

JANUARY 1967

2/-

# TAPE

RECORDING MAGAZINE

## INSIDE

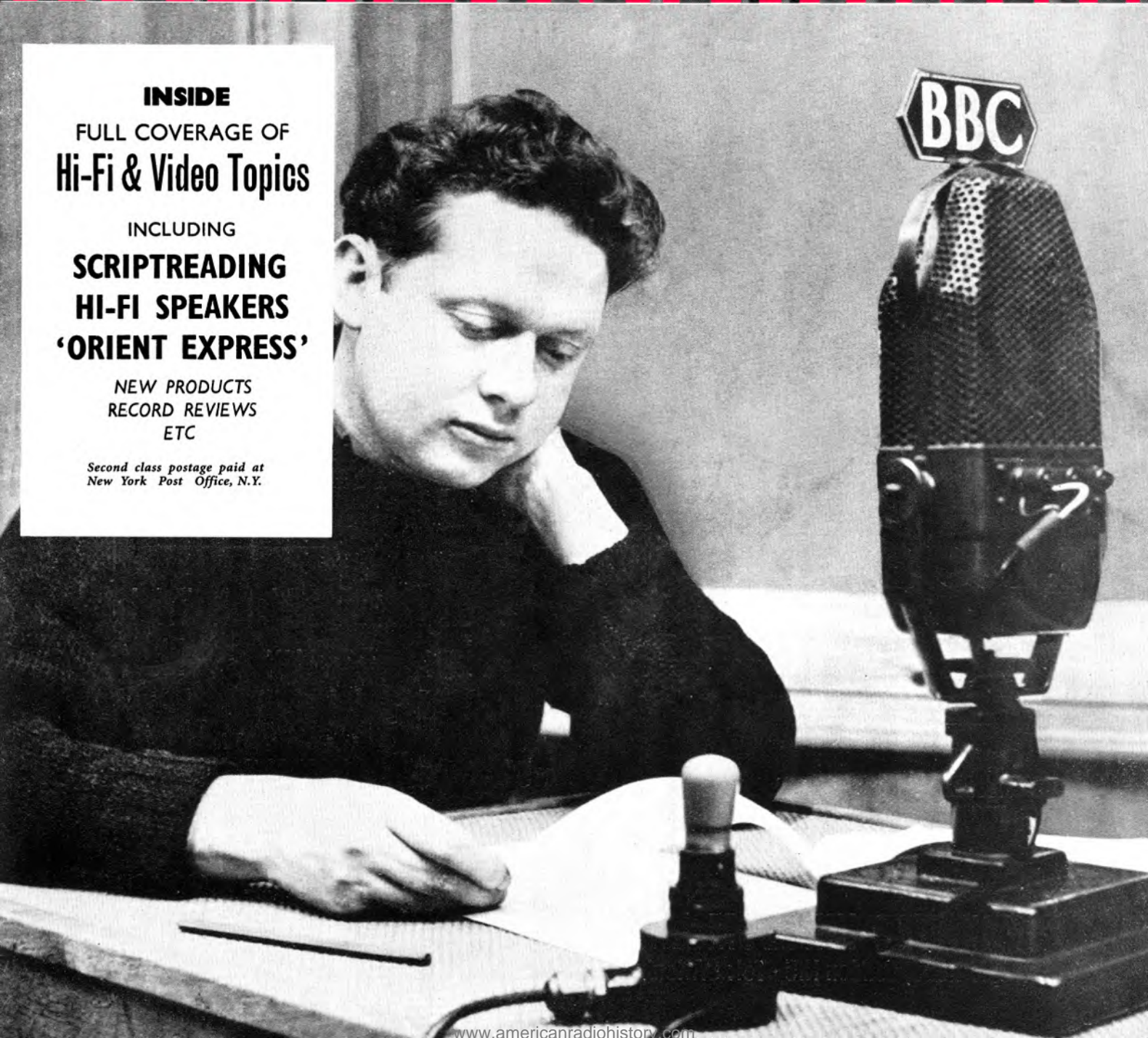
FULL COVERAGE OF  
**Hi-Fi & Video Topics**

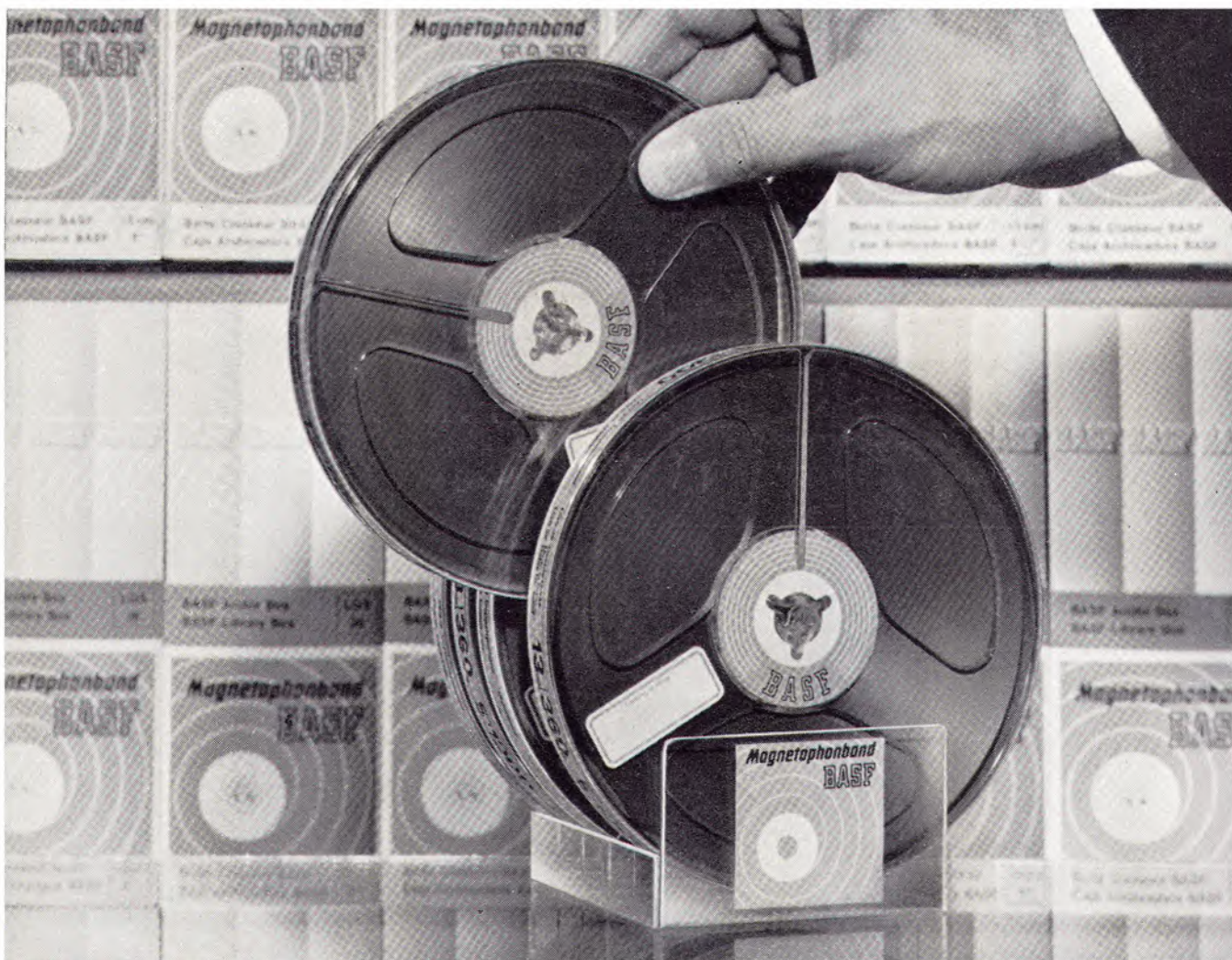
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RECORD REVIEWS  
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**REVOX 736**

**WYNSOR VANGUARD**

**AKAI 1710**

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**SPECIAL OFFERS!**  
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 SONY 777. Superb mono model, 85 gns.  
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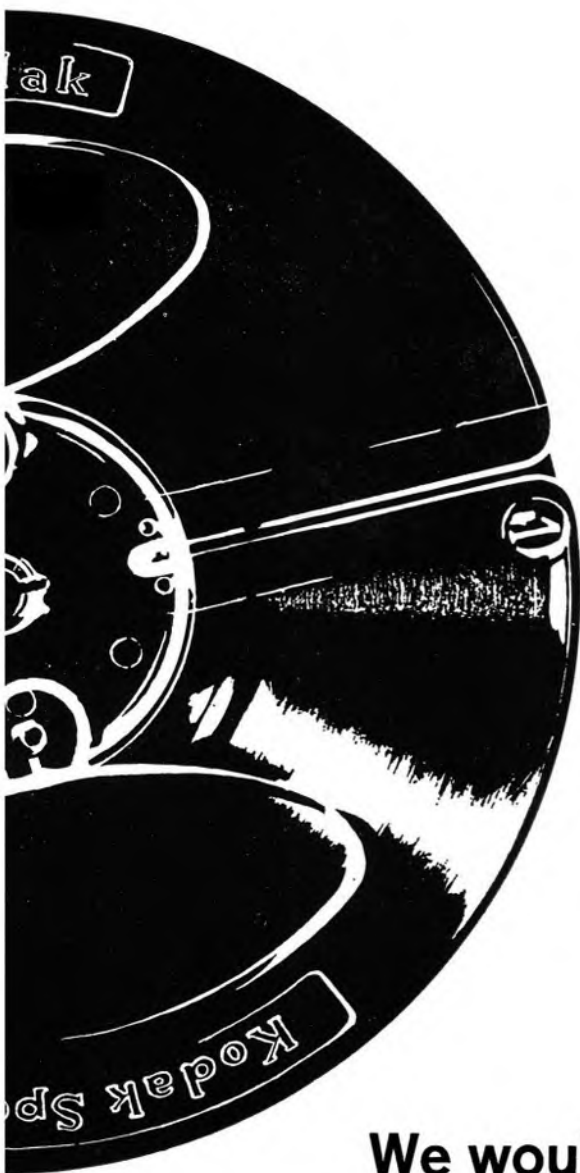
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363

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D-93

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Ferguson 3222 ...	12	5 0	2 0	10	35
Grundig TK140 ...	13	6 0	2 4	4	38
Philips EL3558 ...	14	14 0	2 9	0	42
Ferguson 3224 ...	15	8 0	2 11	4	44
WyndSOR Vanguard ...	20	13 0	3 8	10	59
Philips EL3556 ...	21	14 0	3 12	4	62

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

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

**BATTERY**

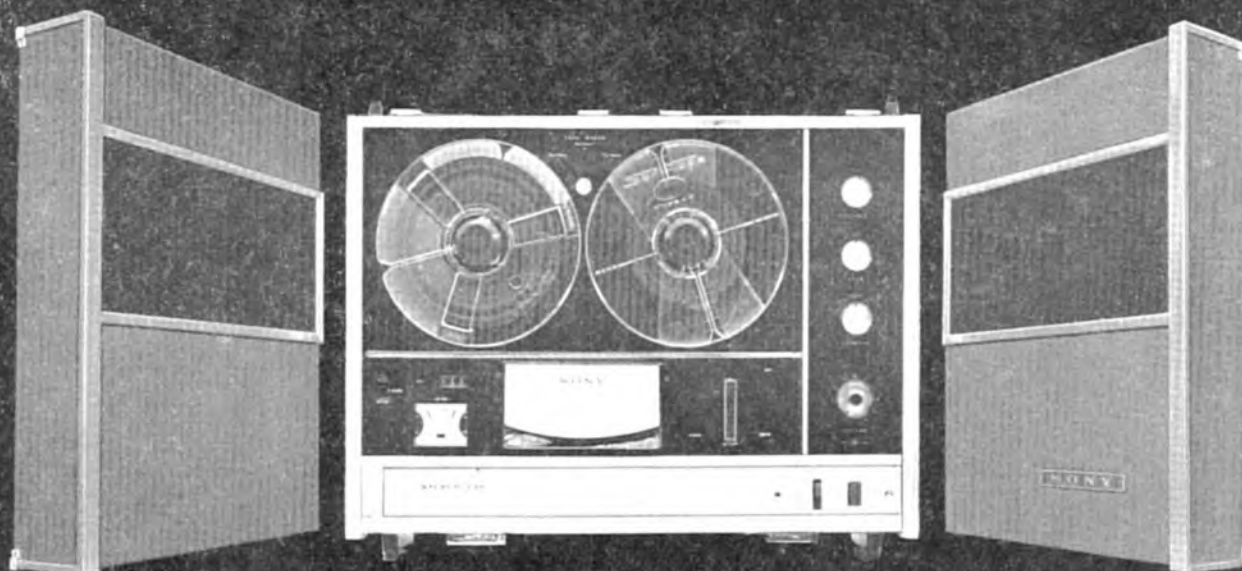
Philips EL3301 ...	9	9 0	1 11	6	27
Telefunken 301 4-T ...	18	18 0	3 3	0	54
Akai X-4 Stereo ...	34	13 0	5 15	6	99
Uher 4000L ...	36	1 0	6 0	2	103

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Reels:	7" diameter or smaller.		Speaker outputs: 2 x 8 ohm.
Recording system:	4-track stereophonic or monophonic.		Binaural monitor output: will accommodate stereo headset Model DR-3C (10k ohm impedance).
Frequency response:	30-20,000 cps at 7½ ips. (±3dB 50-15,000 cps. at 7½ ips.) 30-13,000 cps. at 3½ ips. 30-10,000 cps. at 1½ ips.		
Wow and flutter:	Less than 0.17% at 7½ ips. Less than 0.3% at 3½ ips. Less than 0.4% at 1½ ips.		
Power output:	5W R.M.S. per channel.	Dimensions:	19½" wide x 9½" high x 15⅞" deep.
Signal-to-noise ratio:	Better than 48 dB (at peak record level).	Weight:	41 lbs. 10 ozs.
Harmonic distortion:	Less than 3% at 0 dB line output.	Accessories:	Stereo recorded 5" tape, 7" reel. Two SONY dynamic microphones (F-96). Integrated record replay connector type RK-46 60c/s Motor pulley, Reel cap, Head cleaning ribbon, Splicing Tape.
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Inputs:	Low impedance microphone inputs: transistorised (will accommodate any microphone from 250 ohm to 1K ohm impedance).		

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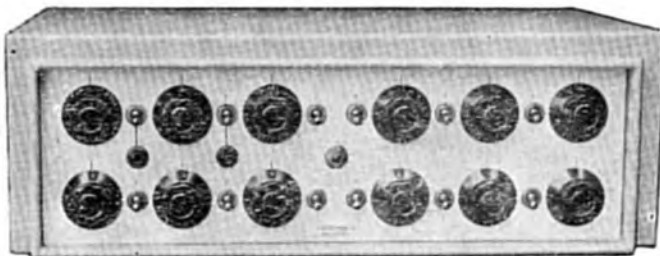
See your local Sony dealer now or write to:- Sony U.K. Sales Division, Mercia Road, Gloucester. Tel: Gloucester 26841. London Showrooms: 70-71 Welbeck Street, London, W.1. Tel: HUNter 2143.

# —Vortexion

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



### FOUR-WAY ELECTRONIC MIXER

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

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

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

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

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

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

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

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

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

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

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

P.P.M. for 200-250 V AC Mains	...	...	Price on application
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10/15 watt Amplifier with built-in mixers.			
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The DP4 microphone is another winner—by performance alone it has achieved world wide acclaim. It is used regularly by P.A. engineers, broadcasting and television companies, film studios, etc., as well as by many professional and amateur tape recordists. Its winning qualities have been designed and produced by Grampian—specialists for over thirty years in the field of sound equipment. We shall be pleased to send you full technical details of the DP4 and other microphones, together with descriptions of various accessories.

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



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



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

# TAPE

RECORDING  
MAGAZINE

Vol. 11

No. 1

January 1967

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

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# Tape trends and tape talk

By the Editor

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

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

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

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

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

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

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

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

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

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

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

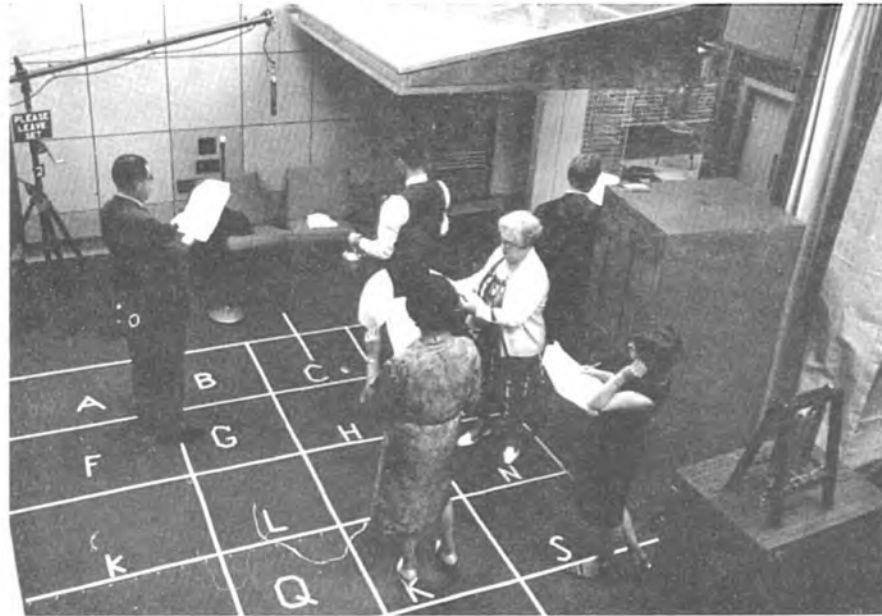
The battery portable using a cassette is a different proposition, provided it has the facility of transferring recording material on to an orthodox quarter-inch tape reel-to-reel model. The simpler and the lighter battery portables can be made, the better.

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

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

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

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



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

Photo by courtesy of the BBC

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

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

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

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

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

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

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

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

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

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

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

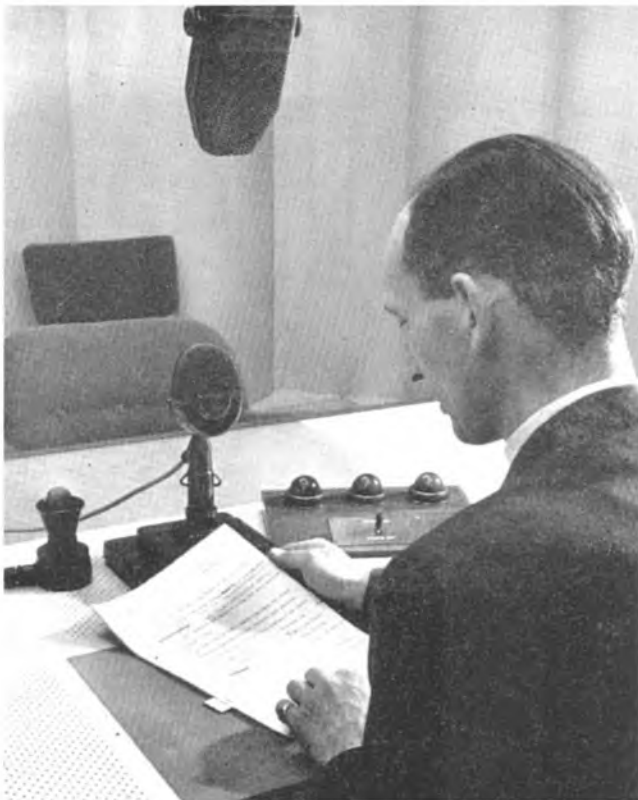
Very often we use sound effects to support the action. A typical instance might be a conversation taking place in a motor car. The readers are standing in the studio before the microphone. The sound effects people are attending to their part of the business, and this might or might not be heard by us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

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

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

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

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



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

Photo by courtesy of the BBC

# TAPE RECORDING TECHNIQUES

Nothing to record?

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

not experiment with the sound of your voice?

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

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

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

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

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

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

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

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

The reader must have confidence in his material.

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

*Dylan Thomas*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

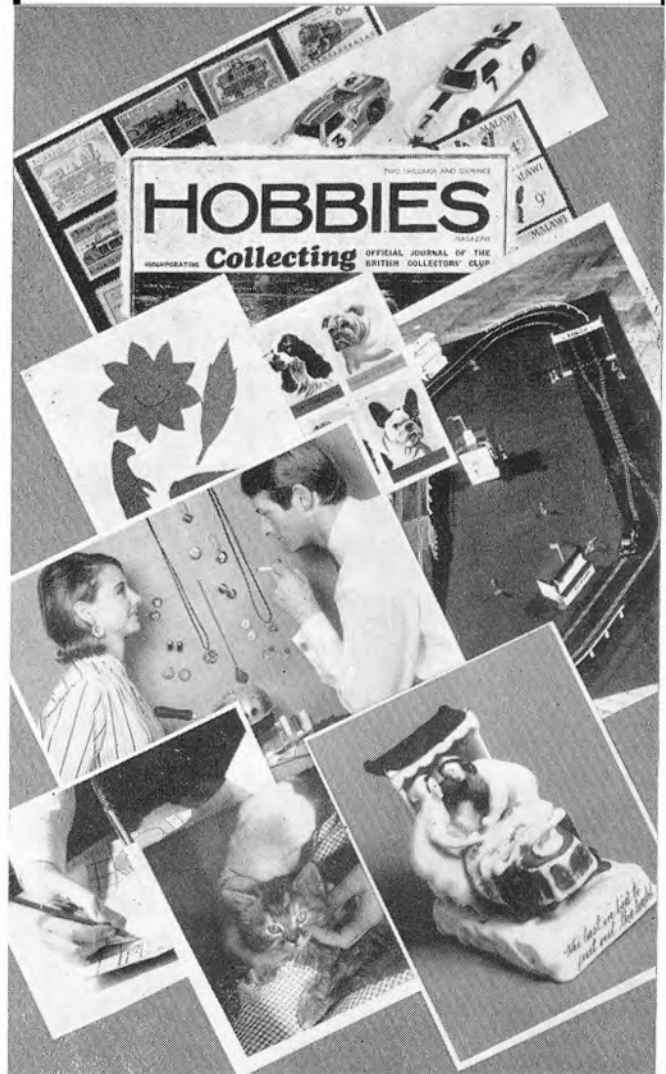
So please do take advantage of this very kind offer. Read it and record it and prove to yourself that reading before the microphone is indeed fun.

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## MICHAEL BARSLEY

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

# Recording the Decline and fall of the Orient Express

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

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

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

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

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

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

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



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

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

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

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

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

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

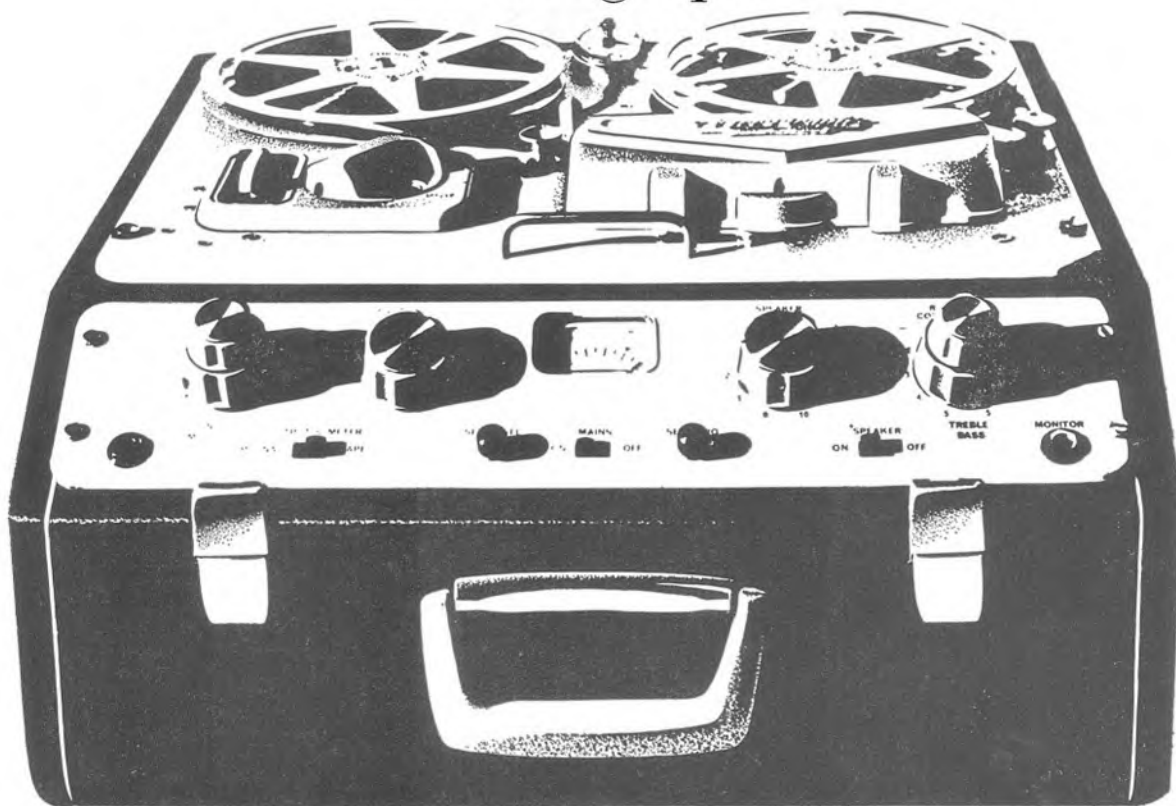
Early morning in Switzerland; rain on the platform at Lausanne, where the first commuters were waiting; stop at Vevey, where the

(Continued on Page 18)



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

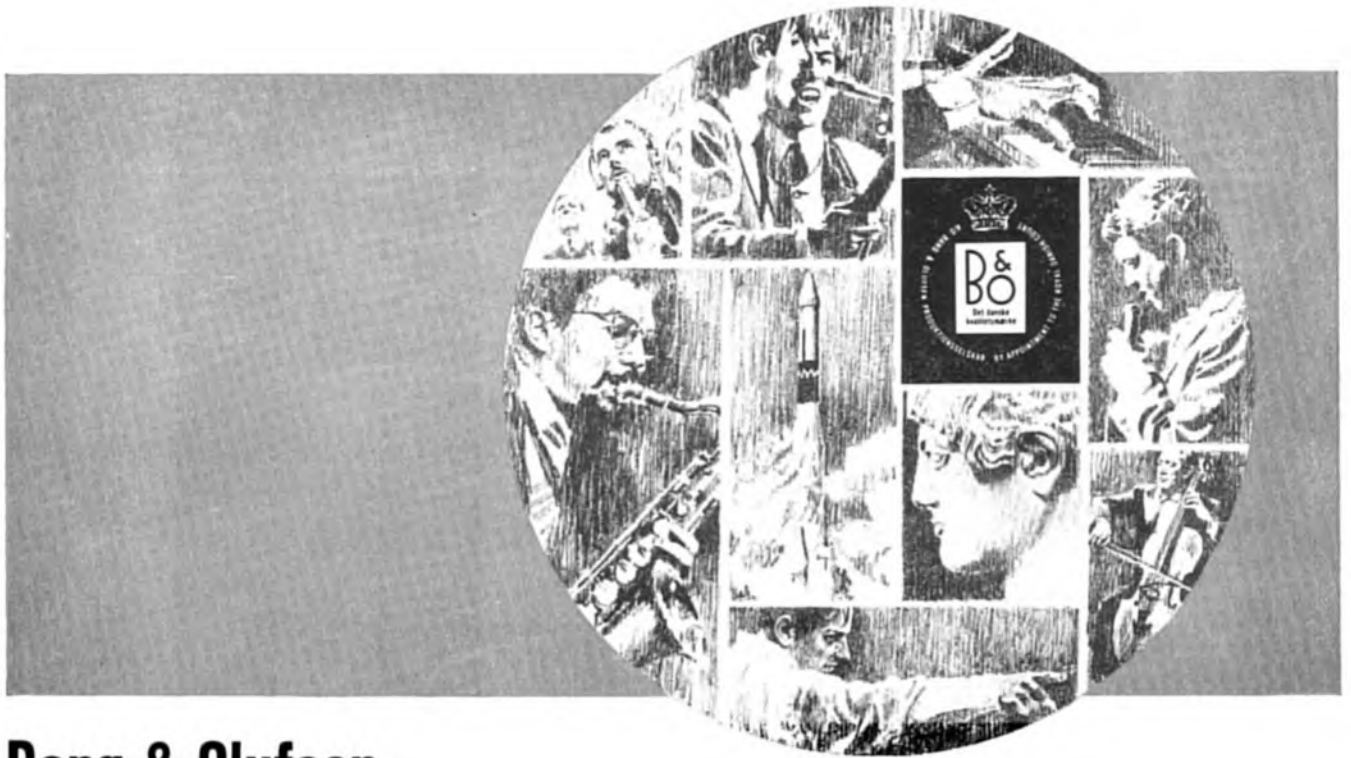


# EMITAPE

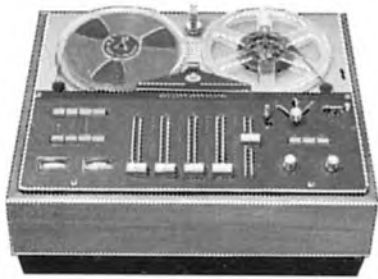
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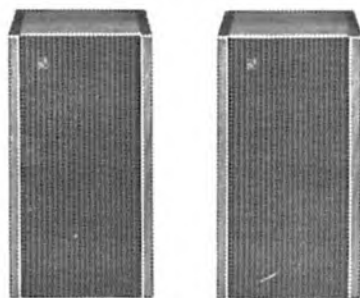
AN E.M.I. GROUP PRODUCT  
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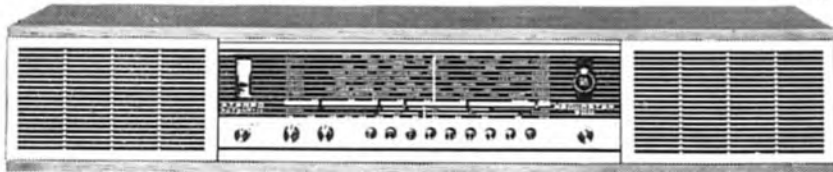
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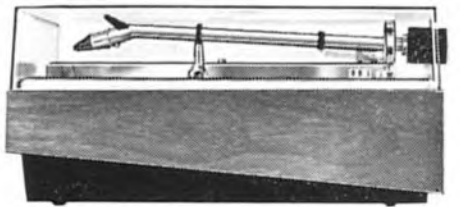
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# CROSS

# TALK

## By Audios

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## HI-FI LOUDSPEAKERS

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

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

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

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

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LOUDSPEAKER SYSTEM

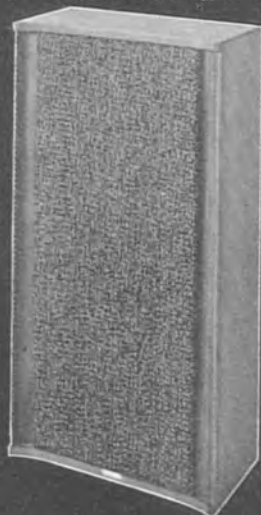
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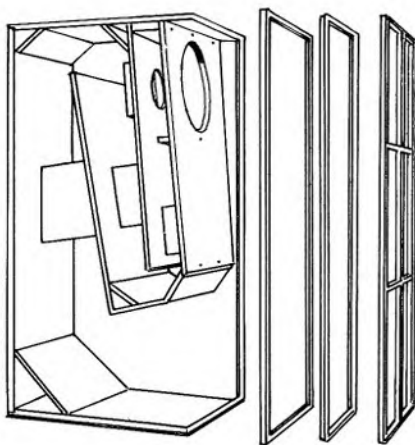
These three Jordan-Watts enclosures appear to be similar. Actually the one on the left is the Jumbo infinite baffle, and in the centre is the Juno reflex. These are both directional speakers. On the right is the Jason folded column, which is omni-directional. Jumbo is a bookshelf miniature, Jason is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

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

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

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

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



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

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

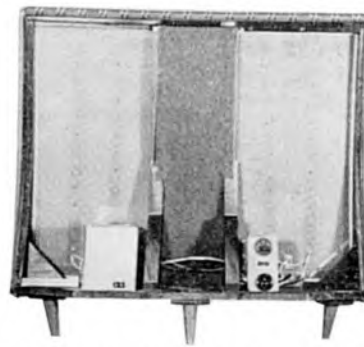
The reflex enclosure is comparatively small. It derives its name from the duct or vent in the cabinet which permits radiation from the rear of the cone, that is from within the enclosure, to add to the output of the drive unit. By the use of proper design a reflex enclosure should be able to reproduce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

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

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

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

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



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

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

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

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

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

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

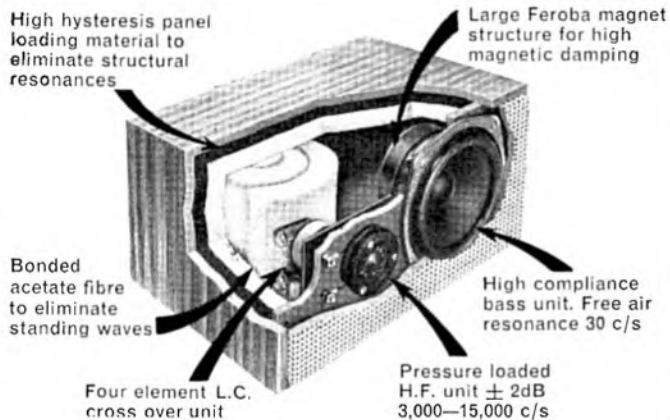
You will probably live with your loudspeakers for many years, so it is wise to choose them with great care. Learn all you can about them in general and make your final choice from personal knowledge and from actually hearing them in your own home if at all possible.

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## VIDEO NEWS

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

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

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

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

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

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

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

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

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



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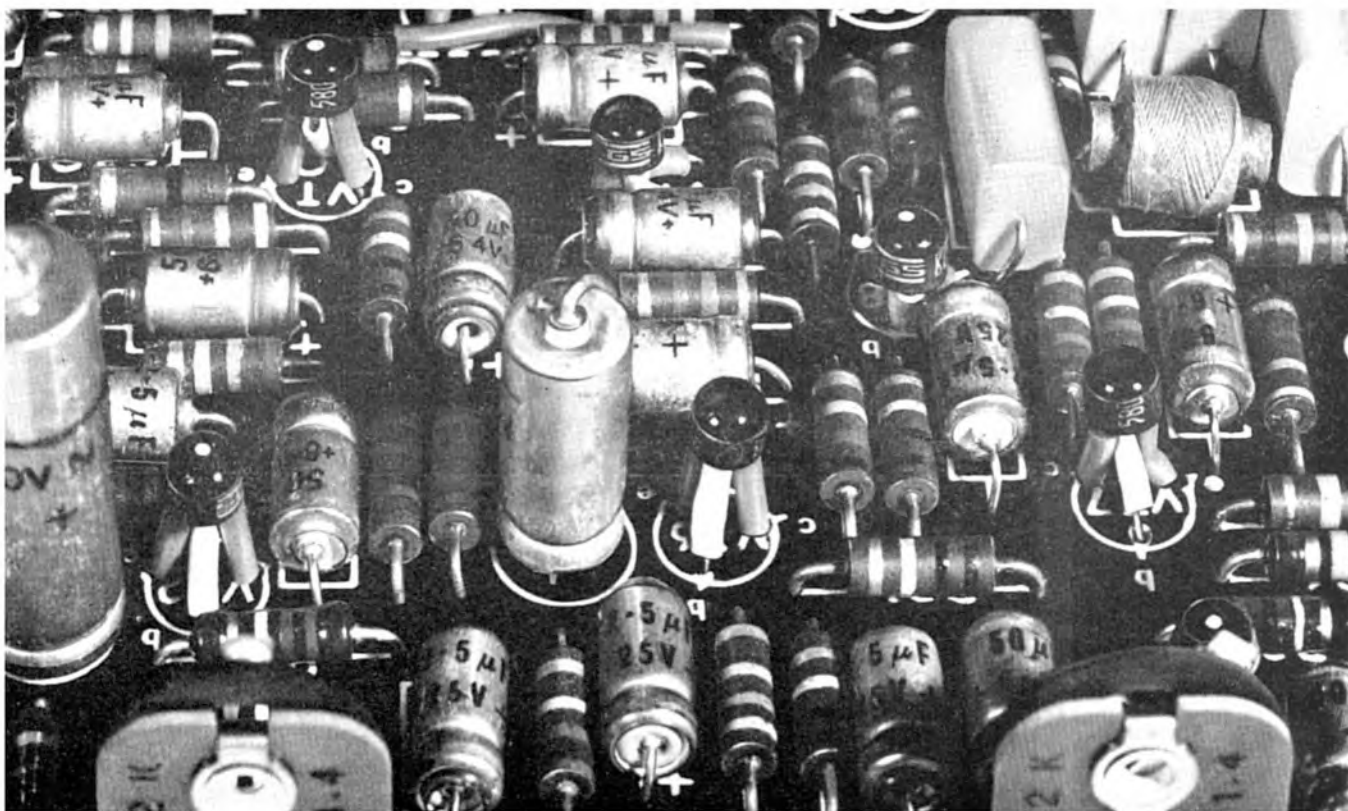
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## Tape records reviewed

### THE SPOKEN WORD ON TAPE

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

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

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

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

### RAVEL IN FOUR VOLUMES

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

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

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

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

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

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

### ENJOYMENT OF LIGHTER CLASSICS

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

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

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

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

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

Besides the works already mentioned the tape includes:—

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

## THE CHARM OF THE BAROQUE

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

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

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

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

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

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

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

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

## PLEASURE— OR ENDURANCE

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

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

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

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

## A TONIC FROM NINA & FREDERIK

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

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

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

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

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

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

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

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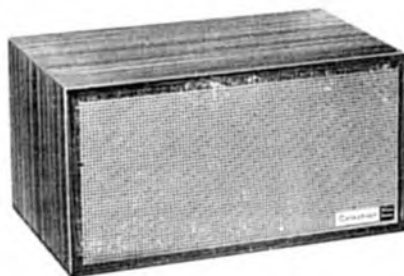
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**T**HE well-known Ditton 10 compact speaker by Celestion Limited is now offered in a 3 ohm version. This new model, which is available in teak, has been developed especially for owners of good-quality tape recorders and audio enthusiasts wishing to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



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

Celestion Limited, Ferry Works, Thames Ditton, Surrey.

**AMPEX  
2100 SERIES**

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

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

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

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



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

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

**NEW STYLING  
FROM TRUVOX**

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

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



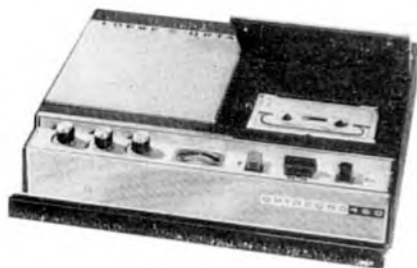
Advanced electronics include solid state silicon all-transistor circuitry. The deck facilities offered by the Belgravia are identical to those available on the standard R102 and R104 recorders from the present series 100 range.

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

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

## A UNIVERSAL CASSETTE PORTABLE

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



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

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

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

## DOING IT YOURSELF?

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

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

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

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

## FI-CORD'S BATTERY DICTATING MACHINE

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

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



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

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

## TUNING UNIT WITH VOLUME CONTROL

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



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

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

## IMPORTANT NOTICE Introducing Heinrich Hertz

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

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

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

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

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

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

## REDUCTIONS IN B & O PRICES

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

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

# FRANCIS OF STREATHAM

## MAINS TAPE RECORDERS

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

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

## BATTERY PORTABLES

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

\*Microphone extra

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Uher 4000, with cell	18 gns.
Telefunken 300, with cell	£15.17.0

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## MICROPHONES, MIXERS, etc.

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

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

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  - S.H.B. Tandberg B. & O.
  - Truvox Ditton
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  - Garrard incl. Thorens
  - AT6, 401, etc. Tannoy
  - Golding Shure
  - Connoisseur Ronette
  - Decca Sonotone
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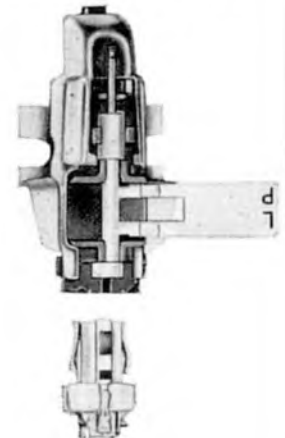
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TD 150 (Motor) £20.19.6 (Tax Paid)  
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**Hawke, David** (23). 232, Welland Park Road, Market Harborough, Leicestershire. Scottish country dance and Irish Ceilidh music. 7½, 3½ ips. 7-inch spool. Truvox R92.

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

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

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

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

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

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

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

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

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

**Knight, Derek** (40). 82, Worting Road, Basingstoke, Hampshire. Short-wave radio, travel, cricket, current affairs, jazz and classical music. 7½, 3½, 1½ ips. 7-inch spool. Robuk RK4.

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

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

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

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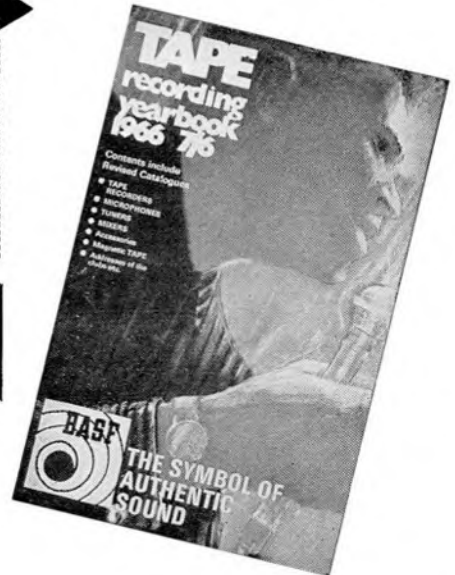
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