/-
" ST459	...	...	84/-
Saba 2305	...	...	79/6
Elizabethan L229	...	...	75/-
" FT.1	...	...	66/-
Brenell Mk. 5	...	...	77/-
" 3 star	...	...	69/-
Robuk R.K.3 & R.K.4	...	...	67/6
Sony S21	...	...	90/-
Ferrograph	...	...	80/-
Revox F model	...	...	84/-
Optacord 412, 414 & 416	...	...	63/-
Truvox 92 & 94	...	...	99/-
Tandberg 72, 72b, 74, 74b, 62, 62b, 64, 64b	...	...	£7/1/8
" (hard case)	...	...	£5/12/6
" Soft case	...	...	£7/1/8
" 92 (hard case)	...	...	£7/1/8

Grundig TK.1	...	...	49/6
" TK.5	...	...	55/-
" TK.6	...	...	67/6
" TK.8	...	...	63/-
" TK.14, 18 & 23	...	...	59/6
" TK.14L, 17L, 18L,	...	...
" TK.400 & 23L	...	...	67/6
" TK.20	...	...	52/6
" TK.24	...	...	55/-
" TK.25	...	...	55/-
" TK.30	...	...	60/-
" TK.35	...	...	63/-
" TK.40 & 41	...	...	66/-
" TK.46	...	...	82/-
" TK.55	...	...	63/-
" TK.60	...	...	75/-*
" TK.830/3D	...	...	63/-*
" Cub	...	...	35/-
Telefunken 85	...	...	65/-
" 75/15 & 76K	...	...	55/-
" 95 & 96	...	...	69/6
Philips EL3538	...	...	63/-
" EL3542	...	...	63/-
" EL3536	...	...	70/-

A. BROWN & SONS LTD.
24-28, GEORGE STREET, HULL Tel.: 25413, 25412

TEMPOTAPE PRE-RECORDED TAPE



MONO
3 3/4 I.P.S.
1/2 TRACK **21/-**

STEREO
3 3/4 I.P.S.
2 TRACK **30/-**

Professional tape recordings at less than blank tape prices. Full length 5/600 feet L.P. Polyester tape.

NOTE THESE EXCITING TITLES:

TCHAIKOVSKY'S PIANO CONCERTO
THE KING AND I
SOUTH PACIFIC
ROMEO AND JULIET OVERTURE
TCHAIKOVSKY'S 1812 OVERTURE
SOUND OF MUSIC
MY FAIR LADY

PORGY AND BESS
WEST SIDE STORY
THE MUSIC OF ROGERS, HART & HAMMERSTEIN
THE MUSIC OF HENRY MANCINI
SCHEHERAZADE
BEETHOVEN 5th SYMPHONY
SPARKLE OF STRAUSS WALTZES

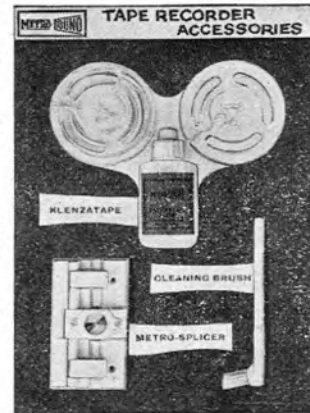
Write for full list or available from your dealer

TEMPOTAPE LIMITED

BRIDGE WORKS • WALLACE ROAD • LONDON N1 • CANONbury 8641

metrosound TAPE RECORDER ACCESSORIES

- Tape Accessory Set containing Klentazape, Metro-Splicer, Metro-Brush, 30/- each.
- Klentazape Price per Kit 13/6. Refill fluids 4/- per bottle. Replacement tapes 6/-.
- Metro-Splicer Splicer Kit complete with Film Emulsion Scraper and Spare Cutting Unit 15/-.
Spare Scrapers 1/- 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-Strobe 12/6.
- Leader Tapes (5 colours) 4/6 each.
- Metro-Splicing Block MST17 9/-.
- Tape Recorder Mechanical Maintenance Kit 36/-.

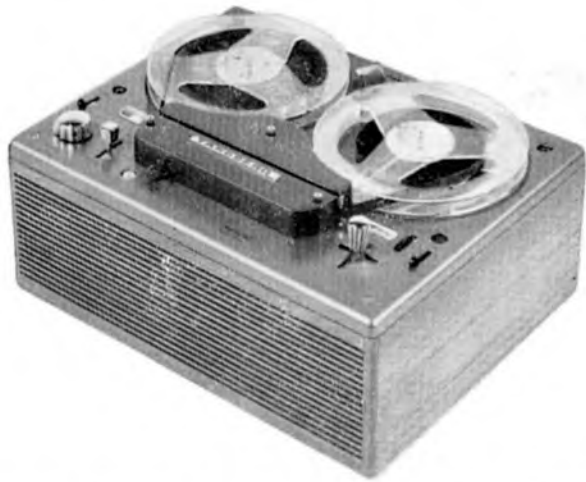


Available from dealers everywhere.

metrosound manufacturing co. ltd.



Tandberg model 9 the world's finest Monaural Tape Recorder



A new facia in the finest Scandinavian design tradition plus Tandberg precision audio-engineering now combine to make the Tandberg Model 923 the monarch of portable, monaural tape recorders.

The Tandberg Model 923, 2 track, 3 speed (7½ ips, 3¾ ips, 1⅞ ips) machine includes a formidable built-in speaker and amp system of the highest quality which provide exacting performance standards without any auxiliary equipment.

Superlative sound, functional simplicity, clean design, the classic look of teak combine to make the Tandberg Model 923 the ultimate in the field of portable, monaural tape recorders. Price: 69 GNS.

Model 8 (2 speed version) available from 54 GNS.

Sooner or later you'll turn to Tandberg -why not sooner?

Tandberg

ELSTONE ELECTRONICS LTD.,
81 Kirkstall Road, Leeds 3.
Telephone: Leeds 3-5111 (7 lines)

Please send me full details of Tandberg 923 or 8

NAME

ADDRESS

TRM 7

Rumpus in Court

REVELATIONS of CINECORDER'S DOUBLE LIFE

Bench "Amazed"

By our Special Correspondent

A well-known tape recorder, the "Cinecorder" was found guilty yesterday of leading a double life. The case was, however, dismissed by the bench, the judge ruling that it was in the public interest for the Cinecorder to continue to play what he described as "its amazing double role."

The Prosecution's case was that the name Cinecorder implied an exclusive use by the cine enthusiast. Witnesses would, however, testify that on repeated occasions they had seen and heard the Cinecorder doing the work of a high fidelity tape recorder, and on other occasions accompanying amateur cine films with synchronized sound.

"Impedance"

Asked in cross-examination how he could be certain on one of these occasions that it was the Cinecorder, one of the witnesses was reprimanded by the bench for impedance when he heatedly replied that only an idiot could fail to recognise the Cinecorder's smooth, clean performance.

Sensation

Climax of the case came when the manufacturer of the Cinecorder and one of the country's largest hi-fi and tape recorder dealers, R.E.W. (Earlsfield) Ltd. caused a sensation by testifying that the demand for the Cinecorder had been so great that he had been able to reduce the price from £75 to 59 gns. He attributed the high level of demand not only



THE ACCUSED

to the superb performance of the machine, but also to its unique features which appealed to every facet of the tape recording world.

In his summing up the judge said he applauded the manufacturer's public spiritedness in offering such value for money. This, he said, was the sort of thing the country needed today. In dismissing the defendant without a stain on its character he hoped the verdict would be instrumental in drawing the attention of the general public to the unique features of the Cinecorder ...

- TAPE DRIVEN CAPSTAN AND STROBE
- TAPE TIME INDICATOR]
- INPUT SELECTORS
- TWO CHANNEL MIXING
- SEPARATE TONE CONTROLS
- PUSH BUTTON FUNCTION SELECTOR
- COMBINED TAPE/PROJECTOR START SWITCH
- VOLUME CONTROL FOR "MONITOR" PHONES OR SPEAKER
- BIAS CONTROL FOR SUPERIMPOSING
- TAPELIFT LEVER FOR CUEING
- SHIFTRACK LEVER FOR DUAL RECORDINGS
- REMOTE CONTROL CONNECTION

Full specification available on request

Only 59 gns. or INTEREST FREE TERMS: £20.19.0 deposit and 12 monthly payments of £3.8.4. Come and pass judgment at our new demonstration room or post the coupon below.

R.E.W. (Earlsfield) Ltd.

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

N.B. — This is our only address

I enclose cash* | deposit for the Cinecorder. *delete inapplicable.

NAME.....

ADDRESS

R.E.W. (Earlsfield) Ltd.
Dept. T.R.M., 266/8 Upper Tooting Road, London, S.W.17

TAPE BOOKS BY POST AT NO EXTRA COST FROM OUR OWN TAPE BOOKSHOP

Normal retail prices—NO EXTRAS—we pay postage on all orders—but remittance must accompany orders

22. **Practical Stereophony** by H. Burrell Hadden (1964). 159 pages. 37s. 6d. *The author, an instructor at the BBC, has been actively engaged for many years in research in this field, as a result the book is mainly directed towards those who make this art their profession, but there is much for the amateur enthusiast.*
33. **You and Your Tape Recorder** by Norman Paul (1962). 5s. *What to tape and how to do it . . . a good, helpful guide for the layman.*
43. **The Philips Tape Recorder Book** by Frederick Purves. 1965 Edition. 15s. 6d. *Includes working instructions and data sheets for individual Philips models.*
45. **The Tape Editing Guide** by Ronald Hack. Most comprehensive. 7s. 6d.
42. **Bird Song Recording** by Frederick Purves. Fully illustrated. 7s. 6d.
7. **Cabinet Handbook** by Gilbert A. Briggs (1963). 112 pages, 90 illustrations. 7s. 6d. *Intended for the do-it-yourself man, and contains vital information on design and acoustic principles particularly in relation to compact enclosures which are now so popular for stereo.*
8. **Direct Current and Magnetism.** Edited by Edgar J. Black (1964). 120 pages, 92 illustrations. 10s. 6d. *Gives a very simple account of basic electrical theory.*
11. **High Fidelity Sound Engineering** by Norman Crowhurst. 336 pages, 262 illustrations. 50s. *Comprehensive coverage on the engineering of modern single-channel and stereophonic sound equipment.*
14. **Introduction to Hi-Fi** by Clement Brown. For the layman. 21s.
16. **Magnetic Tape Recording Handbook** by R. E. B. Hickman. 27s. 6d.
17. **Magnetic Tape Recording** by H. G. M. Spratt (1964 edition). 63s.
18. **Microphones** by A. E. Robertson (BBC Training Manual). 75s.
20. **More About Loudspeakers** by Gilbert A. Briggs (1963). 136 pages, 112 illustrations. 8s. 6d.
46. **Sound Facts and Figures** by John Borwick. Fully illustrated. 12s. 6d. *All the data needed to get the best sound quality from tape, discs, radio, and film . . . by well-known TRM technical writer and reviewer.*
47. **Circuits Using Direct Current Relays** by A. H. Bruinsma. 13s. 6d. *Simple and reliable data and diagrams.*
32. **Transistors Work Like This** by Egon Larsen. 1965 revised edition. 11s. 6d. *Simply explained. Graphically illustrated. Chapter on careers.*
21. **Practical Hi-Fi Handbook** by Gordon J. King. 224 pages. 25s. *A guide to choice, installation and servicing of equipment.*

NEW TRM SPECIALS!

TAPE RECORDING YEARBOOK, 1966 edition. Sole recorder annual. 7s. 6d. (USA \$1.25)

Lists available tape recorders, decks, mikes, etc. including specifications and prices; addresses of Clubs, Manufacturers, etc.

The Law and Your Tape Recorder by Andrew Phelan (Barrister). 3s. 6d. (USA \$0.75) *Interprets the law in UK for the tape recorder owner; what is free, forbidden, restricted.*

REPLICAS of very first issue of *TAPE Recording Magazine* (February 1957). Unobtainable for years. 2s. 6d. (USA \$0.65)

TAPE HANDBOOKS

FOR THE NEWCOMER as well as the
ENTHUSIAST OF LONG-STANDING

Advice on Buying a Tape Recorder by J. F. Ling. 2s. 6d. (USA \$0.65) post free.

Chapters on preliminary considerations, tape deck, amplifier, etc.

Introduction to the Tape Recorder. by C. Langton. 3s. 6d. (USA \$0.75) post free.

To help the newcomer to a working knowledge and maximum enjoyment

Sound Effects on Tape by Alan Edward Beeby. 3s. 6d. (USA \$0.75) post free

How to achieve realistic effects simply and economically.

Tape and Cine by John Aldred. 3s. (USA \$0.70) post free.

With practical advice on synchronising methods, etc.

How to Record Weddings by Paul Addinsell. 3s. (USA \$0.70) post free.

Illustrated. Covers preparation, mike positioning, equipment, etc.

Hi-Fi for the Music Lover by Edward Greenfield. 3s. (USA \$0.70) post free.

Aims at giving the music lover basic technical know-how.

How to Make Money with Your Tape Recorder by Henry Woodman. 3s. 6d. (USA \$0.75) post free.

How to go about getting assignments and turning events into hard cash.

49. **Comedy Scripts for Tape Recording** by Peter Cagney. ("Scotch"). 3s. 6d.

50. **Dramatape Guide** by Woodman. 7s. 6d.

37. **Tape Recording for Pleasure** by Wallace Sharps. 128 pages. 3s. 6d.

38. **Ribbons of Sound** by Karl Barleben. A USA publication and guide. 8s. 6d.

40. **Simple Radio Circuits** by A. T. Collins, editor of *Practical Wireless*. 3s. 6d.

41. **Hi-Fi and Audio** by A. T. Collins. Useful introductory paperback. 3s. 6d.

MAGAZINE BINDER in 2-tone green. "Tape Recording Magazine" gold-stamped on spine. Each issue can be inserted as received. 14/6; outside UK 16/3.

28. **Tape Recorder Servicing Manual** by H. W. Hellyer. Published October, 1965. 336 pages. 63s.

Contains data sheets of some 280 tape recorders and decks from 62 manufacturers, including some models no longer made. The perfect guide to mechanical and electrical peculiarities of many machines.

44. **Teaching with Tape** by J. Graham Jones. 12s. 6d.

Ways teachers can use tape recording in and out of the classroom.

15. **LOUDSPEAKER** by G. A. Briggs. Fifth Edition 336 pages, 230 Illustrations. 25s.

48. **High-Quality Sound Production and Reproduction (BBC Programme Operations Training Manual)** by H. Burrell Hadden. Illustrated. 42s.

23. **Radio and Television Test Instruments** by G. J. King. 25s.

24. **Radio, Television and Electrical Repairs** by Roy C. Norris. 50s.

25. **Sound Recording Works Like This** by Clement Brown. Illustrated. 10s. 6d. *Part of "Science Works Like This" series the book is intended for the younger members of the family.*

2. **Alternating Current and Acoustics.** Edited by Edgar J. Black (1964). 116 pages, 86 illustrations. 10s. 6d.

Deals in simple terms with the origin and generation of alternating current, construction of coils and capacitors. The second part deals with the nature of acoustics and construction and operation of devices used for sound recording and reproduction.

3. **A to Z in Audio** by Gilbert A. Briggs (1960). 224 pages, 160 illustrations. 15s. 6d.

A first-class book of reference.

4. **Audio and Acoustics** by Gilbert A. Briggs (1963). 168 pages, 140 illustrations. 12s. 6d.

Acoustical Consultant James Moir as sub-editor. A revised but basically original work from the well-known "Sound Reproduction."

5. **Audio Biographies** by Gilbert A. Briggs and 64 collaborations (1961). 344 pages, 112 photographs and illustrations. 19s. 6d.

6. **Audio Quality** by G. Slot—a Philips paperback. 156 pages. 13s. 6d.

Subject discussed authoritatively in simplest possible terms from loudness levels to irritating background noises.

MAIL ORDER ONLY

REMITTANCE MUST ACCOMPANY ORDERS

TAPE BOOKSHOP

7 TUDOR STREET, LONDON

E.C.4

*Cheques and Postal orders payable to
Print & Press Services Ltd.*

GLOBAL PRODUCTS

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

only

 plus 1s. post
 and packing

S.A.E for the list of pre-recorded tapes and accessories
 Mail Order ONLY Trade inquiries welcomed
P.O. BOX No. 1, ROTHWELL, Kettering, NORTHANTS

INTERNATIONAL BRAND TAPE

Finest quality American made Tape—at lowest ever prices! Fully g'reed			
3 in. Message tape, 150 ft.	3/6	5 1/2 in. Long play, 1,200 ft. Acetate	12/6
3 in. Message tape, 225 ft.	4/11	7 in. Standard play, 1,200 ft. Mylar	12/6
3 in. Message tape, 300 ft.	7/6	7 in. Long play, 1,800 ft. Mylar...	19/6
3 1/2 in. Triple play, 600 ft. Mylar	15/-	7 in. Double play, 2,400 ft. Mylar	25/-
5 in. Double Play, 1,200 ft. Mylar	15/-	7 in. Long play, 1,800 ft. Acetate	15/-
5 in. Long play, 900 ft. Acetate...	10/-	7 in. Triple play, 3,600 ft. Mylar...	58/6
5 in. Standard play, 600 ft. PVC...	8/6	Post 1/- per reel—4 reels & over Post Free	
5 in. Triple play, 1,800 ft. Mylar...	35/-	Clear Plastic Spools (empty): 3" 1/6,	
5 1/2 in. Double play, 1,800 ft. Mylar	22/6	4" 2/-, 5" 2/-, 5 1/2" 2/3, 7" 2/6. Post 6d.	

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

The Berean Forward Movement

(NON-SECTARIAN
 NON-DENOMINATIONAL)

Loan of nearly 1,000 reliable expositions of the Bible available on tape (3 3/4 ips) for cost of postage only (free to the blind and infirm). Invaluable to all Christians, from teachers to tyros; for Bible Study groups or private meditation. Supporting literature also available. Send for free, complete list of tapes and literature to. . .

B.F.M., 22 FILEY ROAD, READING, Berks.

LEARN WHILE YOU SLEEP!



Languages, studies, scripts, etc. by means of tape recordings

played at a whisper through under-pillow speaker.

SLEEP-O-MATIC UNIT

including two speed tape recorder complete with microphone, time-switch and under-pillow speaker £27/10/- plus 6/- post (Batteries 5/-). Two models available, one for mains only and one for batteries which can be supplied with a mains power pack at 50/- extra. Both will take our special radio tuner at 42/-.

Publications: "Sleep-Learning, Its Theory, Application and Technique" and "Mental Power Through Sleep Suggestion." Full details on request.

RAPID RECORDING SERVICE

21 BISHOPS CLOSE, LONDON, E.17

ADVERTISEMENT INQUIRIES

SERVICE

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

NAME
 ADDRESS

December 1966

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
 Messrs 's advertisement
 on page..... of TAPE Recording Magazine
 about..... (product)

NAME
 ADDRESS

December 1966

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

NAME
 ADDRESS

December 1966

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

NAME
 ADDRESS


December 1966

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

NAME
 ADDRESS

December 1966

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

Fill-in & Post this Coupon with Remittance Today! 

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

NAME

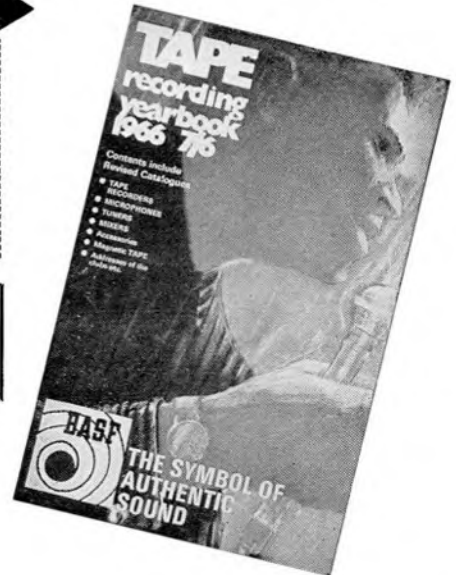
ADDRESS.....

TAPE YEAR BOOK the Recordist's Reference

PRICE
7/6

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

On sale at bookstalls or direct from publishers using coupon above



..... CUT ALONG DOTTED LINE

THIRD FOLD HERE

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

BUSINESS REPLY FOLDER
Licence No. ND 922

SECOND FOLD HERE

POSTAGE
WILL BE
PAID BY
PRINT AND
PRESS
SERVICES
LIMITED

■■■■■■■■■■

■■■■■■■■■■

NO POSTAGE
STAMP
NECESSARY
IF POSTED
IN GREAT
BRITAIN OR
NORTHERN
IRELAND

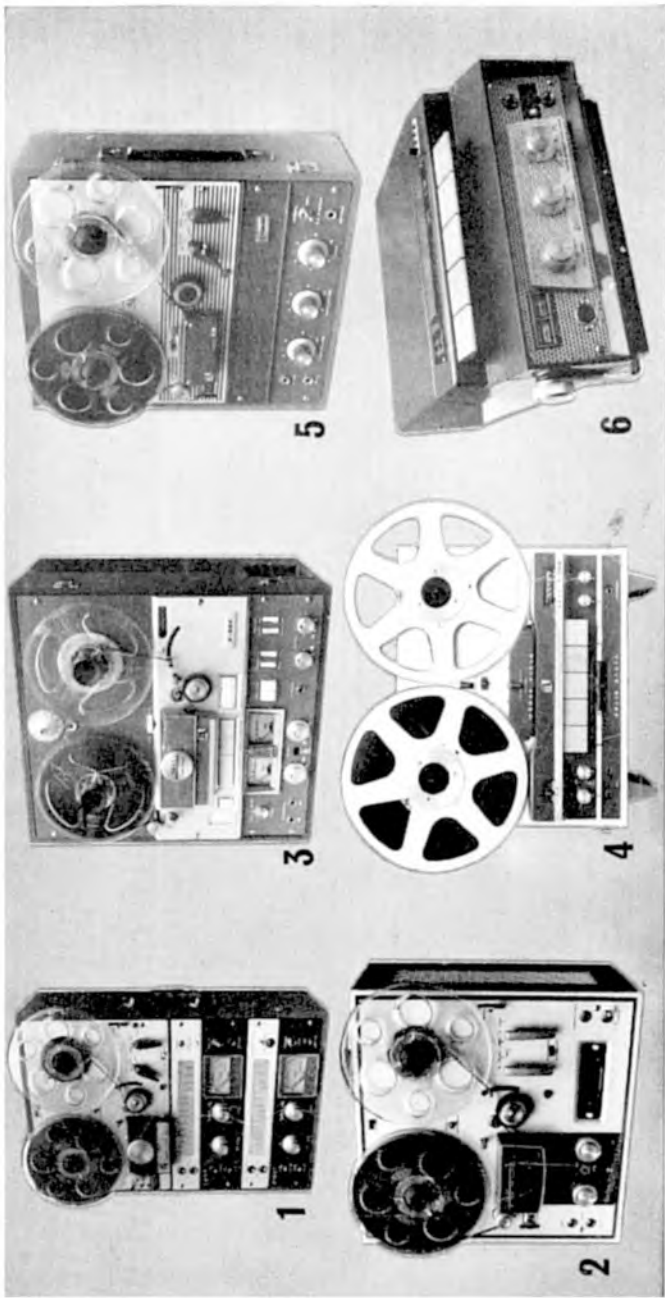
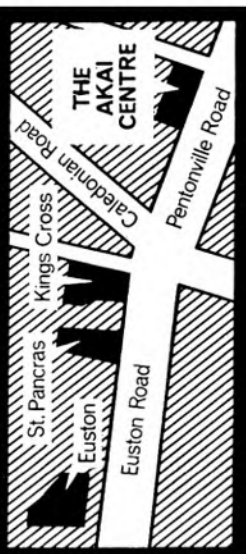
FLAP A

FIRST FOLD ALONG THIS LINE

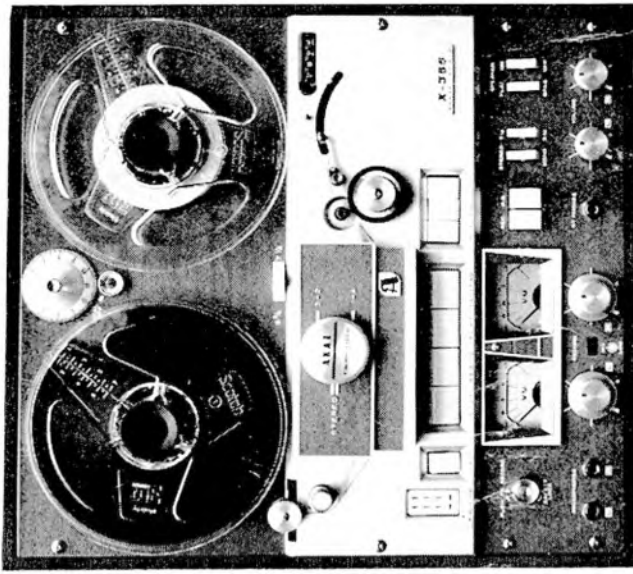
FLAP B

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

THE AKAI CENTRE



1. **AKAI M8**
A high quality 4-speed, 4-track stereo/mono recorder with Crossfield head. Vertical or horizontal operation. 4 hours stereo recording on 1200ft. standard tape. 2 stereo fill-in speakers. Sound-on-sound. 6 watts per channel. 6 watts per channel. 136 gns.
2. **AKAI 1700**
A completely self contained, 3 speed, 4 track stereo/mono recorder. Two 7in. x 5in. built-in speakers, 3 watts per channel. Attractive styling and AKAI precision finish. Takes 7in. reels. 79 gns.
3. **AKAI X300**
A studio type 3-speed 4 track stereo/mono recorder of professional quality. Fully solid state, 20 watts per channel amplifier. Crossfield heads; 3 hysteresis synchronous motors with direct driven capstan. 10 1/2 in. reels; keyboard controls, and many other features. 190 gns.
4. **AKAI X355**
A studio type 3-speed 4 track stereo/mono recorder. Fully solid state, 20 watts per channel amplifier. Crossfield heads; 3 hysteresis synchronous motors with direct driven capstan. 10 1/2 in. reels; keyboard controls, and many other features. 190 gns.
5. **AKAI 910**
A mono recorder, available in four or two track form. Clean and functional styling; two speeds; 3.2 watts output. Built in P.A. system and mixing facilities. 62 gns.
6. **AKAI X4**
A fully transistorised stereo/mono, battery/mains portable recorder. 4 track; 4 speeds; Crossfield heads; superb low-speed frequency response. Mains-rechargeable battery. 5in. reels. Weights only 11.2lb. 131 gns.



3. **AKAI X355**
A machine for the advanced amateur or professional, with 3 motors, 3 speeds, 4 heads (including Crossfield bias) and 20 watts per channel output. Fully solid state; push button solenoid operated controls, automatic reverse, repeat and shut-off functions. Built-in echo chamber effect. Full A.B. monitoring. Remote control facilities, etc., etc. 239 gns.

DEMONSTRATIONS. At "THE AKAI CENTRE" we have on display the complete AKAI range of superb tape recorders, from the amazing stereo AKAI X4 portable to the fantastic AKAI 355. Every model in the fabulous AKAI range is available for immediate demonstration and may be compared with any other make and model available today, for in addition to the complete AKAI range we carry the finest selection of recorders to be seen in this country.

Our expert staff all 100% AKAI enthusiasts are able not only to demonstrate these wonderful recorders but to give you expert advice and technical assistance based upon years of selling AKAI tape recorders. Remember if its AKAI you are interested in then there is only one place to go and that is "THE AKAI CENTRE".

Situated only 100 yards from well known and easy to get to Kings Cross and St. Pancras main line stations, "THE AKAI CENTRE" is one of the most accessible showrooms in London. (See diagram above).

FREE TRAVEL. This is a unique facility offered by "THE AKAI CENTRE". Complete coupon today and send to "THE AKAI CENTRE" for full details of how you can benefit by this unique offer.

Please send me by return a Free Travel Voucher together with full details on AKAI Models.....

Name

Address

Post to: THE AKAI CENTRE
242/4, Pentonville Rd, London, N.1.



The excitement of stereo
captured as never before



AGFA MAGNETON RECORDING TAPE

You haven't *really* heard stereo ... until you've heard it on Agfa Magneton recording tapes. With perfectly balanced sound reproduction over the complete tonal range, Agfa Magneton

tapes add a thrilling new depth and richness to stereo ... make listening more of a joy than ever. Let Agfa-Gevaert bring the full splendour of stereo home to you.

**Agfa-Magneton recording tapes
can be used on all four-track and
two-track recorders.**



AGFA-GEVAERT LIMITED
GREAT WEST ROAD, BRENTFORD
MIDDLESEX • Tel: ISLeworth 2131

Published by Print and Press Services Ltd., 7, Tudor Street, London, E.C.4. Printed by Co-operative Printing Society Ltd., 7-11, Tudor Street, London, E.C.4, and distributed by Trans-World Circulation Co., Bashley Road, London, N.W.10.