

DECEMBER 1964

# TAPE

RECORDING MAGAZINE

24



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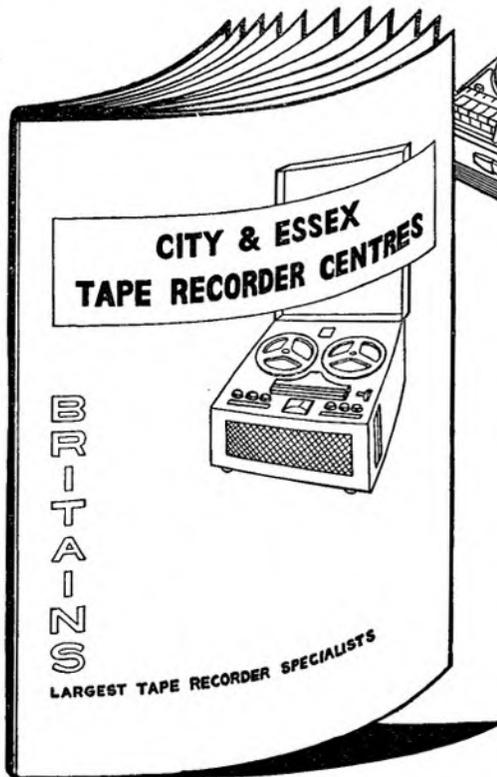
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Our new Kings Cross showrooms are the largest in Britain with over 850 sq. ft. devoted exclusively to recording and Hi-Fi equipment. Easily reached by road, rail, tube, bus, coach, etc., being situated only 150 yds. from Kings Cross main line station and some 100 yds. from world famous Bravingtons. Ample parking space with no restrictions, meters, etc. Open all day Saturday. Half-day Thursday.

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(TRM 2)



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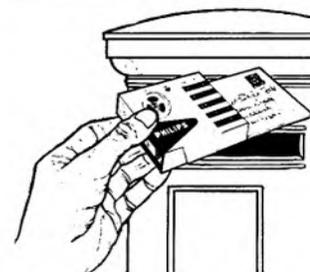
# Gift-problem solver!



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—give it to every tape recorder owner you know!

You solve a lot of gift problems when you give Philips Tape to tape recorder owners—and you give a lot of pleasure! For Philips Tape, sensitive, long-lasting and easy to identify in colour-coded packs, makes every tape recorder sound better than ever. It's easy to give, too—the 5", 5 $\frac{3}{4}$ " and 7" reel sizes come in colourful Christmas wrappers. Buy Philips Tape from your local dealer now. Ask your friends to give it to *you* too!



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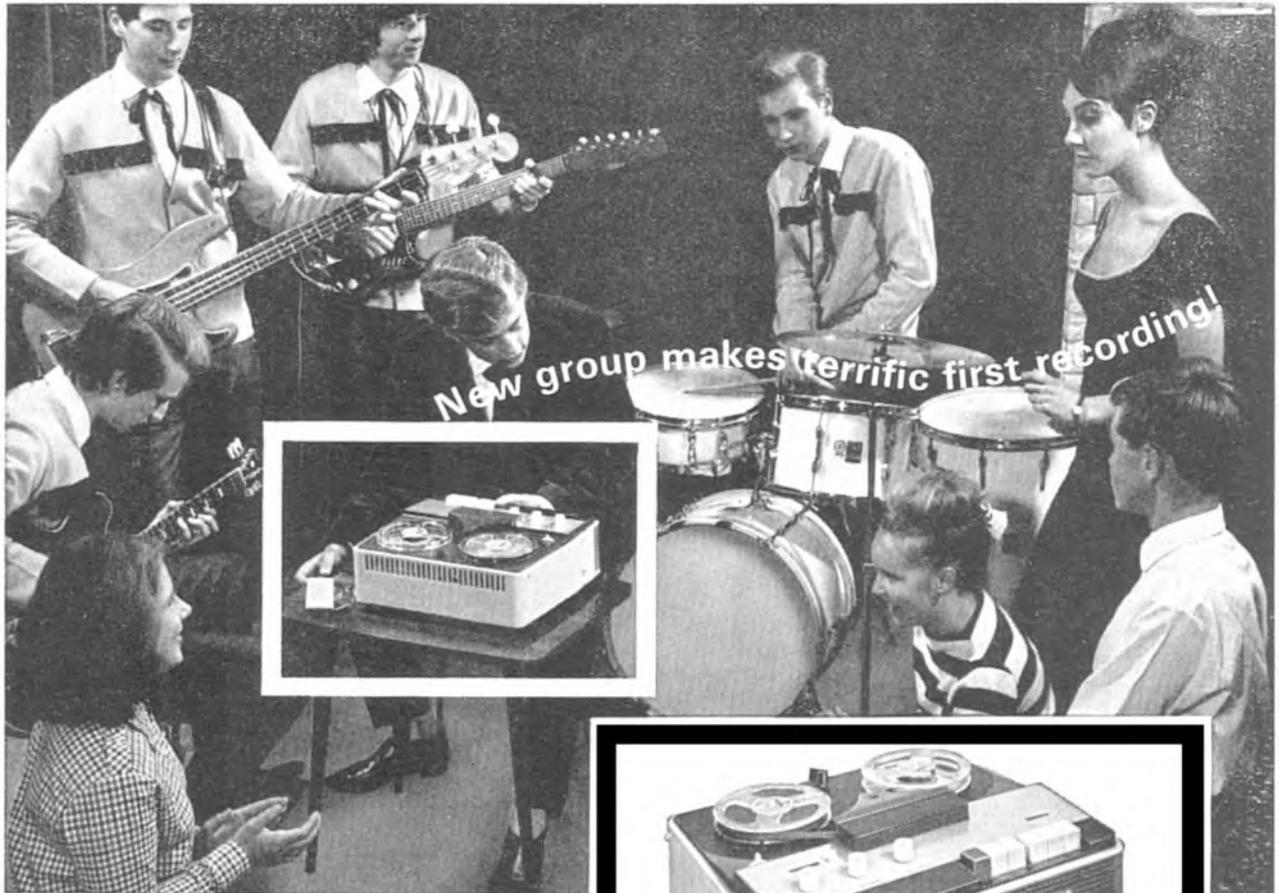
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Tape Recorder  
Model EL 3548: 39 gns.**



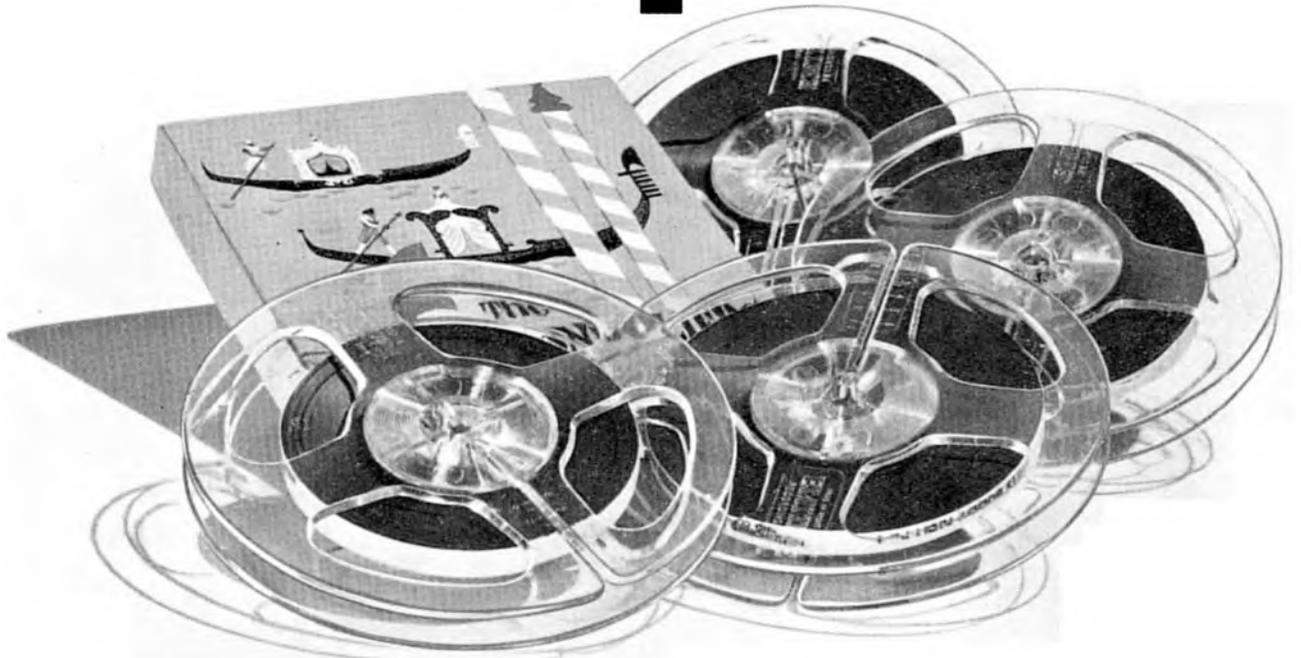
**Two speeds. Four tracks. Gives over 17 hours playing time with 7" reel of DP tape.**

THIS GROUP is great. But they didn't really know it till they got Philips New Look Tape Recorder and put themselves on tape. Now, for the first time, however, they're able to hear themselves as other people hear them. They can iron out parts of their performance which aren't good enough. They can practise and record and improve until they're perfect – thanks to Philips Model EL3548. And this wonderful machine offers *you* a lot, too. With it you can learn languages and to play musical instruments, build up a library of music and plays, record all the sounds you want to remember – in fact you'll get more out of life than ever before! Find out just how much Model EL3548 has to give you – ask for a demonstration today. See two other first-class Philips Tape Recorders, too – Model EL3552 at 24 gns and Model EL3586 at 25 gns – they're all at your local Philips dealer *now!*

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**32** Star cast and orchestra stage all the famous songs. Getting to Know You, Hello Young Lovers, I Whistle a Happy Tune, Shall We Dance, etc. Also in stereo.



**25** Ian Wallace, Joyce Blair and chorus. Some Enchanted Evening, I'm In Love With a Wonderful Guy, and all the unforgettable songs from this great musical. Also in stereo.



**28** Star cast sing Beautiful Murray, Out of My Dreams, Surrey with the Fringe, People Will Say We're in Love and all the immortal hits. Also in stereo.



**59** The silken voice of Nat King Cole in 'Walkin' Because You're Mine, You'll Never Grow Old, Baby Won't You Say You Love Me and 8 more.



**1** Tchaikovsky Swan Lake. John Hollingsworth conducts the Sinfonia of London in a great performance of this well-loved ballet music. Also in stereo.



**10** Tchaikovsky Violin Concerto. Tony Spivakovsky with Walter Goehr and LSO in a superb performance of this melodious work. Also in stereo.



**11** Dvorak Symphony No. 5—From The New World. Leopold Ludwig conducts the London Symphony Orchestra in a dramatic and moving performance. Also in stereo.



**12** Beethoven Eroica Symphony. Josef Krips conducts the London Symphony Orchestra in a masterly performance of this monumental work. Also in stereo.



**63** Cuban Carnival, Yesterdays, Blues in My Heart, and eight more great numbers played by George Shearing with vocals by Dakota Staton.



**74** Superb Sarah Vaughan in ten great numbers. If I Loved You, Saturday, It's Delovely, You'll find me There, etc. Every one a hit.



**108** Stormy Weather Sweet Mc, Charlot, Somebody Loves Me, Hold Me I Can't Give You Anything But Love. 7 more top numbers all with fabulous Peggy Lee.



**108** Mel Tormé's velvet voice in 12 top numbers. Body and Soul, Round Midnight, Blues in the Night, That Old Feeling, Where Can I Go Without You, etc.



**14** Tchaikovsky Symphony No. 5. Sir Malcolm Sargent and LSO combine to give this famous symphony a dramatic and colourful rendering. Also in stereo.



**44** Leopold Ludwig and LSO combine brilliantly in an exciting double: two of the world's greatest symphonies receive vivid new interpretations. Also in stereo.



**53** These two suites, containing some of Bizet's most thrilling music, are given magnificent performances by the Sinfonia of London under Muir Mathieson. Also in stereo.



**54** Tchaikovsky's last and greatest symphony, is here given a splendidly moving rendering by the Sinfonia of London conducted by Muir Mathieson. Also in stereo.



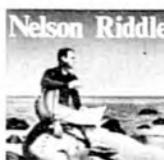
**77** In the Mood, Bugle-Call Choo, Serenade in Blue—9 original tracks by the immortal Glenn Miller and his band.



**48** Deep in My Heart, Drinking Song, Serenade—all the old favourites fresher than ever with Marion Grimaldi, Linden Singers and Orchestra. Also in stereo.



**30** Ian Carmichael, Joyce Blair star cast and orchestra. As Long As He Needs Me, Consider Yourself, all the hit numbers from Lionel Bart's great show. Also in stereo.



**71** The smooth sound of the Nelson Riddle Orchestra in Touch of Your Lips, Body and Soul, The Tender Touch, As you Desire Me—11 favourites in all.



**117** Strauss most popular waltzes—Blue Danube Emperor, Vienna Woods, Voices of Spring, Roses from South, Vienna Symphony under Rudel. Also in stereo.



**111** Ravel's Bolero, Dances Sorcerer's Apprentice, Chabrier, España, Fire Dance and Dance of Terres Scherchen conducts Vienna S O. Also in stereo.



**112** Faust Ballet Music: Dance of the Hours, Aida March, Ballet Music, Coq d'Or, Hymn to the Sun. Vienna Symph. conducted by Aliberti. Also in stereo.



**163** Take a pair of sparkling eyes' and all the great songs from Gilbert and Sullivan's Gondoliers. Full star cast. Westminster S.O. Fairs, Linden Singers. Also in stereo.

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# 30!

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Look for yourself—hear for yourself, with no obligation at all! On this page you'll find classics, jazz, shows, light music, ballet, folk songs—and now, too, the very latest pop sound to make your parties swing with the new beat! And all this music forms just a mere fraction of the vast World Record Club treasure-house that opens for you when you join.

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Choose any 4 of the great 3½ ips mono tapes shown here. (Or, if you prefer, order 12" LPs—mono and stereo—every WRC release is produced on both disc and tape). Mark the numbers on the coupon and post it to us—with no money.

We'll send you all four selections on 7 days' free trial, for you to decide for yourself whether or not they're as wonderful as we claim! If you don't like them, send them back and that's all. If you do keep them, send us 30/- only for all four (plus 3/- post/packing) and you're a member of WRC, entitled to all the membership benefits of Britain's first and greatest record club. Simple enough?

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Eleven famous experts, including The Countess of Harewood, Sir Arthur Bliss, Richard Attenborough, Cyril Ornadel and Steve Race regularly advise WRC on its whole recording programme.

### UNCONDITIONAL GUARANTEE

Every WRC release is fully guaranteed and produced to the very highest

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Sounds fantastic? Then take advantage of this privilege offer now. Today. And get your first four recordings now for the unbelievably low price of only 30/- (you send no money now). It costs you only a 2½d stamp to obtain for yourself a free, no-obligation trial in your own home for 7 days. You'll be glad you did it!

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- **Free 48-page magazine!** Full of colour, pictures, prizes, special offers!
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**BEAT '65 are all issued as \* 3½ IPS MONO TAPES**  
\* HI-FI MONO 12" LPs \* FULL SPECTRUM STEREO 12" LPs... all one price—you! choose

128. The Telectars, The Young Ones and other top 1964 Groups capture the newest of the new sounds and pay tribute to the lads who made these titles great: A Hard Day's Night, Needles and Pins, She Loves You, Have I The Right, The House of The Rising Sun, All Over Now, Bits and Pieces, Don't Throw Your Love Away, Glad All Over, The Rise and Fall of Flingel Bunt, I'll Cry Instead and I Want To Hold Your Hand.

126. 12 of the top hit songs of 1964, recreated for you on this great new release honouring the singers who made them famous. Hello Dolly, You're My World, You Were

Made For Me, Secret Love, I Believe, Anyone Who Had A Heart, Do-Wah-Diddy-Diddy, My Boy Lollipop, World Without Love, As Usual, Can't Buy Me Love, My Guy.

130. The complete party background: shake and jump to side 1 and (later) smooch to side 2... Ray Ellington sings If I Had A Hammer, Let There Be Love, Fly Me To The Moon and nine more.

129. Name your 12 top hits from musicals in the last 10 years. Here they are, newly sung and arranged with today's wide sound and big beat. If I Ruled The World, Getting To Know You, Some Enchanted Evening, Tonight, 8 other hits.

102. A swinging new release for every mood! Dance with Steve Race and his Orchestra to new arrangements of Z Cars, Coronation Street, Dr. Kildare, Perry Mason and 8 more.

131. If you like blues then this is a must. The great Ray Charles sings See See Rider, Kiss Me Baby, Blues is My Name and 8 more.

127. The Seekers, new pace-setting group from Australia, already regulars on TV—and a great hit at the Palladium. The Ox Driving Song, The Eriksky Love Lilt, Chilly Winds and 9 more.

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Please send me

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Choice No. 2

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Place names only in boxes

\* Tick for 12" LPs

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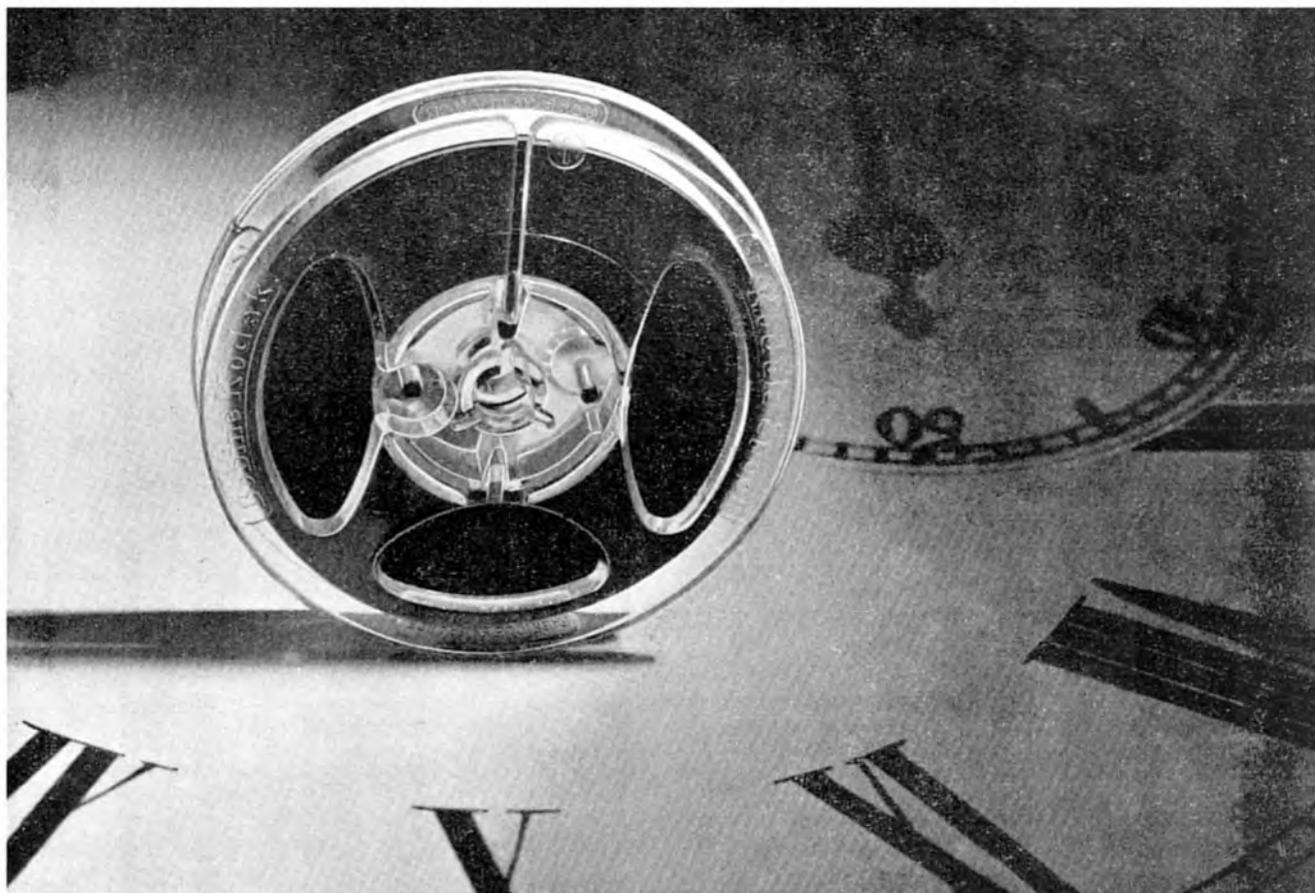
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This offer applies in Gt. Britain & N. Ireland only.

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3 1/4-inch reel . . . 5 1/2 hours playing time!

## Now Kodak introduce the world's first quadruple play tape

From today your battery portable has mains recorder capacity. Kodak's amazing new Quadruple Play tape provides an unprecedented 5 1/2 hours playing time—that's more than 100 'pops' or all Beethoven's nine symphonies—on a single 3 1/4-inch reel.\* Small as they are, these reels hold no less than 800 feet of tape. And for smaller recorders 3-inch reels are available. But if your recorder has a greater reel capacity you're even better off. 4-inch reels—holding 1,200 ft. of tape and giving 7 1/4 hours playing time—are on the way.

### Strength with length

The polyester base of this remarkable new tape is specially pre-stretched and treated to overcome distortion during use. In fact, Kodak Quadruple Play tape is tough enough to stand up to every stress likely to be met with under all normal conditions, no matter what the make of your battery recorder.

### Same famous quality

Unique experience of emulsion coating methods, gained during years at the top of the film business, gives Kodak unrivalled advantages in the manufacture of tape. For instance, the magnetic oxide layer on Kodak tapes is laid down to an accuracy of *millionths* of an inch. No other tapes in the world

can give you the combination of uniformity, sensitivity and high signal-to-noise ratio that stems from this.

### Planned for low-speeds

New Kodak Quadruple Play Tape, with its characteristics planned especially for low-speed operation, provides in addition, superior high frequency response at low tape speeds. And, microscopically thin as it is, print-through is up by only 2dB on standard play tape. Let new Kodak Quadruple Play Tape extend your enjoyment the very next time you buy tape.

*\*1 1/2 i.p.s. 4-track*

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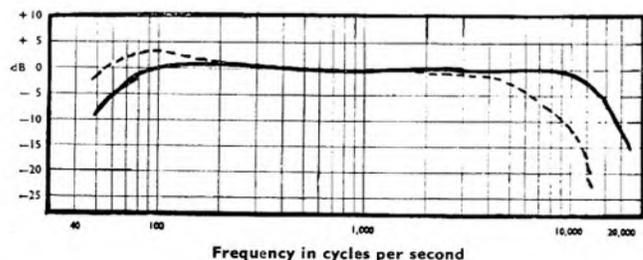
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2

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## TK 230-S STEREO



Record/Replay response via radio socket  $7\frac{1}{2}$  ips (solid line),  $3\frac{1}{2}$  ips (broken line).

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Reprinted from TAPE Recording Magazine—September 1964.

## SABAFON TK 230-S

By John Borwick

The Sabafon TK 230-S is a full stereo/mono, four-track recorder with the popular speeds of  $7\frac{1}{2}$  and  $3\frac{1}{2}$  ips. Its price of 88 guineas puts this new machine in the class favoured by serious tape users and critical lovers of recorded music. But I would say that the handsome design, the high standard of technical performance and the versatile choice of record/replay facilities will give the owner a pride of possession that fully justifies the cost.

... Spinning tape guides are fitted, and another unusual but valuable feature is a tape cleaning pad which bears against the coated side of the tape during fast rewinding. You may judge the usefulness of such cleaning from the fact that I found a considerable quantity of oxide dust had collected on this pad (instead of on the heads) after two or three weeks of normal use.

Three-pin reversible sockets are fitted for left and right external speakers; turning the plug enables you to mute the internal speaker or not as required. The output power is greater than one usually finds on portable tape recorders. A pair of ECL8000 valves in each channel gives ten watts mono or 5 + 5 watts stereo. The two  $6 \times 3\frac{1}{2}$  inch elliptical built-in speakers are mounted at opposite sides of the chassis.

Versatile—The mixing and trick recording possibilities on the Sabafon TK 230-S are extremely versatile. The two control knobs allow you to mix any inputs to the microphone or radio sockets with the phono input. And the latter can also be fed, for example, from another tape machine.

A "Pb" position on the selector switch allows you to listen to one track on headphones or loudspeaker while recording the other. This gives plenty of scope for recording soloist and accompaniment separately, etc.

But there is a multi-playback device which extends the possibilities even further. You can re-record the second track on to the first track, superimposing it on the first recording, while you monitor on the loudspeakers and control the volume as necessary. You now have both recordings blended on track 1, and you can then make a third synchronised recording on the sound track (erasing No. 2). This can then be superimposed on track 1, and so on.

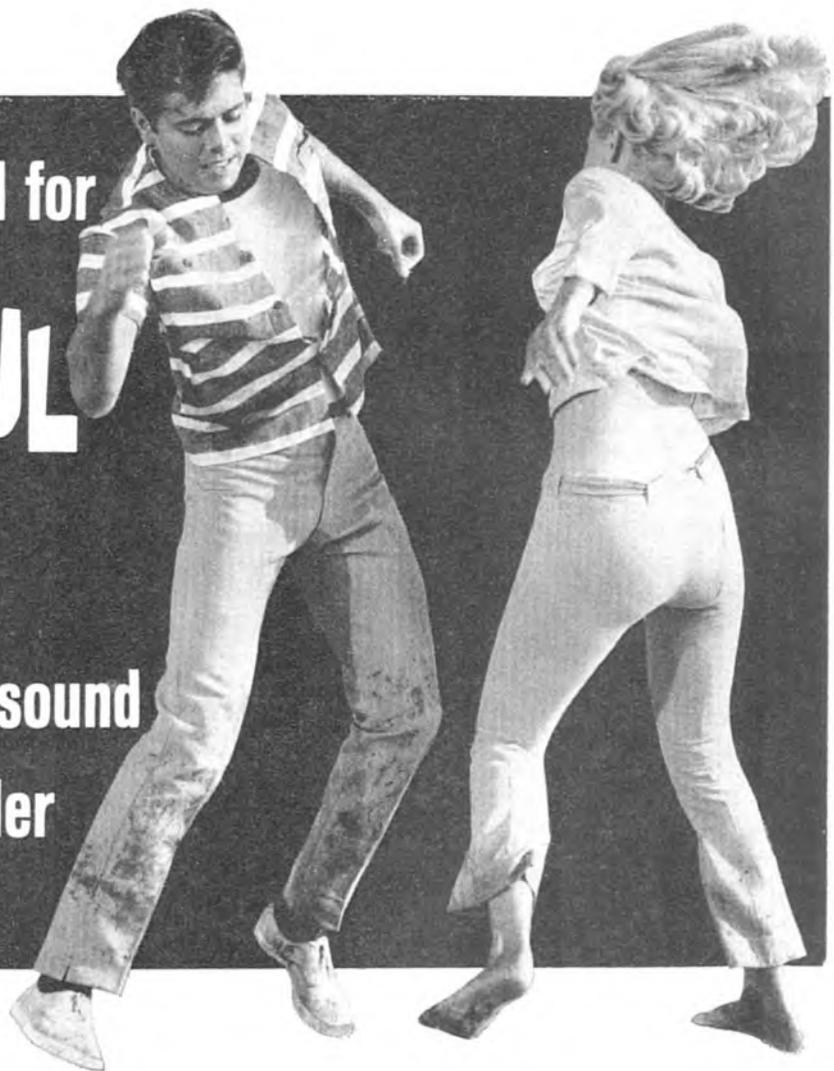
Performance—I put the machine through an exhaustive series of recording tests in all the above modes, using a selection of amateur and professional microphones. The quality of reproduction was excellent. The inherent lack of bass, which must be a feature of all built-in speakers on portable recorders, meant that recordings sounded slightly top heavy. But this soon disappeared when external speakers were used. Background noise is inaudible on normal listening, indeed the gaps between musical passages produced the best "silence" I have heard on any machines reviewed for this magazine. It is also to the credit of the mechanical precision that wow and flutter have been reduced below the level at which they can be detected on music.

To sum up, the Sabafon TK 230-S is well designed and capable of good quality reproduction of mono or stereo. The multi-track recording facilities make the machine very flexible in use and suitable for the serious recording enthusiast.

The same tape used for

# WONDERFUL LIFE

brings 'big-picture' sound  
to your tape recorder



## THE TAPE WITH THE OSCAR-WINNING RECORDING QUALITY

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- Clear Spool: *Diacetate Standard Play.*
- Red Spool: *PVC Standard Play.*
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- Blue Spool: *Polyester Double Play.*

A full range of Zonatape recording accessories includes printed leader and timing tapes supplied in 5 colours, splicing tapes and metal stop foil. These professional quality tapes are obtainable from good class dealers but in case of difficulty send to us for name and address of your nearest Zonatape stockist.

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## Mk 5 Series 2

4 tape speeds  $1\frac{1}{2}$ ,  $3\frac{1}{2}$ ,  $7\frac{1}{2}$  and 15 i.p.s. · frequency correction at all speeds · 3 motors (capstan drive—hysteresis synchronous) · low wow and flutter content—0.05% at 15 i.p.s. · 0.1% at  $7\frac{1}{2}$  i.p.s., 0.15% at  $3\frac{1}{2}$  i.p.s., 0.25% at  $1\frac{1}{2}$  i.p.s. · 4 watts power output · monitoring and superimpose facilities ·  $8\frac{1}{4}$ " dia. reels · Mk 510 for  $10\frac{1}{2}$ " dia. N.A.B. reels · fast rewind (1200 ft. in 45 secs.) · digital rev. counter.



## Mk 5 Type M

as Mk 5 Series 2 PLUS:—

Separate record and playback heads and amplifiers · recording level meter · tape monitoring while recording · separate bass and treble controls · superb finish.



## STB1

Especially designed for use with external High Fidelity amplifiers. Mono/stereo record/playback facilities with twin recording and twin playback pre-amplifiers · immediate comparison of original and recorded signals · adjustable bias level · playback facilities for  $\frac{1}{2}$  and  $\frac{1}{4}$  track mono/stereo tapes · sound-on-sound facilities · 2 edgewise meters for recording level, tape output level and bias level.

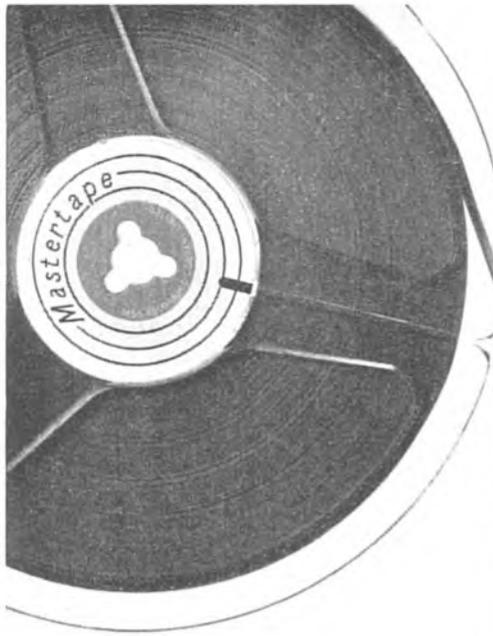
For full details of these recorders write to the sole manufacturers:—

**Brenell**

**BRENELL ENGINEERING CO. LTD**

231/5, Liverpool Road, London, N.1.

Telephone: NORTH 8271 (5 lines)



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YOUR  
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**WITH  
TRIPLE  
PLAY**



# MASTERTAPE

30 years' experience plus modern research and technical efficiency enable us to offer high grade triple play tape at a price little higher than double play. No special coating is used so that compatibility with existing ranges is assured. The super thin coating necessary for triple play tape is applied by our specially developed technique and as with other Mastertapes the coating is super calendered for long life and low friction.

Compare our prices with those of any other manufacturer and you will see the difference.

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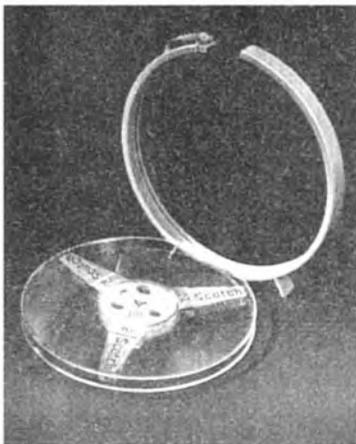


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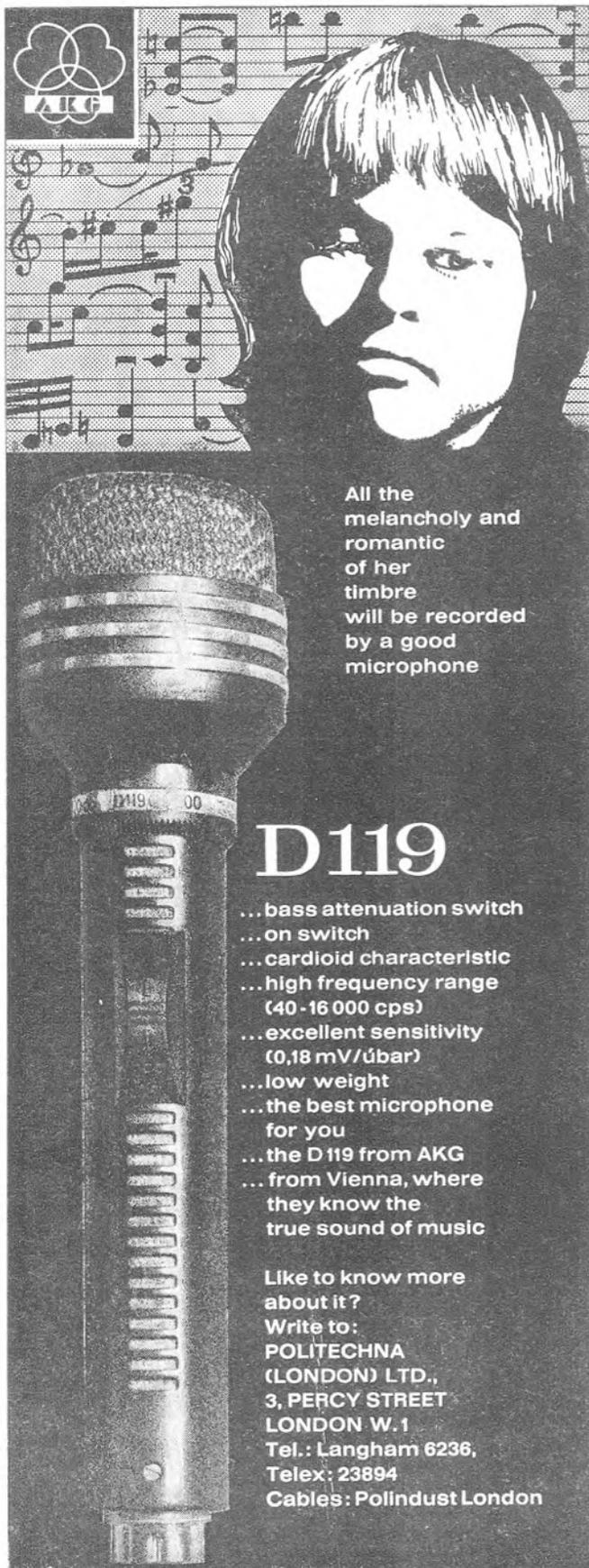
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# TAPE

RECORDING  
MAGAZINE

Vol. 8 No. 12 December 1964

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**COVER PHOTOGRAPH:** The 13th International Amateur Recording Contest, held in Lausanne last month, received the utmost co-operation and support from Radio Lausanne. Highlight of a packed social programme for delegates from the eight countries represented, was a dinner held at the 12th-Century Castle of Oran. Our photograph this month shows Swiss Trumpeters heralding the arrival of some of the guests. (See also "Tape Trends," page 490).

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## EDITORIAL

Editor,  
**R. DOUGLAS BROWN**

Assistant Editor,  
**FRED CHANDLER**

# Tape trends and tape talk

By the Editor

THE INTERNATIONAL FEDERATION of Sound Hunters (FICS) has accepted an invitation to hold its 1965 Congress in London, together with the judging of the International Amateur Recording Contest (CIMES).

Delegates representing amateur tape enthusiasts in at least eight European countries are expected to attend and the best tapes from many countries all over the world will be heard.

FICS held its Congress in London in 1959 and the BBC and leading firms in the tape industry co-operated fully with the Federation of British Tape Recording Clubs and with *TAPE Recording Magazine* to organise the event on that occasion. But those were very early days in the association of Britain with the International Federation and, with the close collaboration and fuller understanding which has developed since 1959, the objective must be to organise in 1965 the most memorable gathering of amateur tape enthusiasts ever called together.

Anyone who has been, as I have, to all the FICS Congresses since the British Affiliation began, will recognise the scope of the challenge.

The FICS and CIMES sessions which took place in Switzerland last month will long remain in the memory. Radio Lausanne gave the utmost co-operation to the Swiss amateur movement. The judging sessions took place in a splendid studio at the radio station.

The highlight of a packed social programme was undoubtedly the banquet arranged by the Swiss radio at the Castle of Oron. We rode by coach from Lausanne far into the country, after climbing high into the hills we suddenly glimpsed the castle standing magnificently floodlit above us. We crunched over the gravel in the darkness and entered the great doors of the twelfth-century castle and, as we did so, two magnificently uniformed guards in medieval scarlet uniforms raised to their lips five-foot long trumpets and greeted us with powerful blasts.

It was a never-to-be-forgotten occasion. After aperitifs in the cellars we went through a delightful stone court-

yard, where a fountain trickled coolly, and into a great banqueting-hall, heavily beamed and with giant hams turning on spits before a mighty log fire.

There we sat down and ate and drank and talked recording together, representatives from Switzerland, France, Germany, Holland, Belgium, Denmark, Austria and Britain.

FOR THE FIRST TIME this year there was a full turnout of British delegates and judges. On the jury sat Alan Stableford, Pat Stavenhagen, Mike Ray, and myself. Mike Avel and Mrs. D. Brown were there as observers. And Mrs. Phyllis Copinger, from Scotland, who is well-known to many recording enthusiasts in London and the Home Counties as well, attended as a delegate of the Union Mondiale du Voix Françaises.

It was a good year for Britain in terms of prizes won; but the British style of humour so brilliantly expressed in Ray King's "Sink Symphony" was not universally understood and I heard some suggestions that it would not make suitable broadcasting material in every country. Clearly, however, it was popular with the majority of judges.

With tape recording enthusiasts, no less than with delegates to other types of international conferences, national differences sometimes assert themselves and it was so in Switzerland this year. But it is the responsibility of those who believe in the virtue and the benefit of international collaboration to smooth away difficulties as they arise.

We have a special duty and a special opportunity to see the International Federation strengthened, consolidated, and expanded at the London Congress of 1965.

Nothing, in my view, would be a better preliminary than to see, during the months ahead, a drawing together into a more powerful national movement, of the various federations of tape recording clubs in Britain which at present lack a formal cohesion.

And obviously, nothing is more important than to ensure that the 1965 British Amateur Tape Recording Contest is the biggest and most successful in the history of the event. I believe this will be so. The Organising Committee which assumed responsibility for the 1964 Contest has already turned its attention to next year's event and will be announcing details within the next few weeks.

I have one other ambition and that is to see organised in Britain a great national get-together of tape amateurs: a study weekend or seminar, perhaps, or a training course and field exercise. Could something of the sort be combined with the 1965 International Congress, I wonder?

At any rate, let us resolve now that 1965 will be a landmark in amateur recording in Britain and in Europe.

ELSEWHERE IN THIS issue Alan Edward Beeby writes some harsh words about the BBC "Sound" programme, recently deceased. Mr. Beeby's views always deserve respect, for he is a dedicated and highly-talented amateur with a long and close association with the amateur movement.

I think he is rather unfair to the programme—which *did* include many of the items he thinks were ignored—but his opinion deserves to be heard.

In this column I several times made clear that I would have preferred the programme to have followed a rather different pattern, involving the playing and discussion of more amateur tapes, with amateurs drawn into the programme more often. I have always felt that "Sound" should be more of an "audience participation" programme.

There is no further news about its prospects of returning to the air. Discussion of what the programme should be, or private correspondence to the BBC about the sort of programme enthusiasts would prefer, seems to me very desirable.

## LAUGH WITH JEEVES



"I ran out of fancy ribbon, but I'll bet you'll never guess what I found to take its place?"

# Boredom led to the production of 'Sink Symphony'

By RAY S. KING

"CONGRATULATIONS!", "Well done!", and "We knew you had it in you," they all said. But, with apologies to Judy Garland and the words of her song: "... if you knew of all the years, of hope and fears and tears, you'd know it didn't happen overnight" ... overnight!!

"Sink Symphony" was a direct product of boredom. As a commercial traveller, away from home most nights, staying in hotel after hotel my mind searched each evening for something to do. Fortunately for me, I had persuaded my wife to go without a new washing machine in order to purchase a second-hand Fi-Cord 1A battery portable tape recorder. The Grampian DP4 microphone, also purchased second-hand, had already proved itself first class at recording trains, busy streets, weighing machines, personal conversations through bedroom walls, and a host of other off-beat and off-street noises met during my search for unusual recordings.

The hobby is a gripping one, and I inwardly felt that eventually I should meet just the type of sounds I was after; although asked the direct question I would have been as perplexed as the next enthusiast.

It was early one morning in an Exeter hotel. I had staggered to the wash-basin, damped my eyebrows, and pulled out the plug. Inspiration hit me as abruptly as it must have done Archimedes: there it was, the most beautiful noise any tape enthusiast had ever heard! "Bz-Bz-Bz-Bz-kerjink, bloop, whistle and hoot!" Everything up from 40 cycles to 12 Kc/s!

Flushed with enthusiasm, Fi-Cord to the ready, I filled and emptied the sink. Once, twice, three times! Yes, a wonderful sound. Set sound level; dummy run; start the motor; and the sound was captured.

At this stage the housemaid entered with early morning tea, and I realised that I had

forgotten my trousers. She departed hastily muttering something about "there wasn't much new..." But there was. I would be moving on that evening to Bridgwater, perhaps there would be another sink with something to offer.

For the next three months this was the routine. When booking in at hotels I would ask for a room with an old sink. I learned soon to ignore the raised eyebrows, and persisted with my inquiries. I found also, however, that even the newer sinks had something to offer.

It surprises me how few people realise what good fun tape recording can be. Many casual acquaintances, showing interest in my activities would request that I visited their room; they "had a beauty."

Recording sinks is about as hazardous as recording passing trains. The secret as always is in the initial volume setting. Fortunately with sinks one can rehearse the basin, noting the loudest passages which should just about enter the over-recording mark. I found that cutting back the input signal as the sound level rose to climax just didn't sound right. It sounds too "studio" if you know what I mean.

The pattern was set, and I think I recorded well over forty sinks during this period, and in all sincerity they were a joy to play. On arrival home each weekend I would try them out on my wife and family. Eventually the greeting from my four-year-old son Kevin became: "Got any good sinks this week, Dad?"

The first rough dubbed version of "Sink Symphony" had about thirty-five sinks, seven and a half foolscap pages of script. They could just be squeezed on to a 5¼-inch spool at 7½ ips.

In all cases I would dub from Fi-Cord to Brenell first, keeping the master intact until the final cutting to match the dubbed final version. It takes courage to cut the master, but in my experience it's the only way to get a good clean high quality programme.

I used sticky tape diagonal splices, and found that using the correct splicing tape, no problems were met with tapes parting on playback. The Fi-Cord is handy for editing

purposes. With the motor running, but without the pinch-wheel engaged, it is possible to move the tape backwards and forwards across the playback head. In this way, it is quite simple to locate the exact spot where the cut is to be made. It is a pity that not more recorders incorporate this facility.

Having been a keen amateur photographer for many years, with considerable cine experience. I knew the value of ruthless editing. Be tough with oneself. Throw away any piece which had nothing essential to offer to the story; and soon I was away.

The tape had to be punchy. Concise. More sink noise than my noise. It hurt me terribly to throw away so many gurgles, bloops and bubbles, but in the end I had seven good and contrasting examples of the most fruity sinks in south-west England.

Linked with a minimum script, hastily recorded at about two o'clock one morning, I thought "this is it, I will not play the thing again." I had heard so much of it that I felt I was no longer in a position to judge it effectively.

I loved the finished tape. Friends on whom I tried it out were polite; one or two asked if there was any chance of my Brenell getting over-heated. I got the message.

Then one day I was asked to cause a bit of fun at the local village hall by recording interviews as guests arrived for a social evening. I had always fancied myself at this lark, and with an opportunity to play with the Fi-Cord I accepted.

Playback time was during the tea-break; and I was surprised at the fun my recordings caused. One dear old lady had said: "... don't ask me to say anything, I haven't got my teeth in." I told her I wouldn't ask her to, and you can imagine the riot this extract caused when the gathering heard it.

I had taken the final edited version of "Sink Symphony" with me, and before they could start the raffle I had it going. It was amplified through an old Plessey twelve-inch speaker with all the volume that the Brenell could muster.

Naturally, they missed my introduction—who could fight village gossip at tea-break, anyway—but I resisted the natural urge to restart the tape. However, at the first gurgle a hush fell, and they listened. They laughed, and eventually they applauded.

Encouraged by the reception, that night I filled in my entry form gleaned from *TAPE Recording Magazine*. I blush to say that after posting the tape I forgot all about it. (Between you and I, when I received the letter notifying me of my award it took me an hour to find the master tape.)

And that's it. The whole story. I needn't explain the thrill winning gave me. And no-one was more surprised than I was to find the various television companies showing an interest in my tape. I get tremendous fun from tape recording, though I will admit that many of my efforts are definitely for family and friends consumption only.

Inspired by the success of "Sink Symphony" I shall go on poking my microphone up and down, in and out, around and about as many sounds as I can find. I seldom have a dull moment, experiments are to be highly commended. Microphones so often hear much more than the human ear. For instance, have you ever heard a tortoise snoring? My Fi-Cord has.

The amount of publicity my tape has received has been shattering, what with the TV appearances, broadcasts, and newspaper articles. Now local inhabitants stop me in the street and ask: "Are you the 'drain' man?" It has lately revolutionised my life—but that's another story.

# THIRTEENTH INTERNATIONAL AMATEUR RECORDING CONTEST

## RAY KING COLLECTS GRAND PRIX FOR BRITAIN AND WINS TRIP TO THE UNITED STATES

**T**HE Grand Prix for the best monaural entry in the International Recording Contest (CIMES 1964) was awarded in Lausanne on October 27 to "Sink Symphony," the five-minute documentary made by Ray S. King of Oxford.

The prize takes the form of a visit to the United States in the Spring of next year. Mr. King will sail from Le Havre on April 9 on the luxury liner *France* and will return to Havre on May 3. The prize was donated by a French travel agency.

In America a special tour will be arranged for Mr. King, in the course of which he will meet tape recording enthusiasts there. He will be with a party of French recording amateurs.

"Sink Symphony" had already been selected as the "Tape of the Year" in the 1964 British Amateur Tape Recording Contest, in which it won the Emitape Challenge Cup, a fifty guineas cash prize, and eight reels of tape. Mr. King received his prize at the Criterion, Piccadilly on November 6, when successful British competitors were invited to a party to meet the British judges and members of the Organising Committee of the British Contest.

Another British success in the International Contest was by Richard A. Margoschis, of Atherstone, Warwickshire. He took the first prize in the Technical Experiment class—as he had done earlier in the British Contest—with a tape entitled "The Songster's Fantasia." His prize was 5,000 Belgian francs, presented by Belgische Radio en Televisie.

In the Actuality section, a British tape made by Philip P. Towell, of Boston, Lincolnshire—a recording of the echo in the Baptistry at Pisa—was placed second. It was awarded as a prize a set of thirty discs comprising an anthology of Swiss music, presented by the organisers of the Swiss National Exhibition.

Britain's entry into the Schools class—a feature tape made by boys at Monkton Wyld School in Dorset, called "Modern Noah"—won a special decorative Swiss cow bell.

### THE WINNERS— AND THEIR PRIZES MONO SECTION

**GRAND PRIX:** "Sink Symphony" by Ray S. King of Great Britain.

**Award:** Transatlantic crossing on the liner "France," accommodation, travel, and facilities in the U.S.A. offered by Treasurer Tours, Paris.

*TAPE Recording Magazine International Shield.*

**COMPOSITIONS:** "I Was There" by H. Beelen of Holland.

**Award:** 1,000 Swiss francs offered by the Societe Suisse de Radiofusion et de Television.

**Second Prize:** "Sabotage" by K. Grollnigg of Austria.

**Award:** 2,500 Belgian francs offered by "Les Amis de Radio-Hainaut."

**DOCUMENTARY AND REPORTAGE:** "Goldmine Dance" by Derek Worman of South Africa.

**Award:** 1,200 Swiss francs, Philips Cup, and complete stereo recording equipment offered by Philips Industries.

**Second Prize:** "Morocco, Land of Sun" by Claud Gendre of France.

**Award:** Bang & Olufsen microphone offered by the Dutch magazine "Lyd & Ton," and an art book offered by l'Union Mondiale de Voix Francaises.

**MUSIC OR SPEECH:** "Improvisation with scales" by Georg Schreider of Germany.

**Award:** 250 Swiss francs offered by Radio Lausanne.

**Second Prize:** "The Old Baskeville Castle" by Karl Duschek of Germany.

**Award:** Five discs of Swiss music offered by L'Exposition Nationale Suisse 1964.

**ACTUALITY:** "The Letter-box" by Marcel Solmon of France.

**Award:** 5,000 Belgian francs offered by Radiodiffusion et Television Belge.

**Second Prize:** "The Music Box" by J. L. Koning of Holland.

**Award:** Six reels of Zonal tape offered by the Federation of British Tape Recording Clubs.

**TECHNICAL EXPERIMENT:** "The Songster's Fantasia" by Richard A. Margoschis of Great Britain.

**Award:** 5,000 Belgian francs offered by Belgische Radio en Televisie.

**Second Prize:** "Voyage to the Tenth Galaxy" by Bernard Pichon of Switzerland.

**Award:** Six reels of Zonal tape offered by the Federation of British Tape Recording Clubs.

**SCHOOLS:** "The Goatherd," edited by Edward Excottier of Switzerland.

**Award:** 500 French francs offered by the Federation Nationale des Industries Electroniques et le Syndicat des Industries Electroniques de Reproduction et d'Enregistrement.

**Second Prize:** "Our Friend" by Kazuko Nishioka of Japan.

**Award:** Five albums of "L'Encyclopedie audiovisuelle enfantine de la CEL Freinet de Cannes" offered by the Centre International Scolaire de Correspondance Sonore.

**Third Prize:** "Modern Noah" by Monkton Wyld School, Great Britain.

**Award:** Swiss cowbell offered by l'Association Suisse des Chasseurs de sons.

### STEREO SECTION

**GRAND PRIX:** "Contrapunctus" by Emil A. Fellman of Switzerland.

**Award:** 1,500 French francs offered by the Federation Nationale des Industries Electroniques et le Syndicat des Industries Electroniques de Reproduction et d'Enregistrement.

**COMPOSITIONS:** "The Tale of the Three Tones" by Preben Danneman of Denmark.

**Award:** Butoba tape recorder offered by Butoba-Vertrieb.

**DOCUMENTARY AND REPORTAGE:** "Visit to a Musician's House" by Emil Heer of Switzerland.

**Award:** Thorens stereo disc equipment offered by Thorens S.A.

**MUSIC OR SPEECH:** "A Night of Music" by Svend Erik Nielsen of Denmark.

**Award:** 250 Swiss francs offered by l'Ostschweizerische Radiogesellschaft.

**ACTUALITY:** "Pisa Baptistry Echo" by Philip Towell of Great Britain.

**Award:** Thirty discs of Swiss music offered by l'Exposition Nationale Suisse 1964.

**TECHNICAL EXPERIMENT:** "Joke with Bells" by Willy Baumann of Switzerland.

**Award:** 250 Swiss francs offered by Radio-Berne.

These successes made it a notable year for British entries.

The full prize list is printed on the opposite page.

Perhaps the outstanding feature of the 1964 International Contest was the exceptional quality of the entries in the Music section. There was a remarkable variety, too, in their character.

The top prize was carried off by a German competitor, Georg Schreider, of Mainz, with a tape called "Improvisation with Scales." Mr. Schreider happened to hear the so-called "High School Big Band" of Mainz during a rehearsal. In his own words, "I immediately resolved to enter into association with these men in order to record something for the 1964 International Amateur Recording Contest. They agreed to play under my direction. I had the idea of using the scale as the basis for my music. My score was embroidered with improvisations by the band-leader, who was himself the trumpeter. After several attempts and some tape editing the recording was complete."

And a splendid musical experience it was. Music tapes were entered from Austria, Czechoslovakia, Turkey, South Africa, Russia, China, France, Holland, Belgium, Denmark, Sweden and Britain.

There was, of course, quite a lot of folk music; always interesting and attractive as a subject, but too obvious a theme to make the judges suddenly sit up and exclaim.

The first time I did that was when I heard a tape called "Portrait of Marc Chagall," made by Michel Birjakov, a Leningrad student with an interest in jazz. Birjakov himself played the drums, as well as recording; his pianist was also the composer of the piece; and a third student played bass. It was an impressionistic piece, interesting as a social study, but technically very good as a recording. Unfortunately, it ran overlength, but the judges took a tolerant view of that.

Immediately afterwards we heard a tape submitted by the Amateur Sound Recording Club of Peking: "The Triumphal Song of the Reservoir."

Played on folk instruments by a folk orchestra, this was lively, stimulating music; but it made its mark as a brilliant recording. Eventually it emerged in third place in this section.

Two French entries, heard next, made a considerable impact. Georges le Coz, of Brest, entered a five-minute extract from a recording of Handel's "Judas Maccabaeus" made in the church at Morlaix. He explained the difficulties of making so ambitious a recording in the single evening for which the church was available. But, on top of the impressive quality of the recording the magnificent voice of the soloist



The judging session held in one of the studios of Radio Lausanne. The British delegates sit in the far right-hand corner

turned out to belong to M. le Coz himself; and, to complete his achievement, he reported that he had built his own recorder.

Holland contributed a notable tape, too—a recording of an occasion at Tilburg when "a brass band and a jazz combination had a musical fight."

From Belgium came an appealing recording of a 14-year-old soloist singing two songs; and from Germany, in addition to the winning tape in this section, there was an ingenious recording in which an original composition by the entrant was played and sung, with resonance added to the voice and effects provided by touching inflated balloons! This took the second prize.

The Grand Prix Stereo was awarded to a tape entered in the stereo grouping of the music section: "Contrapunctus" by Emil A. Fellmann, of Basle, Switzerland. This was a magnificent recording of improvised organ music made in the Catholic church at Brugg.

After this selection, honours in the stereo music class went to a Danish entry, "A night of music"—a splendid tape of a Mozart clarinet piece played by the Prague City String Quartet.

The British stereo entry, Mr. Towell's "Albani String Quartet" showed up well against the competition, and there were notable tapes from Austria, Holland and Uruguay.

All in all, CIMES 1964 provided the finest collection of amateur recordings of music that can ever have been made at one time and place.

Now to consider the other classes of the Contest. In Compositions, the British entry faced very severe competition and had to yield pride of place to several other tapes. An Austrian entry called "Sabotage" was an interesting effort to tell a story without words—using only sound effects. Seventy hours work went into this tape playing for

only 3½ minutes, but it had real quality and deserved its award of second prize.

Undoubtedly, however, the jury was right to award the first prize to the dramatic tape "I was there," entered by H. Beelen of Dordrecht, Holland. This was a moving plea for tolerance, particularly racial tolerance, using music and effects, but owing much to a first-class script and commentary.

In the Documentary and Reportage section, first prize went to Derek Wormann, of Johannesburg, South Africa, for a ten-minute recording of Africans performing their traditional dances at the Witwatersrand gold mines at which they work. The recordings made on the spot with a Nagra machine were, not surprisingly, first-class, but the entry depended strongly on an excellent narrative.

The winning tape in the Actuality section was called "The Letter Box" and was recorded at the home of a French recording enthusiast, Marcel Solmon of Saint-Sulpice. A titmouse built its nest in his letterbox and bred its young there. M. Solmon introduced his microphone into the birds' home and secured fascinating material.

Each class had its own stereophonic section. Preben Danneman of Copenhagen, used the two tracks for an attractive electronic fairy story "The Tale of the Three Tones." It earned him first prize in the Composition class.

In the Technical Experiment section, the stereo first prize went to Willi Baumann, of Switzerland, for an experiment in which he combined mono and stereo recordings of church bells, blending them together with organ music.

The best national selection of tapes (those achieving the highest average marks) came from Germany.

Altogether 18 countries in four continents were represented by a total of 61 tapes in the 1964 International Contest. **D.B.**

Below: Delegates to the International Amateur Recording Contest seen at the Swiss National Exhibition in Lausanne. Left to right are British judges Mike Ray and Pat Stavenhagen; a Swiss hostess serving Fredy Weber (Switzerland) and Erich-Marcel Friedman (Austria); and an official of the Exhibition with Jean Thevenot (France), Rene Monnat (Switzerland) President of FICS, and Jan Mees (Holland) Secretary General of FICS



The third article of a new series explaining the mysteries of electronics to the layman. Below the author describes how an electrical circuit can be compared to hydraulic or compressed-air systems.

# This electricity: Mr Ohm and his law

By CHARLES NORMAN

**W**E saw last month that, to make electrons work for us, all we have to do is upset the balance between electrons and protons and let nature do the rest. That is all very well, but for this to happen the electrons must be guided along a path we have chosen for them just as water is guided along the pipes in hydraulic or compressed-air systems.

Now, just consider a water pipe. Really it is nothing more than a long hole wrapped up in metal. The water flows through the hole because there is nothing to stop it and is prevented from wandering off in the wrong direction by the metal walls round the hole. The plastic-covered or tinned wires in your tape recorder carry electrons in roughly the same way as the pipe carries water, but to understand how we must take another look at the atom.

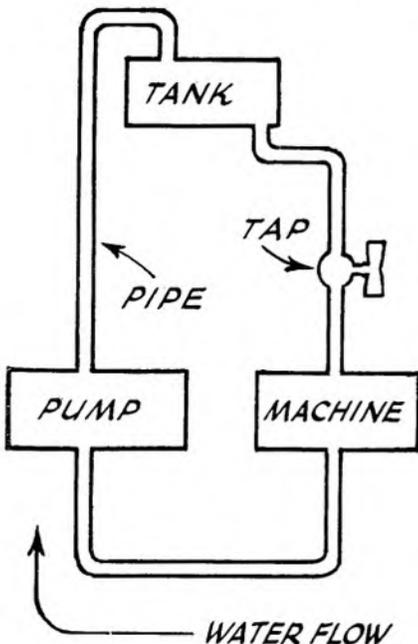


Fig. 1. A water circuit. Water pumped into a tank and allowed to flow along a pipe into a "machine" and operate it

We know that the atom is a heavy nucleus with electrons buzzing round it like flies tearing round the dotted line on a jam jar. In most metals, especially copper, aluminium and silver, the attraction between the outer electrons and the nucleus is so feeble that these electrons are all the time jumping freely from one atom to another. Logically enough, scientists call these "free" electrons free electrons. This is surprisingly considerate behaviour on the part of a breed capable of calling a fly *musca domestica* and of inventing names like ytterbium and praseodymium but accidents will happen.

It is these free electrons that allow electricity to work for us. If a bar of, say, copper is connected between a surplus and a deficiency of electrons, the surplus will see the copper just as the water in a tank sees the hole in a pipe leading down to a drain. They rush into it, push the free electrons from atom to atom and out at the far end, and continue to flow in this way until they have balanced out the difference between surplus and deficiency. If we put any suitable electrical machine in their path, they will operate it just as a flow of water will operate a turbine or any other hydraulic machine. And just as a flow of water is called a current, this flow of electrons is called an electric current. Not really complicated, is it?

Because metals lead or conduct electrons from one point to another they are called conductors. For the same reason, the pieces of tinned or plastic-covered wire that run from component to component in your tape recorder are called leads.

So far, so good. We have found the long hole through which our electrons can flow, but what about some walls for the hole to prevent their dashing off in the wrong direction? Here again, the atom comes up with an answer. In gases, plastics and most non-metallic materials the atoms have no free electrons. As

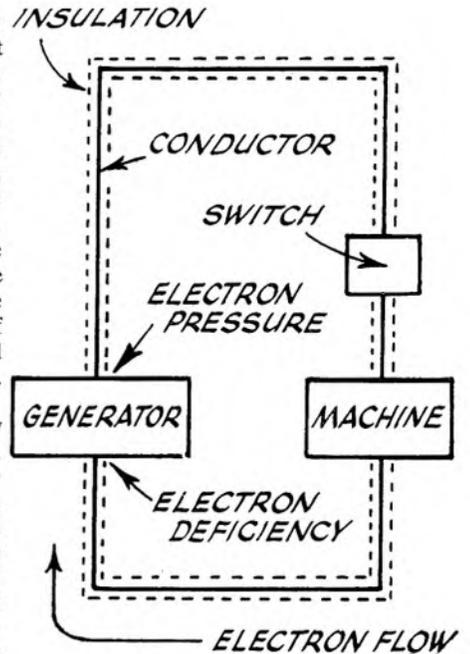


Fig. 2. An electrical arrangement identical to the water circuit shown bottom left

there are no electrons able to jump from atom to atom, an electrical pressure cannot push them along so a current cannot flow. These substances are called insulators. Air, which is a mixture of gases and the plastic sleeving round your leads, are good examples.

So the air or plastic round a conductor acts like the wall of the pipe; it prevents the electrons from straying from the path of virtue. Unlike hydraulic tubing, which must be sturdy and properly fitted, a flimsy conductor need only make contact between two points to enable a current to flow. Up to a point, this makes the engineer's task much easier, but it has one serious disadvantage: unintentional contacts between two conductors can allow a current to flow where it has no business to venture.

These contacts, which are called short-circuits, can blow fuses, burn up equipment or, if you happen to be in the way, give you a very unpleasant surprise. To prevent this, leads are either mounted on insulators and air-spaced, or carefully enclosed in insulating material.

There are quite a few materials which are neither conductors nor insulators, but somewhere in between the two. If, for instance, we take out a copper conductor and substitute a carbon rod of the same size a current will still flow, but it will be much smaller. It is like putting in a pipe with a narrower bore to oppose and cut down the flow of water.

This opposition is called resistance. The dozens of small, brightly-banded tubular components in your recorder are specially made, either from carbon composition or resistance wire, to have a specific value of resistance. Strangely enough, they are called resistors.

An electric current is measured in amperes or fractions of an ampere. All we need to know about this is that it is the rate of electron flow which causes a certain force to be exerted between two current-carrying wires placed a specified distance apart. The ampere is the standard on which all the other electrical units are based because it can be very accurately measured by, of all things, weighing the force on a glorified pair of scales. It is from the ampere that we derive the coulomb, which is simply the quantity of electricity that passes when a current of one ampere flows for one second. That is why the number of electrons in a coulomb is not important.

It should be pretty obvious by now that there must be some definite relationship between the electrical pressure, or voltage, across a conductor, the current flowing through it, and the opposition, or resistance, of the conductor. This relationship was first thoroughly investigated by a gentleman named Ohm, and is called Ohm's law. It was a great blessing to the electrons because, before Mr. Ohm passed his law, the poor little blighters had no idea what to do about things.

Ohm's law states that the ratio between voltage and current in a conductor is constant. This constant is the resistance of the conductor and is measured in Ohms. Mathematically we can put it this way:—

$$\frac{\text{Voltage}}{\text{Current}} = \text{Resistance,}$$

or more briefly

$$\frac{V}{I} = R$$

So by simple arithmetic, provided we have two of the measurements, we can

work out the other. The relationship itself is really just common sense. It merely states that if you push the electrons harder by increasing the voltage they will move faster and that if you hold them back by increasing the resistance they will move slower. Who could argue with that?

The one other thing we need to know is the power of an electric current. This too is common sense. We learned last month that a volt will do one joule of work when it moves one coulomb of electricity and we know now that an ampere is a flow of one coulomb per second. So a current of one ampere at a pressure of volt must be able to do one joule of work every second. This, of course, is a power of one watt. If we increase either the current or the voltage we must obviously increase the power in proportion. So the total power in a conductor must be equal to the current multiplied by the voltage. So we can write:—

$$\text{Power} = \text{Current} \times \text{Voltage, or}$$

$$W = IV$$

Now suppose we take a look at the diagrams and see how all these things tie up together. The first sketch shows a water circuit. If water is pumped up into a tank and allowed to flow down via a pipe into a machine it will operate the machine. The tap can be used to control the rate of flow, which will govern the rate at which the machine works. The really important thing to notice is that the water flows in a closed loop or circuit, so that the system will carry on working without needing any more water for as

long as the pump continues to operate. Even water mills and hydro-electric power stations work in this way, but here the pump is the sun, which lifts up water as vapour and deposits it as rain on the high levels from which it runs down to do the work.

The second diagram is an electrical arrangement which is the exact equivalent of our water circuit. In this system the pump is replaced by a generator which, as we shall see later, is merely a device which builds up an electron pressure just as the pump builds up water pressure. There is no need for a tank, and instead of the heavy pipes we have fine copper wires and the electrons which flow through the system are kept in place by the insulation—which may be just air in some places—that envelopes the whole arrangement. The machine may be any-

## NEXT MONTH

# ' Electrical generators '

thing from a kettle to an electric locomotive and the control is no longer a heavy tap to be screwed on and off, but a switch that flips over instantly at the touch of a finger. Again the electrons flow in a closed circuit, and will continue to flow without replenishment for so long as the generator continues to operate.

The last figure shows the electrical circuit as it would be drawn by an engineer, and it is called a circuit diagram. The diagram in the handbook of your tape recorder is a more complicated version of the same kind of thing, but once you know what the various symbols mean and how the components work, it is just as easy to follow.

Circuit diagrams are a form of shorthand in which signs are used to denote the electrical components and lines indicate the connections between them. The insulation is not shown because any engineer knows it must be there. Just looking at this diagram will tell a technician that a battery drives a flow of electrons through the resistor in the direction shown. And he knows that there is a switch to turn the machine on and off.

A resistor really is a machine, because it can perform work of at least two indispensable kinds, but this is something that can be discussed next month when we take a look at generators. But here is a closing thought.

Conventionally, a current flows from positive to negative, and in the symbol for a battery, the longer line always represents the positive terminal. Why are the electrons flowing in the wrong direction?

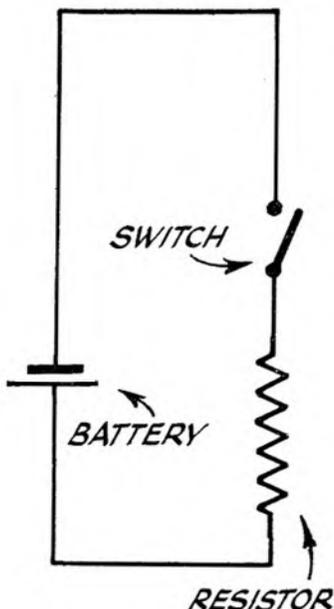


Fig. 3. The electrical circuit (Fig. 2) as drawn by an engineer, and called a circuit diagram

TAPE AND CINE. A new series by an expert giving advice on the exciting possibilities when tape is linked with cine photography.

## Choosing the right equipment

By PETER RYDE

**M**AKING film sound tracks is not particularly difficult; you simply need to know the tricks of the trade. To begin with, there are four important things you need to know before you start.

● Although most amateur sound tracks are recorded on ordinary magnetic tape, this is not the only method. A common alternative is to record on a magnetic track, or "stripe," which you can have laid on the film itself. The advantages and disadvantages of tape and stripe were discussed in the August issue, and we shall return to them in a later article in the present series:

However, very briefly, the situation is this. Stripe is *much* more convenient when you are showing the finished film, but with separate tape the recording processes are easier, the quality is better, and the overall cost is less. Unless you are going to be content with the simplest possible sound tracks, stripe will be no good on its own. Even if you end up by transferring the finished track to stripe, tape will still be needed as an intermediate stage.

● It is possible to make the recording while the film is being shot, but this is difficult, and requires expensive equipment. Even when money is no object, it is seldom a very satisfactory system, so most amateur tracks are not recorded until after the film is shot and edited.

● You don't need a special kind of recorder for cine, and you don't have to make any modifications to your equipment. The only exception is that if you use a "magazine" deck, you will have to adapt it to take separate spools; otherwise it would not be possible to thread the tape through a synchroniser.

Naturally, some recorders are more suitable than others; for instance, a four-track machine with dual replay is a great help when building up the sound-track. But if you already have a recorder, you can certainly make it do. You won't even need any special accessories, except that you will want an extension speaker to place beside the screen.

● The biggest technical difference between making film tracks and other tape recordings is that you have to have some kind of synchroniser to make sure the sound and picture are reproduced in step. The tape and film will not keep in time of their own accord. You will either have to buy a projector with a built-in synchroniser, or, if you already have an ordinary projector, you will have to add a separate synchroniser to it.

To help you in choosing the most suitable apparatus, here are the really vital things you need to know about tape synchronising systems.

Whatever the system, it should be *automatic*. Many devices, such as stroboscope wheels, are sold as "synchronisers," but in fact do no more than indicate the state of sync. to the projectionist, leaving him to make the appropriate correction manually by means of speed control. These non-automatic systems are quite useless for regular film shows, since far too much strain is placed on the projectionist.

What an automatic synchroniser does is to compare the lengths of tape and film being run in a given time, and to adjust a resistance in the projector motor circuit so that 16 frames of film run through for every  $3\frac{1}{2}$  inches of tape. If the tape is running fast, so that more than  $3\frac{1}{2}$  inches are used in a second, the resistance is automatically reduced, the projector speeds up, and the film then runs correspondingly faster.

At present, there are three sorts of automatic synchroniser. All do the same job, but in slightly different ways. The commonest is the loop synchroniser. In these, the resistance is adjusted by a sprung arm. Between the recorder capstan and the take-up spool, the tape passes round this arm, and then over another capstan, which is driven by the projector. If the projector and recorder capstans pull the tape through at different speeds, the length of tape between them will get larger or smaller; this will cause the arm to move, and the resistance will be adjusted accordingly.

Loop synchronisers can be built into the projector, or may be supplied as separate accessories designed to work with the specific projector. In the latter case, they have to be linked to the projector by a flexible

shaft to drive the capstan, and by a cable to connect the resistance into the motor circuit.

For projectors without synchronisers, built-in or otherwise, you can use a Synchrodek. These can be adjusted to suit almost any projector; it is even possible to use them with some stripe projectors for transfer in sync. from tape to stripe. The Synchrodek is not a loop synchroniser, for the resistance is controlled by a system of differential gears which are driven in opposite directions by the film and the tape. If either gains on the other, the resulting movement of the differential cage is used to control the film speed.

As well as keeping sync., the Synchrodek also has a dial on which the state of sync. is registered in seconds. This is very useful when you are making the recordings, because it enables you to check tape and film lengths against each other, without the tape and film being run simultaneously.

A third sync. system, used by Bauer, depends on the phasing of two commutators, one driven from the projector and the other by the tape. This method has the advantage that no mechanical link is needed between the projector and recorder, so the two can be as far apart as you like. Unfortunately, the system has one major drawback. A really satisfactory sync. system should allow you to *stop in the middle of a film, and then restart without losing sync.* This is possible with the loop synchronisers, and with the Synchrodek, but it is not possible with commutator systems, which probably accounts for their lack of popularity.

The *accuracy* of these automatic systems is amazing. With perforated tape (more about this later) you can get sync. so precise that speech can be synchronised with lip movements. (Lip sync.) This requires accuracy to within about a tenth of a second. With ordinary tape, this degree of accuracy is sometimes possible, but it cannot be relied on. However, you should be able to keep sync. to within a second over a long film, and this will normally be quite adequate.

So far as possible, your sync. system should be *interchangeable*, so that your films and tapes can be replayed in sync. on other apparatus besides your own. You might want to enter a film in a competition, or to show it while away from home, or you might want to change your projector at some time in the future. With a non-standard sync. system, you would run into serious difficulties. Most synchronisers are set for film at 16 fps, and tape at  $3\frac{1}{2}$  ips. A few will allow other speeds to be used, but it is questionable whether it is really wise to depart from the generally accepted standard.

When buying a synchroniser it would also be wise to check whether it can be adapted for use with perforated tape. You might want to try lip-sync. one day, even if you don't now.

Finally, there is the question of *ease of setting up* before a show, and *ease of threading* before each film. The built-in synchroniser is a great time saver before and after the show, but it is often a little more tiresome to thread up at the start of each film, because the tape side of the projector may be difficult to reach. The quickest synchroniser of all to thread is the Synchrodek, since the tape has only to go round a single drum, and there is no intricate tape path to follow. But, being a separate unit, it takes longer to set up initially, and of course it takes up more room. It seems you can't have everything.

**NEXT MONTH: Timing, start marks and speech.**

# Dramatape miscellany

By PERSPECTIVE

**L**EARN to make dramatapes. You'll find them full of fascinating practical problems—almost as fascinating as the problems of acting.

Your new dramatape society should, therefore, devote at least one meeting in five to technical discussion and demonstration.

Encourage different members to specialise in different technical aspects; you can then devise a general drama-recording course that sparkles with individual ideas. Each exponent can give talks under headings such as *Microphones for drama, Choosing and using a mixer, Dimension and perspective, Narrative sound-effects, Dramatapes and hi-fi, Loudspeakers and audio-presentation.*

An advanced society would go further, presenting subjects like *Stereo Dramatapes, Making an operatape, Sound-in-the-round.* In addition, special technical meetings can precede serious productions. The producer then explains and demonstrates the techniques he intends to use—and the new theories he wants to try out.

If you are lucky, you can secure a producer from an advanced group to give a talk. But please remember that we are all fellow-enthusiasts together. No one pays us to give a talk; the time we give is entirely our own; and we are often cheerfully out-of-pocket in our efforts to share the hobby. A lecturer who takes the trouble to visit another group should at least be offered a cup of tea. Surely he is a guest—and should be treated as one. Certain groups, I'm afraid, lack courtesy in this respect.

A growing number of women are particularly interested in the technical side of drama recording. An Hon. Effectsman, for example, is likely to be a woman. Practical as her talk may be, however, it is traditional, in my society, to present flowers and chocolates as a reward.

## INTERPOLATIONS

Try this. Record yourself opening and shutting a heavy door. Take this portion of tape and splice leader-tape to each end—thus making a *tape-section*.

Now put a disc of (say) traffic effects (e.g. HMV 7FX12) on the turntable. Dub several seconds of it on a separate piece of tape. Select any portion of this second recording and snip it out—thus getting a second *tape-section* of (say) four seconds in length. The sound it features will, of course, begin and end abruptly.

Cut your first *tape-section* in *two*—at the exact point between opening-and-shutting the door. Now splice your traffic *tape-section* neatly between the ends.

The result on playback: *the door opens; traffic is heard momentarily; the door then shuts.*

This technique is known as *interpolation*. It saves you a lot of time and trouble when making dramatapes; and it's advisable to practice as many examples as you can. Start with doors. An office door, for example, would interpolate with *distant typewriters*; a cabin door, a *distant deck-party*; a garden door, *birdsong*; a kitchen door, *washing-up*; a games-room door, *table-tennis*.

Incorporate a very slight "swell" of sound as the door is opened. This suggests the "opening" movement—far more subtle than the usual creaking hinge! (Create the "swell" by adjusting the gain-control when recording the interpolation.) If, however, you want (say) a storm to blow into the room, then make an exaggerated "swell."

Try interpolation with windows. But remember that *sliding* windows, like sliding doors, must obviously superimpose over the beginning and end of the interpolation.

Again, interpolation is useful when one character speaks in a different acoustic from another. A heroine in a stage-coach, for example, would have a muffled voice as she shouts "good-bye!" through the glass. A man "outside" the coach would speak in the normal studio; and it's quite easy to record the heroine's line separately and interpolate it with the man's.

You can even make echoes by interpolation. For example, a character might be hearing words in an echoic delirium—intercut with snatches of music and bells. (Poor chap!) The method, of course, is only suitable for isolated phrases and words. Try it with (say) "Hulloa! Where are you?"

First, record the words in a *dead* acoustic and at a close-microphone voice-position. Next, record a repetition of the words—on a separate *tape-section*—in a fairly *live* acoustic, standing at some distance from the microphone. *You then interpolate the appropriate "echo-word" between each word of the first recording.* Each "echo-word" should be *cut short* at the beginning ("Hulloa!" becomes "... loa!") and attached to the parent-word without a break.

## Two-minute tape sketch by David Haines

A monthly series of simple exercises in perspective, acoustics and sound-effects.

### ON THE BATTLEFIELD

**T**HE voice-positions here are "close-microphone"—i.e., the actors speak fairly close to the microphone. (You can enact both voices yourself if you're working solo.)

*Footsteps* can easily be recorded from actuality, using (say) a garden path, and *interpolated* with the dialogue (see "Miscellany"). The explosion can then be dubbed from disc (e.g., HMV 7FX1) and interpolated yet again—a simple illustration of interpolation-within-interpolation.

OFFICER: Private Birkenshaw! We're in a very sticky situation. Keep your head down!

PRIVATE: Yes, Sir.

OFFICER: But look very carefully through the crack in the wall. . . . See that little pill-box at the intersection of the road?

PRIVATE: Yes, Sir.

OFFICER: Go and blow it up.

### UNIMIXER

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Generally, interpolation is useful where an effect (for one reason or another) can't be included at the session. Simple examples would include applause during a speech; distorted answers on an inter-com receiver; the crash of plate-glass.

Although usually brief, some of these interpolations can be relatively lengthy. For example, I recently rigged a microphone at an open window—and recorded some nocturnal drunks roistering down the road. I shall eventually interpolate them in a scene for Henry IV (Part I). Hooligans make much the same noise as they did in Falstaff's day. . . .

### DO YOU AGREE?

Too many amateurs are needlessly "put off" from editing their recordings.

"It's the bow-cutting," they complain; "it spoils the tape."

I heartily agree! *I submit that bow-cutting is unnecessary.* It merely weakens the tape and hinders the proper matching of *tape-sections*. I always trim the edges of a splice dead parallel. How about you?

*Slight* bow-cutting was necessary with early tapes and jointing-tapes; even so, many of us still make absurdly deep bow-cuts. As for dusting the splice with french chalk . . . this can only be a hangover from mending too many bicycle-tyres.

Surely, too, the angled cross-cut is only of academic value—except, perhaps, at slow speeds. A perpendicular cross-cut is often more convenient. So why not use it?

PRIVATE: Very good, Sir.

*The private's footsteps depart into the distance. Pause. A gigantic explosion. Pause. The footsteps return.*

OFFICER: Well done, Birkenshaw!

PRIVATE: (timidly) Sir, will I get a V.C.?

OFFICER: Not this time, Birkenshaw. Don't be impatient. Wait until you've blown up a pill-box that belongs to the enemy.



## How tape recorders are made and tested

Inspired by a recent Press visit to the new Thorn Electrical Industries tape recorder factory at Newhaven, JOHN BORWICK describes some of the manufacturing and quality control techniques employed in modern recorder production

**A** VISIT to a modern tape recorder factory, where mass-production techniques are necessarily used to keep up with demand, has much in common with a visit to any other large-scale plant. My recent travels have taken me into a wide variety of factories. I have walked along the "production lines" for the Lightning supersonic fighter, White Horse Whisky, newsprint paper and (coming a bit nearer home) loudspeakers, magnetic tape and tape recorders.

And in all cases you have the same rather impersonal sequence of rows of operators—each of whom performs only a small part of the assembly. Mass production, which I suppose is Henry Ford's major contribution to posterity, is certainly an important feature of present-day living.

Naturally these mass production methods are looked down on by the expert craftsmen who make things individually by hand. We would all agree

that the hand-made article is often a pleasure to own, but it would be a mistake to suppose that the word "precision" is solely applicable to hand-made products.

Indeed I have found that factories often have to work with *greater* precision than the craftsmen. You see, when a craftsman makes an article right through from start to finish—it might be a watch, a tape machine or a sideboard—he can allow for differences in the dimensions of the individual components as he proceeds. But in mass production, every component handled by a given operator must be an exact replica of every other *within very narrow limits*, or the whole system breaks down.

This need for precision was certainly recognised at the Thorn factory, where I found test equipment being used on routine testing capable of detecting deviations of one hundred-thousandth of an inch (that is, a hundredth part of the thickness of a double-play tape).

### TAPE MOTORS

The electric drive motor is one of the most important components in a tape recorder. You can say it is the heart of the machine, and some motors can cost as much as all the other components put together. The requirements of the motor are perfectly uniform rotation of the drive shaft under all conditions of tape spool loading; freedom from mechanical noise; low hum field; a sufficiently high reserve of power for spooling, together with high starting torque and, of course, the motor should not get too hot. Thorn use a special motor which they developed in co-operation with E.M.I. It fulfils all the above requirements, yet is an economical design and is fitted with a fan which I was told produces a 25° Centigrade reduction in running temperature.

This motor is quite heavy, and specially strong bolts have to be used to fix it to the chassis via vibration isolating grommets. They take the biggest strain



Photograph at top of page shows the front view of the Thorn tape recorder factory at Denton Island, Newhaven, Sussex. The factory is built on a six-acre site allowing room for possible expansion in future years.

Fig. 1 (left). Adjusting azimuth and head height of the recording heads of a four-track recorder (see also Fig. 2); (centre). Measuring heads and jig for flywheel accuracy check. "Clock" and air-gauge instruments which measure to one hundred-thousandth of an inch. are employed. To pass this inspection point, the flywheel must be accurate to one ten-thousandth of an inch:

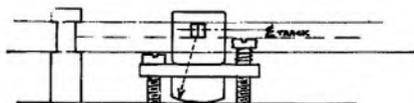
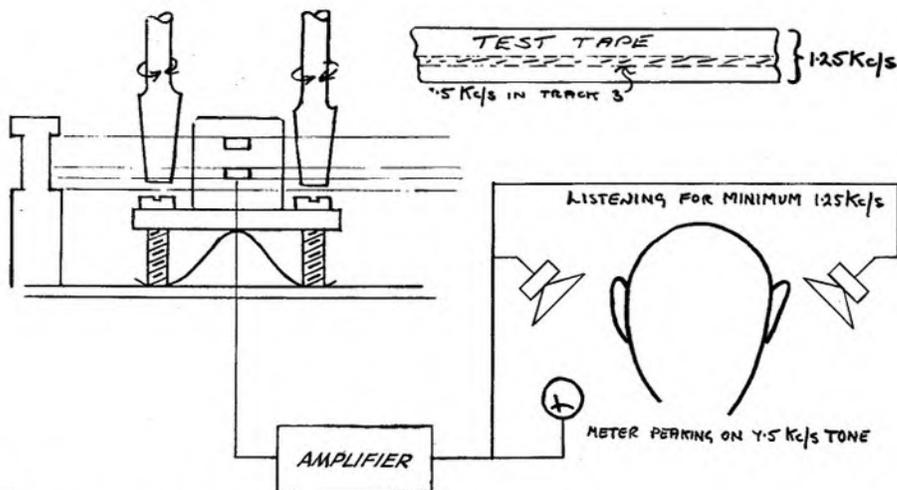


Fig. 2. Head alignment above, for quarter-track recorders, two mounting screws are turned, first in the same direction to vary track position (elevation); and then in opposite directions to vary azimuth. As the test reads position and azimuth simultaneously, this is not as difficult as it sounds. For two-track recorders (left) the curved base of the head has a radial centre at the centre of track one to maintain correct track position when adjusting azimuth.

in a special "drop test" which (for sentimental reasons connected with my years in RAF Signals) I was allowed to try out. During the development stages, the recorder is assembled in its final pack and dropped several times on to a concrete floor from a height of 48 inches. It is then put through a series of quality tests to make sure that the machine has not suffered any deterioration in performance and that it is still in 100 per cent saleable condition.

The motor's performance, like that of the rest of the mechanism, is tested on the production line too, of course. I listened on a special tunable stethoscope and, touching the test probe on different parts of the chassis while the motor was running, I could hear a weird symphony of rumblings and wheezings which I should think beats anything a doctor hears when he taps our chests. The Inspector on this test position learns to identify the different sounds and so

diagnose any faults that may occur in the motor and drive system.

#### THE CAPSTAN AND FLYWHEEL

Very few tape recorders use direct drive, that is with the tape driven by a capstan formed from an extension of the motor rotating shaft itself. It is much more usual to employ indirect drive, the motor shaft being coupled to the capstan via either a drive belt or a rubber idler wheel.

Absolute precision of the drive capstan is essential, and of the flywheel which is a relatively heavy circular dish generally mounted on the lower part of the capstan shaft. It is the flywheel's job to iron out any fluctuations in rotation speed. In professional recorders it is invariably very heavy, though this is clearly impossible in lightweight domestic machines. The flywheel and capstan together virtually determine the "wow and flutter" performance of the machine.

For this reason, the Thorn test engineers have specified a tolerance limit of only one ten-thousandth of an inch, and every capstan/flywheel assembly has to satisfy this. They apply this test very strictly, because any faulty assembly which was built into a deck at this stage would in any case have to be thrown out later. The well-known Gaumont-Kalee wow and flutter meter is employed on the production line, giving direct readings of percentage speed fluctuations and absolute speed. So effort would have to be wasted in replacing the faulty parts.

The mechanical test equipment has to be capable of detecting deviations of

hundred-thousandth of an inch. It includes continuous reading micrometer gauges and a special type of air gauge.

#### DECK GEOMETRY

Accurate running of a tape recorder depends too on the "geometry" of the deck, that is the precise relative positions of all moving parts. The chassis plate is originally designed and pierced so that items such as the capstan, tape guides, tape spool spindles and pressure pads are correctly related to each other.

Tests are directed at this aspect also. To maintain long-term performance, you too, should take care when handling your tape recorder, since mechanical plates and brackets cannot be infinitely rigid, to make sure that nothing happens to alter the geometry of the deck-mounted components. A bent spindle or tape guide for example, may not directly introduce wow. But they could tip the spool off horizontal, maybe making its flanges rub on the deck, or rub the tape, and this can easily produce agonising wow. Or both of these faults can affect the path of the tape past the heads. Any tendency for the tape to ride up or down will naturally affect the output level, or even introduce cross-talk between tracks, in which the replay head "reads" part of the signal on an adjoining track. In four-track recorders this horizontal alignment of the tape path is very critical and, in

(Continued on page 501)



Wow and flutter check combined with speed testing.



**YOU SAID IT!**  
 (played it, sang it!)  
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**HAVE IT TAPED**  
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 operated portable tape recorder in  
 the world.

And this is only the beginning—the incomparably versatile RQ-150 also provides automatic slide and film synchronisation, automatic threading and remote control. If you really want to spread the word, there's a Public Address System that permits accurate monitoring through a built-in loudspeaker while recording. All this and *immaculate* reproduction, too!

**SPECIFICATION**

- Power Source:** 6 unit cells (U.2.), 9 V.
- Output:** 500mW (700mW max.)
- Transistors:** 9 Transistors, 1 Thermistor, 1 Diode.
- Tape Speed:** 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; hand belt; splicing tape; sensing tape; plug for slide sync; magnetic earphone.



RQ-303

**Also from NATIONAL:**

- RQ-303, Mains 2 track, single speed.
- RQ-101s, Battery\*, 2 track, 2 speed, plays any 3" tape.
- RQ-115, Battery\*, 2 track, 2 speed.
- RQ-116, Battery\*, 4 track, 2 speed.
- RS-753, Mains, full stereo, 4 track, 3 speed.

*\*With optional mains adaptor available*

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.



**TAPE  
 IT  
 EASY—**

with NATIONAL,  
 naturally!

# How tape recorders are made and tested

(Continued from page 499)

the case of the outside tracks 1 and 4, there is the danger of the very edge of the tape being presented to the head gap with consequent "drop out".

## HEAD ASSEMBLY

Now that we have got to the heads, it is obvious that their design and mounting also call for a high degree of precision. The height of the head gap must be exactly right, and it must be exactly at right-angles to the edge of the tape—that is, there must be no angle of "azimuth."

The dimensions here are much too small for optical alignment to succeed. Therefore the usual practice is to fit the heads *after* the drive mechanism is assembled so that a test tape can be replayed to allow the operator to align the heads "by ear." A tape head mounting usually consists of two, or sometimes three, bolts with spring-loading to permit the head to be adjusted in the vertical plane.

Unfortunately, when you adjust the tilt or azimuth on most conventional heads, you alter the effective height at the same time. The result is, as many amateur servicemen will have discovered, that a series of fiddling adjustments have to be made before you can be sure that *both* azimuth and height are correct. In case you have never carried out this adjustment, perhaps I should mention



Fig. 3. Fitting and adjustment of spool carrier brackets to tape deck frame.

that it is usually done while replaying a tape of high frequency tone (say 8,000 cps) since azimuth angle is most readily revealed by the drop in high frequency response.

If no test tone is available, you can still do this check using a music tape containing plenty of high frequencies, making small, rocking adjustments to the bolts until the high frequencies come through most loudly. But I would strongly advise you to leave well alone, unless you have some experience of this kind of operation. In any case the heads



Fig. 4. Tunable stethoscope test for vibration after setting up speed change mechanism.

will certainly need demagnetising afterwards if you use anything other than a non-magnetic tool.

During my visit to the Thorn factory, I was intrigued by the way they had solved this problem of simultaneous height and azimuth setting. The secret lies in the head design (a well-known British make) and the special test tape they have devised (recorded for them by A. Tutchings).

This special tape consists of a 1.25 Kc/s tone over the entire width, except for a narrow band of 7.5 Kc/s in the position corresponding to track three in a four-track recorder (see Fig. 2). By running this tape through the machine when the heads are mounted up, and connecting track three of the signal head to

a suitable amplifier and output meter, correct adjustment is set by turning the two mounting screws—in the same direction to adjust track position, and in opposite directions to adjust azimuth. To help the operator to ignore the general noise in the factory during this test, two loudspeakers are used (as shown in Fig. 2). In the case of the two-track machines, the radius of curvature at the base of the head (see sketch) has been made exactly equal to the height of the centre of the track. Therefore, small angles of tilt do not alter the effective height.

## THE ELECTRONICS

Mass production techniques are ideally suited, of course, to the electronic circuitry. Moving belts carry the printed boards past a series of operators each of whom attaches a prescribed number of components. Then, and this is the bit I always enjoy watching, the whole board is automatically soldered in one go. The board first travels over a bubbling bath of flux, then over one of molten solder, and comes out ready for bolting on to the recorder chassis.

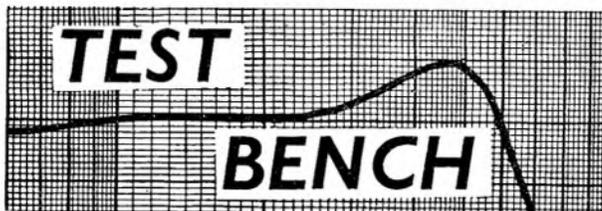
Exhaustive frequency response and other routine performance tests are carried out in sound-proofed booths with felt-lined flaps through which the travelling belt passes. These test engineers have to be quality enthusiasts, and they work very closely with the design and development engineers whose laboratory, at least in the case of the Thorn factory, is within easy access of the test booth positions.

## QUALITY CONTROL

Thorn Management and Engineers are very quality conscious. I found that five per cent of all machines from the factory are fed into the quality control department, where they are subjected to all the tests that have been previously carried out. In addition a further one per cent are put on soak test and run continuously for one week. Analysis of any faults that are thrown up during these tests is quickly fed back to the engineering department who take the appropriate remedial action. If necessary the whole production line is stopped until any recurring fault can be eliminated. It would be difficult to imagine any system more likely to ensure a good quality and reliable product.

## Acknowledgments

All the photographs used here were kindly supplied by Thorn Electrical Industries Limited. I should like to acknowledge the hospitality accorded me at the Newhaven plant, and in particular the technical discussions I was able to have with the Chief Engineer, Mr. Charlesworth and his colleague, Mr. Bishop.



## PHILIPS EL 3552

By John Borwick

A NEW tape recorder from Philips, and one in which we can see the design philosophy very clearly. All the machines from this company represent the outcome of a careful research into the needs of a particular sector of the tape recording market, and the EL3552 is obviously designed to be as inexpensive and as easy to operate as present-day standards will allow.

Inexpensive it certainly is; let us see how successfully it meets the demands for simplicity. Well, it has the single popular speed of 3½ ips; it is two-track (whereas most recent Philips recorders are four-track); and it has a single input/output socket. Each of these features makes for easy operation, since the more speeds, tracks and sockets you have on your recorder, the more likely you are to make mistakes.

### AUTOMATIC VOLUME CONTROL

There is also the facility known as automatic volume control. The circuitry which brings this about has been built into one or two makes of recorder in recent months, and it is no doubt a boon to people in a hurry and those who cannot be bothered to adjust the recording volume control prior to and during each recording.

The circuit is not unlike that giving A.V.C. (Automatic Volume Control) in a radio set, where its job is to combat signal fading. Put simply, a part of the signal being amplified is rectified, to turn it into a proportionate D.C. voltage, and applied as negative bias to one of the amplifier valves. Within limits, signals of moderate strength will be amplified in the ordinary way. But any extra loud signals will tend to bias the amplifier to a condition of reduced gain, so preventing too high a signal reaching the record head. Similarly, if the input signal is faint, the valve bias is automatically reduced and the gain rises to maintain a useful recording level.

Let me say right away that the system

works very well on this machine. I first tried it out in a practical way by speaking, shouting and whispering into the microphone, and then walking about the room sometimes near and some times far away from the microphone, and in all cases the tape played back at a reasonable volume. Of course extraneous sounds like traffic noise were more obtrusive during the quiet speech, because the A.V.C. was boosting them at the same time. I then recorded a wide range of levels of test tone, measuring the output level on replay, and verified that the A.V.C., which has a delay action to keep it from flattening out sounds altogether, will handle all the loudness changes it is



likely to meet in practice. I feel, all the same, that automatic control is good for many speech applications but will tend to take some of the light and shade out of music.

### THE CONTROLS

Should you decide, however, you can cut out the A.V.C. on the EL3552 and revert to the usual manual control of recording volume. To select manual control, all you have to do is press a push-button switch alongside the volume control. This switch is released again when you stop recording so that the machine is normally in the A.V.C. condition.

A group of three white piano keys select fast rewind, play and fast forward. A similar key spaced a little to the right of these is the usual "pause" control, and a red key to the left is for "record." There is a stop bar running along beneath these keys, with a small release bar under the pause key. The only other controls are the mains on/off switch and combined

volume control, the manual push-button aforementioned, and the tone control.

The magic-eye recording level indicator lights up when you switch on, to act as a "mains on" indicator. And it is operative as soon as you press the record key, so that you are given advance indication of signal strength, though the tape does not start to move until you also press the play key.

### GENERAL IMPRESSIONS

The EL3552 is smaller than most mains recorders (14½ x 10 x 5 inches), and its carrying handle is on the shorter dimension which should reduce your chances of knocking the machine against the wall when carrying it through doorways, etc. It is light enough to be termed really portable, even by the most frail users, and although it has a plastic case, this is strongly constructed. The lid is a push-on type without fasteners.

The amplifier is rated at only 1½ watts, but produces plenty of volume (on standard 3½ ips tape records for example) from the four-inch loudspeaker. Perhaps it is a pity that there is no provision for replaying through an external speaker. But this would have meant another socket and would run contrary to the designer's plan to keep costs and operational complications to a minimum. In any case there is the output, rated at 0.75 volts, which enables you to replay through an external amplifier or radio.

Continental radios and radiograms will be easier to connect than most British ones, since the former usually possess suitable sockets to permit both recording and replaying of tapes via a single multi-wire connecting lead without having to change over plugs. However, if you have any doubt how to make a good connection, your dealer can advise. The lead supplied with the recorder for use in this country (EL3768/03) incorporates a resistor in the record line to reduce the sensitivity to 225 mV which will suit most tuners, etc.

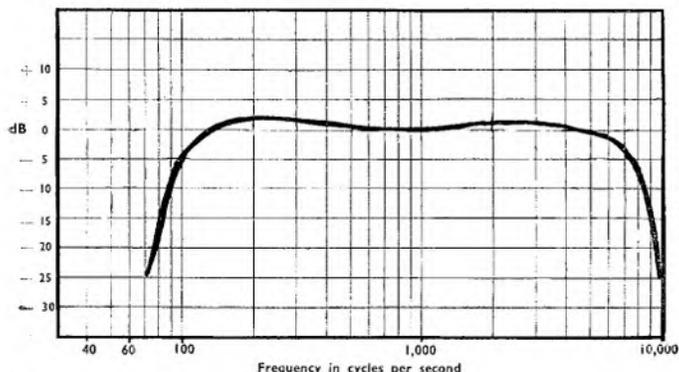
A further sign of the designer's anxiety to market this recorder at as low a price as possible, and so smooth the path of tape recording initiates, is the fact that the reel of tape and the empty spool supplied are both five-inch diameter, whereas the machine will take up to 5½-inch spools. Quite a good moving coil microphone is included in the low price of 24 guineas, however, which matches up well to the quality standards set for this essentially simple recorder.

### PERFORMANCE TESTS

Having tried unsuccessfully to defeat the Automatic Volume Control by giving it all sorts of loud and soft signals to cope with, I can report that it really does its job. This machine is therefore ideal for recording family newsletters, rehearsing speeches (!), and all types of situation around the house, school or club where you cannot be sure of keeping at the same distance from the microphone and yet cannot reliably keep a watch on the magic-eye. There are many such situations in which a clear, intelligible recording is the main requirement, rather than absolute high fidelity.

In fact, the frequency response of the EL3552 is well up to the standard one expects from domestic machines, as the curve in the accompanying graph shows. I have not included an indication of the scope of the tone control, which operates on the internal loudspeaker only, but this includes treble boost as well as cut.

The claimed wow-and-flutter specification is only modest, and a keen ear will detect slight speed fluctuations on the types of



## BOOK REVIEWS

### You too can build your own studio

**ACOUSTICS** by G. W. Mackenzie. 256 pp., 135 diagrams. Published by the Focal Press, price 42s.

**T**HIS is the first book in the series on technique of sound reproduction edited by John Borwick.

In his introduction, Mr. Mackenzie says that his book is intended as a general companion to the others. In this he is too modest since he lays a foundation of acoustical theory upon which the other authors can build without tedious repetition of fundamental principles.

The first part deals with the generation of sound waves and explains how we hear. The characteristics of speech and music which are necessary when working with sound are outlined and the section concludes with a chapter describing the construction, tone qualities and polar response of musical instruments.

The second part covers all aspects of microphones from a discussion of design considerations to the techniques of success-

ful microphone positioning. An interesting feature is a detailed description of several examples of each type of microphone in current use.

It is in the last part that the most useful information is to be found. The science of acoustics is put to good use and the author explains how to control the echoes and resonances in a room and gives details on how to treat a listening room to achieve optimum results. Indeed, following his instructions, one should be able to design a recording studio from scratch!

This is a well balanced book, written at not too high a technical standard and it should be a worthy companion to the others in the series.

### An elementary study of electricity

**DIRECT CURRENT AND MAGNETISM** by E. J. Black, 119 pp., 92 illustrations.

**ALTERNATING CURRENT AND ACOUSTICS** by Edgar J. Black, 116 pp., 86 illustrations. Published by N. V. Philips Gloeilampfabrieken Eindhoven, The Netherlands. 10s. 6d. each.

**T**HESE books are the first two in a series of six paperbacks written with the service engineer in mind. Most authors need to imagine a person for whom they are writing and Mr. Black seems to have conjured up someone long in experience, with little theory to back his reasoning and just enough mathematics to count his paycheck. The books may seem an odd choice for review but here at almost schoolboy level are the all too often glossed over fundamental principles of electricity.

There are no complicated structures to the author's atoms. The copper atom is found simply by chopping an inch cube into 250,000 pieces and on magnification the electrons are seen to be playing "ring o'roses" round the nucleus. The text abounds in such simple analogies, yet the ideas are developed clearly to a stage where the reader has sufficient knowledge to make correct deductions about the behaviour of a circuit.

At the end of each chapter is a summary and a number of questions designed to test the reader's grasp of what he has read. An important feature is that the theory behind the answer is given in addition to the numerical result.

The first book deals with direct current. Ohm's law, heat, power and the various types of resistors. There are chapters on accumulators and magnetism. The final chapter is devoted to d.c. meters and the effect of shunts.

The second book covers a.c. motors, dynamos, inductance, capacitance and elementary a.c. networks. Again the emphasis is on the practical aspect.

The section on acoustics uses a vibrating knitting needle in order to describe the generation of sound and goes on to explain how microphones and loudspeakers work in terms of the preceding text.

These books would be suitable for those who wish to make a systematic study of electricity at an elementary level and newcomers to tape recording should find a lot to interest them. Those who are not frightened of a little maths, however, would be well advised to use a slightly more advanced textbook. **P.M.**

## THE WORLD OF TAPE

### NEW TV TAPE RECORDER IN KIT FORM

—93 gns

**A**DVANCE news of the first TV tape recorder available in an "easy-to-assemble" kit form manufactured by Wesgrove Electrics Ltd. Suitable for 405 or 625 line systems, it will retail at £97 10s.

The new unit, designated VKR500, can be used for recording off-the-air television programmes with a standard domestic television receiver suitably modified (simple modifications only required); or in conjunction with a closed circuit television system. A complementary closed-circuit television camera will be available in kit form in the near future.

The VKR500 uses the standard direct recording principles as used for normal audio recorders, recording with a bandwidth of 2Mc/s on ordinary quarter-inch wide tape. Running speeds are 7½, 10, and 12½ feet per second. Using the 11½-inch spools supplied, this provides a playing time of thirty minutes for each of the two tracks.

Its circuits are entirely transistorised employing silicon transistors on a single printed circuit board. It is distinguished from earlier attempts to produce a machine of this type in many ways, the most important being the employment of non-integrating sync. regeneration, a vital factor in the stable operation of the machine.

An FM carrier system handles the sound side of the VKR500, and the audio frequency response is given as 50-10,000 cps. Inputs and outputs are supplied for one volt (RMS). Vision inputs and outputs are one volt D.A.P. Vision.

Wesgrove Electrics Limited, Nash House, New Street, Worcester.

\* \* \*

**W**ELMEC CORPORATION LTD. (U.K.) agents for Telefunken and AEG) advise they are still examining the effect of the temporary import charge of 15 per cent imposed as and from October 26. An announcement will be made; meanwhile there will be no increase in price on any AEG or Telefunken equipment where U.K. stocks are still available.

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

\* \* \*

**A**DASTRA ELECTRONICS LTD., sole trade distributors of Sychrotape, wish to point out that the prices of the British-made range of PVC recording tape are unaffected by the recently-imposed import surcharge.

## TEST BENCH

(Continued from facing page)

music which are most prone to this effect—piano, sustained woodwind, etc. All controls work positively and efficiently. The motor runs continuously as soon as the mains are switched on, giving quick start operation. Fast wind and rewind of the five-inch spool of long-play tape supplied took 2 minutes 20 seconds.

In short, this new recorder has a sensible price and specification for newcomers to tape recording who want to produce and playback recordings, at a standard speed on the conventional two tracks compatible with other machines, with the utmost simplicity of operation.

### MANUFACTURER'S SPECIFICATION

Tape speed: 3½ ips.

Power supply: 110, 127, 200-250 volts A.C., 50 cycles (adaptable by dealer to 60 cycles).

Audio power: 1½ watts.

Frequency range: 80-12,000 cps.

Wow and flutter: Less than 0.6 per cent peak.

Input: microphone (3,000 ohms, 0.2 mV); radio, etc., via lead EL3768/03 (1.5 Mohm, 225 mV).

Output: 20,000 ohm, 750 mV.

Signal-to-noise ratio: Greater than 45 dB.

Fast winding: Three minutes for 1,200 feet.

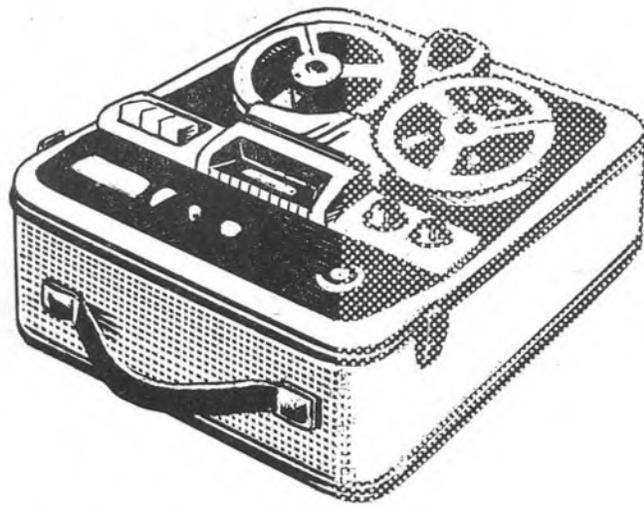
Dimensions: 14½ x 10 x 5 inches.

Weight: 13 lb. approx.

Manufacturers: Philips Electrical Limited, Century House, Shaftesbury Avenue, London, W.C.2.

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# IS HALF YOUR TAPE RECORDER WASTED?

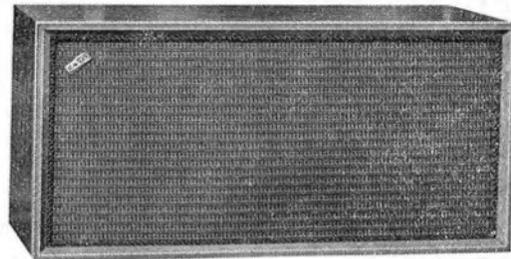


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ALAN EDWARD

# BEEBY

"NO FLOWERS, PLEASE!" Deciding that Britain's tape enthusiasts had gorged themselves sufficiently in a monthly orgy of hi-fi hoo-hah deep in the Sunday afternoon backwoods of Network Three ("It's a minority interest, old boy, like nudism and beer-mats"), the BBC have permitted "Sound" a decent demise at long last. It's death-throes, I tell you frankly, were beginning to get me down.

Douglas Brown, lumbered with an uninspiring task that many another broadcaster wouldn't have touched with a 10 ft. microphone-boom, acquitted himself with distinction throughout. In the beginning, seemingly, he was handed a bevy of assorted cardboard characters plus a pile of the most low-fi, high-blown ideas ever conceived, and told to get on with it—which, to his eternal credit, he did. True, John Borwick and one or two more of his ilk stuck their heads round the door occasionally and brought the thing flickeringly to life, but these cameos apart, there was precious little in it for the average amateur tape enthusiast.

This would seem a good point at which to ask just *who* the programme was aimed at. Not that I shall bother, mind you, because the BBC's answer to that question appeared regularly in the *Radio Times* billing: "For radio and recording enthusiasts." But was it? Witness these comments elicited from various tape-acquaintances since the show ended. (1) "Never listen to it." (2) "Oh, that thing!" (3) "Bit too technical for me, I'm afraid." (4) "When's it on, did you say?" (5) "I used to listen when it first started, but it got a bit uppish."

Alright, so these are only five reactions out of a possible audience of . . . Audience of what? Spare me, I beg you, the cloud-cuckoo statistics. I've been a columnist on this magazine now for nigh on five years, and I know the score where amateur taping's concerned. And the score where "Sound" was concerned? Precisely nil. The programme, acceptable though it may have been on its own pretentious level, was hopelessly out of touch with most amateurs from start to finish. What went wrong? Come to that, *did* anything, in fact, go wrong? Maybe we were barking up the wrong tree all the time, and "Sound" was beamed at another audience entirely. I wouldn't know.

Where, may one inquire, were for features on tapesponding, club activities, hospital-broadcasting, copyright, recorder-maintenance and so on? Where were the tips from the experts on interviewing, reporting, voice-control, newsreading, disc-jockeying, cueing, editing and sound effect-composition? These are the sort of things amateur tape-types are interested in. I know, because they write and tell me so. Alec Nisbett, for example, surely one of the most entertaining and compelling authorities on audio matters, recently contributed a brief series of articles on sound effects to *TAPE*—a series which earned him high praise from the readers. Did no one think of inviting Mr. Nisbett to do the same thing, with illustrations, on "Sound"? The perfect speaker; the perfect subject; the perfect medium. If they did, I missed it.

I was not one of the loyal souls who phoned or wrote to the BBC to demand a

reprieve for "Sound"—at least, not in its previous form. If they do bring it back (and they're threatening to!), and we're stuck with the same old mixture, the BBC will be able to boast one of their beloved statistical listening-figures of *exactly* 999,999. Because I shall be watching the telly.

■■■■■■■■■■

**W**AS doing some editing yesterday. Went to tear off a piece of splicing tape from the dispenser, when my finger skidded and gouged itself on a set of vicious-looking tin teeth. Having thus narrowly escaped the need for a couple of stitches, I'm prompted to suggest that something a trifle less lethal be designed, ma bonny wee manufacturers!

■■■■■■■■■■

**I**NTRODUCING "The Magpies." My October note bemoaning the apparent dearth of female tapists brought a spirited reply from Mrs. Margaret Russell of Fulham. Margaret is 32, has a daughter of nine, and has been a keen tape fan since 1957. Her equipment line-up includes two Grundig stereo machines (half and quarter-track) plus the appropriate mixer; a Telefunken battery-portable, microphone and mixer; a Rodgers Mk. 2 stereo amplifier; a Leak FM tuner; two Goodman 'Triaxette' speakers in cabinets; an AKG stereo headset and a Grampian DP4 microphone. Can any other female tapist beat (or match) this impressive array, I wonder?

Margaret would like to hear from any member of the fair sex interested in forming a tape club for women in the Fulham area with its own tapesponding section. "I have several male contacts already," she told me, "including one I made quite recently through *TAPE* in S. Africa. But I really would like to meet some other females who are bitten by the hi-fi bug as deeply as I am." I asked her if she'd thought of a name for the proposed group. "How about 'The Magpies'?" she suggested. "They're supposed to be great chatter-boxes." Well, she said it—I didn't!

So, ladies, if Margaret's idea interests you, please write to her direct at 31, Oakbury Road, Fulham, London, S.W.6. Or you can reach her by telephone at RENown 6721.

■■■■■■■■■■

**I**N response to numerous requests . . . the music which was used to introduce the BBC's recent nightly coverage of the Olympic Games is called "Tokyo Melody." It's played on the recording by Helmut Zacharias and his Orchestra, and is available on Polydor 52341.

■■■■■■■■■■

**H**OT on the heels of the much-plugged snapshot (taken by Dad with the family "Brownie") of the eight-year-old aspirant loitering with obvious hell-bent intent outside No. 10, comes the latest contribution to the inevitable *Early Struggles Saga* of Harold Wilson, Esq.

His former headmaster recalls that the P.M. once wrote an essay entitled "Myself in 25 years Time," in which he saw himself as Chancellor of the Exchequer. Part of his Budget, so the dear old don tells us, included a crippling tax on gramophones. Reason? "Because we didn't have one ourselves at the time."

Let's hope to Gawd he owns a tape recorder!



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

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## Tape records reviewed

### A most welcome revival of music by Elgar

### CLASSICS



By Edward Greenfield

ELGAR. "Enigma" Variations, Cockaigne Overture. Philharmonia Orchestra conducted by Sir John Barbirolli. HMV (TA-ALP 1998), 3½ ips, mono. 40s.

The latest Elgar revival is much to be welcomed and comes none too soon. For those of us who have known his greatest masterpieces for many years any neglect seems absurd, and at last, thanks in part to recordings, a younger generation is coming to realise that Elgar stands for far more than mere pompous jingoism. Elgar naturally takes to the grand manner, true, but to criticise that is surely a comment on modern smallmindedness.

Elgar is grand because his material rightly and properly required him to be so, and nothing could illustrate better the tightness of his thinking when the form required it than the Enigma Variations, recorded here by Barbirolli in an uninhibitedly full-blooded performance. What other work could go so naturally and inevitably from the rounded, expansive warmth of "Nimrod," the most famous variation, to the delicate fluttering of "Dorabella" (a portrait of a young girl) and the rumbustious humour of "G.R.S." where the opening represents a dog falling down a river bank into the water, then coming out to shake himself.

These are musical portraits of twelve friends, his wife and himself, and it seems ridiculous that no notes whatever are given with this tape to explain the different sections. Admittedly "Enigma" is about the best known of Elgar's major works and everything can be enjoyed and appreciated in purely musical terms, but purchasers of the tape should at least have the same advantages as are given on the sleeve of the disc version. Cockaigne is an attractive if hardly a very generous coupling. This overture gives a colourful, bright, picture postcard view of London with brass-bands, flower-sellers, scenes in the parks, the Edwardian scene in fact. Again it is enjoyable in purely musical terms, but it is far better to understand the programme as well.

Barbirolli's warm-hearted and often rhythmically free performances are matched by rounded E.M.I. recording of a very recent vintage. The Philharmonia Orchestra plays superbly.

GRIEG. Piano Concerto in A minor. SCHUMANN. Piano Concerto in A minor. Solomon with the Philharmonia conducted by Herbert Menges. HMV (TA-ALP 1643), 3½ ips, mono. 40s.

These are among the most engaging and attractive concerto performances Solomon

ever recorded, and it is good to have them put on tape, particularly when the tape catalogue is oddly short of versions of these two favourite works. The Florentino performance of the Schumann is available on Saga, but the Eileen Joyce version of the Grieg also on Saga appears to be unavailable. Otherwise no tape versions at all. In any case these Solomon performances easily outshine those rivals, and having them together on one tape provides excellent value, with practically an hour's music.

Solomon is here in relaxed mood in both concertos, and the rubato in each succeeding romantic phrase is always natural and spontaneous-sounding, where sometimes Solomon could tighten up in the recording studio. The outer movements have plenty of vigour and natural display and the fingerwork is often sparkling. The recording, made over six years ago, still sounds extremely well, though some really hi-fi machines may pick up inadequacies.

TCHAIKOVSKY. Excerpts from Sleeping Beauty and Swan Lake. Philharmonia Orchestra conducted by Herbert von Karajan. Columbia (TA-33CX 1065), 3½ ips, mono. 40s.

This recording was first available on disc eleven years ago, and the recording quality is inevitably a little dated though the wide hall reverberation helps to mask that and the sound is more than acceptable on medium-fi instruments. These are sumptuous performances with the Philharmonia strings in splendid form, and Karajan bringing clear-headedness to the expression of romantic emotion. There are five items from each ballet included. From Swan Lake they are the Scena (Swan Theme), the Waltz in A major from Act 1, the Dance of the Little Swans from Act 2, the Introduction and Second Dance of the Queen of the Swans from Act 2 and the Hungarian Czardas from Act 3. From The Sleeping Beauty they are Introduction and Lilac Fair Prologue, Pas d'action (Adagio) from Act 1, Puss in Boots from Act 3, Panorama from Act 2 and the Waltz from Act 1.

### POPULAR



By Fred Chandler

## Another hit by the Beatles

A HARD DAY'S NIGHT. The Beatles. Parlophone (TA-PMC 1230), 3½ ips, mono. 35s.

Thirteen songs from the collective pen of John Lennon and Paul McCartney—the first of their LPs to be compiled thus—and the Beatles prove again they lack nothing in presentation, polish, and verve of attack.

The first track contains seven songs, including the title number, from their recent hit film. George Harrison sings the beat-ballad *I'm just happy to dance with you*, and the remaining numbers are sung by John and Paul. Outstanding number on this side is the very quiet and harmonious *If I fell* which has been described as the most pleasant ballad by the Beatles.

Also featured in the sound-track seven is another quiet ballad *And I love her*, sung

by Paul to the accompaniment of an acoustic guitar, and *Tell me why* which includes their fascinating semi-yodel effect. The track ends with the big beat number *Can't buy me love*.

Track two sees a departure from the predominant beat of track one, although they don't discard beat altogether. It begins with *Any time at all*, with the lads describing the offer of the love-lorn. *I'll cry instead*, a rock 'n' roll number with an accompaniment popular years ago, precedes a blues number *Things we said today* and then the quartet stride into another beat number *When I get home*, with their familiar throat-straining vocals.

The familiar *You can't do that*, shades of their hit "Please Mr. Postman," and *I'll be back*, another head-nodding number, complete the track. Their best album to date and a good demonstration of their wide range of talents.

**MUSIC FOR LEISURE Number 49. Party Tunes, featuring the Geoff Love Players. Encore (TA-ENC 5049), 3½ ips, mono. 30s.**

**MUSIC FOR LEISURE, Number 51. Frank Martin Orchestra. Encore (TA-ENC 5051), 3½ ips, mono. 30s.**

Two further issues in the "Music for Leisure" series. Both are for piano with rhythm accompaniment. Geoff Love introduces such standards as *April Showers*, *The Sheik of Araby*, *Oh Johnny*, and *For me and my gal*, among the sixteen titles.

The accent is on Latin-American tempo with the Frank Martin tape. *Perfidia*, *Frenesi*, and *Quiereme Mucho* are give brief introductions—necessary to accommodate the 28 tunes featured—before the piano tinkles into *As time goes by*, *Whispering*, and *Love walked in*.

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the finest  
albums  
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this type**

**JAZZ**



**By Mike  
J. Gale**

**MODERN SOUNDS IN COUNTRY AND WESTERN MUSIC. Ray Charles. HMV (TA-CLP 1580), 3½ ips, mono, 35s.**

At long last this recording is available on tape. Ray Charles stands at the top of his particular tree even despite him going through the phase where everyone raves about him because it is fashionable to do so. It always puzzles me how great talent—even in the early stages it is obvious to anyone taking the trouble to listen—suddenly explodes onto the scene as though it did not exist the day before.

The staggering fact is that like Tatum, Charles faced and overcame an appalling combination of handicaps, and then, having learnt successfully to live with blindness and colour prejudice, he climbed through the ranks of professional musicians (and that takes some doing) and reached head and shoulders above his fellow artistes.

The terrible struggles are clearly reflected in this, one of the finest albums of this type I have heard. Not only does he believe in what he is singing, but the emotion, love, pain and tears magnetises the audience and

he successfully conveys it to the impersonal studio.

Even the more straight commercial numbers like *I Can't Stop Loving You* weather time and sound as fresh and dynamic as they did two years ago. The remainder are *Hey, Good Looking*, *Born to Lose*, *Careless Love*, *Bye Bye Love*, *You Don't Know*, *Half As Much*, *I Love You So Much It Hurts*, *Worried Mind*, *It Makes No Difference* and *You Win Again*.

*Careless Love*, a traditional item arranged by Charles is especially worthy of note, as is the uncredited accompaniment which is both subtle and sensitive.

**OSCAR PETERSON AND NELSON RIDDLE. Verve (TA-VLP 9063), 3½ ips, mono, 35s.**

The growing practice of temporary associations for one recording session is adding confusion to the already vast reference indexes of jazz music. We have had Ella Fitzgerald and Count Basie (reviewed in June), Sinatra and Basie, Oscar Peterson and Basie and the most critically acclaimed of all, Sinatra and Riddle. Now we have Peterson and Riddle and despite the former's efforts, it fails to make any sort of impact.

Almost any Riddle track and Peterson track from previous albums could be superimposed to produce a similar result since each man seems unaware of the other. Riddle, a fine musician, professional to the bone and responsive to Sinatra's explosive talent, has too much of an inflated reputation to live up to, and this session puts him in perspective.

Peterson, on the other hand, is at his brilliant best. His particular instrument is gently caressed and coaxed in a misleadingly casual way: in *Nightingale*, his own composition, he reaches the heights of musical maturity while other items are not so disciplined.

The honours go to Peterson in a selection which covers *My Foolish Heart*, *Judy*, *Round Midnight*, *Someday My Prince Will Come*, *Come Sunday*, *My Ship*, *A Sleepin' Bee*, *Portrait of Jennie* and *Goodbye*.

**FAME AT LAST! Georgie Fame and the Blue Flames, with accompaniment directed by Earl Guest. Columbia (TA-33SX 1638), 3½ ips, mono, 35s.**

Fame at last, well not quite for this misnamed curious mixture of Rhythm and Blues, jazz, vintage Rock 'n' Roll, and Country 'n' Western. From my point of view I don't think I would object if it was played at a party although I would make a mental note to give my guest some brass band or even Jimmy Shand recordings for his birthday.

The backing is soulless and uninspired and the only composition worthy of a second hearing. *The Monkey Time*, would need radical re-scoring and a complimentary accompaniment if Mr. Fame's talents—and this item reveals great depth and feeling—are to be exploited.

Not only are the arrangements and programming poor, but the cover is badly printed with most of the text being unreadable; it does not help sales.

The album covers *Get On The Right Track*, *Baby* (symbolic?), *Let The Sunshine In*, *All About My Girl*, *Point of No Return*, *Gimmie That Wine*, *Pink Champagne*, *Monkeying Around*, *Pride And Joy*, *Green Onions*, *I Love The Life I Live* and *I'm In The Mood For Love*.

The tapes reviewed this month are issued by E.M.I. Records Ltd., 20, Manchester Square, London, W.1.

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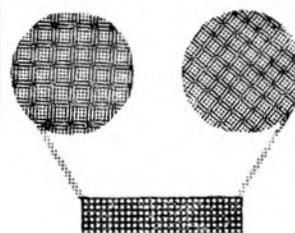
**F**IVE recent arrivals from Japan are the National tape recorders imported by United Africa Mechanical & Electrical Ltd. Two of these are mains machines, and three are battery-operated.

First of the battery operated units is the RQ116 a two-speed, quarter-track unit, with a RQ115 version.

The quoted frequency response is 100-7,000 cps at the top speed of 3½ ips, and 100-4,000 cps at 1½ ips. Wow and flutter at the top speed is given as less than 0.35 per cent RMS.

Among the features are facilities for headphone monitoring, remote control from the microphone, meter recording level indicator, powered rewind, a 3¼-inch loudspeaker, power output of 500 mW (700 mW maximum), and a tone control.

Seven hour continuous use is available from the twelve penlight cells used to provide the power in this transistorised



machine. The tube line-up includes two 2SB175, two 2SB178, a 2SB173, 2SB172, thermister MT-25, and an OA-70 diode.

Accommodation is available for three-inch spools providing a playing time of 26 minutes per track using triple-play tape at 3½ ips.

Among the accessories included in the price of £40 19s. are recording tape, empty spool, recording lead, earphone, leather case, shoulder strap, and splicing tape. The two-track version (illustrated top in our photograph left), sells at £36 15s.

Second of the new battery-operated models is the RQ150 (illustrated centre). This is a two-speed, half-track model with facilities for slide or film synchronisation and featuring an automatic start mechanism operated by sound impulses.

The quoted frequency response is 100-7,000 cps at 3½ ips, and 100-4,000 cps at 1½ ips. Accommodation is available for five-inch reels, providing a playing time of 32 minutes per track using standard-play tape at the top speed. Rewind for this size reel is four minutes.

Among the features are automatic tape end stop, VU meter recording level indicator, loudspeaker monitoring, tone control, and remote control operation from the microphone.

Six dry cells (UM-1) provide the power supply of nine volts required, and they will run for approximately 15 hours continuous use. A 3¼-inch permanent dynamic speaker is incorporated, and the power output is rated at 500 mW (700 mW maximum).

The RQ150 measures 12½ x 9 x 3½ inches, and weighs 5½ lb. Included in the price of £46 4s. are accessories as for the above model, plus synchronisation plug.

The third new machine, RS753 (illustrated separately above), is a three-speed, four-track stereo record and playback model selling at £79 16s.

Quoted frequency response is 60-15,000 cps at 7½ ips, 60-10,000 cps at 3½ ips, and 60-5,000 cps at 1½ ips.

Accommodation for seven-inch reels provides a playing time of 64 minutes per track (mono), 32 minutes (stereo) using standard-play tape at 3½ ips.



A wide range of features includes a special circuit design permitting FM stereo recording from Multiplex tuners, automatic tape end stop, VU meter recording level indicators for each channel, facilities for loudspeaker monitoring, straight-through amplification, push-button operation, and facilities for adding reverberation to recordings, and sound-on-sound recording.

The power source is 100, 115, 125, 200, and 250 volts, AC, 50 or 60 cycles. Power consumption is rated at approximately 70 watts.

The loudspeaker system employs a 6 x 4 inch dynamic unit, plus a 6½-inch round unit. Output power is rated as one watt per channel, two watts combined. Inputs are provided for microphone (20 K ohms), and auxiliary (1 M ohm); and input sockets are supplied for line (47 ohms) and extension speakers (8 ohms).

Two dynamic microphones and stands, seven-inch reel of tape, empty spool, recording leads, extension speaker leads, and splicing tape are included in the price.

Their fourth machine is the RQ303 (illustrated bottom of our photograph), a single-speed, half-track recorder selling at 15 guineas. The quoted frequency response at the single speed of 1½ ips is 150-4,000 cps, wow and flutter given as less than 0.5 per cent.

This transistorised mains machine (power supply 110/220 volts, AC 50 or 60 cycles) will accommodate three-inch spools, providing a playing time of 16 minutes per track using standard-play tape.

Push-button operation, neon recording level indicator, a 4 x 2½-inch loudspeaker and an output of 700 mW are among the features. Included in the price is a dynamic microphone.

The RQ150 measures 8 x 2½ x 3½ inches, and weighs approximately 4 lb.

United Africa Mechanical & Electrical Ltd., United Africa House, Blackfriars Road, London, S.E.1.

## ARGELANE INTRODUCE RECORDER FROM AMERICA

A FOUR-TRACK, three-speed stereo recorder manufactured by Roberts in America is announced by Argelane Ltd.

The new recorder (illustrated below) costs £175, operates at 7½ and 3½ ips, and has an adaptor to provide operation at 15 ips. Quoted frequency response all ± 3 dB is 30-20,000 cps at 15 ips, 30-18,000 cps at 7½ ips, and 50-10,000 cps at 3½ ips. Wow



and flutter is given as less than 0.2 per cent at 7½ ips, and signal-to-noise ratio as better than 45 dB. Tone control range is given as 20 dB.

Accommodation is available for seven-inch reels, providing a playing time of 64 minutes per track (mono), 32 minutes (stereo) using standard-play tape at the slowest speed.

The Roberts recorder is designed for vertical and horizontal operation, and has a wide range of features including facilities for monitoring, automatic tape end stop, digital rev. counter, separate volume controls for each channel, balanced stereo tone control, VU meter recording level indicators, pause control, and two 7 x 5-inch loudspeakers.

Inputs are provided for microphone (2mV) and phono/radio (125mV), and a low impedance output connection for mono or stereo listening on playback.

Further details are available from the U.K. Agents.

Argelane Limited, 251 Brompton Road, London, S.W.3.

## MASTERTAPE INTRODUCE THEIR IMPROVED SPLICER KIT

A NEW improved splicer kit is announced by Mastertape. Five different coloured leader tapes, metallic stop foil, jointing tape, plus tape splicer and cutter are included in the kit which will retail at 21s.

The Mastertape splicer kit (illustrated below) is attractively boxed in modern eye-



catching colours and full operating instructions are printed inside the lid.

M.S.S. Recording Company Limited, Poyle Trading Estate, Colnbrook, Slough, Buckinghamshire.

## PRICE REDUCTIONS IN M-O-T TAPE RECORD RANGE

MUSIC ON TAPE LIMITED announce changes in the price of their tapes in the current catalogue.

Prices for their 3½ ips recording with a playing time of 45 minutes will now retail at 30s.; a similar playing time at 1½ ips selling at 25s. For playing times of over 45 minutes and up to one hour, the new prices will be 45s. (3½ ips), and 35s. (1½ ips).

Music on Tape, 9 Kew Green, Richmond, Surrey.

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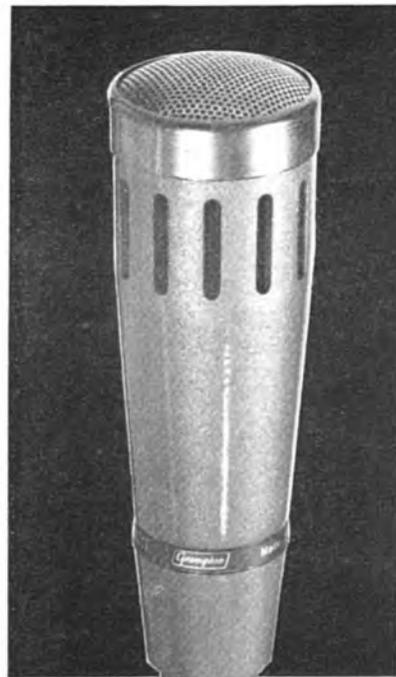
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# News from the Clubs

## BRISBANE

George Todd, of 70, Langshaw Street, Brisbane, Queensland, Australia, is currently trying to establish a club. He seeks advice and information on programme production and welcomes letters or tapes from club members in this country.

## COVENTRY

A unique and most informative experiment was carried out by the members of the Coventry tape recording club at one of their recent meetings.

Dubbings of a taped dubbing were made until the original recording was unrecognisable. Variable results were obtained: the tenth dubbing was quite good, number sixteen dropped right down, and the twentieth attempt finished it. Competing with this particular tape was a further copy made by a second team of members. Harshness at the tenth dubbing, made by the rival group's tape, preceded an indication of speed differences between master and slave machine and the tape became slower and slower. A third group trying this experiment found the frequencies mounting progressively. Extreme hiss developed, and at the fifth dubbing the tape was practically finished.

A previous meeting, was shared with members of the Rugby society. Rugby member Len Stevens provided the programme—a set of colour slides on what almost seemed to be a world tour.

The Rugby club's part of the programme was presented by Len Lucas who demonstrated his "Mikrokit" condenser microphone.

A location interviewing session saw members armed with battery portables interviewing locals on their choice of detergents, the reasons, and whether they were influenced by television commercials. Most said TV adverts had no influence on their choice; one couple admitting they bought a case of powder to obtain a set of wine glasses. The members "interesting" evening was rounded off in a nearby local.

An earlier meeting included the demonstration of frequency testing equipment. A range of frequencies from 30-16,000 cps, using 1,000 cps as a zero setting, was recorded on members' machines. These were played back and checked on a meter. Wide discrepancies were noted on certain machines, only the Brenell Mk 5, 82 coming out with anything like a flat response.

Live organ recordings were scheduled for October 4 when members attended an organ recital featuring one of the finest Wurlitzers in the Midlands.

Other location recordings were achieved by chairman L. S. Day when he visited the Coventry Film Production unit on the set of the current production "The Mask of the Red Death." The 11th century setting concerned itself with the effect of a particularly horrible plague, and Coventry members hope to produce a documentary on the production of this £200 colour film.

Other October meetings included a playback of the recordings so far achieved for the "Coventry Sounds" tape, and a manufacturer's demonstration evening. The first meeting of November was set aside for a tape/slide show from America.

Secretary: Roy Reynolds, 1, Thurlstone Road, Coventry, Warwickshire.

## FERROGRAPH OWNER'S CLUB

Two of the Chester members of this club recently visited the "Blue John Mines" in the Derbyshire peak district. Dispensing with the expected main machines, the pair descended with a Fi-Cord 202 battery portable, recording the guides commentary at a position 250 feet below ground.

The caverns were first discovered by the Romans some 2,000 years ago. The original glacial river drained away to leave stalagmites and stalactites—reputed to be thirty and forty thousand years old—which are found in several of the caverns. Semi-precious stone found below in thin seams gives the name to the caverns. Blue John was worked by the Romans into vases, two of which were found in the ruins of Pompeii.

Readers interested in obtaining copies of the tape made by this club, are invited to contact the secretary.

Secretary: R. D. Littler, "Kingswood," Silverne Drive, Ellesmere Port, Wirral, Cheshire.

## GLASGOW

A recent practical session for the Tape Recording Section of the Radio Club of Scotland saw members J. Wood, A. McCallum and O. Barnes demonstrating mixing and the compilation of sound effects into tape programmes.

During the same evening, John Douglas described a microphone which he had built. This was followed by the first part of a tape/slide show of Malaya, then Jack Malcolm played extracts from a recording he had made of a Salvation Army Brass band.

At another meeting, members welcomed enthusiasts from the Dundee club. A five-hour show had been prepared, and this included a demonstration of loudspeakers and an "Any Questions" session.

The following meeting saw John Knowles describing the production of a tape/slide show; and another member describing the compilation of the club's taped magazine "Spotlight."

Secretary: A. McCallum, 9, Glendevon Square, Glasgow, E.3, Scotland.

## LONDON

A meeting of the clubs formed in and around London has been arranged for Sunday, November 29, at the Hotel Russell, in Russell Square, London, W.C.2, by the members of the London tape club.

The meeting, intended to stimulate a closer co-operation between clubs, is to be attended by many of the personalities of the audio world including Mr. Richard Kenn, producer of the BBC's "Sound" programme. John Borwick, Douglas Brown, Editor of *Tape Recording Magazine*, and Mr. C. Rex Hassan, organiser of the Audio Fair. Acceptance from a broadcasting personality had still to be confirmed as we go to press.

Secretaries of the clubs attending have been asked to prepare short illustrations of their club's activities as an introduction.

The meeting will start at 2.30 p.m., and continue until 6.30. Refreshments will be provided. Further details are available from the secretary.

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

## MAIDSTONE

One of the most recent events of the Maidstone tape club is the completion of the society's mixer unit, which has been constructed during their meetings.

This is a five-channel unit employing jack and continental three-pin sockets. Details of the unit, should other clubs wish to build the "Maidstone Mixer," are available from the secretary.

Other activities of the club have included the recording of one-act plays: *The Iron Maiden* and *Red Spirits*; live recording sessions with local musicians; and the arrangement and recording of several musical programmes interspersed with stories and comment. They have also organised competitions and quizzes—a popular and progressive session with club members—and been entertained by various experts who have lectured and demonstrated on tape recorder maintenance, technique, and construction.

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

## NORTHERN TAPE CLUB

A change of secretary for the tape exchange organisation centred in the

North of England. George Greenhough replaces A. Corton listed in our October issue.

In the club's current newstape, chairman Tom Ingham reviews "Tape etiquette" and lays special emphasis on the conduct between tape correspondents.

A system to dispense with the need for an annual revision of the club's membership is also described by founder member Peter Copley. He is compiling a card index, copies of which will be sent to all members: additions to be made as and when necessary.

Two other members, brothers Ron and John Duxbury, are busy compiling libraries for members' use. John is circulating his musical round-robin which includes a wide range of musical tastes, while Ron is building up tapes of sound effects.

Members recently visited a local printing house where they recorded the "chatter" of the linotype machines whilst the newly-elected secretary succeeded in taping an interview with the Circulation Manager.

Another group activity resulted from the club's visit to Stockport County Football Ground, where they recorded a description of a match, and also secured an interview with a sports reporter. Both recordings have been included in the current newstape.

Secretary: George Greenhough, 24, Florist Street, Shaw Heath, Stockport, Cheshire.

## STEREO INTERNATIONAL

The second issue of "Rounder" the official journal of the Stereo International tape exchange organisation has recently appeared. This chatty newsletter contains brief tidbits from the widely dispersed members, most of whom seem to be asking for a wider membership.

Fred Gazeley, who instigated the club's sound magazine round-robin tape, writes a short note in this issue, and elsewhere the Editor Ron Page makes a special plea for reaction, news, tapes, in fact any type of contact from UK residents.

Interested readers are invited to contact the UK Representative or Ronald W. Page, 135, Sixth Street, Dover, New Hampshire, USA. A spoken version of "Rounder" is available for sightless members.

UK Representative: Roy V. Huddleston 9, College Avenue, Melton Mowbray, Leicestershire.

## UNION MONDIALE DES VOIX FRANCAISES

This international association, founded by an American of Belgian origin, is concerned primarily with those interested in speaking the French language. Members are listed in twenty-one countries throughout the five continents, and the society is associated with the International Amateur Recording Contest committee (FICS).

French members correspond on tape with overseas enthusiasts, to help their contacts improve their French: "Tour-au-Robin" is their own round-robin tape which is circulated to this effect, as well as to exchange news and views between countries.

UK Representative: Mrs. Pat Copinger, 2, Seaford Street, Kilmarnock, Ayrshire.

## VOICESPONDENCE

The UK Representative for the American tape exchange organisation Voicespondence, announces the recent issue of their latest directory of members. Some 2,000 names appear in the publication which runs into over sixty pages. All are up-to-date, being compiled from the quarterly supplements which list new members.

The early pages of the book contain rules and suggestions for establishing tape contacts. Despite printing and mailing cost increases, dues have been maintained at 17s. 6d. per year payable to the UK Publicity chairman.

UK Representative: Robert Cote, 27, Royal Oak Road, Bexleyheath, Kent.

## 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 514 giving their name, age, address, special hobby or interest for this section.

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

Ayers, John C. (25). 41, Kirkley Run, Lowestoft, Suffolk. Shows, films, records. 7½, 3½, 1½ ips. 7-inch spool. Stella ST455, Truvox PD84, four-track.

Baker, Alan (37). Vale Baptist Manse, Todmorden, Lancashire. Theology, football, budgeting. 3½, 1½ ips Seven-inch spool. Cossor CR1604. Letters first please.

Bird, David (24). 92, Gardiner Street, Gillingham, Kent. Cine photography, German language, music. 3½, 1½ ips Seven-inch spool. Philips EL3541/15B, four-track. Male contacts preferred in Germany and UK.

Birtley, Miss June (37). 233, Gowan Avenue, Toronto 6, Ontario, Canada. Music. 7½, 3½ ips. 7-inch spool. Korting MT136.

Blackburn, Stanley (25). 23, Trent Street, Longridge, Preston, Lancashire. Humour, pops and light classical music. 7½, 1½ ips. 7-inch spool. Elizabethan LZ29, four-track.

Brookes, Robin (22). 315, Longmoor Lane, Liverpool 10, Lancashire. Photography, humour, motor sports, classical music. 3½ ips. Seven-inch spool. Philips EL3541H. USA, Canada.

Brown, Derek (20). 7, Haygate Drive, Willington, Salop. Pop records, canoeing, and catering. 3½ ips. 5½-inch spool. Philco Model 5200.

Burrows, Lance-Corporal 23858236, (21). EME Branch, HG Eastco, Hounslow, Middlesex. Sound effects, light classical music. 15, 7½, 3½, 1½ ips. 8½-inch spool. Brenell Mk. V Type M. Female contacts preferred.

Butler, Walter Y. (67). 173, Catherine Street, Leicester. 35mm photography, travel. 3½ ips. 5-inch spool. Majestic.

Clarke, Christopher (23). 67, Crefield Road, West Acton, London, W.3. Stereo reproduction, cine photography. 7½, 3½, 1½, 15/16 ips. 7-inch spool. Cossor CR1605. UK, USA, S. Africa.

Cleeve-Sculthorpe, A. C. (29). 82, Lichfield Road, Coleshill, nr. Birmingham. 16mm and 35mm photography, sea and air travel, pop and c&w music. 7½, 3½, 1½ ips. 7-inch spool. Elizabethan FT3, Alba, Ferguson 3204, Stella ST470, battery-portable. Letters not required.

Calman, Harry (43). 41, Beaconfield Avenue, Epping, Essex. Humour, classical and traditional jazz music. 7½, 3½, 1½ ips. Seven-inch spool. Philips, two, and four-track stereo.

Compton, David (21). 16, Hollington Road, London, E.6. Teaching, Folk, and c&w music. 3½, 1½ ips. 7-inch spool. Stella ST458. English and German-speaking contacts required.

Cook, Robert (25). 28, Allan Street, Essendon W.5, Victoria, Australia. 8mm and 35mm photography, travel, music. 7½, 3½ 1½ ips. 7-inch spool. National four-track, stereo. UK Holland and Germany.

Curzon, Norman (35). 12, Rennell Road, Dundee, Scotland. Photography, astronomy, music. 15, 7½, 3½, 1½ ips. 8½-inch spool. Brenell Mk 5, series II.

Firth, John (45). 7, Birchdale Road, Liverpool 22, Lancashire. Piano medleys. 3½ ips. Three-inch spool. Grundig TK20. UK, Eire.

(Continued on page 514)



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Harmer, Richard (28). 64, Middleton Hall Road, King's Norton, Birmingham 30, Warwickshire. Records and radio. 7 $\frac{1}{2}$ , 3 $\frac{1}{2}$ , 1 $\frac{1}{2}$  ips. 7-inch spool. Truvox R94, four-track. Male contacts only. No letters please.

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Khawar, Bashire Mustifa (30). 14, Upper Hulton Street, Whalley Range, Manchester 16, Lancashire. Nature, reading, music. 7 $\frac{1}{2}$ , 3 $\frac{1}{2}$ , 1 $\frac{1}{2}$  ips. Seven-inch spool. Telefunken 96. Sweden, Egypt, West Germany.

Kettle, John (23). 20, Exeter Street, Gateshead 8, County Durham. Theology, athletics, reading, folk and c/w music. 3 $\frac{1}{2}$  ips. 5 $\frac{1}{2}$ -inch spool. Grundig TK5. UK.

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## MAGNETIC TAPE

A UNIQUE BUY! Recording tape top brand, 7-inch 2,400 ft. DP. 25s.; 5 $\frac{1}{2}$ -inch 1,200 ft., 19s. 6d. P & P 1s. 6d. per spool. Bargains in all sizes. S.a.c. for list. We repair, buy and sell recorders. E. C. Kingsley & Co. Ltd., 132, Tottenham Court Road, London, W.1. EUSTON 6500.

HI-FI MAGNETIC RECORDING TAPE, brand new top quality direct from manufacturer. Today's finest tape value. Money refund guarantee. Price examples: 5-inch standard 600 ft. PVC, 10s. 6d.; 5 $\frac{1}{2}$ -inch L.P. 1,200 ft. PVC, 15s. 6d.; 7-inch D.P. 2,400 ft. fully tenselized Mylar, 37s. 6d. Triple Play tapes, tenselized Polyester base also available. P & P 1s. 6d.—Large stocks tape spools all sizes. Descriptive leaflet on request.—TONRITE ELECTRONICS, 4, Monkville Avenue, London, N.W.11.

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## NEXTMONTH Index to all articles in 1964 volume plus usual features On sale December 16

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### FOR SALE

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Tape recorder owners wishing to make contact with others of similar interests are invited to complete and return this form. (BLOCK LETTERS PLEASE)

Name ..... Age .....

Address .....

Special interests .....

Speeds to be used ..... Maximum spool size .....

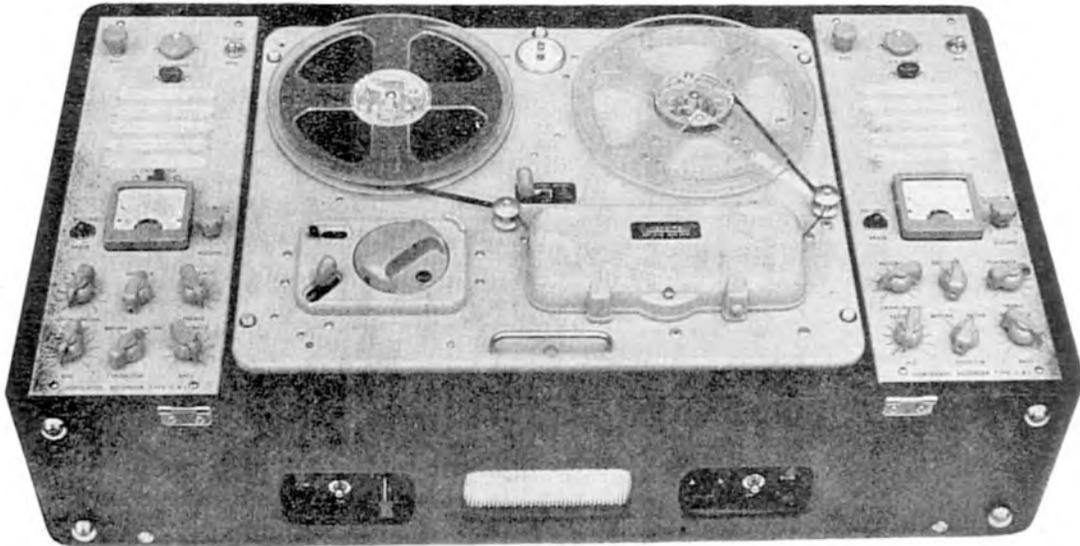
Recorder owned .....

Special areas to be contacted .....

(Unless otherwise stated, I am prepared to accept tapes from any part of the world)

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**quality equipment**

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

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

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

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

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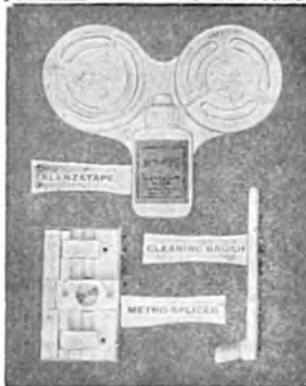
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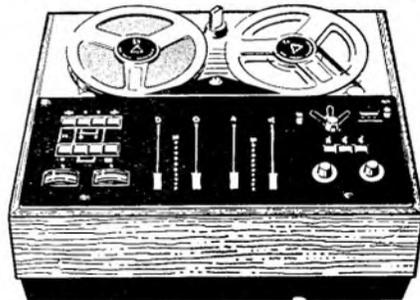
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| Truvox R94           | 7 5 0   | 5 8 8               | 69         |
| Philips EL3549       | 6 12 0  | 4 17 6              | 62         |
| Grundig TK23         | 4 15 0  | 3 10 10             | 45         |
| Philips EL3541/H     | 4 12 0  | 3 5 10              | 42         |
| Elizabethan LZ29     | 4 2 0   | 3 1 5               | 39         |
| Philips EL3541       | 3 15 8  | 2 16 9              | 36         |
| Elizabethan LZ24     | 3 14 0  | 2 13 4              | 34         |
| Ferguson 3204        | 3 10 0  | 2 11 11             | 33         |
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| Telefunken 300        | 6 4 0  | 4 12 11 | 59 |
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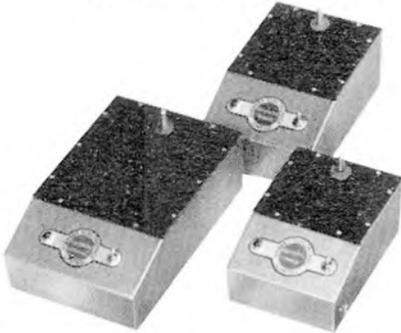
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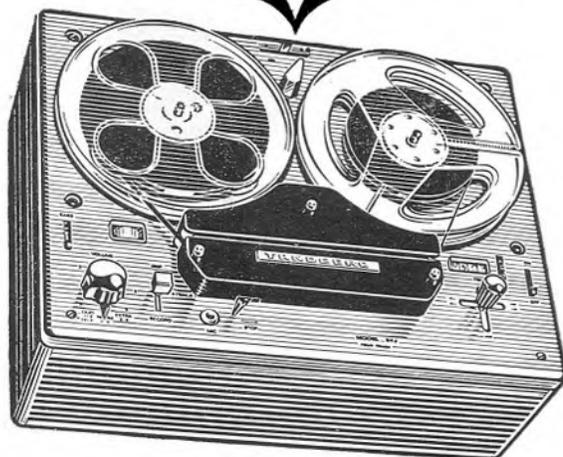
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**8**

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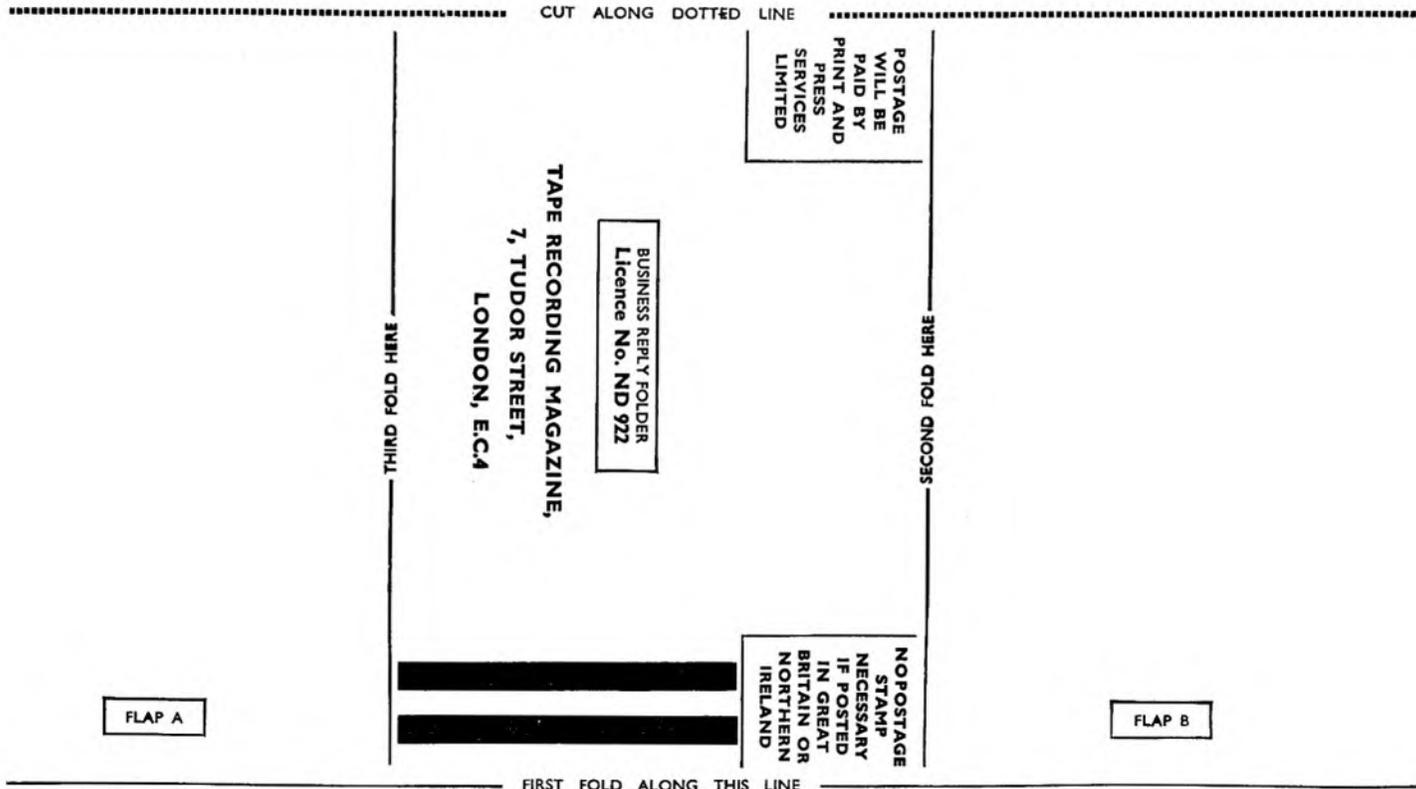
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