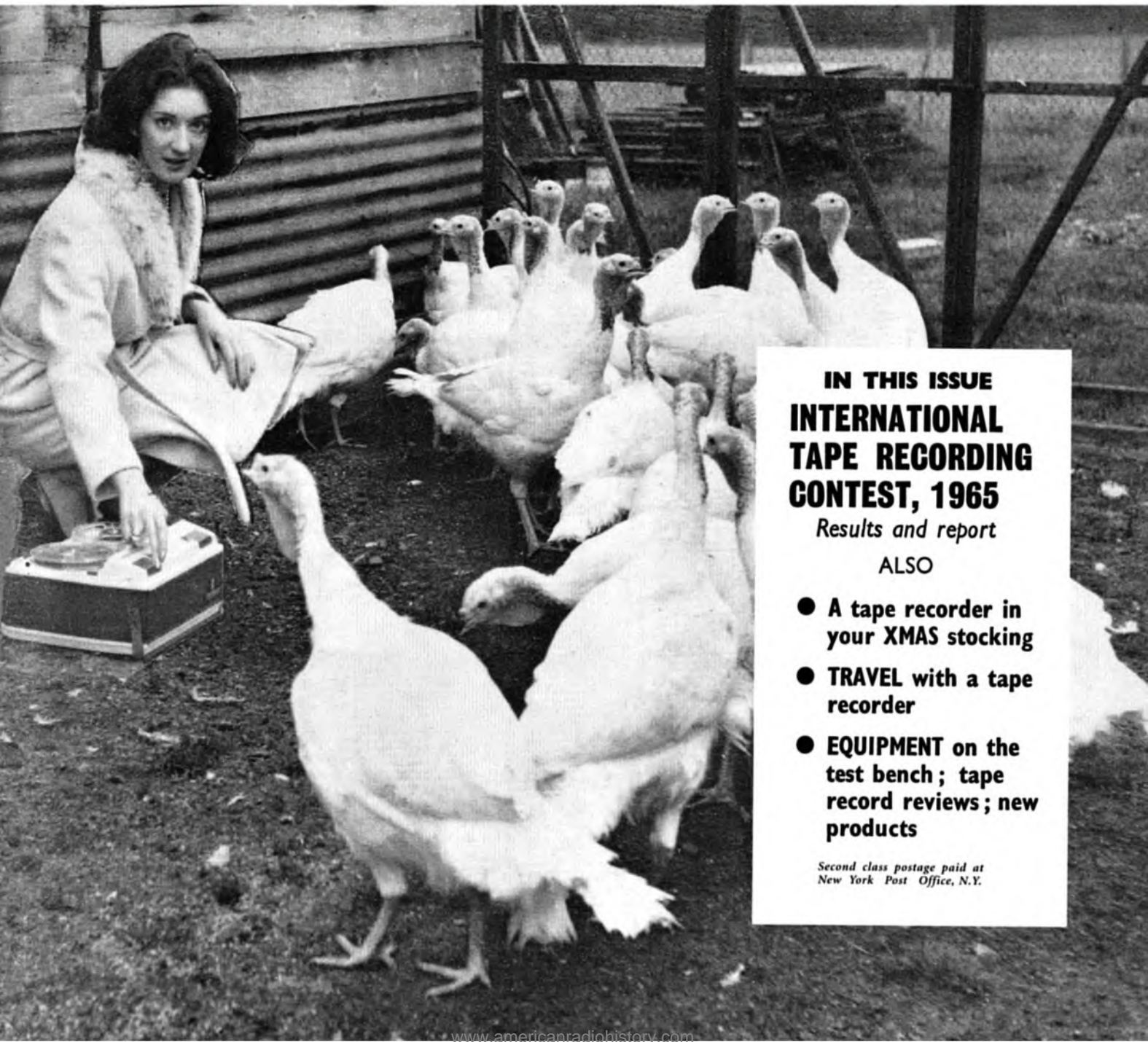


DECEMBER 1965

TAPE

RECORDING MAGAZINE

24



IN THIS ISSUE
INTERNATIONAL
TAPE RECORDING
CONTEST, 1965

Results and report

ALSO

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- **TRAVEL with a tape recorder**
- **EQUIPMENT on the test bench ; tape record reviews ; new products**

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Technical brilliance and outstanding design have made SONY Tape Recording Equipment a world known example of superb Japanese radio engineering. This high quality is achieved through SONY'S policy that places highest priority on Research —Research that makes a difference to you, the owner ... a difference that can be seen and heard in SONY.

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OUTSTANDING QUALITY
... SONY TC 200

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Complete 4 track stereo and mono recording, 2 V.U. meters, TWO full range balanced satellite speakers. Instant Stop. Sound on Sound and Trick Recording. Variable Tone Control. Transistorised Pre-amplifier. Recording monitor through speakers. Public Address facilities. Individual Level Controls on each channel. Complete with two F-96 dynamic microphones.

For the name and address of the SONY dealer in your area, write to the sole UK Agent:—**ST. ALDATE WAREHOUSE LTD**
Radio and Electrical Division, Innsworth, Gloucester. Tel: TWIGWORTH 461

Northern Ireland Distributor: Messrs Solomon & Peres Limited, Belfast 1.
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SONY[®]



FI-CORD IS EVERYTHING IN SOUND REPRODUCTION

FI-CORD



202A

Built to the same specification which made the Fi-Cord 202 the first choice of broadcasting and film companies. The new Fi-Cord 202A offers still more refinements. Among these are a button-operated battery tester with separate indicator scale, and a redesigned control panel, giving greater ease of operation. With a frequency response of 50—12000 c.p.s. \pm 3db at 7½ i.p.s., this hand portable battery/mains recorder captures every sound as faithfully as studio equipment: rechargeable batteries: long life mercury batteries: power pack for use with 12 v. car battery: power pack for use with AC mains 110-240 v.



FI-CORD 801

Omni-directional studio microphone (dynamic moving coil). Shockproof and proof against changes in temperature. Frequency response 50 to 18,000 c.p.s.



BEYER M119

Moving coil omni-directional microphone very good for interviewing and general background recordings smooth response. Frequency response 50-16000 c.p.s.



BEYER M260

Dynamic Ribbon Microphone. A cardioid pattern studio quality microphone at a price the amateur can afford. Frequency response 50—18000 c.p.s.

For further details, please complete and post this coupon to:

FI-CORD INTERNATIONAL

Charlwoods Road • East Grinstead • Sussex
Telephone: East Grinstead 21351

Please send information and literature on the full range of microphones and the Fi-Cord 202A.

NAME.....

ADDRESS

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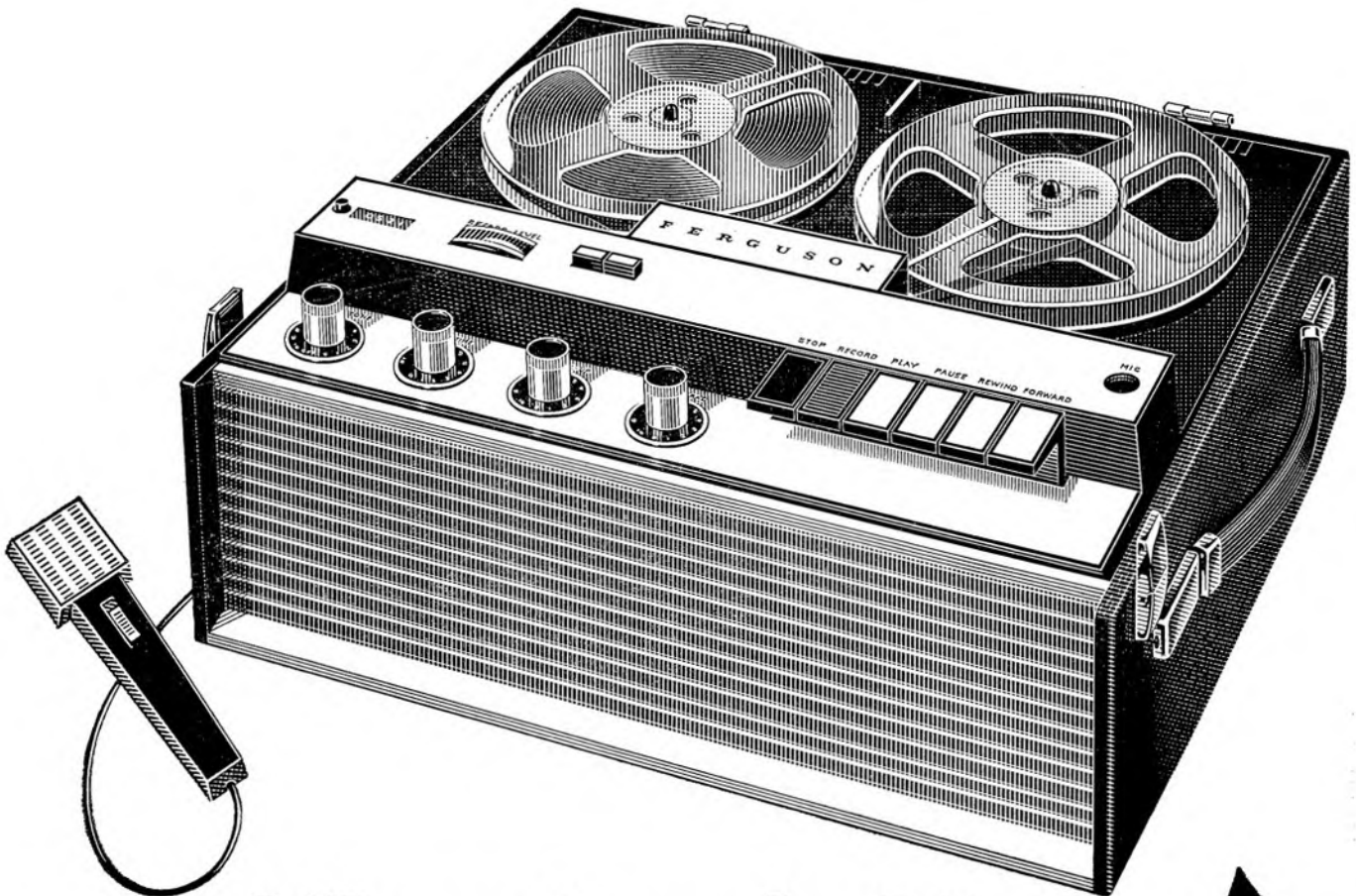
TRM 2

New from

FERGUSON

a tape recorder

for the real enthusiast



... 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 3¾ 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.

Does 18,000 c.p.s. at $3\frac{3}{4}$ i.p.s.
sound interesting?

Meet the Akai Crossfield Head

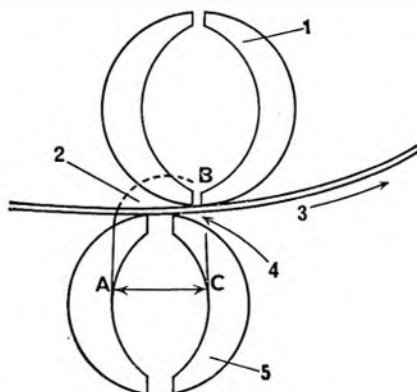


Akai M8

... the best head for sound in the business

No other tape recorders can throw about claims like full frequency range at $3\frac{3}{4}$ i.p.s. and expect to be believed! Whatever other recorders do have, there's one thing they haven't—that's the ex-

clusive Akai Crossfield Bias Head—an advance so important that it opens a whole new world of high fidelity recording and only Akai has the key. Look at this picture.



This is the Crossfield Head—only Akai has it.
1 signal head. 2 bias field. 3 direction of tape travel. 4 signal field. 5 bias head. 6 bias head retracts automatically on playback.

On conventional heads the high frequency components of the signal recorded tend to be attenuated or erased by the effect of bias fields. On the exclusive Akai Crossfield Head the signal head and the bias head are mounted in opposition with their centres slightly off. The tape is pre-magnetized between points A and C and recorded with the signal at point B. The recorded signal is completely free from the effect of prevailing bias fields and can be retained on the tape without loss.

It will be seen from the construction of the Akai Crossfield Head assembly that, as the signal head is arranged obliquely apart from the bias

head, across the tape, the amount of bias may be selected without regard to the functioning of the signal head. This means that the tape can be modulated over the entire frequency spectrum with maximum fidelity since the recorded signal is entirely unaffected by the bias field.

The maximum audio frequency that can be recorded on tape is usually around 790 c/s. at a tape speed of 1 centimetre per second, rising to about 2,000 c/s. at 1 inch per second. For Standard tape speeds: 9.5 cm/s. ($3\frac{3}{4}$ i.p.s.) —7,500 c/s. and for 19 cm/s. ($7\frac{1}{2}$ i.p.s.) —15,000 c/s.

The Akai Crossfield head makes possible the recording of a signal frequency of up to 2,750 c/s. at a tape speed of 1 cm/sec. or 7,000 c/s. per inch. In other words, the Akai Crossfield head—makes it possible to record 18,000 c/s. at a speed of $3\frac{3}{4}$ i.p.s. or 21,000 c/s. at $7\frac{1}{2}$ i.p.s. With the low speed of $1\frac{1}{2}$ i.p.s. (4.75 cm/sec.) now available on the M8 and X4 models, it is practicable to record up to 11,000 c/s.

Employing this Akai technique, it is now possible to record four continuous hours on a standard 1,200 ft. tape without the need for professional 10 $\frac{1}{2}$ in. reels.

AKAI MODEL M.8. £153 * Cross-field head * 4 hours of stereo recording capacity with a conventional 1,200 feet tape * Automatic shut-off switch * Vertical centre speakers * Easy sound on sound recording * Specially biased for recording of FM multiplex * New high speed fast forward/rewind (1,200 feet in only 75 seconds) * Simple change-over for requested AC power * 2-speed 24-slot wave wound hysteresis synchronous motor * 4 speeds (1-7/8, $3\frac{3}{4}$, $7\frac{1}{2}$ and 15 ips) * Instant stop control * 4-digit index counter * Large VU meters * Perfect ventilating system * Vertical or horizontal operation * Tape cleaner * Provision for stereophones

To Pullin Photographic Ltd., 11 Aintree Road, Perivale, Middlesex. Please send me details of the Akai range.

Name _____

Address _____

TRM 2

AKAI

PULLIN
PHOTOGRAPHIC

(A Company within The Bank Organisation)



The RQ-101S

Compact, graceful, superbly efficient, as only Japan can make it. For convenience and top sound quality, for work or play, this is a portable treasure. 19 guineas.

Specifications:

Power source	6 dry cells (U.2), 9V
Recording system	AC bias 35 KC
Erasing system	DC erasure
Tape speeds	2 speeds: 3 $\frac{3}{4}$ i.p.s., 1 $\frac{7}{8}$ i.p.s.
Frequency response	100-7,000 c/s at 3 $\frac{3}{4}$ i.p.s. 100-4,000 c/s at 1 $\frac{7}{8}$ i.p.s.
Built-in speaker	3 $\frac{1}{2}$ " permanent dynamic speaker

Accessories:

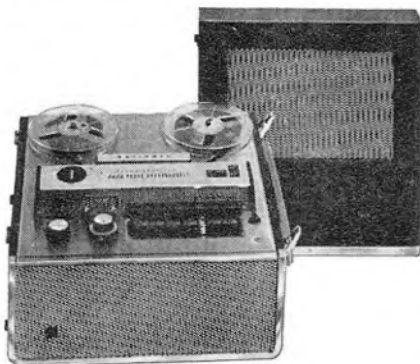
Dynamic microphone	
3 inch reel (200 feet) of recording tape	
3 inch empty reel	
Carrying strap	
Splicing tape	
<i>Optional Extras</i>	Carrying bag £1.11.6. Mains adaptor £3.19.6.

Full details of these tape-recorders are readily available from your nearest NATIONAL dealer or from UNAMEC, P.O. Box 1, United Africa House, Blackfriars Road, London, S.E.1.

If you think 19 guineas is a ridiculously low price to pay for an all-transistor, 2-track, 2-speed, capstan drive, 700 mW audio output, lightweight National tape-recorder...

...you should see our £84 set

The RS-753 offers four-track, three-speed (7½, 3½ and 1½ i.p.s.) full stereo recording and replay facilities with two separate recording level meters, "sound on sound" recording, monitoring through internal speakers, output one watt per channel stereo, two watts monaural to 6 x 4 in and 6¼ in dia. speakers—one in the cabinet, the other in the detachable lid—will accept up to 7" reels, response 60-15,000 c.p.s. at 7½ i.p.s., 60-10,000 at 3½, 60-5,000 at 1½. And they are the reasons why you should see our £84 set.



And while you're about it spare some time for the first completely automatic voice-operated portable tape-recorder in the world. The NATIONAL RQ-150.

The RQ-150 also provides automatic slide and film synchronisation and remote control. And if you really want to spread the word, as well you might, there's a public address system that permits accurate monitoring through a built-in loudspeaker while recording. Price: £48.6.0.



Specifications:

Power source	6 unit cells (U.2.), 9V
Output	500mW (700mW max.)
	9 Transistors, 1 Thermistor, 1 Diode
Tape speeds	3½ i.p.s., 1½ i.p.s.
Frequency response	100-7,000 c/s at 3½ i.p.s. 100-4,000 c/s at 1½ i.p.s.

Recording level indicator	VU meter
Speaker	3½" Permanent dynamic speaker
Dimensions	3½" x 9" x 12½"
Weight	5 lb. 14½ oz.

Accessories:

Dynamic microphone with remote control switch; 5" recording tape (600 ft.); 5" empty reel; radio cord; leather case for accessories; carrying strap; splicing tape; sensing tape; plug for slide sync.; magnetic earphone.

Also from National:

RQ-303, Mains 2 track, single speed, 16 gns.
RQ-115, Battery*, 2 track, 2 speed, 37 gns.
RQ-116, Battery*, 4 track, 2 speed, 41 gns.

*With optional mains adaptor available

**Tape it easy
with
National,
naturally!**



NOW! 20,000 CHANCES TO TRY KODAK TAPE



Ample supplies of all Kodak Tapes have been released for the British amateur market. This means you can now obtain these famous tapes through any of 20,000 Kodak photo dealers (there's one in *your* town).

Try the Kodak tape of your choice this week — and prove for yourself how justified are the 'rave' reviews you've read in the country's audio press!

Kodak tapes—Standard, Long, Double, Triple and *Quadruple* Play—are available in all standard reel sizes.

THERE'S A **Kodak** TAPE SUPPLIER IN **YOUR TOWN**

Kodak Limited, London



You plug a microphone into your Grundig tape recorder.

We plug in humpots and fluttermeters.

Meet an interesting tape recorder. The Grundig TK18L, which sells for 41 guineas.

It looks simple. Six press-buttons and a few controls.

It is simple. But behind the scenes lies a lot of work by Grundig. Each TK18L has a history before it reaches you. Checks. Anything up to 150 of them. Noise level tests (that's the humpots!). Recording tests (that's the fluttermeters!).

Grundig are fussy. That's why they put gold in their recording heads, silver in their switches.

Natural sound

The TK18L is a twin-track machine with Grundig's automatic 'Magic Ear'

recording level control. That means no knob-turning while you're recording. The 'Magic Ear' balances every noise it hears—from a whisper to a cymbal crash. And the sound that it plays back is *natural* sound—with no hum, no motor noise.

The TK18L is not the cheapest tape recorder you can buy. But in case you don't think you're getting a bargain, Grundig give you a spare spool and tape worth £2. Plus an unusually high-quality microphone. Separate, that would cost you about 7 guineas.

Your Grundig dealer has a TK18L. Talk to him.

Or better still, plug in the Grundig itself. And listen.

Valuable - but free if you post now!

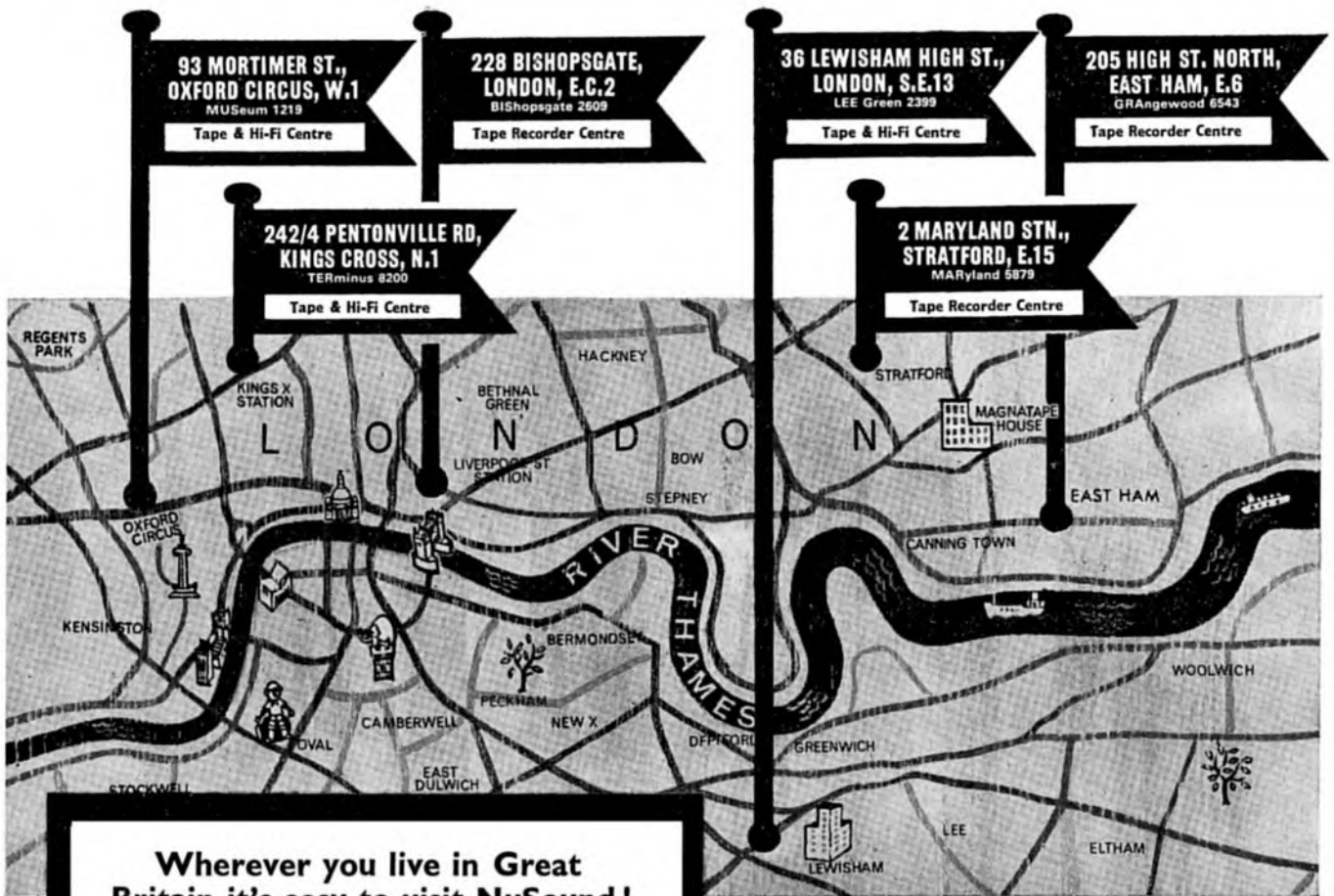
'The Grundig World of Sound.' This 20-page colour book illustrates the full range of Grundig tape recorders, radios, stereograms and accessories. To get your copy post this coupon now to Grundig, London, S.E.26.

Name _____
(Block letters, please)

Address _____

TRM 2

GRUNDIG



Wherever you live in Great Britain it's easy to visit NuSound!

Whatever your means of transport or point of arrival, be it Oxford Circus, Kings Cross or Liverpool Street Stations there is a NuSound showroom within easy reach. The position of each showroom has been carefully selected to be just a few minutes away from these well known Central London landmarks.

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Open Sunday 9.30 a.m. to 2 p.m.

OXFORD CIRCUS:
Monday to Friday 9 a.m. to 6 p.m. Saturday 9 a.m. to 2 p.m.

● **TRAVEL FREE TO NUSOUND**

To all our customers residing outside the Greater London Area, NuSound offer a unique Free Travel facility. Simply write today to our Oxford Circus Showroom (Dept. FTV) for full details by return post.

● **YOU CAN SAVE £ £ £ £ £ £ £**

Not only will you see (and hear) the biggest collection of brand new tape recorders at NuSound, but you'll also find a wonderful selection of used and shop soiled tape recorders in first-class condition. And all at substantially reduced prices.

In some cases you can save over 50% of the usual price.

OVER 1000 MODELS ON DISPLAY

They're all here . . . every kind of Tape Recorder and HI-FI unit on the market. Nowhere else can you see such an all embracing display as that which awaits you at NuSound.

As Britain's largest Tape Recorder and Hi-Fi sales organisation with over 10 years experience in this specialised field NuSound have built up a reputation that is "second to none".

Only from NuSound can you obtain the benefits of all these invaluable features—The most comprehensive range of equipment on display in this country, expert staff, free technical advice, immediate demonstration of any model, the finest after sales servicing available.

WHY YOU'RE WISE TO GO TO NUSOUND

- Over 1,000 models to choose from.
- Advice from specialists—all freely available.
- Highest part-exchange allowances.
- The finest after sales servicing.
- Attractive easy H.P. terms.

Britain's Largest Tape and HI-FI specialists

THIS MONTH'S



FEATURE

GRUNDIG

TK40
Four-track recording, three speeds (1½, 3½, 7½ i.p.s.). Double-play tape on a 5½ in. spool gives 12 hours' playback. 7 in. spools extend this to a maximum of 16 hours. Press button re-set, a cine socket, and built-in tape cleaner are included. Twin-track version available, called the TK41. This has 7W output and separate bass and treble controls. Price 87 gns.

TK14L
The all-new push-button TK14L represents stunning value in tape recorders. It's a twin-track machine with Grundig's 'Magic Eye' recording level control. The TK14L plays at 3½ in. per second, gives two hours' recording or playback time. A precision tape indicator, with press-button re-set, helps you locate instantly any part of the tape you wish. Price 37 gns.

TK6
The new Grundig TK6 goes anywhere—captures living sound wherever you are. It's the perfect portable recorder. The touch of a button gives you twin-track recording, two speeds and four hours' playback in the finest Grundig tradition. No need to add extra amplifiers or loud-speakers—the TK6 is complete in itself. Battery or mains operation! Price 69 gns.

COME AND INSPECT THE SPECIAL NU-SOUND DISPLAY OF THE COMPLETE GRUNDIG RANGE

In co-operation with GRUNDIG (Great Britain) Ltd. we are featuring in all of our showrooms during the next four weeks the complete GRUNDIG range. See and hear these fabulous recorders demonstrated under ideal listening conditions. Our expert staff with their wide knowledge and experience will be pleased to assist you in selecting the GRUNDIG model which best suits your individual requirements and pocket.

• NU-SOUND — THE GRUNDIG SPECIALISTS •

Britain's Largest Tape and Hi-Fi specialists

3 GOOD REASONS WHY YOU SHOULD CHOOSE *Mastertape*

1

FREE TAPE SPOOL

Special Christmas
packs containing
full reel of
tape and a
FREE EMPTY SPOOL



2

MASTERSTIK LEADER

Sticks at a touch-
lifts in a flash!
Simply place onto
the hub of empty
spool, press down
with fingertip, give
a quarter turn and
your tape is ready to use.



3

IMPROVED OUTPUT COATING

All Mastertapes have
the new specially
developed improved
output coating.



Mastertape

TODAY'S TOP TAPE!

MANUFACTURED IN ENGLAND BY
Mastertape (MAGNETIC) LIMITED
COLNBROOK, SLOUGH, BUCKS.

NATIONALLY DISTRIBUTED BY VIDOR



the
"MIKE 3"
mixer gives
control over
sound

Completely mobile, the fully transistorised and battery operated "Mike 3" Mixer puts the amateur or semi-professional fully in control of sound. All the subtleties of tone, are within the range of this excellent mixer with its built-in tone controls. Mains interference, earth loop problems and other sources of "hum" are completely eliminated. Available in three ranges of Impedance. Obtainable from your local dealer.

Grampian SOUND EQUIPMENT
INTEGRITY THAT YOU HEAR

For fullest details ask:

GRAMPIAN REPRODUCERS LTD
Hanworth Trading Estate, Feltham, Middx. FELtham 2657



Read this carefully, then see if you can guess the actual price of this sparkling new Truvox recorder.

What's the new recorder that everyone's talking about? *The Truvox 'Series 40'*. Why? Because this brilliant new model has at last brought really professional TR standards within the reach of every serious amateur.

Beautifully compact and portable, the Truvox 'Series 40' still gives big-recorder performance, its trouble-free all-transistor circuitry, modular construction, accommodating a large speaker gives a full 3 watts undistorted output. And that's powerful.

It takes 7" reels *without overhang*, so tapes can be left in place during transport; offers three tape speeds of 7½, 3½ and 1½ i.p.s. and gives the choice of 2 or 4 track recording.

All the components are exactly the same as those used in even our most expensive professional models and, although some of the more complicated features required solely for studio work

are eliminated, nothing has been spared to bring truly professional standards to this superb recorder. Even the 'magic eye' found in most popular recorders has been replaced with a professional V.U. recording level meter!

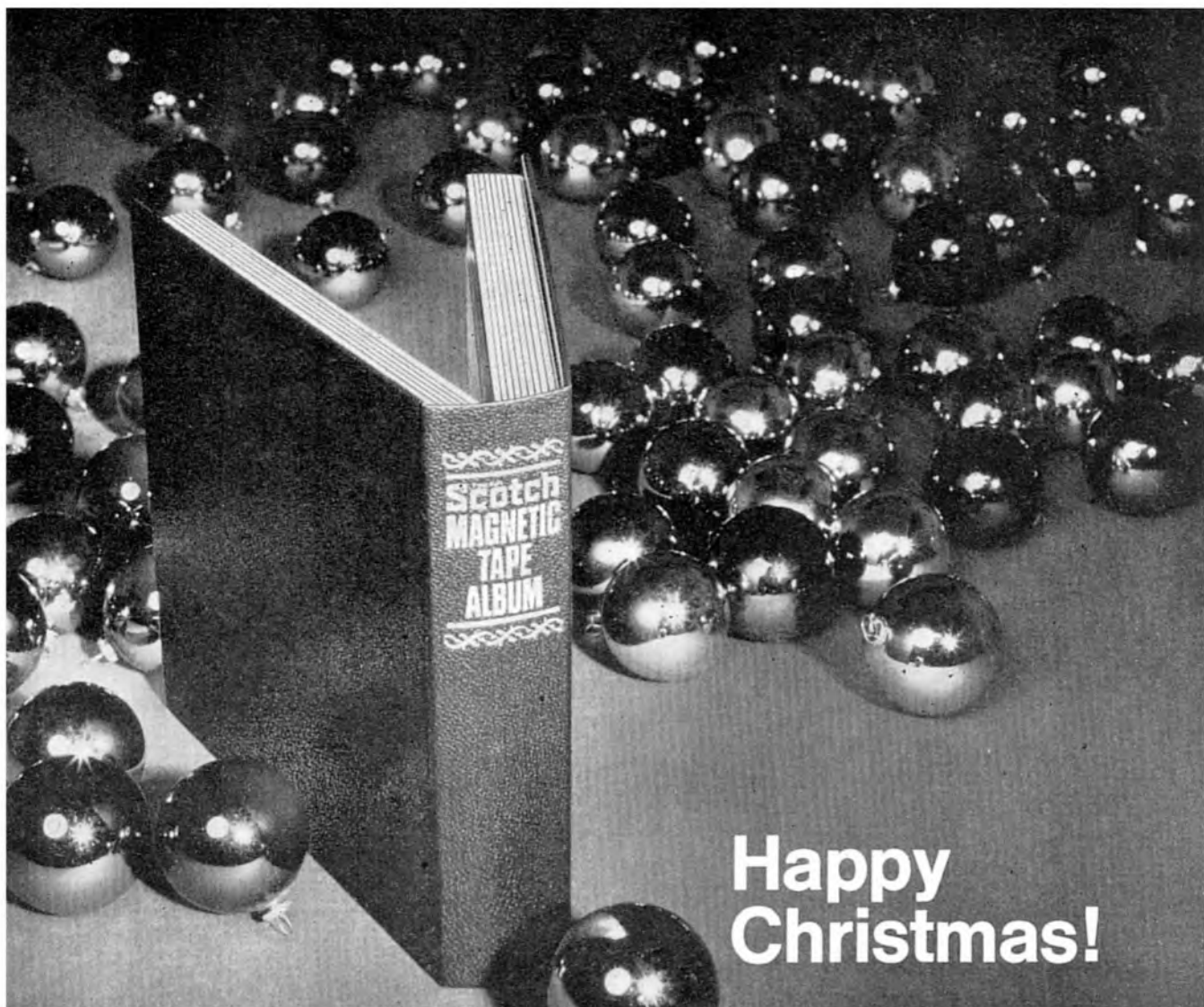
And yet with all this extra performance, extra quality and extra versatility, the Truvox 'Series 40' is simplicity itself to operate. It all adds up to the PSP Factor—that unique balancing of Performance, Styling and Price which is built into everything that Truvox make.

NOW—TAKE A GUESS AT THE PRICE. 70 guineas? 59 guineas? 65 guineas? Well, by the sight and sound of it, the Truvox 'Series 40' should certainly be somewhere in this price range. But remember that this amazing new recorder is a real break-through in TR design and development the first professional recorder with an amateur price tag!

Give up? Turn to the small ads on Page 498 and read the one headed 'Series 40'. And then head smartly for your nearest Truvox dealer!

The new Truvox
SERIES 40
 TRUVOX LTD · NEASDEN LANE · LONDON NW10 · TEL : DOLLIS HILL 8011





**Happy
Christmas!**

Wish your tape recording friends 'Happy Christmas' with a 'SCOTCH' Magnetic Tape Album—the new, practical, smart way to keep tapes. Luxuriously bound in green leatherette with real gold block lettering, each Album comes complete with one tape and space for another.

The albums are available in 7", 5½" and 5" sizes for all types of 'SCOTCH' Magnetic Tape. Each Album has an index plus spine and spool labels. And it costs just a fraction more than the tape alone. What gift could be more practical, more welcome—more *timely!*

From all 'SCOTCH' Magnetic Tape stockists.

P.S. All 'SCOTCH' Magnetic Tape (except Type 111) has Superlife coating.



Trade Mark
Scotch MAGNETIC TAPE ALBUMS

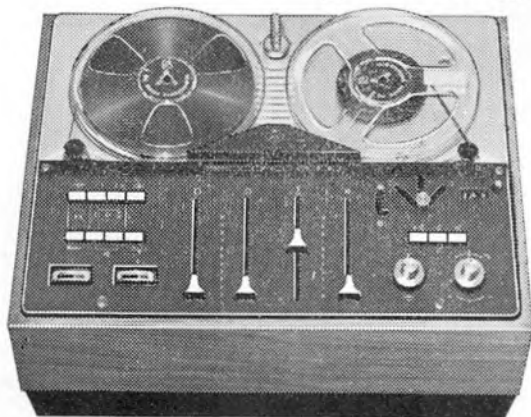
Minnesota Mining & Manufacturing Co. Ltd., 3M House, Wigmore St., London, W.1. Tel: HUNter 5522 3M and SCOTCH are trademarks of Minnesota Mining and Manufacturing Co.

... when Quality is the First Consideration

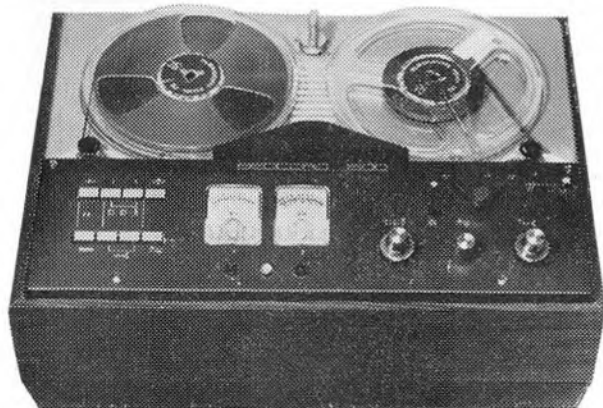
E. Rorbaek Madsen
World famous authority and chief of
B & O's Electro-acoustic Laboratory
and Sound-film Division.



Bang & Olufsen—a brilliant combination of advanced Danish Audio Engineering and modern Scandinavian design



◀ **Beocord 2000 K**, prize-winner at the 1964 Hanover Fair, a Supreme example of B & O audio engineering. The first all-transistor hi-fi stereo tape recorder with a professional specification which has been acclaimed in international trade and tape-amateur circles for its carefully planned design, advanced features, and outstanding performance. The **BEOCORD 2000 K** is the ideal tape recorder for the enthusiast whose only interest is perfection. Available in a 2-track & a 4-track version. **112 gns.**



Beocord 2000 T—The Beocord 2000 is also available as a portable model with loudspeakers built into the lid and has exactly the same technical specifications as the Beocord 2000 K. The lid can be divided; each half forming one loudspeaker unit and giving a performance fully comparable with two stereo loudspeakers. This unit is ideally suited for the enthusiast who insists on the high quality performance of the Beocord tape recorder in a transportable version. Dimensions $10\frac{3}{4}$ " high (including speakers), $17\frac{3}{4}$ " wide, 14" deep. **Price 117 gns.**

◀ **The Beocord 1500**—the very latest tape recorder from Bang and Olufsen. Based on the design of the Beocord 2000 this new tape recorder is technically identical but does not have mixing facilities or an output replay amplifier and is intended for the enthusiast who already owns a high quality hi-fi system yet desires the inherent qualities of the famous B & O Beocord 2000. The Beocord 1500 is available in a choice of Teak or Brazilian Rosewood finish. Dimensions $8\frac{1}{8}$ " high, $17\frac{3}{4}$ " wide, 14" deep. **Price 89 gns.**

Available only through appointed dealers of quality, Bang & Olufsen products are on permanent exhibition at our new London Showroom, 70/71 Welbeck Street, London, W.1.

BANG & OLUFSEN U.K. SALES DIVISION

A division of Debenhams Electrical & Radio Distribution Co. Ltd.

EASTBROOK ROAD, EASTERN AVENUE, GLOUCESTER. Telephone GLOUCESTER 25634.

Northern Ireland Distributor: Messrs. Solomon & Peres Limited, Belfast 1.

Distributor for Scotland: Bryterlite Electrical Co. (Glasgow) Limited, Glasgow, C.2.





WHO SAID BEAUTY AND BRAINS DON'T GO TOGETHER?

This great new tape recorder is best in its price range for performance and looks!

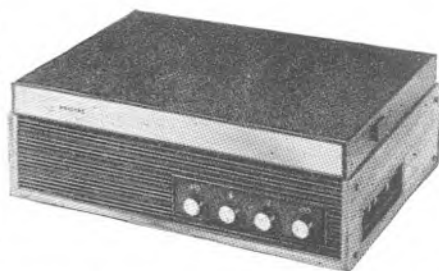
Philips 'High Performance' Tape Recorder with Furniture Look Model EL3556 62 gns.

Whoever said beauty and brains don't go together was wrong! For Philips brilliant new High Performance tape recorder is more than a leader in its price range for performance, reliability and technical excellence. It also has Philips breakaway Furniture Look—it's a handsome, contemporary piece of furniture that's *designed to look right in your home*. Judge for yourself. Its technical features include four tracks, four speeds, separate treble and bass controls, powerful four-watt output through the 7" x 5" loudspeaker, a frequency response of 60-18,000 c/s at 7½ ips, a signal to noise ratio that's better than 47dB and Duoplay, Multiplay and Stereo playback facilities. In styling, too, it's way ahead. Rich teak combines with dark grey polystyrene to form the sleek cabinet. All controls are sensibly grouped, clearly marked for utmost operating ease. Supplied complete with moving coil microphone, L.P. tape, empty spool, and direct recording/playback lead.

PHILIPS—THE FRIEND OF THE FAMILY

Philips Family de luxe Model EL3558 42 gns.

Rich teak cabinet. Automatic recording control regulates recording level for you—manual control provided. Four tracks, two speeds. Mixing, monitoring and parallel track replay. Supplied with moving coil microphone, LP tape, empty spool and direct recording/playback lead.



Remember—PHILIPS Tape Recorders make ideal Christmas gifts!

To: Philips Electrical Ltd. (Dept. TM1), Century House, Shaftesbury Ave., London WC2
Please send details of Furniture Look recorders & free booklet 'All about Tape Recording'

Name.....

Address.....

.....

TEMPOTAPE

SUPERB PROFESSIONALLY RECORDED MUSIC—PLUS 600 ft OF EXTRA TAPE FOR YOUR OWN HOME RECORDINGS ALL FOR 21/- (3 $\frac{3}{4}$ I.P.S. $\frac{1}{2}$ track) MONO



Why consider ordinary magnetic recording tape when you can buy the wonderful new TEMPOTAPE, 600 ft. of super quality long play polyester on 5" reel, with the top track professionally recorded by skilled engineers on the latest Danish Lyrec equipment costing many thousands of pounds.

Here is the list of titles available:

1 EROTIC PERCUSSION. 2 BIG BAND BLAST. 3 GUITAR BOOGIE. 4 TCHAIKOVSKY'S PIANO CONCERTO. 5 THE KING AND I. 6 CAMELOT. 7 FEATURING BILLY DANIELS. 8 HAPPY HARMONICA. 9 SOUTH PACIFIC. 10 ANDRE PREVIN. 11 GREAT THEMES FROM GREAT MOVIES. 12 BIG BAND SWINGS THE CLASSICS. 13 TRIBUTE TO DUKE ELLINGTON. 14 FLAMENCO. 15 UNDER PARIS SKIES. 16 ROMEO AND JULIET OVERTURE. 17 ORGAN POP CLASSICS JOHN KILEY. 18 TCHAIKOVSKY'S 1812 OVERTURE. 19 L'AMORE D'ITALIA. 20 OKLAHOMA. 21 FAMOUS OVERTURES. 22 MUSIC FROM IRVING BERLIN. 23 MUSIC FOR LOVERS. 24 THE GOLD RECORD. 25 SOUND OF MUSIC. 26 TRIBUTE TO WOODY HERMAN.

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TAPE

RECORDING
MAGAZINE

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COVER PHOTOGRAPH: Contented turkeys, like contented cows, fetch a greater market price. One way of achieving this contentment is by pacifying these highly sensitive birds with soft music and the familiar sound of the farmer's voice. Turkey farmer Brian Chapman of Easedale Turkey Farm in Farnborough, Kent, uses a Grundig tape recorder and a system of loudspeakers to calm his 4,000 birds—amounting to a fair amount of Christmas dinners—some of which are shown in the attractive company of Margaret Harvey of Grundig.

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FOURTEENTH INTERNATIONAL AMATEUR RECORDING CONTEST

Report on London judging session by the Editor

THE ANNUAL CONGRESS of the International Federation of Sound Hunters (FICS), and its associated International Amateur Recording Contest (CIMES), have become, in my view, the best sounding-board available of the progress and prospects of tape recording as a hobby. Here gather each year not only the officials and principal enthusiasts of the various amateur organisations of Western Europe, but representatives of several broadcasting concerns which show interest in the hobby and some influential figures in the European recording industry.

I emerged from the recent sessions of FICS and CIMES exhausted, but more optimistic about the future growth of the hobby than I have been for a long time. And let me say immediately that nothing contributed to this optimism more than the actions and the attitude of the BBC.

Some amateurs, I know, feel disappointed because of the loss of the regular Network Three programme *Sound*, in the course of the recent reorganisation of BBC programmes. I have had the chance of speaking privately now with many of the most senior executives responsible for BBC sound programmes and I have been convinced that they are anxious to do as much as possible for amateur recording, consistent with their duty to transmit programmes with public appeal.

Welcoming the delegates to the International Federation congress at a reception in the Council Chamber of Broadcasting House, Mr. Richard Marriott, Assistant Director of Sound Broadcasting, assured them of the BBC's close interest in their activities. But it was in the actions of the BBC in arranging all manner of facilities in connection with the International Recording Contest that the proof of the BBC's co-operation was offered. The Contest was judged, over three days, in one of the finest studios at Broadcasting House, with a talented BBC team to assist.

The year ahead will, I believe, see many important developments in the world of amateur recording: in the technical development of equipment, in the industry's promotion of the hobby, and in the growth of organised amateur activity. I have good reason to suppose that the BBC will play a very full part and I hope, before long, that I may be able to say more.

IN ONE SENSE, the International Federation has ended a phase of its career, and entered a new one. FICS was born as a child of two great pioneers—Jean Thevenot, of France, and Rene Monnat, of Switzerland. With the support of radio organisations in their countries they built it up. The Secretary-General's report to the recent London congress showed twelve current members—Germany, Austria, Belgium, Denmark, France, Great Britain, Holland, Japan, Sweden and Switzerland, plus l'Union Mondiale des Voix Francaises (UMVF) and le Centre International Scolaire de Correspondance Sonore (CISCS). All except Sweden, Denmark and Japan were represented in London.

This year, for the first time, the Presidency of FICS has passed from the hands of its founder-countries, with the election of Herr H. Runge, who is chairman of the amateur organisation in Germany. Herr Runge made it very clear that he is a "more action—less talk" man and I expect to see he and Dr. Jan Mees, the Secretary-General, making a big new effort to develop the organisation in the year ahead.

The reception given Dr. Mees—and the refusal of delegates to consider any other candidate as Secretary-

General—was a tribute to the quality of the service he gives to the movement. The fact that his job enables him to travel widely and constantly in Europe, plus his linguistic ability, make him the ideal man.

The FICS congress discussed in some detail the right relationship to seek between the amateur organisations and the professional radio concerns who are interested, and the overwhelming view was that the responsibility for organising the International Contest must be retained by the amateurs, but that they should seek the maximum co-operation (but not the dominance) of radio concerns.

By the time these words are in print, the BBC will have transmitted a programme called "Sound Hunters," largely based upon this year's British and International Contests. As it went out at 9.30 p.m. in the Home Service—a peak listening spot—this was probably the biggest opportunity we have been offered to date to interest the uninformed public in amateur tape recording.

It was a challenge, to produce a programme with wide general interest, which all of us who were involved accepted with enthusiasm. I hope we succeeded. Listeners' reaction, addressed to the BBC at Broadcasting House, London, W.1, would help.

ONE OF THE MOST interesting features of the 1965 International Contest was the big increase in the number of stereophonic entries. Three years ago there were eleven stereo tapes out of a total of 57 submitted by national juries for international judging; this year there were 22 stereo tapes out of 54.

Half the entries in the music section were two-track, and nearly half of those in the technical experiment category.

This trend towards stereo was much less marked in the British Contest—only one of the six tapes submitted by Britain to the International Contest was stereo. We shall have to do better in this country, if we are to hold our own.

In fact, British entries were altogether less successful in the 1965 CIMES than in most previous years. They carried off no first prizes, overall or in the various categories. Ray King's amusing "The Nose" was judged the best humorous tape, for which he was awarded the traditional Mannikinpis statuette donated by the Belgian Sound Hunters. For the rest, Britain had to be satisfied with second place in the Compositions and Actuality sections—"Mushrooms," made by Hertford College undergraduates, in the first and "The Real Thing," entered by John Bradley, in the second.

ALTHOUGH THERE WERE FEW, if any, tapes this year setting entirely new standards for amateurs, I think the overall standard was higher than ever before. The combination of a first-class subject and very high recording quality was present in almost every case.

And there was the customary variety of subjects. Some of the titles indicate the range: Ad Astra, The Zoo, Ordination of a Buddhist Priest, The Camerouns, my Country, Russian Impressions, Sicilian Orchestra.

I was particularly interested to study the sort of people who had made these tapes. I found that only six, out of the forty who gave their ages, were under 25. Twenty-four were between 25 and 40. Ten were over forty. It is not perhaps surprising that a very high proportion were professional men.

The organisation of an International Contest is no small responsibility; in fact, I heard the total cost estimated at something like £2,000, if a cash value were put upon all the facilities and services required.

It is a tribute to the Federation of British Tape Recording Clubs that it was able to stage the 1965 event in London so successfully. Of course, the BBC played a big part and I hope it is not invidious to single out Timothy Eckersley for special mention. No one in Britain has done or is doing more for the amateur than he.

The amount of documentation required for an international event is almost unbelievable: lists of delegates and of tapes, scripts in three languages, programmes, prize lists, and so on. John Bradley and Peggy Buchanan worked from crack of day to late at night throughout



The judging session held in a studio at Broadcasting House. The British delegates sit extreme right, front row.

the proceedings to get it all out. Roger Aslin, secretary of the organising committee, almost seemed to have solved the problem of being in two places at once—in the office and in the judging studio. And Alan Stableford presided over all the proceedings in a most business-like way.

That the event could take place in London was due to the generous co-operation and assistance of the following: the BBC Brenell Engineering Co. and Office Machinery Ltd. for equipment and facilities made available; Agfa Ltd., BASF Chemicals Ltd., E.M.I. Ltd., Ferrograph Recorder Co., Fi-Cord International, Grampian Reproducers, Ilford Ltd., Kodak Ltd., Mastertape Ltd., Minnesota Mining & Manufacturing Co., Philips Electrical Co., *Tape Recording Magazine*, Truvox Ltd., Tannoy Ltd., Reslosound, Stagesound (London) Ltd. and Stern-Clyne Radio Ltd., and Mr. C.

Rex Hassan for cash donations plus Samuel Whitbread Ltd., who laid on a tour of their brewery for the visiting delegates.

NOW THOUGHTS TURN TO next year's Contests. First to hit the 1966 headlines will probably be the new Grundig Contest for Schools. Entries are now coming in and, as several hundred schools applied for entry forms, it looks as if participation by schools will be on an altogether bigger scale than in any previous Contest.

I look forward to hearing the best of them, as Grundig (Great Britain) Ltd. has invited me to join their jury.

Details of the 1966 British Amateur Tape Recording Contest will be announced early in the New Year. The Organising Committee is at present digesting the lessons learned from this year's event and considering whether any changes are called for.



Herr H. Runge, chairman of the German amateur organisation, is the new President of the International Federation of Sound Hunters.

THE WINNERS—AND THEIR PRIZES

MONO SECTION

GRAND PRIX: "Guitarra Rapida" by Jurgen Sprotte of Germany.

Award: E.M.I. L4 battery tape recorder with ten reels of DP tape offered by E.M.I. Ltd.

COMPOSITIONS: "Rue Madame, rue de Bussy" by Jean Claude Gigon and Pierre Denervand of Switzerland.

Awards: 5,000 Belgian francs offered by Radiofussion et Television Belge.

DOCUMENTARY AND REPORTAGE: "Khai Concert" by Derek Worman of South Africa.

Awards: 1,000 Swiss francs offered by the Societe Suisse de Radiofussion et Television.

Special Mention: "Tuneschicher Bilderbogen" by Hans R. Buchi of Switzerland.

MUSIC OR SPEECH: "Russische Impressionen" by Wilhelm Gluckert of Germany.

Awards: 5,000 Belgian francs offered by Belgische Radio en Television.

Special Mention: "Psalm 138" by Benoit Zimmermann of Switzerland.

ACTUALITY: "La cote des Appels" by M. Cayron and M. Dufour of France.

No prizes were awarded in this section.

Runner-up: "The Real Thing" by H. J. Bradley of Great Britain.

TECHNICAL PERFORMANCE: "Magnetophobie" by Fernand Paillard of Switzerland.

Award: Philips Shield and stereo tape recorder offered by Philips Industries.

Special Mention: "Mixed Boogie" by Meyer zu Hoberge of Germany, and "Dat do min Lievsteb bist" by Rita Nave of Germany.

SCHOOLS: "The correction-puter" by Willem de Zwuger of Holland.

Award: 250 Swiss francs given by Radio Lausanne.

Second Prize: "Naufrage" by Noelle Gloaguen of France.

Award: Swiss cowbell given by L'Association Suisse des Chasseurs des Sons.

Third Prize: "A day at Grange School" by Grange County Secondary School of Great Britain.

HUMOUR: "The Nose" by Ray Stanton King of Great Britain. **Award:** "Mannekinpis" statuette given by Belgium.

"Ordination d'un Moine Bouddhiste" by Joseph de Ryck of Belgium, received the Prize for International Understanding given by Union Mondiale des Voix Francaise.

BEST NATIONAL SELECTION: Switzerland.

Award: Cup given by the Dutch Sound Hunters Club.

Second Prize: Germany.

Award: The International Shield given by *Tape Recording Magazine*.

STEREO SECTION

GRAND PRIX: "The music machine" by Kurt Felix of Switzerland.

Award: Gold-plated Sennheiser microphone given by Ring der Tonbandfreunde of Germany.

COMPOSITIONS: "Disturbed night's rest" by A. A. Naaktgerleren of Holland.

Award: 250 Swiss francs given by Radio Berne.

DOCUMENTARY AND REPORTAGE: "Musique religieuse Armenienne" by Lucien C. Wasmer of Turkey.

Award: 1,250 Belgian francs given by Les Amis de Radio-Hainaut.

MUSIC OR SPEECH: "Anklong Orchestre" by J. L. Koning of Holland.

Award: 250 Swiss francs given by Radio St. Gallen.

Special Mention: "Melodie pour deux guitares" by R. H. E. Peel of Belgium.

TECHNICAL PERFORMANCE: "Pipsy" by Gerd H. Nieckau of Germany.

Award: 1,250 Belgian francs given by Les Amis de Radio-Hainaut.

A tape recorder in your stocking!

By L. REID

IF you hope to buy a new machine for Christmas now is the time to make up your mind just what you really need in a tape recorder.

Perhaps you only intend to keep a record of a growing family, or use your recorder to provide fun at parties. If this is the case it would be sheer extravagance to invest in a semi-professional machine; on the other hand if your main interest is high class music you need the best recorder you can afford, and it would be a great mistake to think (as so many people think about a piano) that anything will do for a start. I can assure you from practical experience that once the novelty of a new machine wears off, its owner becomes more and more critical of its performance, and any shortcomings seem very obvious.

It is at this stage that many people lose interest in recording, and perhaps the choice of an unsuitable machine may have something to do with this, so the

following hints are offered as a guide to the right machine for your needs.

Most good dealers display such a variety of tape recorders that would-be purchasers can be excused if they become confused and buy the wrong machine. This is more liable to happen if you simply walk into a shop without having very definite ideas as to what you really want, and, since the second-hand value of tape recorders is not usually as high as you might expect, it is a wise precaution to make sure you get the right machine first time.

So before you go shopping get out pencil and paper, list your present recording requirements and any possible future developments, and then draw up a specification tailored to your own particular needs. This will give you something definite to act as a yardstick against which you can check the various tape recorders listed in *Tape Recording Yearbook*. Having prepared a "short list" in this way you can then go to your dealer and inquire about the machines which come nearest to your ideal. From these you should have no difficulty in making a final decision, and at this stage it is wise to bear in mind the old saying "Penny wise, pound foolish" as an extra pound or two may be well spent.

Spend time over the manufacturers' literature before deciding. The technical specifications may look very formidable at first but help here could be obtained from the booklet, *Advice on buying a tape recorder* (price 3s.). However, you do not need to understand the theoretical side in order to compare one set of figures with another; a straightforward comparison will enable you to arrive at very definite conclusions. If you are still in doubt many manufacturers are most obliging in supplying additional information, often accompanied by copies of any reviews which may have appeared in *TAPE Recording Magazine*. By preparing your own specification you not only narrow the choice to the most suitable machines but you also clarify your own ideas regarding tape recording.

For instance you may find that for your particular purpose tape economy is more important than hi-fi quality, so you settle for the slower speeds and/or four-track operation. (Let me hasten to add that four-track machines can give quite good quality for general work, but are more at the mercy of the tape as regards "fall out.")

On the other hand, if you are a real hi-fi enthusiast you are more likely to choose a two-track machine which also offers higher speeds . . . or possibly stereo.

Perhaps this question of economy v. quality is as good a place as any at which to start your specification. Although manufacturers have worked wonders in recent years to obtain improved quality at the slower speeds and with four-track operation, it still remains true that really high class reproduction of music needs the higher speeds and wider tracks for best results. This being so, the music lover's specification will doubtless be for two-track operation with a choice of $3\frac{1}{2}$ ips for normal use and $7\frac{1}{2}$ ips for special occasions.

Choice of speeds

For most amateur work the compromise speed of $3\frac{1}{2}$ ips should prove more than adequate, with possibly a second speed of $1\frac{7}{8}$ ips available for extra economy on

speech; therefore a machine which offers $7\frac{1}{2}$, $3\frac{1}{2}$ and $1\frac{7}{8}$ ips, will cater for everybody.

Having decided upon a suitable speed the next most important mechanical feature is the machine's ability to maintain this speed without undue variation . . . I say *undue* variation because it is practically impossible to avoid some variation, but so long as this can be kept small enough it will not show up in normal recording work. Large slow variations are termed "wow," while "flutter" is the name given to smaller faster vibrations; either can ruin music recordings.

By referring to the manufacturers' specification you can find out if a machine is likely to prove satisfactory in this respect; if the combined "wow and flutter" is stated to be "0.15 per cent," or "less than 0.2 per cent," you need not worry on this score, but anything above 0.3 per cent should be rather suspect if you have a keen ear.

Fast wind

While the various recording speeds have been standardised there is a great variety in the "fast wind" speed as between different makes of recorder. Some take nearly three minutes to rewind 1,200 ft. of tape but give a beautifully even wind, while others whizz through the same amount in half the time with more untidy results. Still, with extra-long-play tapes a speedy rewind is an advantage, and it is always possible to produce a tidy wind when desired by lightly breaking the full reel with a finger. (Beware of burns from plastic reels if the speed rises too high!) Incidentally with the faster rewind speeds it is essential that the brakes operate smoothly in order to avoid stretching ultra-thin tapes.

A mechanical point which could have some bearing on trouble free operation is the number of motors used in a machine; two systems are in use. Some machines, usually those with a slower rewind, operate with only one motor. This drives the capstan and also, by means of belts or rubber wheels, operates the fast wind. Alternatively three motors may be used; one operates the capstan while the other two carry the tape reels directly on their spindles without the use of belts or rubber wheels. A very positive drive is obtained by this system.

Spool size

It is also an advantage to have a deck which will take reels up to seven-inch diameter, and there should be easy access to the heads for cleaning purposes and for marking the tape when editing.

Before turning to the electronic side there is one further point to bear in mind regarding the tape transport, and that is the amount of noise the machine makes in operation. This may not be noticeable in the shop, but if you intend to make recordings in very quiet surroundings, e.g., in church, motor hum or noisy switches sound startling!

In fact it is better in such circumstances to operate from the vestry, or when recording a concert, from an ante-room to the hall, which also makes for easier monitoring (see below). As long microphone leads will be necessary in such circumstances, we will now take a look at the electronics.

Many popular recorders, which are usually supplied with crystal microphones, do not have this facility of extended leads, but a change of microphone will put this right and probably improve the quality as well.

In order to make use of extended microphone cables it is necessary to use what are known as low-impedance microphones (we need not go into details!) and at least one semi-professional machine has a low-impedance microphone input for this reason. Other machines which only provide high-impedance inputs are easily converted by using a matching unit in the microphone leads.

So enter "low-impedance microphone" (with or without matching unit) on your specification, even if you are only likely to need extended leads occasionally. Low-impedance leads (specially if on "balanced line," i.e., centre tapped to earth) have the added advantage of picking up less hum.

Microphones

Microphones are available with different characteristics, and choice depends on the type of recording being made, and on the acoustics.

At one time ribbon microphones were always recommended for music recording, and these are still widely used for this purpose. Their directional properties, described as "figure of eight," can be a great advantage apart from their good frequency range. One disadvantage of this type of microphone is the fragility of the ribbon (beware those folk who insist on blowing into a microphone to see if it is live!) which makes it unsuitable for use out of doors or even in a draught. The ribbon could be damaged by strong winds.

For general purposes the more robust moving coil instrument is to be preferred. It can be used anywhere and modern types (costing from £8 upwards) can now take their place alongside the ribbon for music recordings. Both types are often used together in such applications. The moving coil, unlike the ribbon, is omni-directional, it picks up equally well all round (even from the back, as some unwary people have discovered!) and it is therefore ideal for picking up "atmosphere" from the surroundings. Indoors a single moving coil microphone suspended above a group of singers or actors will often meet the case.

It is an advantage to possess several microphones with different characteristics, and so, in the accessory column of your specification, enter a second microphone to be added later. You might also enter a microphone mixer, so that several microphones could be used at the same time; this piece of apparatus is available in various forms or it could be assembled at home. Space does not allow a full description of various mixers, but the electronic type is to be preferred to the purely resistive, as the latter absorbs some of the available signal.

Inputs

Apart from a microphone input, your ideal tape recorder should have a second input for recording from radio, or preferably from a special tuner. In some cases this second input also acts as an *output* to provide a signal (not affected by the recorder's volume control) to supply a hi-fi amplifier or a second recorder. With this system the output level is always the same when playing back a tape for dubbing, and you can monitor the programme via the volume control in the normal way. Before leaving the input arrangements it might be well to say a word about recording from radio. Most people know by this time that it is no use placing a microphone, however good, in front of a radio set! The extension speaker socket is not entirely satisfactory, and a special "diode" output from the set

is essential for good results. Better still are the special "tuners" marketed for the purpose. These are rather expensive but give much better quality than the average radio set, so if you want really high class radio recordings add a tuner to your specification . . . VHF, of course.

Monitoring

When making recordings it is an advantage, and in some cases essential, to have adequate monitoring facilities available. With most machines it is possible to monitor (or listen to) the incoming signal either from the internal speaker or from the extension speaker sockets, but this does not check the quality of the actual recording being made, nor even prove that the signal is reaching the tape. For serious work it is better to have a more elaborate system whereby, by means of a second playback head, the incoming signal can be compared instantaneously with the recording as it is made. This allows you to keep a check on quality, etc., as you go along. Whether you add this facility to your specification depends, of course, on whether you consider the extra expense justified by the nature of your recording work. It is invaluable when recording music, or for checking that a "once only" performance is actually being recorded safely.

Extension loudspeaker

A good recorder should and most do have provision for an extension speaker. A large speaker improves playback quality immeasurably and do more justice to the machine than its small built-in speaker. Such output should preferably be at 15 ohms to suit most of the commercial speaker systems. A good speaker really makes such a difference that one should certainly appear on your specification as a desirable accessory.

When you come to the question of frequency range do not be too impressed by such claims as 20-20,000 cps, to the exclusion of more important factors. Such figures can no doubt be verified by instruments, but the ultimate test of a recorder is what it sounds like to the human ear, and few ears can hear the extreme ends of the frequency range. As a matter of fact with increasing age the top "ceiling" becomes lower and lower! Apart from this our ears have become accustomed to broadcast quality which is surprisingly restricted when a concert is relayed over land lines. Many of the semi-professional machines are content to offer a specification of around 50-10,000 cps, and it is quite safe to accept this for high class work.

Noise level

Another figure in the manufacturer's specification which has a great bearing on quality is the "Signal-to-noise ratio," and other things being equal, you should prefer the specification which quotes the largest figure for this. The figure represents the difference in level between the recorded signal and the background noise of the system (i.e., tape hiss, amplifier hum, etc.). A figure of 45 dB upwards would be quite satisfactory for first class work. Incidentally the manufacturer's quotation will only apply if you record properly at full depth. If the recording is not deep enough playback volume must be turned up excessively to

try and compensate, and this increases background noise.

Unfortunately it is impossible to completely eliminate all background noise from the recording process as you prove by running a blank tape through the machine and listening to the hiss.

You may prefer a meter to a magic eye as a recording level indicator. Having no moving parts the latter is more sensitive, but choosing your machine for its other qualities you will have to accept whatever form of level control it offers. However, if you have chosen a semi-professional recorder the chances are that it will be fitted with a meter. Two types are available, but again you will have to take the manufacturer's choice. The cheaper type, known as a VU (volume unit) meter gives a rather jumpy reading and one has to estimate an "average" of the needle swings, whereas the more expensive Peak Programme Meter, which operates on signal peaks, gives a much more direct reading which I find less irritating and more accurate. So watch the needle when the machine is being demonstrated!

Weight

Recorders vary in weight as well as size, and if you propose to carry it around you should not overlook the *avoirdupois!* Weight can vary from a few pounds for small transistor models to 50 lb, or more on the larger semi-professionals. These latter can hardly be regarded as really portable, transportable would be a better description, especially as one usually has a case full of accessories and a few rolls of extension cable as well!

However, by this time you should have a fairly clear picture of the sort of machine which will meet your needs. You will have weighed this point against that and made the necessary compromises, for it is usually impossible to get everything you want in one machine. And now you are ready, armed with your specification, to face the dealer with some confidence.

If your main interest is in serious music recording, and you want to be prepared for all eventualities, your specification will probably look something like this:—

Speeds: $7\frac{1}{2}$ and $3\frac{1}{4}$ ips.
Wow and flutter: Less than 0.2 per cent at $7\frac{1}{2}$ ips.
Recording sense: Two track.
Frequency response: 40-12,000 \pm 3 dB at $7\frac{1}{2}$ ips; 40-10,000 \pm 3 dB at $3\frac{1}{4}$ ips.
Signal-to-noise ratio: 50 dB
Monitoring: Direct from tape.
Level indicator: Peak Programme Meter.
Maximum reel size: Seven inches.
Output: $2\frac{1}{2}$ watts at 15 ohms.
Inputs: Low impedance microphone, and radio (with output facility for dubbing, etc.).
Microphone: Low impedance moving coil for general use.

Number of motors: Three.
Weight: Under 50 lb.
Accessories: Extension mains cable; three-core cab tyred with unbreakable plugs; set of mains adaptors for various sockets; two 50 ft. lengths screened microphone cable (single or twin-cored as necessary, with plugs to suit recorder)—these may be joined to give 100 ft.; low impedance ribbon microphone; microphone mixer (preferably electronic) with inputs for microphones, radio and gramophone; large extension speaker (15 ohms); and VHF radio tuner.

At least one semi-professional machine can meet the above requirements so you should have little difficulty in making a choice.

with a tape recorder: Continuing our series of articles on location recording, JOHN WHITTAKER relates how he recorded the magical sounds of an Eastern Bazaar and an Arabian pop concert, and describes how his recorder helps him in his job.

A paradise for the tape recording enthusiast

NOTHING one meets in any part of England prepares you for an Eastern bazaar. There is something almost magical about the atmosphere of these places that you certainly don't get in, say, a Yorkshire market.

One is stunned by the bustle of Arab men, the swishing of the dark purdah gowns of the Arab women, the cry of the pedlars and fortune tellers, the loud barter of goods at the stalls. As if that is not enough there are camels, goats, hens and cows roaming about completely undisturbed and apparently belonging to nobody.

As darkness falls so the loud hiss of the hurricane lamps swells the chorus. Then there is the constant hooting of motor car horns. To the local Arab this is still a fascination and many have actually adapted their horns to play a tune.

Eastern music cuts through the evening air from a hundred cheap transistor radios imported from the Far East, and at regular intervals the public address system installed in the main mosque howls forth the prayers of Islam.

As with so much in the East the old merges with the modern. The Mosque scene is typically incongruous—decor as old as Islam and then, right in the centre, a gleaming ribbon microphone. High powered horn loudspeakers dominate the six minarets and carry the prayers to the people. Such is the random encroachment of the modern West that it's not uncommon to see a shack made from corn flake packets with a Mercedes Benz or Ford Zodiac parked outside.

The only really unspoilt bazaar I know is in the township of Sheikh Othman, where I live, some eight miles north of Aden. Until recently it was reasonably safe to walk the streets after dark but now things have



The author interviews a local Arab in the Bazaar at Sheikh Othman, Aden, before the crisis began. Now Europeans are urged to avoid the Bazaar



changed and Europeans are urged to avoid the bazaar.

However, we prevailed on an Arab friend of ours to drive us up and down through the bazaar in his car one night. The tape recorder was set in motion and the microphone strung in mid-air from an extending fixture attached to the rear window of the car.

Every so often we would see a shot for our cameras and so stop the car and jump out to take the picture. Our cameras, both Kowa's SE Model, with a fully coupled cds light meter and 50 mm F1.9 lens, are very easy to operate and are specially made for rapid action photography. So the atmosphere of the bazaar was captured and a rewarding exercise it made.

Arabian pop concert

It was Thursday, January 28, nine o'clock in the evening, and a colleague and I were heading for a large hall in Sheikh Othman, carrying our tape recorders and cameras. We had heard on the "bush telegraph" that an Arabian concert was to be held there.

From all accounts it was to be a first-class programme with several songs from the local "Pop" idol.

On arrival we found the hall bursting at the seams with 300 male Arabs trying to get into seats for 200.

We were treated as VIPs and each given a front row seat and a bottle of orange pop to keep us happy.

The acoustics of the hall were surprisingly good and, as it turned out from my vantage point almost on the stage, I was able to make some good quality recordings.

Amid tremendous cheers the first musical group came into view as the curtains were pulled back. It consisted of four smartly dressed Arabs, two with violins, one with a tambourine and the fourth, the vocalist, doubled on a sword.

As they swung into action with the first number, I swung into action with my tape recorder. Unlike a typical British audience, the Arabs talked, cheered and jeered throughout the whole evening. However, the ovation at the end could best be compared to that of a Wembley football crowd so that my modulation needle was sent spinning right into the danger zone.

As the evening wore on many other

groups made appearances with similar receptions, keeping me busy changing reels and taking photographs.

Then came the star attraction—it was by now just after midnight—the pop idol from Sheikh Othman.

Perhaps the most striking fact about Arabian songs is that they go on and on and on. One popular Egyptian singer sometimes take two and a half hours to sing one song. The longer you take over one song the more popular you become to the Arab. On this particular evening the pop singer told a love story in song lasting some twenty minutes, and the audience loved it. My recordings apart from being a lasting record for me have given untold pleasure to my Arab pupils since.

My colleague on the approved school project is Brian McPhee, a young red-headed Scot. He spent a great amount of his spare time prior to being selected for Voluntary Service Overseas, singing with beat groups in and around Glasgow.

He, better than I, could appreciate the quality of these Arab groups on that evening. At one point in the programme while I was deeply engrossed in my recording he slipped out from his seat and crept backstage.

To my amazement some minutes later the curtain opened to reveal Brian standing at the microphone.

I afterwards learnt that being a little fed up at the long drawn out songs of the other performers he had decided to offer the audience a taste of rock.

He proceeded to sing his own adaptation of the old miners song "Sixteen Tons", and the audience loved it. They clapped and cheered and cried for more and he gave them five more numbers before handing back to the Arab performers.

Thus ended another fascinating experience from my year in Arabia. An experience—due to film and tape—that I will be able to share with others and to re-live myself for the rest of my life.

Some of my enthusiasm for tape recording has rubbed off on my colleague Brian. He has since acquired a Grundig TK6 as a Christmas present to himself.

The first-class recordings I was obtaining on my own Grundig, with Emitape, must have been advertisement enough for him to acquire the same model. The recordings he is making will add another dimension to the programme of slides he proposes to give on his return to Britain.

He is at present teaching his carpentry class the song "If I had a Hammer." With the addition of the tape recorder the whole thing becomes quite a social occasion.



An informal tape recording lesson at the Sheikh Othman Approved School where the author worked for the Voluntary Service Overseas organisation



Recording sessions of this kind are great fun for all concerned and provide an opportunity for the boys to perfect their pronunciation. How a Scot can teach correct English pronunciation to Arabs is a topic which has no place here!

One of my most rewarding recording activities in Aden has been exchanging tapes with two physically handicapped friends in Britain. Both these boys have excellent voices and charming personalities but they find it difficult to write.

A great deal of my time is spent working in the Sheikh Othman Boys' Club, which caters for a hundred boys between the ages of 12 and 19.

One of my jobs is to introduce the Duke of Edinburgh's Award Scheme, and here once again, the tape recorder comes into its own. Another of my tasks will be to translate the Emiguides, the famous series of instructional tapes, into Arabic. It will be quite a task but well worth while as these tapes explain so well the basic elements of recording.

When it comes to introducing the boys to voluntary service for others as part of the Scheme the tape recorder will again be a valuable aid. I intend to have the lads produce musical programmes in Arabic to take out to the local Arab Old Folks Home and to the Aden Blind Centre, a project run by the Royal Commonwealth Society for the Blind.

Thus the tape recorder is becoming an integral part of the club's life. The club

building is so constructed that it has an area of 15 x 20 feet which would make an ideal projecting room. We propose to utilise this and build a photographic dark-room and recording studio.

Monthly newsreel

One of the features we hope to introduce through these facilities is a monthly newsreel. This will be circulated around the other clubs in the area and would include recordings of the various activities of the club, news-items, interviews and discussions.

There will be no shortage of musical items, as many of the lads are skilled instrumentalists and good singers. The tape recorder will come more and more into use as we begin preparations for the club's annual dramatic production. It will be used to help the lads memorise their parts, to provide sound effects, musical back-drops and produce music during the intervals.

Future projects in the approved school include the installation of a public address system. It is envisaged that this will operate from the main office and a one-way system will reach the dormitories, dining halls and classrooms. It will carry Arabic music and announcements. Under my direction the boys will play a major part in the installation and so will learn something of this subject. Tape recording will, of course, be used in conjunction with the system.

The work of Voluntary Service Overseas is becoming better known to the young people of Britain. One of the chief aims of my taking all these recordings and pictures of my work in the Middle East is to produce a sound-slides programme. When I return to Britain these will be used to stimulate recruiting for Voluntary Service Overseas.

There is nothing worse than a "lecture and slide show," as most of us know. With the correct fading of music and sound effects behind the commentator on tape the whole show can be brought to life.

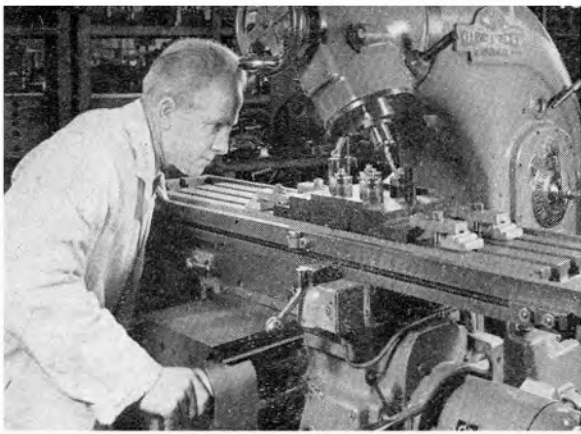
I have found a tape recording enthusiasts paradise, here on the Southern tip of Arabia. Recording equipment is cheap and some of the most fascinating scenes and sounds exist right on the doorstep of the bazaar in which you can buy your machine.

These places will not last for ever. The modern West is sweeping in like a cloud of locusts and soon much of the old East will be consumed, but thanks to film and tape it will never quite disappear. I am proud to be playing a small part in compiling a record.



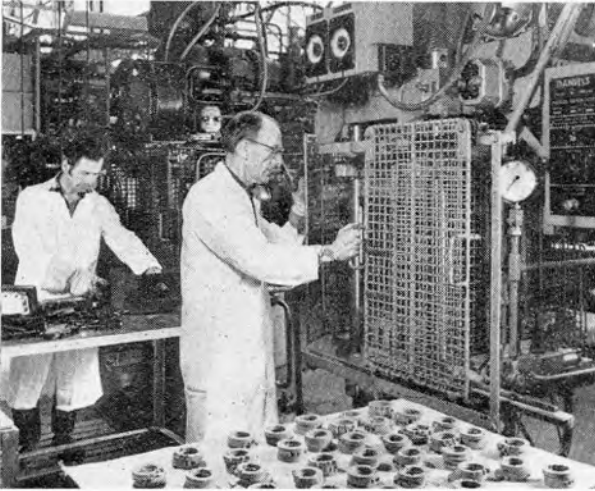
Camels and a Mosque provide the setting for one of the outdoor recording sessions, the material for which was later included in a tape message





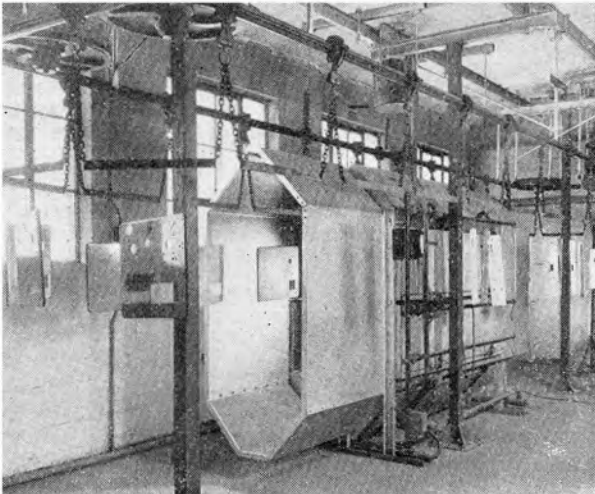
AN OPEN LETTER TO MEMBERS OF THE BRITISH FERROGRAPH OWNER'S CLUB BY JOHN BORWICK

Dear Member...



A COUPLE OF WEEKS ago I was flattered to receive a letter from one of your colleagues (Mr. George West) asking me if I would tape-record a contribution for the first edition of your new quarterly sound magazine. I promptly sat down and chatted into the microphone for a few minutes, and posted off the tape.

By a coincidence, I had been on a visit to the Ferrograph Works at South Shields just a few weeks before (duly reported in the June issue of *The Gramophone*). I naturally mentioned this visit on the tape, and suggested that a trip to the South Shields factory would make an excellent outing for club members. (I assume that you will be arranging to meet each other from time to time—as well as keeping in touch via tape letters.)



One thing I could not do in my recorded letter was *show* you some of the highlights of my Ferrograph visit. So here, by kind permission of the Editor of *TAPE Recording Magazine*, are my notes on some photographs which I have scrounged from The Ferrograph Company especially for this letter.

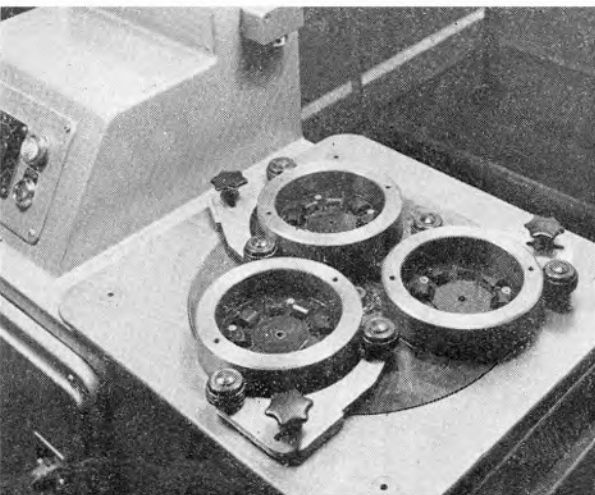
(The photographs are numbered top to bottom, left column first.)

Photograph 1. An exciting feature of the Ferrograph works is that practically every part is made on the premises. So you can see the whole process from scratch. Here is the tool room where dies and other tooling are machined.

Photograph 2. Here you see plastic moulding in progress. I do not recognise the parts in the foreground: perhaps they belong to one of the Ferrograph depth sounders or other marine equipment. The man on the left is handling the well-known hinged cover for the head assembly.

Photograph 3. But there is much more metal than plastic in a Ferrograph which, while it no doubt contributes to the *Weight*, is certainly a big reason for their reliability in amateur and industrial use. The photograph shows deck covers passing through the infra-red stoving plant in the paint shop.

Photograph 4. It is fascinating to see the tiny head coils being wound, the laminations stamped out and then assembled as two halves. This lapping machine spins the head sections round in beds of abrasive fluid until the faces are lapped to a mirror finish. As the head halves are mated together, an inspector carefully checks their pairing. He is also responsible for examining the shim that produces the all-important head gaps. I was allowed to run the lapping machine and then check my results on the microscope.



AN OPEN LETTER TO MEMBERS OF THE BRITISH FERROGRAPH OWNER'S CLUB

BY JOHN BORWICK



Photograph 5. Quality control, or product testing, is taken very seriously at Ferrograph. The Test Room shown here is much bigger and more comprehensive than is usual in factories of this type. Many components are effectively tested several times over, such as the motors in the foreground which are tested individually, then on the deck and finally in the completed recorder.

Photograph 6. Mechanical testing is carried out on all moving parts. Here the drive capstan assemblies are being given static and dynamic tests for trueness, prior to being fitted with the heavy flywheel. A 24-hour run-in is given before checking the mechanism with stethoscopes and wow and flutter instruments.

Photograph 7. The low wow and flutter figures achieved are mainly due to accurately machined and tested component parts and the special motor bearings. (New enclosed ultra-sonically cleaned ball-race bearings are used on the Series 6 motors.) Here the flywheels are being dynamically balanced.

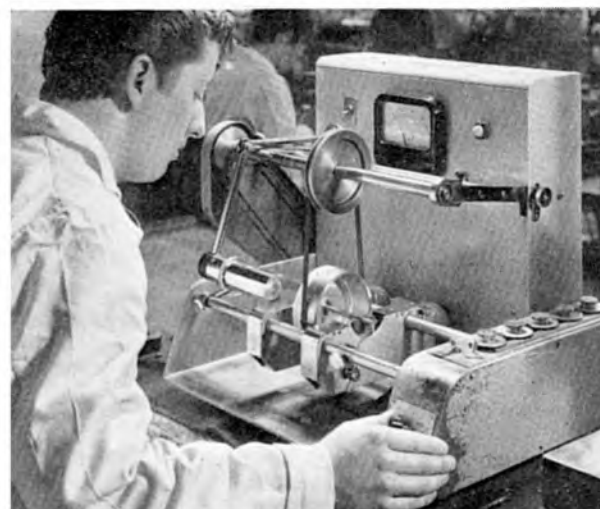
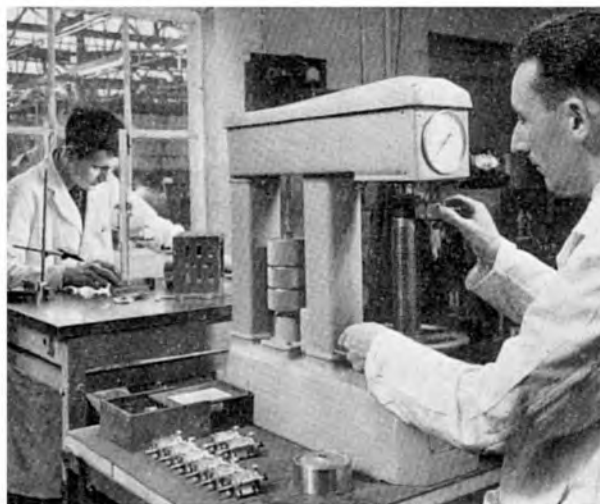
Photograph 8. Nearest to the heart of tape recording enthusiasts is the frequency response curve. Here every single machine has its response automatically drawn on Bruel and Kjaer equipment which simultaneously tunes an audio oscillator from 20 cps to over 20,000 cps and pen records the resultant signal from the tape.

Well, dear member, I hope these pictures and notes give you something of the flavour of the place where your machines are made. Since my visit, I have taken delivery of a Series 6 recorder and it is providing music for me as I write. I received with the machine a handsome Certificate of Test, which includes a pen recording of the frequency response (easily within ± 2 dB from 20-15,000 cps), a speed micrograph (wow and flutter at $7\frac{1}{2}$ ips equals 0.14 per cent), and other data.

Ferrograph are debating whether to send out a Certificate of this kind with every machine. It would be easy for them to do, since every machine is tested in this way: but they are anxious not to do anything which might be regarded by some people as a gimmick. What do you think?

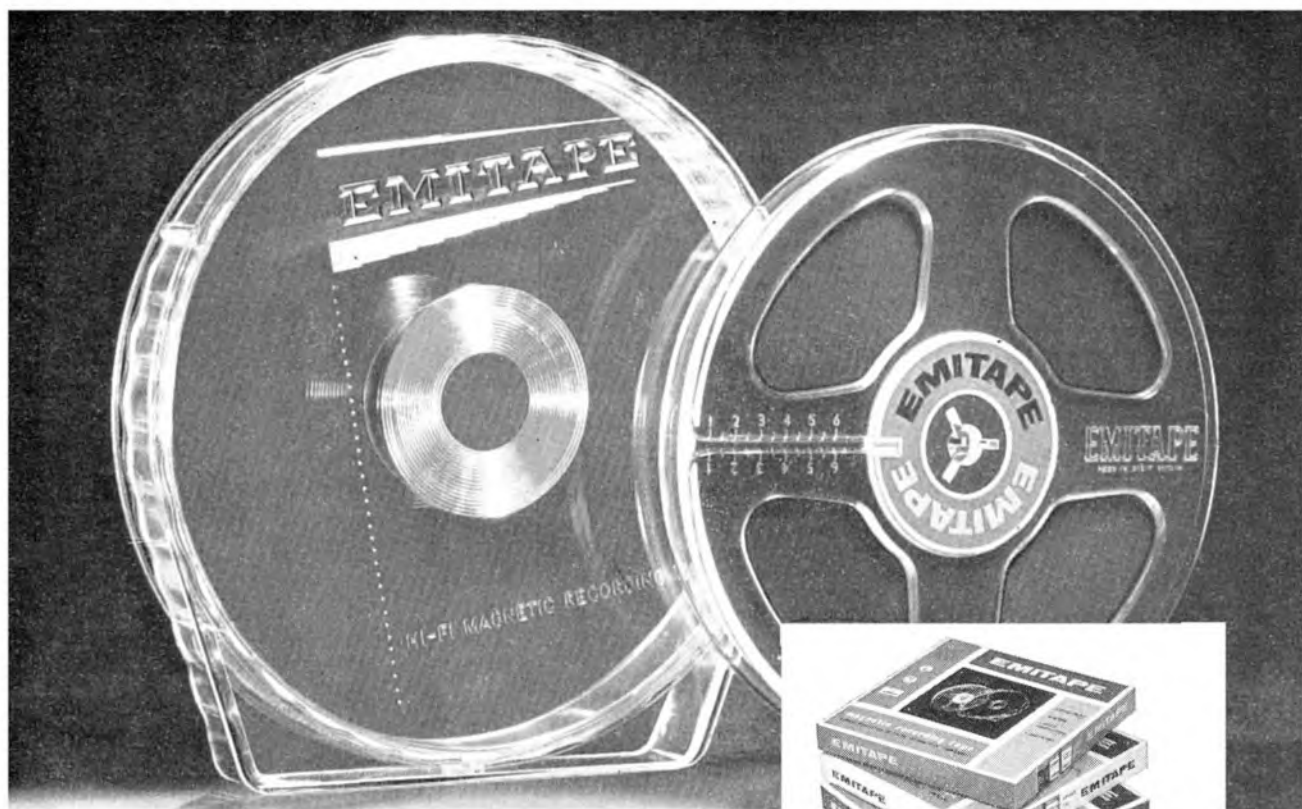
Good luck to your Club.

John Borwick



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Dramatape

Miscellany

By PERSPECTIVE

THIS year's season for amateur theatricals is now a month old. And do you know how many people are engaged in it? *Half a million.*

And do you know how many of these enthusiasts make regular use of a tape recorder? A mere fraction!

Here we have a movement where tape could do so much "behind the scenes," yet relatively few of the hundreds of societies are even dimly aware of the possibilities. Who can alter this state of affairs?

Not the drama-fans. They are far too wrapped up in acting. One man alone can introduce them to tape—and that man is the tape recordist.

Are you this tape recordist? If so, a position awaits you in your local dramatic society—as honorary recordist.

I'm not assuming, of course, that you are interested in acting; possibly you're not very interested in drama. But the recording of drama will present you with a series of exciting technical problems. It will give you the opportunity to develop research into new techniques—for example, into stereo sound-effects.

"But how," you might say, "do I set about joining a dramatic society?"

JOIN NOW!

It's easy. Choose the brightest society you can find—and simply offer your services by phone or letter. Tell the secretary that you're looking for a society that needs a permanent recordist.

But don't expect too much. You'll have to volunteer your own equipment and tape until you become an established member.

Start by offering to undertake an obvious and elementary chore—the providing of interval-music and refreshment announcements. This is an excellent initiation for both you and the society. It calls for more technical organisation than you (or they) might suppose.

Properly speaking, this particular job comes under the front-of-house manager—the member who sees to tickets, seating, playbills, programmes. Your consultation with him (to prepare the material) will probably take an entire evening; the dubbing and mixing, etc., will probably take another. But you'll save a lot of time if you draft a simple, preliminary script. Don't be tempted to do it "off the cuff." And remember that copyright records must be mixed with the announcements during direct-replay—not in a re-recording. This means that you must practise the procedure until you're quite familiar with it.

GETTING TO WORK

You'll now be qualified to have more of a say in future productions. Like the other members, you should attend all rehearsals. The actual schedule comes under the producer, but you will be responsible to the stage manager on the actual night of performance.

The rehearsal-schedule is usually opened by an audition. Your job is to record this audition—and to record it properly (which is something most drama-fans are unable to tackle). The playback will subsequently help the producer to select his final cast; it enables him to judge whether or not the voices fit the part. And this is very, very important.

A first-class producer, if faced with a

choice between voice and appearance, will *always* settle for voice. Make-up, you see, can rectify appearance—but unsuitable voices are much harder to disguise. (Make this point clear if the society is inexperienced).

Your attendance at remaining rehearsals is concerned chiefly with technical estimations for the back-stage sound-effects. Your tape recorder is not strictly necessary during these rehearsals—and can even be an annoyance. But you *must* get to know the play; and watching and listening (with a copy of the script) is obviously the best way.

Later, it is useful to make a recording of the first complete run-through. *Then*, in consultation with producer and stage-manager, you can plot the mechanical basis of the effects.

Having assembled the effects on tape, ask the producer to convene an "effects-rehearsal." You can then test the effects against the live performance—on the stage, if this is possible. Any adjustments should be completed by the dress-rehearsal.

It is impossible, in the short space I have, to dwell on all the fascinating details of stage-and-sound. But, in principle, any medium-priced recorder, if coupled to a good extension-speaker, will yield good results in the average hall. You should really have at least two speakers—one back-stage (i.e., in the wings) for sound-effects; and one in front of the proscenium, for any background music. The latter speaker of course, is also switched-in for the interval-tape; and all tapes are operated from one control-position behind the stage.

Last, but not least, you can suggest that you record the play for the archives (or for transfer to disc). This gives you two major jobs "on the night"—recording and replaying. You'll need a permanent assistant-recordist before long—and possibly an effectsman. When that time comes, you'll know that the society is truly initiated into tape recording—and by your efforts alone.

I can assure you, from personal experience, that the achievement is worthwhile.

Two-minute tape sketch by David Haines

A monthly exercise in perspective, acoustics and sound-effects.

MAKE a recording of any party where people are talking at random. Later, superimpose this dialogue over it—acting the two voices yourself, if necessary, and speaking fairly near the microphone.

AT THE PARTY

1st MAN: I say, old man—isn't this a dull party?

2nd MAN: I agree—it's terrible.

1st MAN: I don't think I've been anywhere so boring! Have another drink.

2nd MAN: Thank you.

1st MAN: I can't imagine why my wife dragged me here. It's the worst party I've ever attended. I tell you what,

old man—why don't you and I slip out?

2nd MAN: Where could we go?

1st MAN: There's a very nice little pub down the road.

2nd MAN: Well, I'd like to. But wouldn't it be considered bad manners?

1st MAN: Nobody will notice we've gone.

2nd MAN: But they would—it's me who's giving the party.

READERS are well aware that standards exist: the public address fraternity has been cleaning house for some time and a recent publication by the British Standards Institute defines very clearly certain of the limits to which equipment should be designed and operate.

But the usual criticism is not the lack of a standard so much as the absolute dearth of information to be gleaned from so-called specifications. And this from manufacturers whose sales figures certainly indicate they should have a greater sense of responsibility to their potential customers. So long as such woolly definitions as:— Frequency range X-Ykc/s can be quoted, with no indication of limits; or Hum and Noise Level = ZdB, with no mention of whether this was weighted or unweighted; or input and output impedances stated as "High," "Medium" or "Low," the tape recording enthusiast needs to be on his guard.

This glossary is not intended as a dissertation on standards. Readers can refer to BS 3860.1965 for more specific information. My brief is simply to outline the common usage—and some misuses—of terms commonly met with in these pages, and elsewhere.

Which brings us almost directly to the next term. . . .

HALF-TRACK. Correctly, this refers to the system of recording a signal that occupies half the width of the tape (minus the safety lane—see *Crosstalk*, and *Tracks*). The usual method is to record the upper half of the tape, with tape moving past heads from left to right, using a half-track head, i.e. a head with one gap only. The spools are then inverted to record the second track. This makes a two-track recording.

When half-track stereo recordings are made, the head has two gaps, one above the other, each recording a half width of the tape (again minus the safety lane). This type of head with gaps vertically in line is known as a "stacked" head.

HARMONIC DISTORTION. There are three principal types of distortion that concern us, and they are related. For the most part we need to test for and eliminate harmonic distortion, which is evident, in its worst condition, as a roughness or harshness of sound.

To take an example, if a tape with a pure tone of 400 cps is replayed, and the amplifier is wrongly corrected, or has faults, in addition to the fundamental tone, frequencies of 800 cps (second harmonic) 1,200 cps (third harmonic), etc., will be reproduced. Other even-order harmonics are 1,600 and 3,200, and odd-order harmonics, 2,000 and 2,800 cps, but these will be considerably weaker.

Fig. 1 shows the way a sine wave (A) is misshapen by second harmonic distortion (B) and by third-harmonic distortion (C). It will be noted that the curves given for second-harmonic distortion vary; this is because the amplitude and phase of the unwanted component adds to and subtracts from the fundamental.

The same thing happens with other types of distortion. Measurement of overall distortion is generally made and a figure for total harmonic distortion quoted. The in-

SERVICE BUREAU

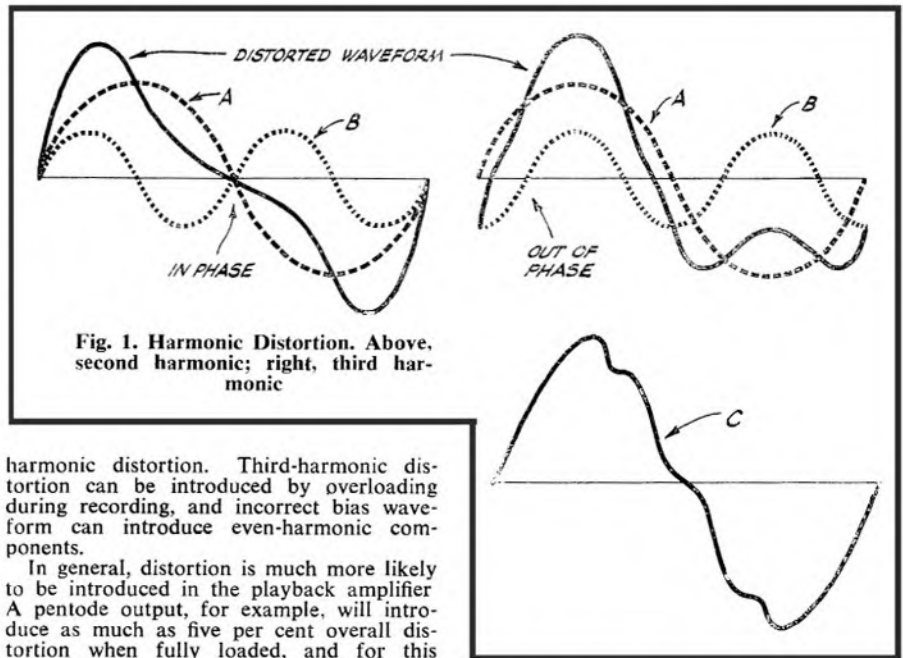
A glossary of tape terms—part two

BY HARRY MACK

put and output to and from a machine is calibrated and a filter inserted to trap the calculated frequency. Readings then indicate output level with and without filter and the resultant dB readings can be converted directly to a percentage.

Harmonic distortion can occur in any amplifier. One great advantage of tape recording is its inherent freedom from second-

cuit works below overload conditions, reducing the chance of distortion (see above). Note the presence of the large electrolytic, C3, which has a dual function. As well as acting as a filter component, it allows a slow discharge of the oscillatory voltage when the h.t. is cut off from the valve. This helps prevent magnetisation of the heads.



harmonic distortion. Third-harmonic distortion can be introduced by overloading during recording, and incorrect bias waveform can introduce even-harmonic components.

In general, distortion is much more likely to be introduced in the playback amplifier. A pentode output, for example, will introduce as much as five per cent overall distortion when fully loaded, and for this reason better-class machines employ push-pull output, where the second-harmonic component is eliminated. Extensive use of feedback also helps keep distortion down.

HARTLEY OSCILLATOR. The Hartley is essentially simple in design and is widely used as a bias oscillator. One example is shown in Fig. 2. This is a series-fed type, with the necessary feedback to sustain oscillation from the tapped grid section of the coil L1. The second coil L2 takes off the bias and erase voltages, and this is tightly coupled to the main coil. L1 is tuned by C1 and R1 is used to adjust the grid drive. This is to ensure that the cir-

HEAD. This is basically an electromagnet, with fine turns wound on a laminated core brought to a close gap at the polepieces. The poles are faced with a highly polished surface to minimise friction to the tape.

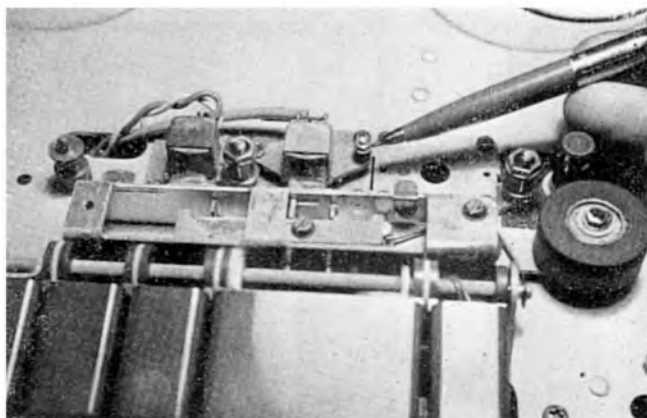
This is a crudely simplified explanation: a lot has gone into head design, but it would need a complete article to give even a smattering of the details. For our purpose, we need consider first the types of heads and next their specifications. There are three heads, Record, Playback and Erase. Often, the first two are combined in a single unit, switching selecting the appropriate circuits. In some cases, all three functions have been

performed by a combination head. Better-class machines generally employ separate record and replay heads, and, of course, a separate erase head.

Head impedances depend upon several other factors of design. Recording head impedance should be low in comparison with the impedance of the signal source so that the head current should be fairly independent of frequency. (Remembering that a head is mainly inductive, and that head design is deliberately tailored to have a resonant frequency above that of the bias frequency to prevent shunting of the bias.)

Playback heads, however, present a different problem. In the first place, gap dimensions are more critical, and as signals which it must deal with are much smaller than those energising the recording head, design parameters are more exacting. To obtain maximum output voltage, the playback head should have a high impedance—or alternatively, have a low impedance working into a step-up transformer. The resonant frequency should not lie within the frequency range that the instrument is recording. A low impedance has an advantage of lower

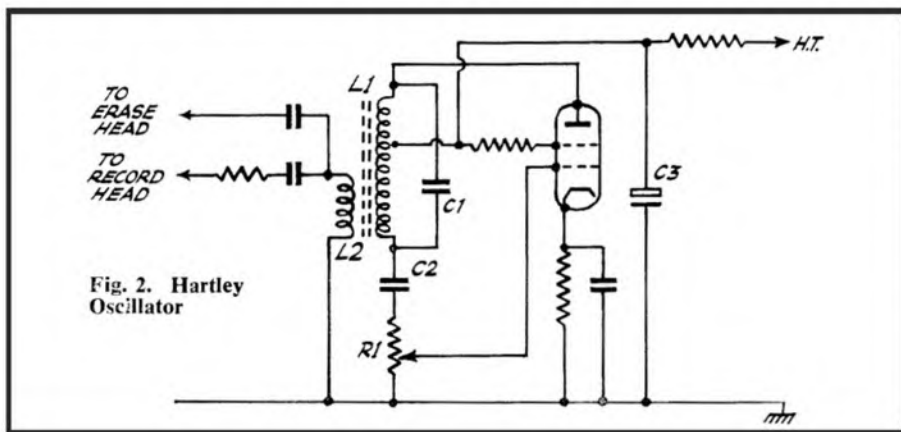
Typical head assembly, showing spring-loaded head mounting plate adjusting screw. Note the space provided for mounting a third head. Mu-metal head shield completely encloses head except for polished facing



as opposed to mechanical greasing and oiling is referred to here) is carried out, head wear on domestic machines should not be a great problem. Lack of care can result in a rapid deterioration in head facings, etc.,

HYSTERESIS LOOP. Graph of magnetic flux (B) plotted against the magnetising force (H) producing it. This gives a cycle of magnetisation, as shown in Fig. 3, demonstrating the effect of remanence of magnetic materials. (Residual magnetism left when energising force has diminished or is removed.) The value of B when H has dropped to zero is the residual magnetism, and the reverse force needed to reduce B to zero is known as the coercivity. Units used are: magnetising force (H), in Oersts and Flux density (B) in Gauss. Coercivity is measured in Oersts.

HYSTERESIS MOTOR. Type of induction motor with the armature surrounded by a thin ring of magnetically hard material, which becomes highly magnetised. Speed depends on the voltage to a great extent. One variation of the synchronous hysteresis type is the "outer-rotor" method of structure, with the rotor having a pronounced fly-wheel effect. These are more expensive than the simple shaded-pole type used in cheaper machines, but have better characteristics



hum voltages and less stringent shielding being necessary.

From this it can be seen that combination heads, as used on the majority of low- and middle-price domestic machines, are necessarily a compromise. It says much for such people as Miniflux, Bradmatic, Bogen, etc., that the eventual product is so effective.

Erase heads present a totally different problem. The gap is comparatively wide to allow a large number of magnetic field reversals during the passage of the tape past the head. In some cases, two successive gaps are arranged to facilitate this. The inductance is often tuned to resonate at the erase frequency to obtain maximum power. Ring-type heads are popular, using laminated cores of Radio-metal or silicon steel, with a higher saturation point than the mumetal used for R/P heads. Laminations are kept as thin as possible to eliminate eddy-current losses. Overheating due to the erase power is a problem that again often necessitates some compromise. The erase frequency is most important, and should not be altered for a specific head design.

Self-oscillating erase heads have been developed, and are likely to be employed quite widely in domestic machines of the future. They are particularly suitable for transistor tape recorder designs.

HEAD WEAR. Many bogeys have been raised on this subject. Modern design certainly reduces high-frequency losses due to head wear, and if the routine of cleaning and lubrication (tape and head lubrication,

reducing gap depth, increasing reluctance and magnetic flux through the gap. This results in a marked high-frequency loss.

HISS. Noise produced by combination of random frequencies. Tape hiss may be evidence of head wear or a magnetised playback head.

HUM. Low-frequency noise, usually the result of stray pick-up of mains frequency due to inefficient screening. Hum level is an important factor in specifications of a tape recorder. Hum and noise levels may be quoted as a composite figure, in terms of decibels down on full output. For example, a specification of -45dB may be quoted. A combined hum and noise level of -60dB is considered to be satisfactory, and a level of -90dB indicates a hum and noise factor that is quite inaudible.

Measurements of hum and noise level may be made "weighted" or "unweighted." In the former case, the frequency response is adjusted to give a matching to the ear's response at low listening levels. (See also *Signal-to-noise ratio*, and *Weighting*.)

HUB. The centre of the spool carrier or turntable, usually consisting of a raised spindle with flanges. Dimensions are standardised, the principal standards being the European and the NAB.

HUB-LOCK. Method of securing the spool on the carrier, by spring clips loaded in the hub, top screws or clamps or spring-loaded bolt action in the spool itself.

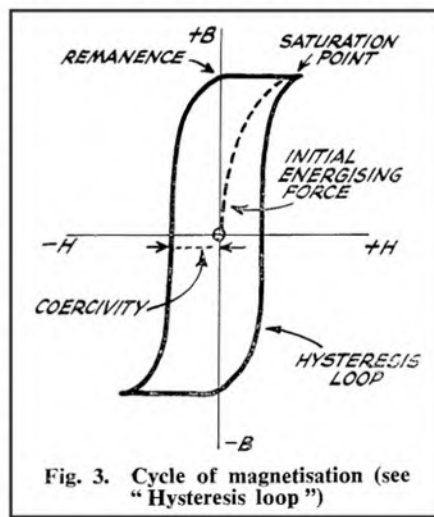
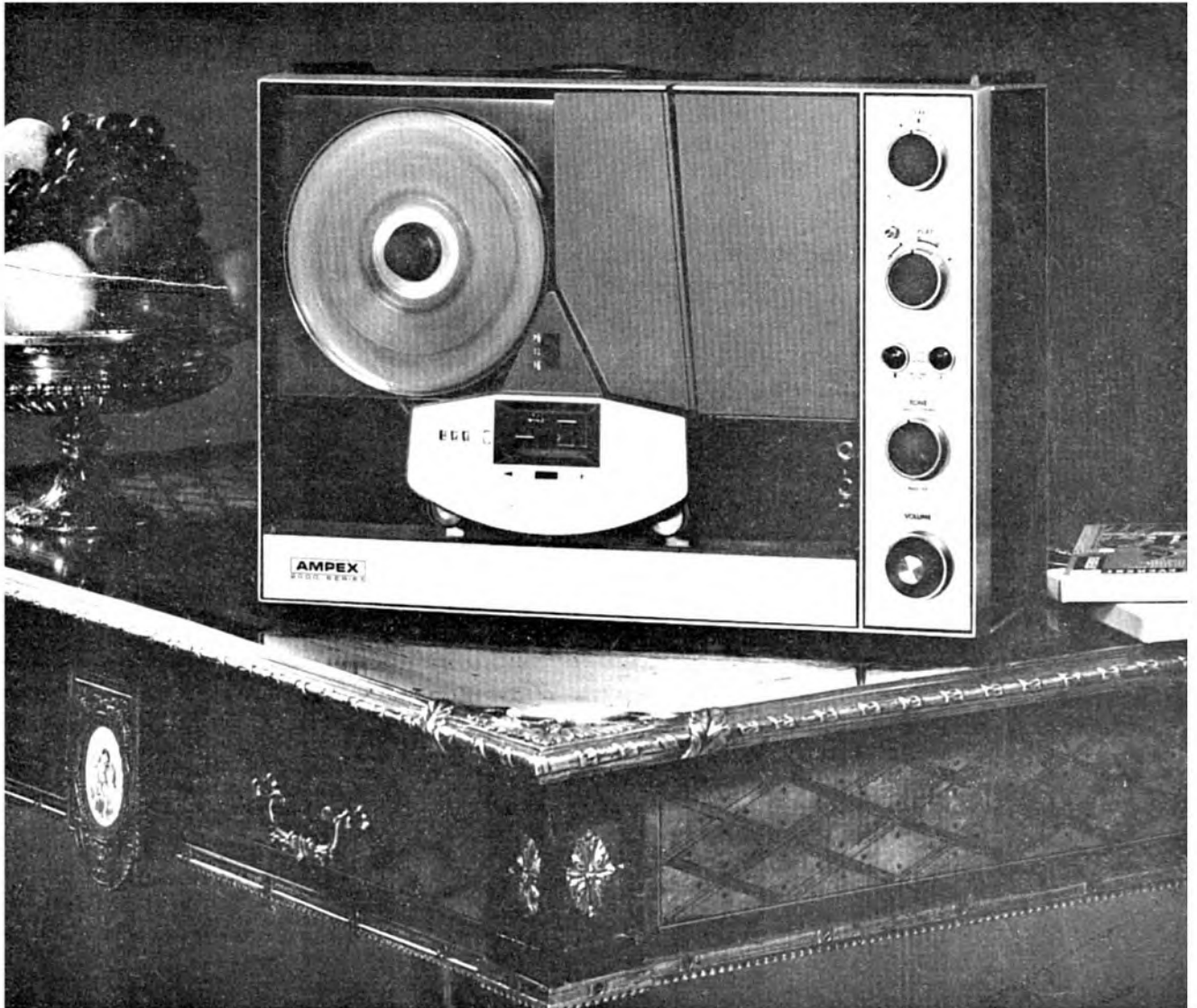


Fig. 3. Cycle of magnetisation (see "Hysteresis loop")

under varying load conditions. The non-synchronous type has good torque characteristics but speed varies with loading, making it suitable for spooling rather than capstan drive.

INCHING. Technique of moving the tape in controlled small amounts, used for editing or monitoring. Widely employed in dictation machines, and can be effected by electrical or mechanical means.

CONTINUED NEXT MONTH



STRICTLY FOR THE EARS OF PERFECTIONISTS —the Ampex 2000 series stereo tape recorders

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TEST

BENCH

GRUNDIG TK400

By H. B. Hadden

FOR a long time now, we have been able to buy automatic motor cars with no conventional gear change levers, and for a few years automatic cameras which set their own apertures and shutter speeds have been available for those who wanted them. Not until quite recently has this type of automation been applied to tape recorders. Several manufacturers are producing models with some form of automatic control of the recording level, so that use of a level meter and record gain control becomes unnecessary. This particular model, the Grundig TK400, incorporates such a system, which the makers call their "Magic Ear." But more of this later.

The TK400 is a mains-operated recorder having dimensions of only $13\frac{1}{2} \times 11\frac{1}{2} \times 6\frac{1}{2}$ inches, and weighing approximately 20 lb. In spite of its small size the TK400 will accommodate spools up to seven inches in diameter, although the lid cannot be closed with spools of this size on the machine. Two tape speeds are available, $7\frac{1}{2}$ and $3\frac{1}{2}$ ips, a welcome change to see the higher speed present in a machine in this price range. The machine records monophonically on four tracks, and the maximum running time for the 1700 ft. reel of tape supplied with the machine is six hours.

The machine is valve operated, the amplifier having four valves and two metal rectifiers. It delivers four watts output power into the $4\frac{1}{2} \times 2\frac{1}{2}$ inch elliptical loudspeaker.

The deck and amplifier controls are all mounted on the top of the machine, and are easily accessible. From the left hand side of the machine, the first control is the mains on/off switch, combined with the replay tone control. Concentrically mounted with this control is the loudspeaker on/off switch, for use when the extension loudspeaker socket is being used. Next to this is the playback volume control, and mounted concentrically with this is the switch for the selection of the correct operation of the "magic ear" control for the recording of speech or music. Above these controls is the thumb wheel reset for the digital tape position indicator.

In the middle of the front of the machine is the single control giving fast forward and rewind, and on the right hand side the record/play switch. This cannot be moved into the record position until the red record safety button has been pressed, thus avoiding the accidental erasure of valuable

tapes. The speed change switch is at the top of the deck plate, between the tape spools; the operation of this is slightly different from usual in that it must not be moved unless the machine is switched on.

The input and output sockets are also to be found on the deck of the machine. On the left-hand side are two output sockets, one for connecting monitoring earphones when recording, and the other a socket for extension loudspeaker. On the right-hand side is the input socket, which serves for both



microphone and the now common connection giving recording and playback facilities with external equipment. All sockets are of the DIN type.

The main feature of this machine, the "Magic Ear," or automatic volume control, which operates on record, deserves a special mention. The inclusion of this circuit removes the necessity for a record gain control and of the associated recording level indicator. Incidentally I found that the absence of this last produced a curious psychological effect, in that there is no indication whatever that the machine is actually recording, and it was almost impossible to believe that it was!

The control circuit works by taking a sample of the signal being fed to the record head, amplifying it, and then deriving a voltage which is used to control the amplification of a special valve in the recording amplifier. The bigger the signal going into the machine, the bigger this voltage, and the less amplification this valve will give. Thus it is virtually impossible to overload the machine. If a very big signal is applied, distortion occurs, but this will not happen under normal operating conditions. Any system of this type has two major possible snags. Firstly it is not possible to effect changes in gain instantaneously; it takes time for the gain to be reduced, and yet more time for it to increase again after the high peak has passed. For ideal operation, the

reduction of gain should happen as quickly as possible, whilst the recovery should be somewhat slower, if unpleasant jerking effects are to be avoided. Slightly different conditions apply whether speech or music are being recorded, and on this machine the only control on the record amplifier is a switch changing the speed of recovery for these two functions. The recovery time on music is set much longer than that on speech, so that quiet passages following loud ones are not turned up too quickly, thus destroying the musical effect.

This effect of destroying the dynamic range of a musical composition is the main objection to these automatic systems, and the reason why they are not often used by professional workers, except when special effects are desired, the general effect produced being one of flattening the sound, removing much, if not all, of the light and shade. I for one wish that this machine had a means of disabling the automatic system for, say, the recording of serious music. Much popular music is already severely compressed, and so the effect is not so noticeable.

In the event this machine performed well. Because of the "Magic Ear" feature it was not possible to make any reliable measurement of frequency response, since the gain of the amplifier changed, only very slightly, between the various frequency tones as they were being recorded. This change would not be significant on music or speech, but when measurements are being made accurately, it is sufficient to make them unreliable. However, on the practical tests listening confirmed that the frequency response was very good, and probably up to the maker's specification. Wow and flutter were quite satisfactory. The general impression is of a good little machine, very well suited to the recordist who is just beginning the hobby, or for the person who does not want to be bothered with too many technicalities.

The machine is supplied with microphone and recording lead, and I can recommend it as a good buy at 47 guineas.

Manufacturer's Specifications

- Maximum spool size: Seven inches.
- Recording sense: Four-track.
- Tape speeds: $7\frac{1}{2}$ and $3\frac{1}{2}$ ips ± 2 per cent.
- Playing time: Six hours (1,700 ft., double-play tape).
- Frequency response: 40-16,000 cps + 3-5 dB at $7\frac{1}{2}$ ips; 40-15,000 cps + 3-5 dB at $3\frac{1}{2}$ ips.
- Wow and flutter: ± 2 per cent.
- Output power: Four watts (approx.).
- Loudspeaker: $4\frac{1}{2} \times 3\frac{1}{2}$ inch elliptical with ceramic magnet.
- Outputs: High (700 mV across 15 K ohms); ext. loudspeaker (5 ohms); earphone (11 volts across 220 K ohms).
- Hum and noise level: From high impedance output 47 dB ($3\frac{1}{2}$ ips), 49 dB ($7\frac{1}{2}$ ips).
- Inputs: 2.2 mV-45 mV across 1.5 M ohms.
- Mains voltage: 110, 130, 220, 240 volts, 50 cycles, AC only.
- Power consumption: Sixty watts (approx.).
- Fuses: 1A-105/125 volts; 0.5A-200/240 volts; 125 mA-HT: all surge resisting.
- Valves: EF86, EF83, ECC81, ECL86 plus two metal rectifiers.
- Dimensions: $13\frac{1}{2} \times 11 \times 6$ inches.
- Weight: 20 lb. (approx.).
- Price: 47 guineas.

Manufacturers: Grundig (Great Britain) Limited, Newlands Park, Sydenham, London, S.E.26.



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Tape records reviewed

CLASSICS An album that is well worth having



By Edward Greenfield

PROKOFIEV. "Chout" (the Buffoon)—Ballet Suite. London Symphony Orchest conducted by Walter Susskind. WRC (TCM 65), 3½ ips, mono, 29s. 6d.

Prokofiev wrote his ballet "Chout" on a grotesque Russian fairy story, and both the grotesqueness of the story and the surrounding circumstances of the First World War (most of the music was written in 1915) are reflected in really bitter music. So much so that when it was first given by the Diaghilev ballet company after the war, it was condemned for its excessive modernism and ugliness. Such a judgment would seem odd to most of us nowadays, for by current standards of modernism "Chout" is an easy score with grinding dissonances and harsh orchestration, it is true, but with many characteristic Russian-style melodies and a wit which is rare in modern music.

It is certainly one of Prokofiev's more difficult works, and what it needs is a really brilliant performance and recording. That is what it receives on this tape, originally an Everest recording. When the disc version first appeared several years ago I counted it the finest mono recording I had then heard, and though 3½ ips tape hardly covers the very highest frequency range, the combination of brilliance and a vividly real sense of atmosphere is most impressive.

Many who would not normally venture upon such a work will find the tape well worth having simply for demonstration of exotic orchestral sounds brilliantly recorded.

Familiar tunes by happy Mrs. Mills

POPULAR



By Don Wedge

MUSIC FOR ANYTIME. Mrs. Mills with accompaniment by Geoff Love. Parlophone (TA-PMC 1254), 3½ ips, mono, 35s.

Happy Mrs. Mills gives six medleys on this album in her usual jolly, rollicking piano style. All are good for a pub sing-along. The tunes are almost all very

familiar (but who knows the words of *Tangerine?*). Very likeable corn.

THE MEXICAN WAY. Pepe Jaramillo with accompaniment by Geoff Love. Parlophone (TA-PMC 1253), 3½ ips, mono, 35s.

A year ago EMI mounted a big campaign to launch Pepe Jaramillo as a record artist without the benefits of television and stage exposure which usually come the way of such attractions.

They succeeded in building a following for him—big enough to justify the release of his records in tape form.

Jaramillo is a pleasant pianist in the heavy bass-melody style. He picks his way through a series of pseudo-Latin standards like *Spanish Harlem*, *Lisboa Antigua* and the latest bossa nova national anthem *Girl From Ipanema*. It's music to grace any cocktail party.

WHEN IN ROME. Cliff Richard and the Shadows with Norrie Paramor and his Orchestra. Columbia (TA-33SX 1762), 3½ ips, mono, 35s.

Cliff Richard has an immense following on the Continent and has fostered it by a series of records in foreign languages. Nearly all have been issued in Britain with reasonable success.

This is his Italian effort. It includes *Don't Talk To Him* as *Non L'Ascoltare*, one of his big international hits, as well as several other standards like *Arrivederci Roma*, *Come Prima*, *Volare* and *Autumn Concerto*.

He makes foreign language listening very easy.

THE SOUND OF THE SHADOWS. The Shadows with the Norrie Paramor Strings. Columbia (TA-33SX 1736), 3½ ips, mono, 35s.

This is an interesting album including standard tunes like *Brazil* (which gets a very effective treatment by the Shadows' bell-like guitars) with interesting new compositions.

Blue Sky, *Blue Sea*, *Blue Me* written by Shadows' John Rostill and Bruce Welch is particularly effective with its setting of the quartet's guitars among Norrie Paramor's orchestra.

In fact, five of the fourteen numbers are by members of the group. It's clear that when they eventually put away their instruments and shiny suits they will still have a long career as pop writers.

TELL HER YOU LOVE HER. Frank Sinatra. Capitol (TA-T 1919), 3½ ips, mono, 35s.

There is a highly familiar air to this package of old Frank Sinatra numbers. The title track is not so familiar but renderings of *Love Is Here To Stay*, *Can't We Be Friends*, *Makin' Whoopee*, and *Night And Day* are very familiar.

So it's in the less well-known titles—like *Weep They Will* and *Ill Wind*—that the appeal lies in this record.

It's as masterfully sung as his best albums. It has superb, driving arrangements. But it would be best to check your existing Sinatra titles before buying.

ACK'S BACK. Mr. Acker Bilk and his Paramount Jazz Band. Columbia (TA-33SX 1747), 3½ ips, mono, 35s.

Acker Bilk was the leader of the trad boom that preceded the beat age inspired by the Beatles, three—yes, three—years ago.

As with all booms, the leaders tend to continue after the craze has died away.

Acker Bilk remains an entertaining stage act and a listenable record artist.

This, his first album for some time, marks a musical development towards mainstream jazz rather than the trad Dixieland that was once so popular.

Bilk's fruity voice is heard on several of the tracks, notably *Judy*, an old Hoagy Carmichael song.

The new musical style is most noticeable on Charlie Shavers' composition *Undecided* and in the many solos of guitarist Tony Pitt.

STEVE RACE—TAKE ONE. Steve Race and orchestra. WRC (TT 453), 3½ ips, mono. 29s. 6d.

Steve Race was responsible for the best British dance band record of recent years when he recorded the *Dance to the TV Themes* album for WRC a while ago.

It was a high standard to set and a hard one to live up to. This album consists of music from films; seven of the twelve numbers being film title themes.

If it doesn't reach the same high standard, it is because Race has over-reached himself in an attempt to create original virtuosity-type dance band arrangements.

Excellent performed and recorded though it may be, somehow the arranging seems to be that little bit too tricky.

ROSEMARY CLOONEY SWINGS SOFTLY. WRC (TT 491), 3½ ips, mono. 29s. 6d.

Rosemary Clooney zoomed to fame in the early fifties with such hits as *Come On 'A My House*. Her following in Britain has declined to rather a greater extent than it has in America.

At the same time, she seems to have developed into a much fuller, maturer singer, as indeed time's passage would lead one to expect. Gone are the frightful gimmicks.

On this record she sings warmly through such standards as *Looking for a Boy* and *For You*. But most of the album comprises a refreshing collection of lesser-known songs. I liked particularly the Jerry Livingstone-Ray Evans composition, *Got To Keep It Simple*, which ends the album.

PRETTY BABY. Dean Martin with accompaniment directed by Gus Levene. WRC (TT 490), 3½ ips, mono. 29s. 6d.

Dean Martin has taken the art of the relaxed singer to the ultimate. This album is a collection of songs from way back that are perfect for him.

As well as the title number there's *Only Forever*, *Maybe*, *Once in a While* and eight others which perfectly match his mood.

Corry . . . but beautifully done.

BRIEFLY

Among other 3½ ips mono tapes recently released are two from the World Record Club by Dinah Shore. *Somebody Loves Me* with Andre Previn and his Orchestra (TT 429) is a relaxed album, full of Dinah Shore's unnerving vibrato that so easily becomes a warble. It's not for me.

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

"Capitol," "Co'umbia," "Liberty," "M.G.M." "Parlophone" and "Stateside": 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.

"Global": Global Products, 14, Underwood Road, Rothwell, Northamptonshire.

Though less typical of her, *Dinah*, Yes Indeed (TT 408) is indeed more worthwhile. Perhaps it's the magic of Nelson Riddle's accompaniment—forceful, swinging — that makes it a memorable performance of better songs.

Columbia issued the Seekers' *A World of our Own* (TA-33SX 1722) using the title of their biggest hit. The album style is much more in keeping with their chart records than that of their previous World Record Club releases. They offer a happy, jangly folk music but hide their biggest asset, girl singer Judith Durham.

The same label has *Catch Us If You Can* (TA-33SX 1756), the songs written by the Dave Clark Five and played and sung by them in the film of the same name. The movie was so bad it was hard to credit the success of the songs. Heard separately they seem excellent. There's a lot of good pop to be heard.

Stateside brings *Gene Pitney's More Big Sixteen* (TA-SL 10132) by the pop singer who, of them all, is going to last and become a Buddy Greco, if not a Sinatra. In the sixteen numbers there's not one standard but a choice selection of fine 1965 pop songs.

From another vintage is WRC's *Our Love Story* (TT 431) featuring the husband and wife singing duo, Gordon and Sheila Macrae. It's got the feel of a big theatre-restaurant with two excellent performers going through a selection of top songs. One to listen to and admire.

This tape is brief, brash and boisterous JAZZ
By Mike J. Gale



STEVE LANE'S FAMOUS SOUTHERN STOMPERS. Personnel: Steve Lane, cnt; Alex Revell, clt; Mick Cliff, tbn; Dave Hill, bbs; Geoff Walker, bjo; Bob Gough, pno, and Geoff Blackwell, dms. Global (6591), 3½ ips, mono, 21s.

In total contrast to the two albums reviewed last month "Steve Lane's Famous Southern Stompers" is brief, boisterous and brash with liberal doses of infectious enthusiasm which, on reflection, makes up to some extent for any lack of technical achievement both musically and in the standard of recording.

Even so, allowing for production disappointments, they seem insensitive to each other with ragged phrasing being more evident on the non-vocals. Indeed, I felt that something was missing and a clue may lie with the three vocals which are unquestionably the album's best moments; Pam Heagren and Pam White take, respectively, *See if I Care* and *Cakewalking Babies* with Pam White showing up again on *Papa De Da Da*. Their considerable melodic authority and equal amount of feeling sparks off something approaching a discernable rapport between the band. In all, a little too raw.

The rest: *King Porter Stomp*, *Zig Zag Rag*, *Mindin' My Business*, *Snake Hips*, and *I'm Happy with You*.

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(SEE PAGES 468 & 469)

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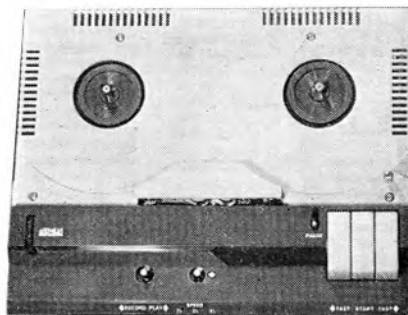
**NEW TAPE DECK
BY
MAGNAVOX**

A NEW tape deck is announced by Magnavox Ltd. who have recently announced their 363 tape transporter.

The new unit, illustrated below, replaces the familiar Studio deck, and is already providing the basis for some tape recorders, including the latest Truvox model described this month.

Available for two- or four-track applications, the single-motor 363 incorporates three tape speeds, $7\frac{1}{2}$, $3\frac{3}{4}$, and $1\frac{7}{8}$ ips. Wow and flutter figures are quoted as 0.15 per cent at $7\frac{1}{2}$ ips, and 0.25 per cent at $3\frac{3}{4}$ ips. Rewind for a seven-inch reel of standard-play tape (1,200 ft.) is given as 120-150 seconds at 230 volts.

Among the features of the new unit are rocker-type control keys, a pause control, three-figure digital rev. counter, a straight



channel for tape loading, and an interlock system to prevent inadvertent depression of two keys.

The 363 Tape Transporter measures $13\frac{1}{2}$ x 11 x $5\frac{1}{4}$ (below mounting board) inches. It weighs 10 lb.

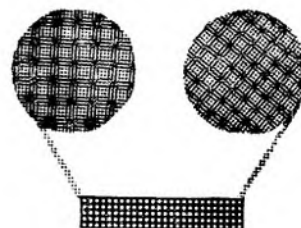
Choice of heads available include Acos, Bogen and Marriot quarter-track record and erase heads and Bradmatic half-track record and erase heads.

The price is £14 19s. 6d.

Magnavox Electronics Co. Ltd., Alfred's Way, By-Pass Road, Barking, Essex.

**TRUVOX ANNOUNCE
THEIR
LATEST MODEL**

FIRST recorder to be announced incorporating the new Magnavox 363 tape deck is the Series 40 by Truvox. Their new model is the 44 guinea three speed, half-track recorder, illustrated above right. With a four-track version at the same price, the Series 40 has a quoted frequency response ± 3 dB at all speeds of 40-15,000 cps at $7\frac{1}{2}$ ips, 40-10,000 cps at $3\frac{3}{4}$ ips, and 40-5,000 cps at $1\frac{7}{8}$ ips. Wow and flutter is rated as



better than 0.15, 0.25 and 0.35 per cent respectively; signal-to-noise ratio as better than 46 dB; and hum and noise as better than 42 dB.



It will accommodate seven-inch reels providing a playing time of 64 minutes per track using standard-play tape (1,200 ft.) at $3\frac{3}{4}$ ips; rewind being achieved within two minutes.

Among the features are facilities for mixing, monitoring, three digit rev. counter, pause control, meter recording level indicator, and fully interlocked rocker-type push button controls. The four-track version also features parallel-track. The built-in 8 x 5 inch loudspeaker handles the power output rated at three watts.

Inputs are provided for microphone and radio/pick-up; outputs for extension loudspeaker and amplifier.

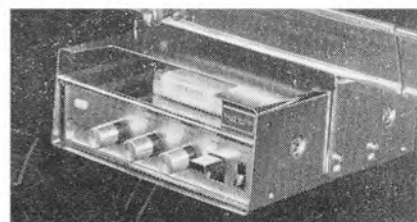
The size is $16\frac{1}{2}$ x 14 x 8 inches and the weight is 22 lb. A moving coil microphone, reel of tape (1,200 ft.) and recording lead are included in the price.

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

**STEREO CASSETTE
PLAYER
BY NEW FIRM**

LATEST cassette-loaded tape player to appear was seen at the recent London Motor Show. Introduced by a newcomer to the tape market, this was the Craig Car-Stereo unit designed primarily for use in cars.

The unit, illustrated below, measures $9\frac{1}{2}$ x $9\frac{1}{2}$ x $3\frac{3}{4}$ inches, and weighs only 11 lb. Completely self-contained and fully transistorised it provides a power output of 2½



watts per channel through the two five-inch-round 8 oms loudspeaker units supplied.

Main selling point of the Car-Stereo, manufactured in Japan, is the availability of over 9,000 stereo tape record titles supplied on endless tape cassettes. Vocal, instrumental and orchestral pieces are included in three versions of these cassettes playing for 30 minutes (40s.), one hour (69s. 6d.) or two hours (£7 and above). Artists include Ella Fitzgerald, Ray Charles, Connie Francis, New World Theatre Orchestra and the London Philharmonic.

Playback is achieved by simply inserting the cassette in the Car-Stereo, and selecting one pair of channels from the four-track head system.

The Car-Stereo, also available for use in boats, and later for domestic installations, retails at 46 guineas including speakers.

Hasmick Promotions Ltd., 13 Elvaston Place, London, S.W.7.

NEW MULTI-FEATURE RECORDER BY FERGUSON

RECENT addition to the Ferguson range of recorders is the 3214, a three-speed four-track machine selling at 44 guineas.

Their new model, illustrated below, incorporates the Thorn Mk. II tape deck, featuring tape speeds of 7½, 3½, and 1½ ips. The quoted frequency ranges 40-18,000 cps, 40-14,000 cps and 40-7,000 cps respectively, and wow and flutter is rated as better than 0.15 per cent, 0.2 per cent, and 0.25 per cent (RMS). Signal-to-noise ratio is given as 40 dB unweighted. With accommodation for seven-inch spools, the 3214 provides a



playing time of 64 minutes per track using standard-play tape (1,200 ft.) at 3½ ips; re-wind being achieved within 2½ minutes.

Among the wide range of features are facilities for parallel-track playback, mixing, monitoring, straight-through amplification, pause control, automatic tape end stop remote control stop/start with hand or foot control, four-digit rev. counter, interlocking push-button controls, facilities for tape "inching," and independent loudspeaker volume control.

The 3214 features a 7 x 4-inch elliptical built-in loudspeaker handling the power output of three watts (10 per cent distortion). Inputs include microphone (1.5 mV into 10 M ohms), radio (1.5 mV into 68 K ohms) and pick-up 180 mV into 200-250 K ohms and 75 mV into 3.3 M ohms). Outputs are for extension loudspeaker (30hms) and radio or external amplifier (1 volt at 22 K ohms). A further accessory socket provides facilities for remote pause control, stereo tape replay, second track dubbing, and slide projector synchronisation.

Power supply required is 200-250 volts, 50 cycles. AC. Power consumption is rated as 60 watts.

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Ferguson Radio Division, Thorn Electrical Industries Ltd., Thorn House, Upper St. Martin's Lane, London, W.C.2.

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Reslosound Ltd., 24 Upper Brook Street, Mayfair, London, W.1.

DESIGN CHANGE BY FERROGRAPH

A FURTHER departure from the standard design of their tape recorders is announced by Ferrograph, who have recently introduced the teak-sided finish to their machines (illustrated below). Designed specifically as one component in a hi-fi



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All current Ferrograph models can be supplied in the new concept and are distinguished from standard finish by the suffix "T" added to the model number. Prices remain unchanged whichever styling is required.

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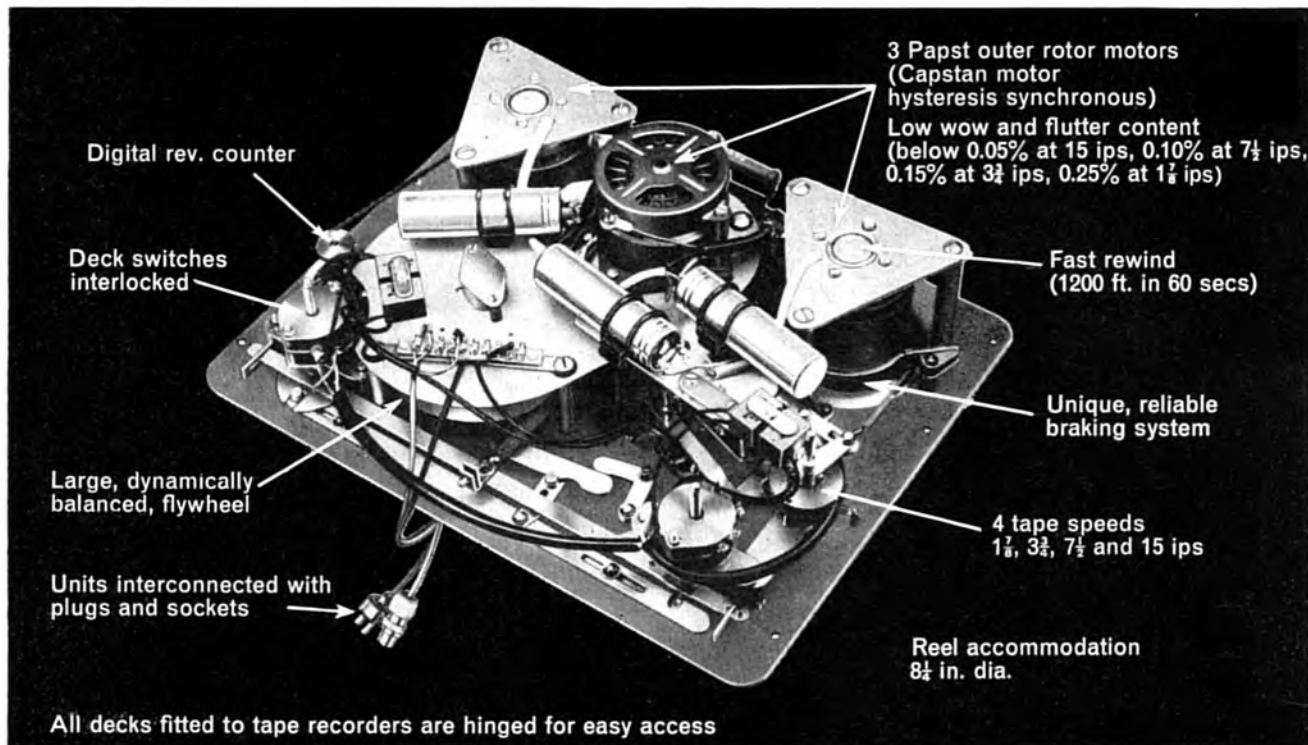
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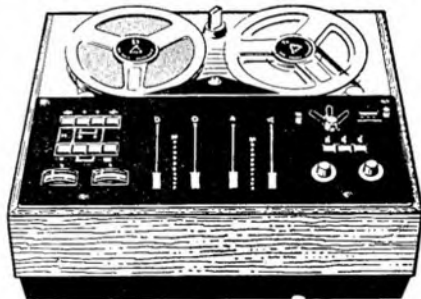
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AUSTRALIA

News of the first local tape club to be formed in Australia is received from Richard Collinson former secretary of the North London club in the UK. He has initiated the formation of a club in Melbourne, and already has achieved a membership of twenty enthusiasts. They hope to take possession of their own meeting rooms before the end of the year.

Meanwhile meetings are being held fortnightly in members' homes. To date activities have included recording techniques and equipment demonstrations, a live music recording session with a Melbourne folk-singing group, a documentary tape on a local holiday spot, and a special talk by club president Harry Jay, who described how to fake stereo recordings from a mono source.

Mr. Collinson's own effort included a lecture on making a feature tape using only one machine. He illustrated his talk with "Gurjincrat"—a short narrative on the beauty of a Mediterranean island—the tape which won for him the North London tape club's 1962 "Tape of the Year" award.

Plans are being made by members to record local sounds of interest, and the compilation of a library of Australian bird calls.

Secretary: Richard Collinson, 46, Warrigal Road, Surrey Hills, Melbourne, Australia.

BRIGHTON

A change of venue for the Brighton club, with members now meeting at 14a, St. George's Place. First of their meetings at the new HQ saw Louis Goldberg demonstrating the latest Ferrograph tape recorder. Vast improvement being noticed with the acoustics of the new venue.

The following meeting was the club's AGM, when the existing committee were re-elected for a further year.

The club is at present "putting its tapes in order." All tapes will be filed, and erased where necessary, within a few weeks before members continue with the rapidly filling programme of activities for the winter months. Already planned are a visit to the BBC studios at Southampton, various manufacturers' demonstrations, and Carol Service recording sessions.

The club's internal competition closes on November 30. This is an open contest with tapes on any subject eligible. Recent activities have included a history of the club on tape; short talk on the history of tape recording given by Eric Savage, playback of the winning tapes in the British Tape Recording Contest, and film and tape of the Brighton Speed Trials.

Secretary: Keith W. Upton, 47, Kingsley Road, Brighton, Sussex.

LEEDS

A full programme is reported by the members of the Leeds society who have recently completed a run of meetings covering many aspects of tape recording.

First of these was on September 3 when the secretary, treasurer and chairman respectively explained and demonstrated wow, flutter and hum. This was followed (September 17) with a dubbing exercise using a Tandberg Series Six and the Revox models E36 and 736. Ron Crossley entertained the members on October 1 with a tape/

slide show using a Ferrograph recorder and Lowther speakers. His programme included "Monas Isle" and "Glorious Gurnsey." The following meeting (October 15) included a demonstration of the Bang & Olufsen equipment, presented by the Tape Recorder Centre (Halifax).

Between meeting activities have included attendance of the Yorkshire Federation of Tape Recording meeting at the Blind Institute at Hull on September 19. Beechome Blind Tape Recording Club were the hosts and other clubs present include those from Hull, York and Doncaster. A further visit was made later in the month to a BBC 2 publicity show in a Leeds Departmental store. Member Chris Eagle managed to obtain an interview with "Pick of the Pops" star and B.T.R. Contest judge Alan Freeman and on October 7 William Rowe and George Penock visited Granada TV studios in Manchester. George interviewed Brian Trueman of the programme "Scene" whilst Bill operated his home-built tape recorder.

Individual services provided by members included chairman Mike Plant's visit to Chapel Allerton Hospital to supply background music for a coffee evening.

Secretary: W. H. Rowe, 34, Bristol Road, Leeds 7, Yorkshire.

NEW ZEALAND

Latest report from New Zealand is of the formation of a South Auckland branch of the country-wide tape society, by Les Robson of 35, Halsey Road, Manurewa. This recent formation increases the total number of branches to seven in the North Island. A further sixty enthusiasts have yet to form local branches in the South Island.

Secretary: National HQ, PO Box 5368, Auckland, New Zealand.

NORWICH

A change of secretary is announced for the Norwich society, with John Butcher assuming the role vacated by Mr. Spinks. Their meeting dates are also changed: the club now meets on the fourth Thursday in the month at the Assembly House, Theatre Street (sole exception is the December meeting, to be held on the 3rd Thursday).

Among programmes lined up for the winter months was a lecture illustrated with slides on "Video Recording Tape" (October 28). Presenting the talk was E. A. Meacock, Senior Engineer of Anglia Television. Future items include the use of a tape recorder in a Gramophone Society, featuring taped interviews with famous people, presented by Reg Williamson. On November 25, Mr. Williamson will again hold the chair with an "Any Questions" session. This will be followed by a live recording session with "The Echoes" beat group.

The new year programme includes a visit by Fi-Cord International (Jan 27), "Cine-Sound" talk (Feb 24), "Norfolk Dialect" (March 24) and their AGM (April 28).

Secretary: John F. Butcher, 4, Hillvue Close, Hill Road, New Costessey, Norwich. NOR 17K.

REDBRIDGE

The Ilford tape society has been renamed. At their 6th AGM held in September, members decided to substitute Redbridge for Ilford. At the meeting, the serving committee were re-elected, except for the chairman whose place was taken by Dave Budd.

Among their recent activities has been a visit by Mr. Richard Keen, BBC producer familiar to readers of this column as a keen supporter of the tape clubs. His talk that evening covered production and editing techniques. Earlier, the members were entertained by Mr. R. W. Raine, who welcomed the club to the Brenell fac-

tory in Liverpool Road for a demonstration of the Brenell range of recorders.

Another recent demonstration, this time at the club, was held some weeks later when the members were shown the Bang & Olufsen range of equipment, presented by Studio 99.

The club has successfully carried out an experiment to provide a fuller programme of lectures, etc. Members draw from a hat a subject on which he is to provide a brief lecture at the following meeting. The programme, "Lectures," includes such items as frequency response, reverberation and echo, and "The Decibel."

Secretary: Dave Bolton, 99 Seventh Avenue, Manor Park, London, E.12.

RUGBY

A programme of cine film and 35 mm slides occupied most of a recent meeting of the Rugby club at the Central Hotel in Church Street. The programme, presented by Dick Cotgrove was produced from material gathered during his family's recent four-month trip by boat to Australia. Two guests for the evening—shortly to make the same trip—were very eager to see the Cotgrove's impression of life "down-under." One of these guests later won first prize in the club's regular tape quiz contest. Second award went to Jean Crane attending her first meeting since the birth of her son.

The evening's assembly saw the opening of the new room extension and bar facilities since the club changed its venue.

During the evening president Len Stephens reported on the visit club members recently made to the Warwick and Leamington society. The Warwick members are making a return visit on November 18. Later, arrangements were made for Rugby members to visit the Leicester club for a meeting scheduled for October 28.

Winter activities continue with the resumption of work in presenting tape/slide programmes to local homes for the aged and other organisations.

Len Stephens set the ball rolling with a visit to the Ladies' Round Table at Dunton Bassett in Leicestershire. He has also agreed to provide sound effects for a play being produced by the Roade W.I. in Northamptonshire during November, and make recordings for two local young ladies who wish to send Christmas greetings to their relations in America. The club is to invite a number of local blind persons to their Christmas Social on December 16.

Local dealer and club member J. W. Berwick was to attend the club on November 4 to present prizes for the club's summer tape contest. The Len Stephens Trophy, an engraved Cup, was to be awarded to the winners.

Plans for the winter contest are now being considered. Members will compete for the Terry Davis Trophy held at present by Keith Fisher. During the November 4 meeting Keith's feature tape on a local beat group, "The Cataracts," was to be heard.

Secretary: Michael Brown, 219 Clifton Road, Rugby, Warwickshire.

WALTHAMSTOW

An inter-club tape competition was organised during October, when members of the Walthamstow society travelled to the headquarters of the Redbridge (formerly Ilford) tape club.

A double win was recorded by the guest club, with Ken Perks collecting first prize for his entry "The Human Brain" and Don Cooper taking second place with his documentary feature on glider flying.

Later in the month members heard and discussed progress on their documentary feature tape concerning the British Oxygen Company.

Secretary: Tony Norton, 22 Lechmere Avenue, Chigwell, Essex.

TAPE EXCHANGES

Tape recorder owners who wish to contact others with similar interests, to exchange news and views by tape are invited to fill in and return the form on page 498 giving their name, age, address, special hobby or interest for this free service.

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

Holloway, Kenneth (29). 60, Mason Lathe Road, Shire Green, Sheffield, Yorkshire. Hi-fi, electronic organ, c & w music. 7½, 3½, 1½ ips. Seven-inch spool. Carousel and Fidelity recorders.

Houslop, Paul (21). 27, Rodenhurst Road, Clapham, London, S.W.4. Motor-cycling, light classical and pop music. 7½, 3½, 1½ ips. Seven-inch spool. Brenell Mk 5M.

Howard, Raymond (35). 69, Oliver's Mount, Sheffield 9, Yorkshire. Police work, Scouts, Swedish language. 7½, 3½ ips. Seven-inch spool. Sweden only.

Hughes, Private G. (?). Royal Army Medical Corps, 24, Field Ambulance, B.F.P.O. 69. German language, classical music. 7½, 3½, 1½ ips. Seven-inch spool. National RS-753, four-track stereo. Germany, Austria.

Jamieson, William A. (35). 12, Lidgett Mount, Leeds 8, Yorkshire. Live opera, opera archives. 7½, 3½ ips. Seven-inch spool. Tandberg Series 62. Argentina, Berlin, Milan.

Rees, Thomas (30). Flat 66, Grag Court, Halifax, Yorkshire. Football, boxing. 3½ ips. Seven-inch spool. Elizabethan Automatic. London area.

Richardson, Terence (24). 15, Pleydell Road, Northampton. Photography, motoring. 3½ ips. 5½-inch spool. Fidelity Arystil Minor, four-track. Female contacts preferred.

Roberts, Glynn D. (30). Flat 4, Woodlands, Congleton Road, Aldreley Ledge, Cheshire. Photography, travel, outdoor life, films, sport, music. 3½ ips. Seven-inch spool. Philips EL35/41, four-track. Male contacts preferred.

Rudd, Michael (22). 12, Nightingale Road, Guildford, Surrey. Sound effects, photography, motoring, modern jazz and classical music. 7½, 3½, 1½ ips. Seven-inch spool. Truvox R92. Germany, UK, USA, South Africa.

Sanders, Malcolm (?). 11, Milebrook Grove, Bartley Green, Birmingham 32, Warwickshire. Photography, travel, r & b and pop music. 7½, 3½ ips. 8½-inch spool. Ferrograph 5/A. Female contacts preferred in UK, Europe, Scandinavia, Australia.

Savage, R. F. (21). 22, Pine Wood Road, Midsomer Norton, near Bath, Somerset. 8mm cine, 35mm colour photography, bird recording, pop music. 7½, 3½ ips. Seven-inch spool. Robuk RK3, Telefunken M300, battery portable. New Zealand, Australia.

Soates, Terence (32). 22, Winchester Road, Orpington, Kent. Travel, people, most music. 7½, 3½ ips. 8½-inch spool. Ferrograph 5A/N. UK, USA, Canada.

Scott, David W. M. (20). 10, Shaftesbury Road, Dundee, Scotland. Engineering, motoring. 3½ ips. Four-track spool. Philips EL3541, four-track. USA, Australia, Canada, UK.

Sculthorpe, Cleve (30). 82, Lichfield Road, Colehill, near Birmingham. 35mm and cine photography, travel, camping, outdoor life, sunbathing, oil painting, all music. 3½, 1½ ips. Five-inch spool. Ferguson and Grundig recorders. Male contacts only in Canada, USA.

Shaw, John W. (41). 35, Red Courts, Brandon, Co. Durham, Read-

(Continued on page 498)

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TAPE EXCHANGES

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TAPE EXCHANGES

(Continued from page 497)

ing, poetry, classical music. 3½ ips. 5½-inch spool. Grundig TK14.
Shirley, Terrance P. (36). 9, Holly Lodge Green, Crossycillio, Cwmbran, Monmouthshire. Speedway, collecting badges. 7½, 3½, 1½ ips. Seven-inch spool. Elizabethan LZ29, four-track. Poland, Sweden, Germany, USA, Finland, Denmark.
Sims, Ron (42). 30, Admiralty Street, Keyham, Plymouth, Devon. 8mm cine and 35mm photography. 7½, 3½, 1½ ips. Seven-inch spool. Bang & Olufsen two- and four-track stereo. Male contacts only in UK.
Skelsey, Martin (30). Briary Cottage, Plough Lane, Ewhurst, Surrey. Radio, bird-watching, aircraft. 3½ ips. 5½-inch spool. Philips EL3554.
Smart, E. J. (36). 125, Blackwell Buildings, Fulbourne Street, London, E.1. Italian language, opera, classical music. 3½ ips. 5½-inch spool. Grundig TK18. Italy. Letters not required.
Smith, Douglas (29). Pettit's Farm, Heathway, Dagenham, Essex. Travel, motor-cycling, music. 7½, 3½, 1½ ips. Seven-inch spool. Challenge recorder, UK, Europe.

TEENAGE READERS

Attwood, John (17). 21, Park Hill, Carshalton, Surrey. Guitar-playing,

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folk and pop music. 3½ ips. 5½-inch spool. Home-built BSR TD2 tape deck, four-track. Female contacts, same age, in UK.
Penny, Simon (16). 14, Ravensfield Gardens, Ewell, Surrey. Travel, most music. 7½, 3½, 1½ ips. Seven-inch spool. Martin Recordakit. Holland, USA, Canada, Germany.

OVERSEAS READERS

Cilia, Victor (33). 73, St. Thomas Street, Hamrun, Malta, GC. Languages, travel, music. 3½ ips. Five-inch spool. Telefunken M300. Male contacts only, letters first please.
Farson, A. M. (25). 603, Gaylene, Visagie Street, Pretoria, South Africa. Hi-fi, folk and classical music. 15, 7½, 3½ ips. Seven-inch spool. Nagra III, full-track.
Gwilym, Arnold Griffith (22). 37, Jalan Sungei Kelian, Hillside, Penang, Malaysia. 35mm photography, hi-fi. 7½, 3½, 1½ ips. Seven-inch spool. Akai 44S.
Osborne, Roy A. (32). Parkerville Children's Homes, Parkerville, Western Australia. Sound effects, bird song recording, all music. 7½, 3½, 1½ ips. Five-inch spool. Telefunken M96 and M300 battery portable, Philips, four-track. Letters not required.
Rycroft, Albert (30). S.A.C., 3149125, 2 X Site, RAF Tengah, G.P.O. Singapore 24. Photography, travel. 3½ ips. 5½-inch spool. Grundig TK17.
Shedden, Alastair (19). 7, Vredenberg Circus, Rosebank, Cape, South Africa. 8mm cine, travel, theatre, music. 3½ ips. Three-inch spool. Sanyo MR200.

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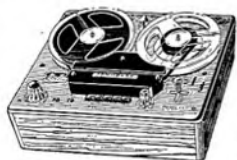
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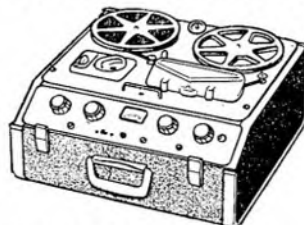
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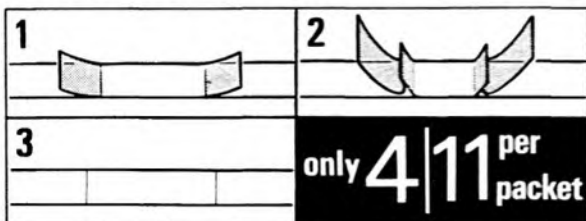
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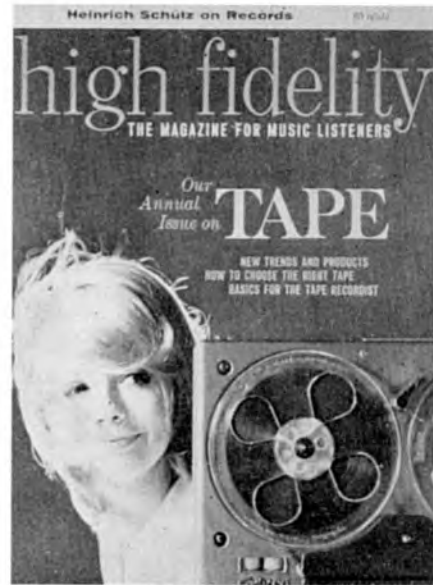


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FLAP A

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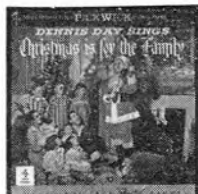
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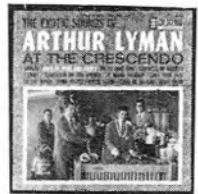
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