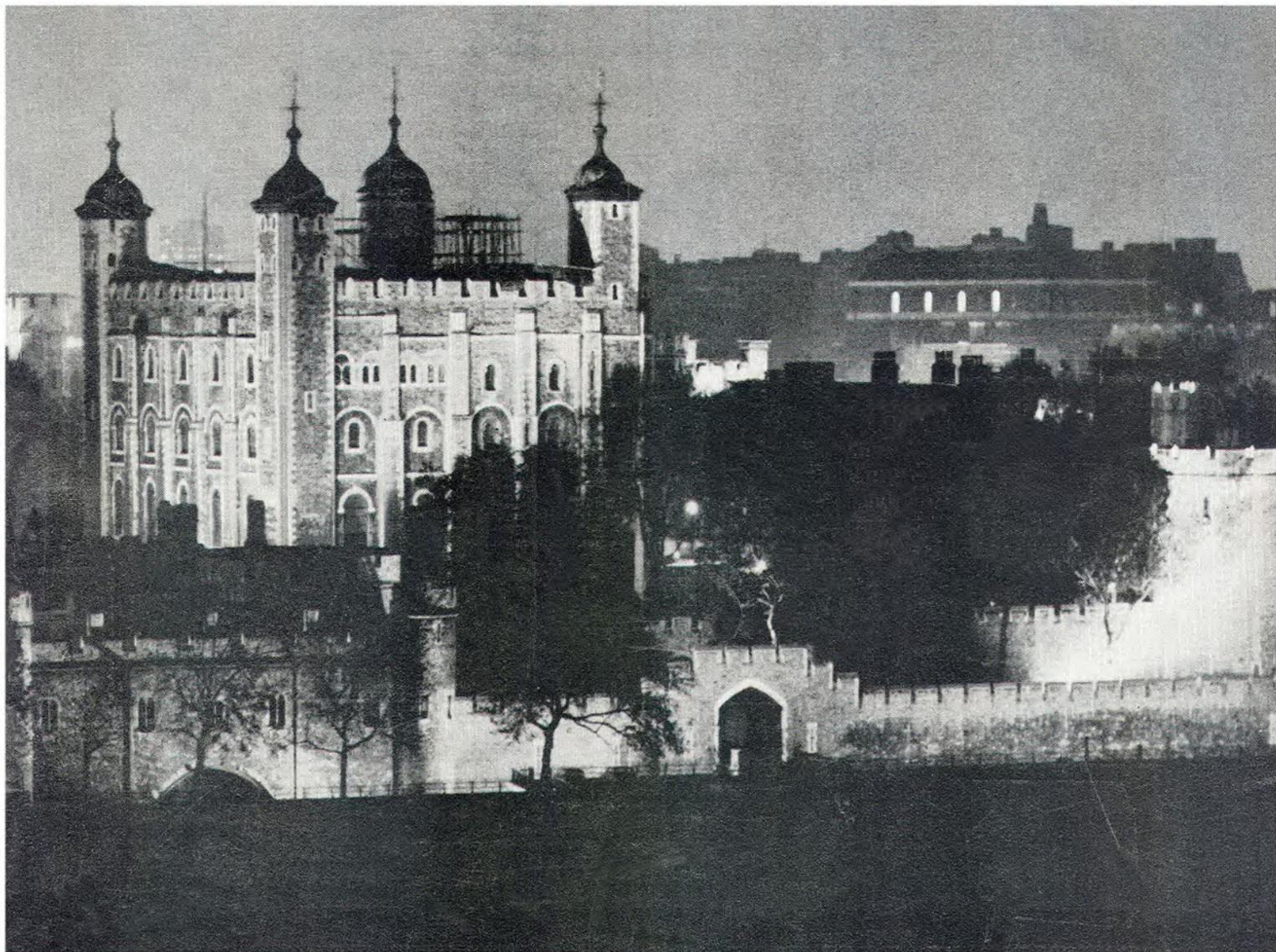


JULY 1963

TAPE

RECORDING MAGAZINE

1/6



IN THIS ISSUE

- Son et Lumiere at the Tower of London
- Advice on producing a holiday tape show
- Report on the Hanover Fair
- Test Bench reports on two stereo recorders
- The production of tape records
- New Products
- Reviews of the latest tape record releases
- Club News

USE YOUR TAPE RECORDER FROM ANY D.C. SUPPLY

You can operate your recorder from a car, caravan or boat battery, or from any D.C. mains supply with a VALRADIO D.C. CONVERTER. These D.C. converters enable you to operate TAPE RECORDERS, etc., for play-back music, telephone conversations and reports whilst on long journeys, in addition to making outside recordings.

Electronic types of converters are also available for 200/250 D.C. with outputs up to 200 watts 50 c/s. from ships' supply or D.C. mains.

Available for practically all makes of recorders, record players, radiograms, amplifiers, etc. with prices ranging from £7 3s. 0d., VALRADIO D.C. CONVERTERS add versatility to your equipment.

Valradio and Stereosonoscope are the registered trade marks of Valradio Ltd.



For further details just post coupon below to:

Valradio

LIMITED
Browells Lane,
Feltham, Middlesex,
Tel.: Feltham 4242-4837.



Please send me fully descriptive leaflet, ref: TRM on D.C. CONVERTERS for tape recorders and other equipment

Name

Address

Make and type of equipment:

D.C. volts in: A.C. watts out:

YOU DESERVE A BETTER TAPE RECORDER!

We know it's easy to say so—but it's just as easy to achieve when you're dealing with Britain's largest Part Exchange Specialists! Write or phone our Mail Order Dept. NOW—or call in person. You'll be delighted at the selection we can offer of over 300 machines—just about every model on the market—for off-the-shelf delivery, and with the prompt and generous allowance we'll make for your old machine.

... get that new machine with the **R'E'W**

'PLUS FIVE' SERVICE!

- Generous Part Exchange Allowances
- No Interest Terms—Lowest Deposits
- Off-the-shelf delivery from the biggest range under one roof
- Optional Personal Insurance
- FREE Servicing—FREE Delivery

Starting in Tape Recording?

Let us send you brochures and leaflets—make your choice in the comfort of your own home—and order with confidence on friendly, no interest, low deposit terms over 12 months. (H.P. Terms available for 18/24 months.) Or call, see, hear and choose for yourself from one of the biggest ranges anywhere under one roof. Plenty of used models in stock at bargain prices if you prefer—ask for free lists.

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

FERROGRAPH 5AN...	85 gns.
BRENELL Mk. 5/2	69 gns.
BRENELL Mk. V "M"	88 gns.
REVOX Stereo	110 gns.
REFLECTOGRAPH Type "A"	105 gns.
REPS. R.10 2-Track	59 gns.
SIMON S.P. 5	93 gns.
TANDBERG Stereo 6	110 gns.
TANDBERG Stereo 7	93 gns.
AKAI Stereo	130 gns.
VORTEXION WVA	£93.13.0
FERROGRAPH 522-524	110 gns.
SONY Stereo 521	124 gns.
AMPEX Stereo 1273	290 gns.

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

AT **R'E'W EARLSFIELD LTD.**

Personal callers always welcome

Write or 'phone MAIL ORDER DEPT "TR" 266 UPPER TOOTING ROAD, LONDON, S.W.17
Telephone: BALham 7710

We offer a wide range of over 50 different models



including: Radios, Speakers, Amplifiers and Test instruments.

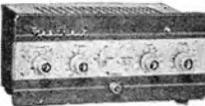
Save Money Building Your own Equipment!



TA-IS

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

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



S-33

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

DE-LUXE STEREO AMPLIFIER Model S-33H

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

HI-FI STEREO 18W AMPLIFIER Model S-99

Within its power rating, this handsome looking amplifier is the finest available. U/L push-pull output. Printed circuit board construction. £27.19.6.



S-99

HI-FI FM TUNER Model FM-4U

Available in two units. Tuning unit (FMT-4U £2.15.0 incl. P.T.). I.F.-amplifier (FMA-4U £12.6.0). Printed circuit for I.F. Amplifier and Ratio detector own built-in power supply, 7 valves. Tuning range, 88-108 Mc/s. Total price £15.1.0.

HI-FI AM/FM TUNER. Model AFM-1.

Also available in two units as above: Tuning heart (AFM-T1 £4.13.6 incl. P.T.) and I.F. amplifier (AFM-A1 £20.13.0.). Total £25.6.6.



AM/FM TUNER

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



MALVERN

EQUIPMENT CABINETS

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

Prices from £6.19.6. to £29.8.0.

TRUVOX TAPE DECKS.

Models D-83-D84

High quality mono/stereo Tape

Decks.

D83 2 track for higher fidelity

£31.10.0.

D84 (identical presentation) 4

track. £29.8.0.



TRUVOX D83

COTSWOLD & MFS SPEAKER SYSTEMS

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

Price either model £23.4.0.

COLLARO "STUDIO" TAPE DECK

This stylish tape transcriber

is by far the best "buy" in

its price range, with 3 speeds

1½, 3½, 7½ i.p.s. £17.10.0.



STUDIO



COTSWOLD

Without obligation please send me

FREE BRITISH HEATHKIT CATALOGUE

Full details of Model(s)

Name

Address

(Block capitals please)

TI.

All prices include free delivery in the UK. Deferred terms available on orders over £10.

ALL MODELS AVAILABLE ASSEMBLED—PRICES ON REQUEST

DAYSTROM LTD.

Dept. TI
Gloucester, England.



THIS UNIQUE POCKET-SIZED
'MINICO'
 TRANSISTOR TAPE RECORDER

RE-LIVE YOUR HOLIDAYS—

For the Cine Enthusiast the "Minico" is a must; it rests effortlessly on your wrist as you film, the highly sensitive microphone is built into the leather strap, recording every word and sound. Capture the atmosphere—at home or abroad—record and play back anytime, anywhere. Excellent for the 'Pops', T.V., etc. Also ideal for offices, commercial 'Reps', students, languages and lectures.

★ COMPLETE WITH MICROPHONE
 TAPE AND BATTERIES

YES—THE PRICE IS CORRECT

ONLY 7 1/2 GNS

USUALLY 15gns.



- ★ Exquisitely engineered, a thrill just to handle. Microphone can be readily removed from carrying strap for even more versatility.
- ★ Play back through high quality internal speaker. Double track, giving up to 45 mins. recording.
- ★ Automatic erase, fast rewind. All external controls, 4 transistors, precision rim drive.
- ★ Weight only 33 oz. SIZE 6½in. × 4½in. × 2½in.

POST, PACKING AND INSURANCE 6/-

**HORNTONS
 ELECTRONICS**
 1 NAVIGATION ST.
 (next to Queen's Hotel)
 BIRMINGHAM 2.
 'PHONE: MID 0972



The Grampian Ribbon Microphone

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

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

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

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

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

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

TAPE RECORDER COVERS



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

Cosor 1602	...	57/6
" 1601	...	63/-
Stella ST455	...	63/-
" ST454	...	57/6
Saja MK.5	...	57/6
Stuzzi Tricorder	...	58/-
Saba	...	63/-
Wyndor Viscount	...	55/-*
" Victor	...	60/-*
Elizabethan Princess	...	60/-*
" Avon	...	60/-
" Escort	...	57/6*
" Major	...	63/-
" FT.1	...	66/-
" FT.3
Fi-Cord	...	52/6
Korting (4 track stereo)	...	63/-
Harting Stereo	...	66/-
Fidelity Argyle	...	55/-*
Walter 101	...	55/-
Simon SP4	...	63/-*
Clarion (complete with strap)	...	52/6
Brenell Mk.5	...	77/-
" 3 star	...	69/-
Minivox

Grundig TK.5	...	55/-
" TK.8	...	63/-
" TK.20	...	52/6
" TK.24	...	55/-
" TK.25	...	55/-
" TK.30	...	60/-
" TK.35	...	63/-
" TK.50	...	60/-
" TK.55	...	63/-
" TK.60	...	75/-*
" TK.830/3D	...	63/-
" Cub	...	35/-
Telefunken 85	...	60/-*
" 85	...	65/-
" 75/15	...	55/-
" 76K	...	55/-
" 77K
Philips 8108	...	57/6
" 8109	...	63/-
" EL3538	...	63/-
" EL3542	...	63/-
" EL3536	...	70/-*
" EL3515	...	57/6
" EL3541/15	...	57/6

A. BROWN & SONS LTD.

24-28, GEORGE STREET, HULL Tel: 25413, 25412

for Professional Performance...

Tandberg

SERIES 6 STEREO TAPE DECK



- 3 SPEEDS
- 3 HEADS
- 4 AMPLIFIERS
- *4 TRACK

and 2 TRACK

- High and low level mixer inputs and cathode follower outputs.
- "On and off the Tape" monitoring.
- Sound-on-Sound simultaneous record and playback.

110 gns

Booklet of Technical Reviews on request.

SERIES 7 STEREO TAPE RECORDER



- 3 SPEEDS
- 2 HEADS

and 2 Power Amplifiers

- Two Indicators.
- Two Monitor Speakers.
- Two outputs for additional speakers or Hi-Fi.

*4 TRACK and 2 TRACK

Send for leaflet.

BUILD-IT-IN OR CARRY-IT-AROUND!

4 track model 74
2 track model 72

(Luggage type carrying case. £7 1s 8d. extra).

93 gns

Tandberg GB

ELSTONE ELECTRONICS LIMITED,
Edward St., Templar St., Leeds 2.
Telephone: Leeds 3-5111 (7 lines)



SEE
ALL
MAKES

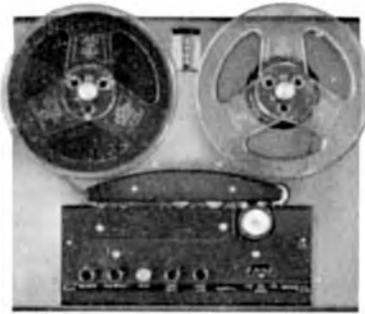
Hear all makes. At the Tape Recorder Centre showroom you can see, hear and compare them *all*, on the spot. The country's leading specialists in tape recording are there to give you unbiased help in choosing from the country's largest stocks of equipment. At The Tape Recorder Centre there is the model best suited to your needs (and your pocket). And everything else for tape recording, office dictation and hi-fi, plus excellent HP terms. See all makes, hear all makes, at

THE
T **R**
C **TAPE**
RECORDER
CENTRE

Philips
Elizabethan
Grundig
Ferrograph
Stella
Vortexion
Brenell
Ampex
Tandberg
etc

82 High Holborn, London WC1. Tel: CHA 7401 ● 75 Grand Parade, Harringay, London N4. Tel: FIT 2316

**BRITAIN'S
FINEST
TAPE
DECK**



This is not merely our claim—it is the considered judgment of many leading experts. And now, under our 1963 production programme, there will be more PLANET tape decks available.

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

Write for illustrated brochure and independent test reports to:

PLANET PROJECTS LTD.

Goodman Works, Belvue Road, Northolt, Mddx.

**The Berean
Forward Movement**

(NON-SECTARIAN
NON-DENOMINATIONAL)

Loan of over 700 reliable expositions of the Bible available on tape (3½ ips) for cost of postage only (free to the blind and infirm). Invaluable to all Christians, from teachers to tyros; for Bible Study groups or private meditation. Supporting literature also available. Send for free, complete list of tapes and literature to B.F.M. "Eastgrove," Marsham Way, Gerrards Cross, Bucks.

Invitation to Sound Reality

High Fidelity Equipment should bring to you the closest possible approach to the original sound . . . but in choosing we have to bear in mind your own individual requirements.

Let us assist you with a well chosen selection of equipment which can give you quick and accurate comparisons under the right conditions.

Specialist in High Fidelity Sound.

H. D. KIRK

Stereolectrics
LIMITED

Phone: 23093

150 HIGHER BRIDGE STREET

BOLTON



ONLY A PILLAR-BOX AWAY . . .

Wherever you live, you are only the nearest pillar-box from the biggest Tape Recorder dealers in the British Isles—

HOWARD OF BROMLEY

Thinking of buying a Tape Recorder, Hi-Fi Equipment or a Camera? Willing to risk 3d. to see if we really do offer you better terms than anyone else? Then contact us for full details of all our offers (which includes INTEREST FREE H.P. on most makes) and free brochures, etc.

If we do not convince you, you will only have lost 3d. and you can still go elsewhere. (But we bet you won't!)

WRITE, PHONE, CALL IN OR SEND CARRIER PIGEON:

**218 HIGH ST
BROMLEY
KENT**

**RAVensbourne
4000 & 4477**

**H O W A R D
T A P E R E C O R D E R S**

*moment
of
triumph*



... the ballerina, curtsying at the applause, remembers the years of training, hard work, muscle-wrenching toil. Her success makes sense of that life-long discipline.

... the SIMON SP5 makes sense of the technological development, the use of transistor circuitry, the new thinking about design, that have gone into its conception.

... to put it bluntly, no other tape recorder in the high quality range offers the amateur or the professional so much; nor quite the same modern, logical, treatment of shape and controls.

... where else can you buy for 93 guineas (or 106 guineas for stereo) such a remarkable range of facilities—uni-directional twin-track recording, two speeds, seven-inch spools, dual channel mixing, master fader, loudspeaker monitoring, level setting, controlled echo, track to track recording, bias control, and metered recording control?

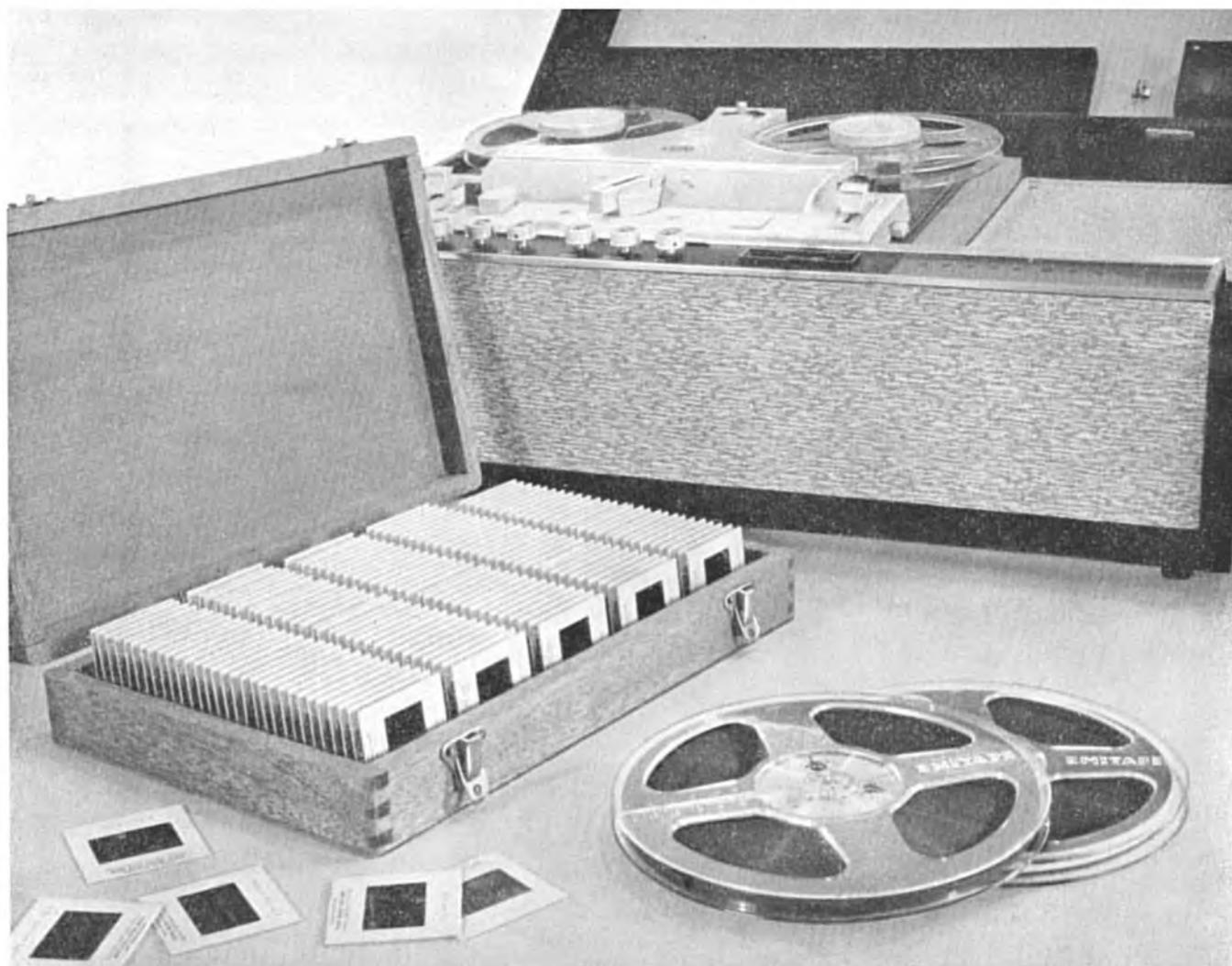
... and where else, at such an inexpensive cost, can you buy equal or even comparable performance?



SIMON SP5

For full technical details of SIMON tape recorders and microphones, please consult your dealer.
In case of difficulty we shall be glad to help if you write to:

SIMON EQUIPMENT LIMITED 48, George Street, London W.1.



How to make slides speak for themselves with Emitape

A colour slide show is twice the fun when it's planned around a soundtrack on Emitape. Get a new reel now. Then team up your recorder and camera, and start collecting sounds as well as pictures.

You can snap the voice with the face, and capture the *sound* of a scene. Afterwards you have fun editing the tape, matching effects against slides, adding music, and recording a commentary. The show will be the

smoothest you have put on, because it has been planned and prepared beforehand, slide by slide. Emitape never hesitates or forgets a name!

NOT SURE HOW TO START? Then write in for No. 3 in the new series of Emitape leaflets: *Adding Sound to Slides with Emitape*. It has been written specially for Emitape by John Borwick, and it's completely free. Also available: *Two and Four-track recording with Emitape*.

Get another reel of **Emitape**

Please send me your free leaflets *Adding Sound to Slides with Emitape* and *Two and Four-track recording with Emitape*.

NAME.....

ADDRESS.....

.....

.....



TRM 1

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



SPECIALISTS IN

FERROGRAPH
VORTEXION
BRENELL
TANDBERG
AMPEX
REPS
SONY
REVOX
GRUNDIG
PHILIPS
LOEWE OPTA
TELEFUNKEN
ETC.

FANTASTIC!!

FANTASTIC!! An understatement indeed, for so vast is the range and selection of new and second-hand recorders to be seen in our showrooms that no other word can describe it. Call into any of our branches and see the largest and finest selection of recorders on display in Great Britain. Every recorder can be seen, heard and compared and each member of our experienced and expert staff will be happy to offer you honest, unbiased advice in order to assist you in the selection of a recorder to suit your individual requirements.

- ★ HIGHEST PART-EXCHANGE ALLOWANCES
- ★ OVER 250 NEW & S/H RECORDERS ON DISPLAY
- ★ H.P. TERMS OVER 9-24 MONTHS
- ★ FREE HOME DEMONSTRATIONS
- ★ TAPE RECORDER REPAIR SPECIALISTS
- ★ FREE DELIVERY, FREE TECHNICAL ADVICE

NOTE—OUR CITY SHOP CLOSED SAT. OPEN MON.-FRI. 9-6 p.m. SUN. 9-2 p.m.

CITY & ESSEX TAPE RECORDER CENTRES

228 BISHOPSGATE, E.C.2 (opp. Liverpool St. Station) BIS 2609
2 MARYLAND STATION, STRATFORD, E.15 (adj. station) MAR 5879
205 HIGH STREET NORTH, E.6 (opp. East Ham Station) GRA 6543

TAPE

RECORDING
MAGAZINE

Vol. 7

No. 7

July 1963

IN THIS ISSUE

Tape trends and tape talk	10
A holiday tape show	11
Kenneth S. Duke	
The Hanover Fair	12
Hans Koebner	
Son et Lumiere	13
Signal-to-noise ratio	14
James A. Moir	
Tape Talk	16
Alan Edward Beeby	
Tape records today	17
Don't say Amateur	18
Alec Nisbett	
Special Assignment	20
Denys Killick	
Test Bench	22
Sony 464 and Simon SP5	
Tape records reviewed	24
Edward Greenfield	
Popular music on tape	25
Don Wedge	
Letters to the Editor	27
New Products	28
News from the clubs	31
Tape Exchanges	33

COVER PHOTOGRAPH: The Tower of London will be floodlit with a difference throughout the summer months, during the presentation of "A Fair White Tower," a son et lumiere presentation with the technical realisation by Philips Electrical Limited. Further details are given in the story on page 13.

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

"TAPE Recording Magazine" is available by a postal subscription of 20s. per annum (U.S.A. \$3.50) including postage, or it can be obtained at newsagents, bookstalls and radio and music dealers. In the event of difficulty, write to the Publishers at 7, Tudor Street, London, E.C.4.

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

Address all communications

7 TUDOR STREET, LONDON, E.C.4

FLE 1455

EDITORIAL

Editor,
R. DOUGLAS BROWN
Assistant Editor, FRED CHANDLER

ADVERTISING

Advertisement Manager,
MISS PAMELA DURHAM

Tape trends and tape talk

By the Editor

THE JUDGING of the International Amateur Recording Contest and the annual meeting of the International Federation of Sound Hunters will take place this year in Liege, Belgium. With the French and Swiss, the Belgians were pioneers in getting the international movement established. There has been notable progress during recent years in organising and encouraging activity there.

At the Audio Festival I met J. Vanwelkenhuysen, who is now compering regular radio transmissions aimed at the Belgian amateurs—programmes pitched somewhere between the BBC's "Sound" series and Jean Thevenot's popular "Aux Quatre Vents" in France.

In Belgium in earlier times, I believe, there was some difficulty in developing an amateur tape recording movement because of the language problem—French and Flemish; but there is now a good balance of activity between the two parts of the country.

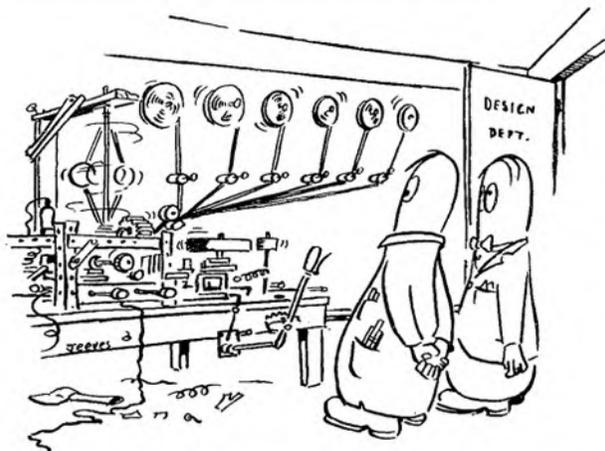
It will be fascinating to study the situation on the spot.

Contest tapes

BRITISH AMATEURS who want to enter tapes in the British and International Recording Contests have only about a fortnight left in which to complete their entries and get them in. We are looking for a greatly increased number of tapes this year, judging by the total of entry forms sent out, but I know how often good intentions are defeated at the last moment. Get your tape completed now and get it in the post; we like to receive entries early, and I may mention that a number of tapes had arrived even during May.

The closing date is June 28. During July there will be a preliminary sifting of all entries by the staff of this magazine and officials of the Federation of British Tape Recording Clubs (which is, of course, associated with the Contest).

LAUGH WITH JEEVES



"It's a six-track recorder; now all we have to do is slim it down into a fancy case."

After that, the final judging will be made by the expert panel: Jo Douglas, the TV producer; Timothy Eckersley, Assistant Head of Central Programme Operations (Recording) at the BBC; John Borwick, audio author, lecturer and broadcaster; Alan Stableford, Chairman of the F.B.T.R.C.; and myself.

The results will be announced in September when the winners will be invited to London to receive their awards. In place of the Savoy Hotel luncheon of previous years, Emitape Ltd. are this year arranging a novel form of celebration, details of which will be announced later.

The September edition of the "Sound" programme will be devoted entirely to the winning tapes and the producer of the "Tape of the Year" will be invited to take part.

International idea

THE INTERNATIONAL STUDY WEEK planned to take place at Interlaken next month has been cancelled by the Swiss organisers.

This event seems to be dogged by ill-luck, though the conception is first-class. Last year it was found that insufficient time was provided to complete all the international arrangements. This year, the organisers report, the arrangements have been made but a large number of lecturers found that they could not get away from their laboratories and studios in July.

A pity. I think we should have been able to send a good delegation from Britain. I am left wondering whether, in a future year, we might try to stage such an International Study Week over here.

Astro-tapes

CONGRATULATIONS to The Voicesspondence Club, which has just celebrated its tenth anniversary. The first issue of its journal appeared way back in July 1953.

The latest issue displays the catholicity of taste of present-day members. A piano tuner and a pigeon fancier, a bee-keeper and a computer programmer are advertising for tape soul-mates. A fisherman wants to trade fishing stories on tape! One couple advertise themselves as "shutterbugs," which defeats me entirely.

And, sign of the times, there's quite a business going on in the exchange of tapes of the various American astronauts in orbit.

Mass demand

PUBLIC INTEREST in recording in this country seems to be booming at the present time. Emitape Limited provide me with the latest evidence of it.

Last August they printed 25,000 copies of John Borwick's excellent "Guide to Better Recording" and all have been sold. In the first month after they announced a new series of free leaflets, they had over a thousand applications. The first two leaflets, dealing with indexing and outdoor recording, are very attractively produced.

We are happy to report that the same surge of public interest is reflected in our own circulation, currently rising at a record rate. To cater for the flood of newcomers, we have just produced a new edition of our half-crown handbook "Advice on buying a tape recorder." It's the standard work.

Take a recorder with you on holiday!

BY KENNETH S. DUKE

A TAPE recording of the various sounds of your holiday will recall happy memories, but the enjoyment will be much greater if the recording is linked with some visual record. This applies even more strongly to your friends, who will otherwise have to listen to detached sounds from a place that they have probably never visited.

The best way is to link the tape recordings with colour transparencies.

If you have no suitable camera for this purpose, you can usually buy a wide selection of colour transparencies at holiday centres; failing that, you can get pictorial postcards, although you then tend to lose the personal touch. As a compromise, you may use your own black-and-white prints.

To make your show interesting, it must be arranged in some logical order. You may make your first recordings on the journey—perhaps at the airport or station, or even the car starting off, but this is not essential. Perhaps your recorder is packed away, or you have no time to spare—if you have your family with you.

You will find that some of the subjects you wish to record can only be recorded at certain times. Find out about these early in your holiday; otherwise you may be disappointed.

If you are only staying a week and you

want to record the church bells, remember they only ring on Sunday. If you want to record the church clock striking, it does not necessarily strike on Sundays. I stood in a churchyard one Sunday with my recorder running until two minutes past the hour before this dawned on me. A photograph of a clock indicating a certain hour, with a recording of the actual striking, is most effective; the photography and recording do not have to take place on the same day, of course.

The orchestra in the bandstand on the promenade is another good subject. You can probably record the announcement over the loudspeaker but, if possible, avoid being close to the loudspeaker to record music, as it is likely to cause distortion.

Your microphone will probably pick up people talking while the music is being played, particularly if it is out of doors. Do not worry; it gives atmosphere to your recording. If you have enough tape available, you might record the applause at the end of the item.

If you are staying at the seaside, there are plenty of sounds you can record. But beware of picking up wind noise—try to keep your microphone as sheltered as possible.

The sound of waves breaking on the shore, particularly on rocks or shingle, is effective. The cry of seagulls is a great asset in any show, although not as easily recorded as one might imagine. I tried throwing bread to the gulls while I made my recording, but they did not seem hungry or interested. The best place to make this recording is a fishing port.

“Trip round the bay, starting now, sir!”—here is a good recording to make. The boatman, as he stands shouting on the pier or beach, trying to fill his boat for a pleasure cruise, adds interest and, perhaps, even a touch of humour to a tape. You will have plenty of time to record and photograph him; “starting now, sir!” is a stock phrase of such seaside characters, not to be taken too seriously.

The best way to complete this sequence is a final photograph of the boat sailing off on its cruise with its full complement of passengers.

The beach gives you scope for other recordings—children playing, the jingle of bells on the donkeys, and so on. You might be lucky enough to be on the beach at a Punch and Judy show; at most seaside places there is a beach cafe in which you can make your recording whatever the weather.

There you may find a great variety of sounds: a background of voices, the chink of cups and saucers, the sound of slot machines with a juke box playing.

When you play this tape back, your first reaction will be: “is it really that noisy?”

You will, no doubt, while on holiday, visit some place of historical or architectural interest where you are taken round by a guide. After obtaining the guide's permission, you may record part, or even all, of his commentary. When I visited Battle Abbey, in Sussex, with the guide's consent, I recorded his entire commentary on my Fi-Cord, using the slow speed, and at the same time took a number of colour slides.

When I later made my tape show I used those parts of his commentary relevant to the slides I had taken. This was far more interesting and effective than if I had tried to describe things myself. Most guides—and mine was no exception—have a few humorous tales to tell, and these go down well in your tape show.

Like all good things, your holiday soon comes to an end. It is advisable to see that all your reels of tape are marked as to the recordings on them. This saves you time later.

Back home, you can settle down to editing. Sort out your pictures or slides into some definite order. Try to group slides or picture on a common theme—such as historical buildings, even though this means taking one or two sections out of order. Avoid putting serious and light-hearted things together. Poetry should only be read on the tape if you, or some available friend, know how to recite it correctly—otherwise leave well alone.

Now you have settled the order of your slides or pictures, write down any points of interest about each of these. Just jot down headings, not whole sentences. Very few people can read out whole sentences and yet make them sound natural and informal. For your information, you can refer to holiday brochures or guide books, but avoid quoting too many statistics or dates.

You can now make up your complete tape show, saying a few words about each slide or picture in turn, and introducing your various “live” recordings. You can sit back and enjoy it with the others, and relive your holiday. You will feel well rewarded for your trouble.

TAPE AT THE HANOVER FAIR

THE HANOVER Fair has become Western Germany's main shop-window for new developments in tape recording and audio equipment. One of the vast halls echoed with a tremendous volume of sound as the full range of models was demonstrated.

On this page are illustrations of some new trend-setting products first displayed at this year's Fair. Uher, already famous for its range of recorders, showed piano-type controls developed into a full-scale keyboard in its new Universal 5000 (top left). This is a three-speed machine with a very pleasing design. I forecast a great future, too, for the same firm's Royal Stereo model.

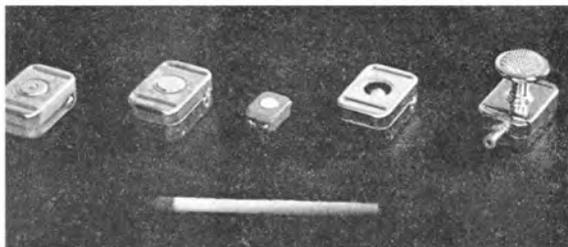
Another well-designed stereo machine making its debut was the Saba TK220-s (centre). This is available in two-track and four-track versions, has two speeds, and two speakers and a built-in mixer unit.

The Japanese challenge was carried a stage further at this Fair, with several notable new models. One that caught my eye was the incredibly tiny Yashicorder 77 battery portable (top right). Despite its size, this machine provides a satisfactory volume from its built-in loudspeaker. A special feature is the radio receiver which is incorporated, using the same batteries and speaker. It is possible to record direct from the radio.

Of special interest to the amateur recordist was the Korting Constellation machine (bottom right), provided with facilities for carrying a second pair of reels and dual heads, so that copying is possible with a single machine.

I was particularly impressed with some of the microphones shown at the Fair; for example, the sub-miniature models produced by Sennheiser (below), one of the leading manufacturers in Germany. AKG and Beyer products were also very well received.

from our special
correspondent
HANS KOEBNER



"A FAIR WHITE TOWER"

A Son et Lumiere spectacle
now at the Tower of London

NIGHTLY during the summer season, four launches will moon off Traitor's Gate at the Tower of London for the presentation of "A Fair White Tower," the Son et Lumiere spectacle. Loudspeakers, electronic control gear, tape recorders, and thousands of yards of cable and floodlamps are installed in the Tower for the City's new tourist attraction.

Our front cover this month shows the Tower as it appeared to the first audience of 1,000, with the various towers spot and flood-lit. Twenty-five actors are involved in the recording process, and ten miles of tape had to be edited. The Tower became enmeshed in a vast network of cable connecting the various banks of light and speakers to the central control unit illustrated above.

Considerably more complex than merely siting the lights and speakers, voices, music, and sound effects must be tied in absolutely precisely with the lighting effects. Colour, density of colour, and timing of the illuminations have to be carefully worked out, and transfer of sound from one to another of the seven loudspeakers arrayed along the banks of the Thames, arranged skillfully to simulate the speakers' movements from one point to the next.

Endless rehearsals were held to get the recorded sound-track completely synchronised. The actual production is almost entirely automatic, with only three engineers at the control desk to set the equipment in motion and monitor the performance. The space by the Traitor's Gate is packed full of electronics equipment. The control involves a series of high frequencies to trigger off programme cards, each controlling certain aspects of the production.

"A Fair White Tower" lasts about fifty minutes and covers that period of London's history from 1660 to 1667. Locked in the Tower for his part in the execution of Charles I, is the former Sir Robert Walpole. Played by Richard Todd, he compares his own and similar predicaments with his Yeoman Warder Tom, played by James Hayter. They reminisce about Anne Boleyn, the murder of the two Little Princes, the Coronation of Charles II, Wat Tyler and the peasant's revolt, the Great Plague and the Fire of London. In a series of flashbacks, the spectacle moves back and forth across the river's frontage in a stereophonic set-up using seven loudspeakers.

Son et lumiere, or the sound and light re-creation of history, was the brain-child of a French architect, M. Paul Robert-Houdin, grandson of the immortal Houdini. The idea was born after he had watched the lighting effects in the grounds of a Chateau during an electrical storm. The first performance

was given in 1952, and later productions followed at the Hotel des Invalides in Paris, and the Chateaux at Chenonceaux and Luneville. The idea then caught on rapidly in various parts of Europe. The Acropolis, the Roman Forum, the Inner Court at the Hague have all been used. Even the Sphinx and the Pyramids have had their ancient history picked out in terms of sound and light.

England's first son et lumiere was given at the Royal Naval College, Greenwich. Another was presented by S.T.C. on board Nelson's flagship *Victory* in Portsmouth Dockyard in 1960.



"A Fair White Tower" is produced by Pageantry Production, and the technical realisation is by a division of Philips Electrical. Tickets are available (20s. inclusive of the river trip) from Ashton & Mitchell, 100, St. Martin's Lane, London, W.C.2.

Professionals provide tape course for London teachers

LONDON teachers now have their own improvised radio studio in Soho, where for the past two years they have been meeting regularly on Friday evenings to learn the art and craft of radio acting, production and writing under the leadership of Geoffrey Hodson, L.C.C. Inspector of Drama.

This Easter the studio was used for a seven-day tape recording course, and several scripts written during the past two years were given professional recorded production by John Allen, Desmond Briscoe, George Dixon, Margaret Hotine, Charles Lefaux and Jack Singleton. Copies of these tapes are to be distributed to London schools shortly by London Tape—the title selected for themselves by the Friday evening enthusiasts.

In addition preliminary instruction was given on operating tape equipment. Two London teachers, B. A. M. Herbert and Tony Jackman, looked after the newcomers, and H. Burrell Hadden and Geoffrey Hodson had the experienced group.

Of the practical exercises, the most unusual was creating a tape accompaniment for a synchronised swimming display. A swimming instructor who had produced an aquatic pantomime consisting of solo voice announcements and pop records, felt that something more dramatic could be devised. Bob Gunnell, BBC Talks producer, agreed to lead a group to solve this problem, and after only two days' work came up with a splendid version of Noah and the Flood!

Graham Jones conducted the more bread and butter sessions on the application of tape in the classroom. The

* Bob Gunnell will be reporting on the techniques used, in the August issue.

teachers learnt a lot about tape recording and classroom techniques, for Mr. Jones is the most experienced teacher in the country on the subject.

One of his groups improvised an excellent five minute tape on Stepney, including speech and music. This was directly inspired by the opening lecture of the course by Charles Parker, the BBC Birmingham producer who has pioneered radio ballads. Mr. Parker is a most delightful, unusual and inspired individual, and tape enthusiasts and teachers generally should arrange to hear him if they can.

A final group spent two days with Ray Colley, the BBC news reporter. By special arrangement they used current news agency material—and their own initiative about local news. That Wednesday was only two days away when they set up their news room, and one reporter obtained two excellent interviews with an Australian magazine photographer and a BBC TV cameraman outside Westminster Abbey. Another reporter talked with the Press Officer of the Hilton Hotel. Stella portable battery machines were used.

Playback of tapes took nearly a day, but learning to listen intelligently and critically takes time. The London teachers' course was fortunate to have John Allen as commentator. After wide experience in the theatre and with BBC Schools, Mr. Allen now has a special qualification for this job—he is an H.M. Inspector.

Technical note.—The London Tape Soho studio has been supplied with Brenell tape recorders. Final recordings were made on their latest STP1 machine.

SIGNAL-TO-NOISE RATIO

A NOISE annoys everybody and to the hi-fi enthusiast there is no more annoying noise than the clicks, pops, bangs and hiss that accompanies the playing of a treasured but ancient gramophone record.

Tape recordings are free from the clicks and bangs but hiss is only marginally satisfactory, while radio, unless you have a good F.M. receiver, may have a whole gamut of noises plus a selection of other programmes in the background. Where does it all come from, what is the "just detectable" amount and what can be done about it?

The clicks, pops and bangs that bedevil the gramophile are largely due to the presence of airborne dust in the grooves, each speck of dust giving a transient kick to the stylus and thus producing a disturbance in the loudspeaker. There is only one cure for this sort of trouble, keeping the dust out of the grooves. This, however, is easier said than done.

Airborne dust consists of fine particles, generally of silica, the particles having diameters down to a fraction of a millionth of an inch. Such small particles may float about in the air for several days generally settling onto even surfaces in the room unless kept in suspension by draughts and disturbances such as the wife with her mop and duster.

Noise is less of a problem in a tape recording, largely because the typical smooth hiss is less annoying than intermittent clicks and pops. Dust is only a minor trouble and its presence introduces difficulties of another kind. Unless the dust is of magnetic material, and this is rare, it does not introduce noise; its main effects being to push the tape out of contact with the head and to increase wear on the head. Anything that keeps the tape out of contact with the head attenuates the high frequency response and this is the first result of having dust on the tape.

However, unless the tape is heavily coated with dust, the overall effect is small because a speck of dust does not introduce an air gap over the whole width of the tape but at one point only. It will be appreciated that the effect of dust becomes more important as track width decreases but even with quarter-width tapes, dust is not a very serious

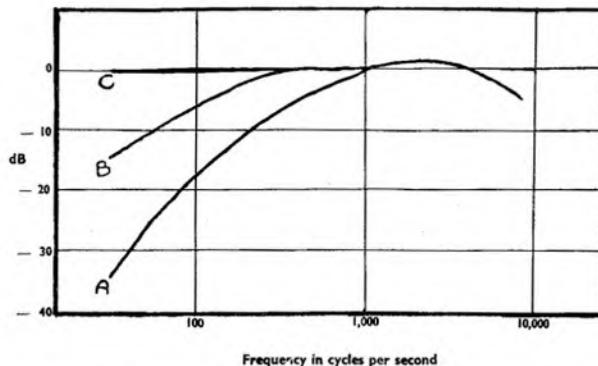
problem. The mechanical effects of the dust may be more serious, for the small particles become embedded in the soft tape and act as an abrasive producing very rapid wear of the head.

Noise from a tape recording arises in several ways. Even with the most highly developed techniques some non-uniformity exists in the distribution of the ferrous powder over the surface of the tape, each little conglomeration of powder producing a low frequency "clump" as it passes under the head. However, though this is the most obvious source

random and thus the magnetic fields of adjacent particles tend to cancel each other. The voltage induced in the replay head is due to the several hundred thousand particles that are under the gap at any instant. As far as the pick-up head is concerned, the effect of a large number of randomly oriented magnetised particles is just the same as if each of the individual particles were completely demagnetised.

We have spoken of perfectly demagnetised tapes but tapes as demagnetised on the average machine are often far

Fig. 1. Frequency characteristics of a Sound Level Meter. A: Scale used for measurements of quiet sound below 40 dB. B: Scale used for noises about 70 dB. C: Scale for loud noises 100 dB.



of noise, it is not the most serious except in very cheap tapes.

The tape coating consists of very fine iron particles, each of which may be considered as a small magnet. When the tape, considered as a whole, is completely demagnetised the individual iron particles remain magnetised but the demagnetising process orients them at

from the degree of perfection that is desirable. The erase arrangements on the average machine consist of a ring type head having a relatively large gap of perhaps 10-20 thou. over which the tape passes while the head is energised by a large signal from the erase oscillator running at a frequency generally in the 50-100,000 cps region. During the passage of any single magnetised particle across the gap the high frequency field takes the particle through several cycles of magnetisation to saturation, the peak intensity of magnetisation of each succeeding cycle gradually decreasing towards zero as the particle passes out of the magnetic gap.

This is the classic method of demagnetising any iron body; expose it to an intense field sufficient to magnetise the section to saturation and then slowly decrease the field to zero. To be a satisfactory erase for our purposes the high frequency signal that is used to energise the erase head must be a perfectly sinusoidal signal without any trace of the asymmetry that indicates the presence of even harmonics in the erase waveform. The required degree of freedom from waveform distortion is not

TABLE 1

Signal/Noise	Applicability
30 dB.	Tolerable to the non-critical.
40 dB.	Acceptable if the programme volume range is low or the room noise level is high.
50 dB.	Very good, acceptable to most listeners.
60 dB.	Excellent, completely acceptable except where the noise is concentrated in a narrow frequency band.
70 dB.	Acceptable to a very critical listener in a very quiet room.

A typical harmonic analyser or tuned voltmeter for measuring distortion in amplifiers. This is the Dawe Wave Analyser Type 705



JAMES MOIR M.I.E.E.

easy to obtain when the cost of equipment must be carefully considered, and in consequence many domestic tape recorders leave the tape far from being cleanly demagnetised even after it has passed through the erase head.

Professional machines employ a push-pull oscillator circuit of relatively high power, often followed by filters to ensure adequate freedom from residual harmonics but these are expensive. Users of professional equipment generally take the further precaution of erasing the tape in a bulk eraser before attempting to use it for a master record-

ing. The effectiveness of the erase arrangements on a tape recorder are limited to some extent by the amount of power that can be dissipated in the erase head without causing overheating. An external erase system need have no such limitations, many bulk erasers requiring several tens of volt-amps, at mains frequencies.

The tape itself may become magnetised in many ways, the most troublesome being the accidental magnetisation of one of the heads on the tape recorder. A head may become magnetised by the careless use of a magnetised screwdriver (and most screwdrivers are magnetised) to adjust a head, remove the head cover, or lift off a piece of dirt.

Any attempt to check the electrical continuity of a head winding with an ohm-meter of the usual type will inevitably magnetise a head. These things can be avoided but there are many that cannot. Any high current surge in the record-head circuit can leave the iron permanently magnetised and when this happens, every tape run through the machine will be partially magnetised and the hiss level raised.

The cure for all these troubles is an occasional demagnetisation using a "de-fluxer" the best known type being that produced by Wright & Weaire. Basically this device is merely an electromagnet energised from the 50 cycles mains. In use it is brought into contact with a magnetised body and then slowly removed to a distance. While in contact or in close proximity the head is magnetised to saturation but as the de-fluxer is slowly removed the maximum flux density reached on each cycle of the mains frequency gradually decreases, the classical method of demagnetising any magnetised object.

Not all the noise evident from the loudspeaker is due to the partial magnetisation of the tape. The replay head or the input transformer coupling the head into the first valve grid circuit may be in the stray magnetic field from one of the tape drive motors, mains transformer or smoothing choke. Small voltages at mains frequencies and its harmonics are then induced into the head or transformer and are amplified with the signal to produce "mains hum."

The signal voltage produced in the replay head by the tape is relatively small necessitating considerable amplification to bring it up to the level required by the output valve. In consequence the mains frequency and hiss noise produced by the first valve can be unduly prominent.

Some amplifier designs even result in noise produced by the second valve becoming significant.

The designer of a professional tape recorder takes precautions to ensure that all these sources of noise are kept at a level well below that of the tape signal. However the precautions cost money and in consequence the designer of a domestic tape recorder must omit the expensive design features. In practice he must design his machine so that buyers just do not criticise the machine as being noisy. In fact it must be just 2 or 3 dB. below the "criticising level."

To do this he must know something about the noise, have means of measuring it and know just what level noise is tolerable. The remainder of the present discussion will be devoted to the problem of measuring the noise and seeing how little of it we can get along with in a high quality sound system.

If the signal can be removed there is no great difficulty in measuring the residual noise or perhaps it would be more correct to say that there is no serious difficulty unless great precision is required. The usual measuring instrument is the noise meter or sound level meter. Basically this consists of a wide frequency range amplifier and a rectifier type voltmeter.

The standard instrument has three different frequency characteristics selected by a switch, these characteristics being chosen as similar to the ear's own frequency characteristic at three different loudness levels. In practice the vast majority of measurements are made using only two of the ranges corresponding to the ear's response at a loudness level in the region of 80-100 decibels, a very loud sound, and the second to the ear's response at a level of about 40 decibels, the background noise level in a quiet room. The three standard characteristics are shown in Fig. 1.

Two readings of noise are usually taken, one with each response curve, the value obtained with the flat response curve being known as the "unweighted"



A transistor battery-operated sound level meter giving accurate measurements of sound level over the entire audio range. Dawe, Type 1400E

(Continued on page 26)

Alan Edward Beeby's

TAPE TALK

"**F**ABULOUS show!" "Superb organisation!" "Congratulations! Can't think how you did it!" These were just a few of the many superlatives heaped upon the triumphant heads of members of the Northampton Tape and Cine Club at the first National Tape, Audio and Cine Rally organised by them in Northampton recently.

Throughout the day, the two main halls of the Methodist Centre, Regent Square were jam-packed with sight-seers, hi-fi addicts and members of the general public who, attracted by announcements in the local, trade and tape-recording press, had come to see the show. And what a show!

The Mayor of Northampton, Alderman E. F. Tompkins (who is also the Northampton Club's President) opened the Rally, paying tribute in his address to the Club's courage and initiative in tackling such an ambitious project. He congratulated them, too, upon their lesser-publicised activities for local charity: *The Blind News* tape-magazine, and their frequent 8mm film-shows given to the local branch of the British Limbless Ex-Service Men's Association and other Societies.

Two complete programmes of hi-fi entertainment then ran simultaneously in the upper and lower halls of the spacious Centre. Deserving special mention is Mr. F. C. Judd's lively demonstration of "Synthetic Sound," in which he proved, to a rapt audience, how a single sound-source (a spoon tapping on a pudding

basin) could be applied—by recording at varying speeds, playing in reverse, adding echo, etc.—to produce a complete musical scale. The organisers, anticipating the popularity of Mr. Judd's contribution, had thoughtfully arranged a shortened version of the lecture for later in the evening. It proved a wise move!

Two specially-selected 8mm films, produced by the Northampton Film Society, were shown on equipment belonging to the South Birmingham Tape Recording Club. In the hall below, two films from the Northampton Tape Club's library were on view: Tony Smith's *All in a Day's Work*, followed by Dodwell Presentations' *The Battle of the Brook*. Tapes from other clubs were also featured: Birmingham, Britwell, Thornton Heath, Warwick-and-Leamington, Coventry and Norwich being among those represented.

Items of particular interest included a tape-slide performance of *Moses, Part II* (which won the Schools Section of the 1962 British Amateur Tape Recording Contest, sponsored by *TAPE Recording Magazine*), written by Mr. H. J. Walding, and recorded by pupils of Stimpson Avenue C.P. School, Northampton. Another tape-slide item *London Airport*, by the Britwell Amateur Tape Recording Society of Slough, was extremely well received, as was their tape-marionette show. So popular, in fact, was this last item, that a repeat performance was promptly demanded by the audience.

Several of the 8mm films were also repeated later in the day by special request. Popular, too, was the R.C.A. Synthesiser, computer which, after being fed with information from a "programming" unit, reproduced the sound of the human voice singing a well-known musical com-

position. A quiet interlude, contributed by Mr. R. Spokes of Northampton, featured a short organ recital which he himself had recorded on location at a church in the nearby village of Harpole. In contrast to the predominance of "canned" music, the local "Caribbean Euphony Steel Orchestra" took over the stage during the afternoon interval, when refreshments were served by members of the Northampton club. In the lower hall during the break, Mr. J. T. Gilbert of Solihull presided over a meeting held to discuss the proposed formation of the Association of Midland Recording Clubs.

Meanwhile, in the Trade Hall, tape recorders, film-cameras, recording tapes, mixers, microphones, speakers . . . in fact, every item of apparatus likely to interest the hi-fi buyer, jostled for attention. Representatives from manufacturing firms, dealers, trade journals and tape recording magazines were kept on their toes all through the day, answering questions and inquiries from all sides. The Northampton Club's own stand exhibited vintage sound-recording and reproducing machines, records and cylinders, etc., dating between 1900-1915, in addition to well over £1,000-worth of the latest cine equipment, loaned by a local firm of photographic chemists.

Outside the Centre, the private car-park (by courtesy of a local building firm) was filled to capacity, whilst the Automobile Association to make certain that no "foreigners" got themselves lost and missed the Rally, provided efficient signposting along each of the town's main entrance-routes.

Finally, as the last of the estimated 3,500 visitors left the Centre, the Northampton Club's "location" unit prepared to leave for the local Salon, where they were due to record the Annual Dance Band Festival—a gruelling five-hour-long recording session stretching well into the early hours of the next morning.

And next year . . . ? Commented Secretary, Ray Foster modestly: "Well, now we've more-or-less made a go of this little effort, we can get cracking on something really ambitious." My guess is that they will, too!

* * *
NOTE: If club secretaries, or anyone else interested, would like a copy of the Souvenir Programme, they may be obtained (9d. inc. postage) from: F. Thompson, 33-35, Henry Street, Northampton.

AUTOMATED SLEEP-SUGGESTION

- WHAT IS SLEEP-SUGGESTION?
- HOW DOES IT WORK?
- HOW CAN IT BENEFIT YOU?

SEND NOW for FREE BROCHURE for up-to-the-minute information on this vital subject

EDUCATIONAL RECORDINGS LTD.
Dept. B, 21 Bishop's Close,
Church Lane, London, E.17

BINDERS

Special binders for *TAPE Recording Magazine* designed to hold a year's supply are now available.

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

PRICE 14s. 6d. (post free)

From: 7, Tudor Street, London, E.C.4

The production of tape records

High speed duplicating is necessary to keep down the price of tape records. Here, the director of a company specialising in this work describes the problems, and how they are overcome.

EVERY tape record on sale to the record-buying public is a copy of a master tape recording. However, if tape records were made by the simple process of re-recording, their retail price would put them out of the recorded music market. The need to make inexpensive tape records available has been the reason for the development of high-speed tape duplication.

The first obvious step is make several copies at the same time. This is done by using a master deck which plays back the master tape and feeds a number of slave decks. This means that with a master deck and twenty slaves it is possible to make twenty one-hour tape records in just one hour. By using twin stereo heads throughout, both tracks one and two can be duplicated at the same time (one forwards and the other backwards). This halves the time to make the copies, and so twenty one-hour tape records can be made in thirty minutes.

But this is not economically practical. The next stage, then, is to run the master deck and slave decks at a speed faster than the final playback speed. Running a $7\frac{1}{2}$ ips master at 60 ips and the slaves at 60 ips allows our twenty-slave duplicator to turn out the twenty one-hour tape records in 3 minutes 45 secs. Copies made at this slave speed of 60 ips will be played back correctly at $7\frac{1}{2}$ ips. If the slave speed is only 30 ips, the copies will play back at $3\frac{1}{2}$ ips.

Loading the tape

This sounds too good to be true since now the duplicator has an hourly output of 320 tape records. This does not take into account the time wasted in clearing and reloading the slaves and rewinding the master. In fact, a twenty-slave duplicator would take longer to clear and reload than to run the copies. A more reasonable chain has twelve slaves and is fed by three operators who take, on an average, two minutes between runs of copies. From this it is clear that a complete reload and run takes 5 minutes 45 secs., per twelve copies of a one-hour tape record.

Now this high speed of 60 ips is quite

practical, but it does introduce a number of limitations. Apart from the critical mechanical considerations to be met (wrap-round of heads, no pressure pads are used) there is the all important question: "what are tape records like made at this high speed?"

There is an accepted standard of high fidelity sound reproduction gained mostly through either the six-track stereo magnetic systems used with 70 mm films, or high quality LP gramophone records, or, to a certain extent, from BBC VHF radio services. It is hardly likely that a listener who has sampled good sound reproduction would be satisfied with a tape record with an overall response to 7,500 cps—which is all that can be expected from a $3\frac{1}{2}$ ips product made at very high speeds.

There are many listeners who have never heard their choice of music played "live," who would abhor a wide-range high-fidelity reproduction, and prefer a more mellow response from something like Medium Wave radio services. But they would turn down a $3\frac{1}{2}$ ips tape record made at high speeds because it also lacks fullness in the bass.

The causes of this rather unsatisfactory response are briefly these. A tone of 10,000 cps becomes 80,000 cps at 60 ips. If an 80,000 cps tone is recorded with a bias of say 100,000 cps, not only will the copy contain 80,000 cps but also 20,000 cps (the difference frequency). When the copy is played back at its correct speed, 10,000 cps will be heard and also 2,500 cps (one-eighth of 20,000 cps) plus 12,500 cps (one-eighth the 100,000 cps bias frequency). The complex of frequencies which would be audible if the tone was replaced with a musical instrument with harmonica in the region of 8 to

12,000 cps (64 to 96,000 cps at 60 ips), is difficult to imagine. Therefore the bias frequency has to be pushed up to the order of 250,000 cps or more. The BBC Light Programme on 1,500 metres is 200,000 cps.

It is not surprising that a lot of bias is radiated so that the tape tends to be very under-biased. This adds an equivalent treble lift, which, when added to the increased gain at the treble end due to running the master at a high speed, tends to give a thin response emphasised on domestic recorders by poor low frequency response (to reduce hum on playback) and small speakers in small cabinets.

A compromise

Something of a compromise has to be accepted between hourly output of a duplicator and quality of the product. By using a slower speed than 60 ips, the bias frequency can be chosen within reasonable limits and the tape correctly biased. The response of a tape record at $3\frac{1}{2}$ ips can be extended to between 40 cps and 12,000 cps giving a clean treble with full middle and adequate bass. A highly satisfactory commercial product can be manufactured with this response at the rate of over seventy per hour per duplicator chain depending on the length of the master.

The only limiting factor with tape records is the raw material itself—the tape. Great strides have been made in the last three years in improving the standard acetate product so that tape records (particularly of popular music) running at $1\frac{1}{2}$ ips are a commercial possibility now, utilising quarter-track width too! All tape used in high-speed duplicating systems must be mechanically and magnetically reliable with the minimum possible variation. A test stereo tape record, made at high speed, and playing back quarter-track at $1\frac{1}{2}$ ips surprised a number of listeners during a recent test of imported American acetate tape.

With a reliable tape as raw material and given a good master of high signal-to-noise ratio, having a wide range flat response, resulting tape records are a perfectly satisfactory way of bringing music into the tape recorder owner's home.

NEW "MINITAPE" SERIES

A SERIES of fifteen-minute popular music tapes, retailing at 12s. 0d. have been introduced by Music on Tape. The new "Minitape" series, will be issued on five-inch reels at $3\frac{1}{2}$ ips only, in mono and four-track stereo recordings.

Further details of the first releases will be published when available.

Music on Tape Limited, 188, Vauxhall Bridge Road, London, S.W.1.

THE PATTERN OF AMERICAN RADIO

The radio programmes of a nation largely determine the character and the technique of its amateur recording activity. BBC producer ALEC NISBETT recently made a private visit to the United States to launch his book "The Technique of the Sound Studio," and to see—and hear—something of American broadcasting.

MY first experience of the state of tape recording as a pastime in the States was a letter I'd had from my American publisher, asking me to go through the introduction to my book and remove the word "amateur" throughout, as its use would cut down his market. As an important purpose of the book had been to show how professional standards of workmanship could be obtained by amateurs (no, make that "obtained with more limited equipment") the introduction had to be carefully rewritten—as did the front end of several chapters. The terrible word was, however, permitted to creep in towards the ends of chapters.

The fact is, there are thousands of radio stations to draw the talent which in this country or on the continent would go into a club—this is particularly true of the educational and "college" stations. Individual amateurs who are outside these areas are quite happy to read books for professionals or "semi-professionals."

The real amateur field is "audio" (catered for by the hi-fi business and magazines) and enthusiasm tends to polarise between this and radio. "Sound. . . . Studio," said the publisher looking at my title sadly (and this time, too late), "Nobody will know what the book's about. The words aren't used here, not together anyway."

Out of New York I stayed with a S.A.C. pilot, a Washington novelist, a travel-guide editor and a Harvard professor. All had magnificent audio systems. But the novelist and the professor, both "liberals," were more inclined to talk about (and play) the contents of a record library which indicated a highly cultivated taste. The others, staunch Republicans, talked first about the height of their fi, and how it fitted the room layout, and doesn't that sound great? Politics has some curious sidelights in the States.

Radio, the other pole of the business, is of course, totally different from the British product. Of between four and five thousand AM and FM stations only about two hundred each are affiliated to ABC, CBS, and NBC. Mutual is bigger, and KBS (Keystone) has over a thousand. Outside these there are innumerable small groups and individual stations. However, in any particular place the choice may be very limited: in a small town there may be only one local station, with alternatives coming in with difficult reception from forty or sixty miles away. In these circumstances it is useful to have a large rotating aerial which automatically lines up to a direction selected on an indicator.

At a house so equipped, dinner and conversation proceeded to a gentle background of "good music" (FM). There were very few commercials and these were not intrusive, as is almost always the case elsewhere. "Good music" stations are not too difficult to run in the States. All you need is a transmitter, the minimum of studio equipment, and a library of lp's. In Britain "needle time" would have to be negotiated with record companies and musicians. In America copyright is less restrictive in this respect, so there are no payments to be made for material, and costs to be recouped through advertising are not great. And the audience, though small, is "high-quality" and sometimes listens seriously.

It is quite impossible to listen seriously to the main stream of American radio, which is primarily an advertising medium and after that a public service (because many Americans like to feel they are serving the community, and also because figures indicating the public service role of a station support a licence renewal application). Then come all the other things of radio. Each station constantly attempts to assert its individuality and to give you good reasons why you should listen at this particular point of the dial. But you have to change, if only to get rid of the thing the station advertises most—its own call-sign and the inevitable puff which follows.

Often the advertising sounds interesting (indeed, more interesting than the pro-

gramme) as it details a local sale or campaign offer, but when you hear it for the third time and realise regular listeners have heard it many times a day for the past fortnight, interest falls and an attempt at mental-switch-off follows.

It should be realised that each hour has room for eight good commercial breaks. Indeed, breaks may not be the appropriate word, as the commercials are often well integrated into the flow of material. For example: after thirty-five minutes of intermittently interviewing an Israeli painter, the local housewifely announcer again stops her guest in mid-subject and turns to the audience without any change in manner to chat about a new furniture polish now in stock locally.

On Madison Avenue, an executive told me he had switched his morning listening to one with *less* commercials, a statement which became more comprehensible when he told me of a campaign led by a director of his own agency to reduce the advertising content of programmes, in the public interest (anyway, too much spoils the market). My favourite "good" station in Washington *seemed* to contain about 30 per cent advertising in the early morning. One interesting programme spot it carried was a five-minute round-the-world report on big engineering projects—sponsored by an engineering company, but impartial. I heard two British projects reported accurately.

For many stations, the prime elements of a public service are the time and the temperature. Telling (or listening to) the outside temperature practically rates as a national pastime—a driver will switch on his car radio and expect to be told the temperature within about five minutes, and often enough he is.

News is a public service which network affiliates have no difficulty with, but other stations have to rely on a wire service and a local source or two. The results vary enormously and can be quite good if you're lucky. As anywhere else in the world, there is strong parochial interest and for some stations violence is a vital ingredient. In recent months, if there is no Cuba story (often the lead) the "international" element

sounds as if something is missing. Newscasts often *sound* hysterical to the English, but not to Americans, whose ears expect the trivial to be pronounced with the same insistence as the really earth shattering events. The aggressive element is habitual.

Traffic reports can be an element in public service. But visits to local police headquarters, where someone without the ability to get the information across consistently well may hog the microphone for far too long, is not the answer. Stations providing these reports can be dull or irritating. Other "public service" announcements often tend to sound goody-goody. One-minute religious capsules sound like just another commercial.

The industry is well on the way to recovery after its TV-traumatic shock (everybody, inside and out, thought it was going to die). In a dozen years purge has followed purge in the big companies. New ideas have been followed blindly like hem-line fashions, but the new pattern is now fairly consolidated. Soap-opera has been out for years. (No Mrs. Dales here any more.) The most popular station is the one which plays the top forty pops *only*. At the other end of the spectrum is the educational station. No commercials, and sometimes no radio technique. In a particular locality monotonous stridency may vie with monumental boredom—and there's not much in the middle.

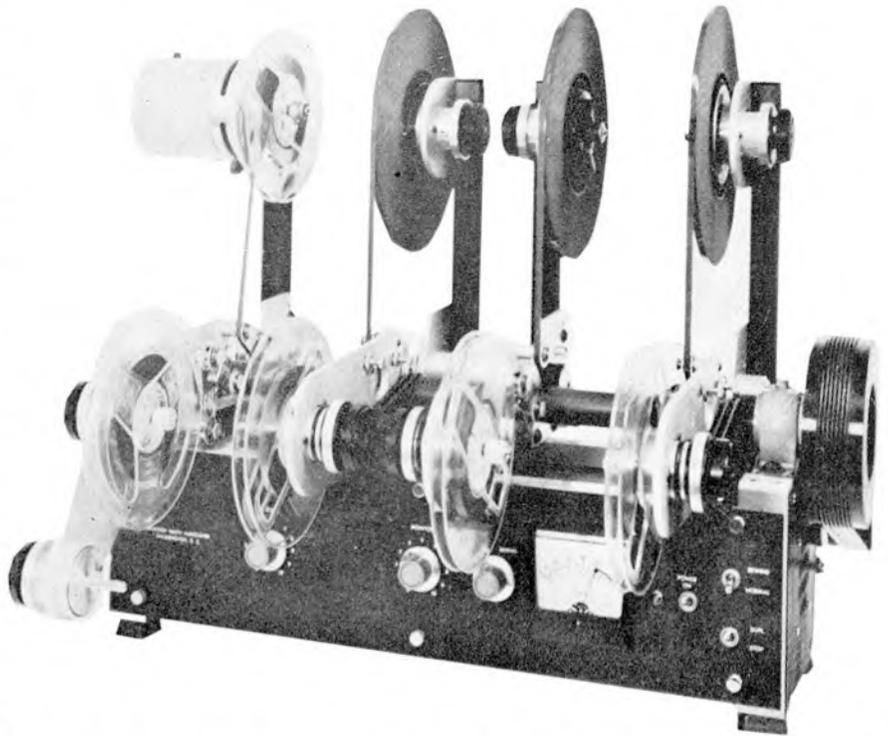
For interest I joined a \$1.25 (or 9s.) tour of a national network's headquarters. Most of what we were shown was concerned with TV rather than sound. The tour, conducted by a bright college kid earning in his spare time from a "liberal arts" course, included an aquarium view of networking control rooms and videotape recorders (and a presentation of a foot of the tape to each visitor).

Sound was represented by an effects demonstration from the guide; and like the redundant studio used for it, this was resolutely mid-thirties in technique. "See yourself on TV" (using an obsolete camera tube) and everything else was presented by our guide with a proud assurance which most of the audience appeared to accept with admiration and wonder. When the big CBS building now under construction is completed, a better see-round show will doubtless be available, but I was left feeling very sorry that the BBC does not do guided tours.

If readers will forgive me digressing to TV for a moment, I'll put a word in here about picture quality. This is remarkably poor in many parts of the US. It's a big country, like they tell you—a nation of fringe areas. Only in major towns did I see the benefit of the 525-line quality (which was then substantially and obviously better than our present 405). But even in medium-size towns in well populated areas a big aerial often got small results. Except under ideal conditions, colour (rarely seen in the home) was like a badly tinted Victorian postcard—poor in definition, particularly.

I spent an evening in the gallery for the taping of one of the Nation's most popular programmes, a two-hour guest show. The style, a successful one, was casual and largely unrehearsed—except for the commercial content which was very elaborately prepared, and partly pre-taped. Rigid discipline was observed over the timing of station breaks (in the studio the screen went blank while local commercials filled the

(Continued on page 20)



Copying a 7½ ips half-hour tape in less than four minutes

In sound equipment, writes Alec Nisbett, the most interesting that I saw during this visit was a Rawdon Smith "Multitape" copying machine, running at 60 ips. The original and three or five duplicates run on a single drive, and a timing accuracy of one inch in 1200 feet is claimed.

As usual with this sort of work, tapes are copied backwards, so that they finish the right way round with a tight smooth wind. An interesting feature is the feed, with tape completely unsupported at the sides. Price: this model, mono, \$3,960 in Washington—a little beyond the amateur.

Dr. Rawdon Smith, the engineer inventor, has a laboratory and sound studio in a Washington suburb, and there he told me how a single bright idea had cured practically all of the faults of earlier models: "The solution was to turn the whole thing through ninety degrees, so the tapes run in a vertical plane." I could hear no difference between original and duplicate after he had copied a half hour 7½ ips tape backwards in less than four minutes (though we'd had to wait over half an hour first for a union man to arrive and lace up the tapes!).

I've heard since that users of earlier models really do have difficulties—one with a 22½ ips horizontal machine says it's always giving trouble, and when a tape spills off the head there's a horrible mess. Heads are presumably still a problem, as they are non-standard, expensive and are subject to heavier abrasion than normal heads; they were also said to be difficult to adjust. Dr. Rawdon Smith now provides long-wear heads, but these are more expensive still.

The quoted performance figures are very good. Dr. Smith's pride and joy amongst his measuring instruments was a German device for the accurate study of wow and flutter—and he had a few hard things to say about manufacturers who are imprecise in their performance claims.

IN

SEARCH

OF

SONG

DENYS KILLICK ON A SPECIAL ASSIGNMENT

LIVING as we do in an age remarkable for the brilliance of its technological achievements there is a very real danger that much of our unwritten cultural heritage may pass forever out of the contemporary scene, irrecoverably lost to future generations. Ancient monuments and works of art are rightly protected by the State, as are genuine antiques carefully preserved by their fortunate owners. When dealing with material things of this kind the problem is fairly simple; either we keep them or we discard them.

But what of the vast store of unwritten song? No less valuable than the objects one can hold and see, they exist only in the minds of an ever-decreasing section of our population and their preservation presents us with enormous difficulties.

Mr. Eric Cole of Hatfield writes to tell me that not only is he aware of what he feels to be almost an obligation on his

part as an owner of modern recording equipment, but he also asks my advice on the best way in which he can both find and record folk music. Let me at once make it clear, that the pursuit of such an interest is yet another example of the need to combine a knowledge of recording techniques with other skills.

Without a sound musical training and background, the amateur is at a great disadvantage, for how can he assess the comparative values of the collected material?

I do not suppose all my readers are trained musicians, but do suggest that anyone who wishes to investigate the possibilities of this most rewarding field should not be deterred by their own lack of musical knowledge.

We have in this country a very much greater number of musicians than recording enthusiasts. Since for this purpose the two skills are complementary to each other, the problem could be solved by using a partner who would be content to leave the recording and handling of equipment to you, whilst he concentrates on the musical side of the project. You may well find that such an arrangement works ideally from both points of view, to your mutual advantage.

This leaves us then with two questions; what equipment to use and how to find suitable subjects to record? This search for song may take us into the more remote and isolated parts of the country. Equipment must be transportable and independent of main electricity supplies.

Alan Lomax is internationally famous for his work in collecting recordings of folk song. He uses a battery machine, and is strongly in favour of the Nagra, a recorder capable of the very highest quality standard. Quality is important, because the recordings obtained may well have some intrinsic value of their own, quite apart from their usefulness as documentary records.

The one sure way to match the exacting standards of quality demanded by Mr. Lomax and other professionals, is to use standard mains equipment, run when necessary from a 12 volt car battery and a suitable convertor.

This unit would convert the 12 volt d.c. output of the battery into a 240 volt 50 cycle a.c. supply which will operate the electronic circuitry and also drive the recorder's capstan motor at precisely the correct speed. Since most machines employ a synchronous motor, its speed is governed by the frequency of the alternating current applied to it. Our domestic supply is rigorously standardised at 50 cycles per second and any variation from that frequency would be

▶ AMERICAN RADIO

(Continued from page 19)

air). And only a shade less disciplined was the positioning of the sponsors' commercials, which were part of the show package, and if not ideally placed would be followed by a ten-second "We'll be back with . . .," then the station identification and then the local spot commercials (like those on ITV). But the total advertising was roughly twice that of ITV and to me barely tolerable.

An American might well point out that, surely, British broadcasting has its faults, too—and indeed it does. In Cambridge, Mass., I met one of those much-talked-of scientists who had crossed the Atlantic for better conditions of work and equipment—and as far as he was concerned American radio also was more acceptable than British. The two things he liked particularly (and which were readily available in Boston) were local services of news and traffic reports, and the good music station. These are things the BBC would like to be able to provide.

I heard quite a few Americans complain of their own radio and TV, but they seemed to find it difficult to suggest any alternative that would not be, in effect, un-American.

Canadians, who put a great deal of effort into not being the same as their neighbours, have the enormous advantage of not being tied to commercials to anything like the same extent. As I drove across upstate New York towards Canada, I first came across Canadian radio at maybe eighty miles from the border. From there on, I felt as though I were emerging from a hot-house jungle into wide open windswept spaces. And indeed, Americans do listen heavily to Canadian stations, as far south as reception permits. Driving back later, I recall how the air-waves seemed to close in again as I constantly retuned after losing Canada.

All this confirmed my American publisher's comment about "amateurs." The atmosphere strongly supports consumer industry: audio as a product, and radio itself. But the potentially creative amateur tends to be diverted passively into the hi-fi field, or alternatively towards supplying programme material professionally. And as a professional he has to fit in with the "character" of whatever station he is working for. In general, the only scope for creative work in such conditions is sound gimmicks with "impact."

bound to result in a recording at a non-standard speed which it would be impossible to properly reproduce.

Much of the cheaper equipment widely advertised as suitable for operating television sets or radios from a low voltage supply, is worse than useless for our purpose; it may produce a perfectly steady output at the voltage claimed but the frequency of that current is not likely to be nearly accurate enough to provide the speed constancy essential to even fair quality recording.

My own convertor is manufactured by Vortexion Limited of Wimbledon, and is specially designed by them for this purpose, delivering 240 volts at a rock-steady 50 cycles per second. In use the convertor should be placed as close as possible to the battery. This avoids losses associated with long runs of cable carrying low voltages. The high-voltage output can have a lead of some considerable length running to the machine as there will be less effective loss on this side of the equipment. For this reason, the convertor is fitted with remote control terminals, so that it may be switched on and off from the recorder operating position. This helps to conserve power in the battery by providing a convenient means of cutting it out of circuit when the recorder is not actually running.

My convertor is fed from a 12 volt battery housed in a larger wooden box fitted with carrying handles. Car batteries are notorious for being as heavy as they are dirty and packing it up in this way saves a great deal of fatigue and ill temper.

The rest of the equipment could comprise any standard mains machine of proven reliability and quality, together with moving coil microphones, microphone extension leads and folding microphone stands. There are now available, a number of super-lightweight microphone stands all of which seem to ignore the need for weight at the base of the stand, in order to ensure the safety of the microphone. Don't be persuaded into acquiring one of these flimsy contraptions. The stand I use has three legs of good, solid steel with reasonably hefty telescopic rods above; even so, one has to be most careful that it is not unwittingly knocked over when the microphone is in place.

I permit myself two other luxuries. Although it may be possible to record with the machine lying half buried in the grass as the operator crawls painfully around on all fours, I wouldn't consider attempting a project of this kind without providing some better support both for the recorder and myself. A folding table and chair stow neatly on the roof rack on top of the car and are just as useful



for picnic lunches as for recording sessions.

It is my normal practice to keep fairly short leads on moving coil microphones intended for outdoor work. GPO jack plugs and sockets can be obtained very cheaply from government surplus stores and by using them as standard, I can interchange any microphone with any extension lead. When used out of doors, however, open connectors of this type will induce hum in the microphone line, if they are allowed to short to earth by trailing on damp ground.

This is a simple fault that can easily ruin a recording. I slipped an empty tape box under the connector at the base of the microphone stand and this is quite sufficient to provide the necessary insulation.

You may note in the illustration, that the microphone itself appears to be positioned rather too low and the vocalist is standing too close. Under studio conditions that would undoubtedly be so, but in the open air, one must always guard against interference from the wind. As a light breeze was gently blowing directly behind the girl, the microphone was actually being sheltered by her body. Such an arrangement can prove an effective safeguard against really light breezes; for stronger winds either find a more sheltered position or try again another day.

Having settled on the technical requirements, how do we find our subjects? What sort of people are they likely to be? The city dweller is subjected to such a barrage of popular music from the radio and gramophone, that in all but a very few exceptional cases, the old songs passed down through the generations from parent to child, have long been forgotten. So we turn to the country in our search for this unwritten music. Even there the tremendous effect of mass communication is threatening to swamp the tradition of folk song for ever, and it requires both time and patience to find a suitable subject.

The usual plan of campaign is to select a particular area for operation and to investigate it fully before moving on to the next locality. The village post-office

can often prove a most valuable source of information, and after that, one can inquire at the pub and at the church. Always the question is the same, "Do you know of anyone living locally who sings any of the old songs? No, not the songs you hear on the wireless but the really old one that grandfather used to sing?"

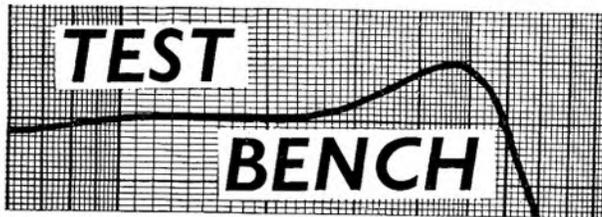
More often than not you will be directed to the house of some well-meaning, elderly individual who has a vast store of Victorian melodies and who will insist on making you listen to the entire repertoire. This is a pity, because it wastes so much time, but sooner or later, you're bound to find the real thing and then the thrill of discovery and achievement will be well worth all the trouble it has taken.

Your subject may be an old man whose wrinkled face conceals a mind so clear and memory so retentive, as to recall every word of the songs his mother sang when he was no more than a baby. More rarely your subject may prove to be a younger person who has absorbed and remembered every word and note sung by his parents and grand-parents.

The recordings taken should later be analysed and the items of interest carefully written up in the form of a musical score with accompanying words. In this way, the results of numerous independent investigations undertaken at different times in different parts of the country, can be compared and localised variations of the same song can be traced. It is only by pursuing such a methodical system and by working in the closest collaboration with fellow investigators, that your search for song can produce any worthwhile result.

The satisfaction of personally salvaging even the tiniest little bit of our national history, is immeasurable, and apart from which it also happens to be jolly good fun.

If this article should have given anyone the itch to go out into the field and search for themselves in the way I have described, then I should like to personally wish them good hunting, and to Mr. Cole in particular, here's hoping all your subjects are good ones.



THE SONY 464

By H. Burrell Hadden

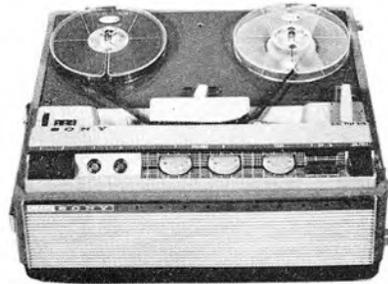
THE Sony "Tape recorder" model 464 is a multi-purpose four-track machine, capable of recording and playing both monophonically and stereophonically. For the last function, it is necessary to connect the machine to a pair of suitable power amplifiers and loudspeakers. Monophonic reproduction of both mono and stereo tapes is possible on the single built-in monitor loudspeaker.

For a machine having so comprehensive a specification, the physical size and weight are commendably small, the dimensions being $14\frac{1}{2} \times 6\frac{5}{16} \times 12\frac{3}{8}$ inches and the weight 26 lb. The maximum reel size the machine will accept is seven inches, and two tape speeds are available, $7\frac{1}{2}$ and $3\frac{3}{4}$ ips. Fast forward and rewind are provided, and the rewind time for a seven-inch reel of standard tape was $3\frac{1}{2}$ minutes. Removing the lid of the machine provides instant visibility of all the controls. A single lever selects the functions of play and fast rewind, and a further lever associated with this is operated to "convert" the play condition to fast forward. A control in the middle of the deck behind the heads sets the tape speed to either $7\frac{1}{2}$ or $3\frac{3}{4}$ ips. An "instant stop" or pause control is placed on the left-hand side of the head assembly, together with a tape position indicator of the digital type.

The amplifier controls are situated along the front edge of the machine. These consist of three thumb-wheel type controls, and five push buttons. The mains on/off switch is at the extreme right-hand end of the machine, and operating this button once turns the machine on, pressing it a second time turns it off. On the left of the mains switch are two slightly smaller buttons, by means of which the built-in monitor loudspeaker can be connected to either or both of the stereo tracks. Next comes the thumb-wheel tone control, operating on playback only, and ganged to function on both channels simultaneously. The other two thumb wheels, which come next in order, control the levels of the two channels, both on record and playback. Two other push buttons, at the left-hand end of the deck, are used to switch the machine to record; either one or the other, or both at once, being pressed and held down before setting the tape in motion by means of the "play" control. Both buttons are used at once, of course, when the machine is used to make a stereophonic recording. Level indication whilst re-

cording is by means of two miniature magic eye type indicators, also set in the top front edge of the machine in close proximity to the controls.

All the input and output sockets are to be found on a panel let into the left-hand side of the recorder. Two standard size "tip and sleeve" jack sockets are provided for microphone input at high impedance, one for each



channel. Immediately above these sockets is a further pair, of the miniature variety this time, for recording from a high-level source, such as a radio tuner, giving not less than 0.15 volt at high impedance. Three miniature jack-type output sockets are provided, two of them giving "line" outputs to feed high-quality amplifiers, and the third an external loudspeaker output, giving access to the loudspeaker connections of the internal monitoring amplifier. This socket gives the output from the track or tracks selected by the push buttons on the control panel. A word of caution about the "line" sockets. These are not the low-impedance connections of the order of 600 ohms, often associated with the term "line," but are high-impedance outputs. A further socket, of the now familiar multiple pattern standard on most recorders on the continent of Europe, provides for a single cable connection to give stereophonic record and replay facilities with associated equipment.

On measurement this recorder was distinctly disappointing. The manufacturers do not specify any tolerances for the frequency responses they give, but, as can be seen from the curves in the accompanying graph, the high-frequency response at both speeds falls short of what we normally expect at the present time. Nevertheless the

responses of the two tracks are well matched for stereo, and on practical recording tests the results sounded quite satisfactory. Reproduction from the internal monitoring loudspeaker as well balanced, and adequate volume was available. A certain amount of mechanical noise was audible from the particular model tested.

The recorder is provided with a single moving coil microphone, and a pair of leads with crocodile clips for use with high-level inputs. A single earpiece was included with the equipment sent for review. A comprehensive instruction manual is provided.

With the reservation mentioned above concerning high-frequency response, this machine is good value at £75 12s.

Manufacturer's Specification

Speeds: $7\frac{1}{2}$ and $3\frac{3}{4}$ ips.

Maximum spool size: Seven inches.

Recording sense: Four-track stereo, left to right.

Playing time (Standard-play tape): 32 minutes per track (mono) at $7\frac{1}{2}$ ips; 64 minutes per track (mono) at $3\frac{3}{4}$ ips.

Heads: Stacked four-track record/playback, and stacked four-track stereo erase.

Frequency response: 60-15,000 cps at $7\frac{1}{2}$ ips; 60-10,000 cps at $3\frac{3}{4}$ ips.

Signal-to-noise ratio: 45 dB or more across line output.

Wow and flutter: Less than 0.20 per cent at $7\frac{1}{2}$ ips, less than 0.25 per cent at $3\frac{3}{4}$ ips.

Amplifiers: Main power amplifier for either channel, and pre-amplifier one each for channel.

Record level indication: two magic eyes.

Level controls: Individual controls on each channel for playback or record.

Tone controls: Treble boost or treble roll-off operates both channels simultaneously.

Inputs sockets: For high impedance and auxiliary inputs.

Outputs: Two line outputs, and one socket for external loudspeaker.

Power output: 2½ watts, 8 ohms impedance.

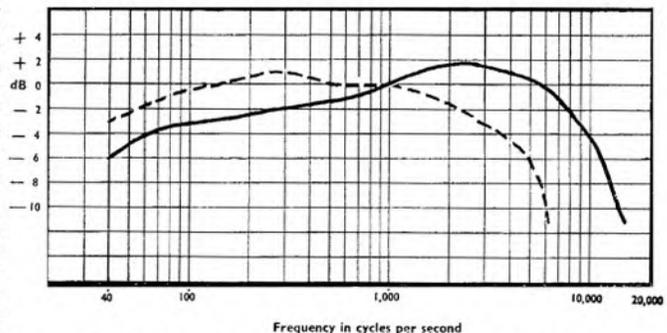
Valve line-up: One 12 AX7, two 6AU6, one 6AR5, one 6AV6, one 6X4, and two 6ME10 (magic eyes).

Microphone: Sony F-7B dynamic.

Dimensions: $14\frac{1}{2} \times 12\frac{3}{8} \times 6\frac{3}{8}$ inches.

Weight: Approx. 26 lb.

Agents: **Tellux Limited, Gallows Corner, Colchester Road, Romford, Essex.**



Record/replay characteristics of the Sony 464.
 $7\frac{1}{2}$ ips ————— $3\frac{3}{4}$ ips - - - - -



THE SIMON SP5

By H. Burrell Hadden

THE Simon SP5 is a high quality tape recorder in the higher price range, having a number of interesting facilities. It is large in size compared with many recorders on the market, the dimensions being 21 x 21 x 9 inches, and is by no means light in weight, but with such a comprehensive specification something has to go, and this recorder is after all presumably designed as a static, rather than a lightweight portable machine.

The case is finished in a dark grey, business-like leathercloth, and is provided with a strong carrying handle, which serves as a support for the machine when it is in use. By means of this support, and ingenious cabinet design, a sloping panel is arranged for all the controls, whilst the deck itself remains horizontal. Furthermore, the support raises the base of the recorder from the table, thus ensuring adequate ventilation for the large amount of electronic equipment under the panel.

The machine will accept spool sizes up to seven inches in diameter, and runs at 7½ or 3¼ ips. Using long play tape, and both tracks, a recording time of three hours is possible at the slower speed.

All the tape controls are mounted on the deck itself, and are simple in operation. On the left-hand side of the deck is the spooling control, giving fast forward and rewind. The time taken to rewind 1,200 ft. of standard tape was one minute and five seconds, but this short time produced a rather uneven wind, presumably due to insufficient tape tension. In the middle of the deck, the next control is the speed selector, giving a choice of 7½ or 3¼ ips with a central position in which the drive is disengaged. At the right-hand side of the deck is the single control giving the play and

record operations, with a safety catch to prevent accidental switching to the latter condition. A pause control is also found on this side of the deck. A clock-type tape position indicator is mounted between the tape spools.

The amplifier controls are conveniently situated on either side of the tape deck, those associated with the record amplifier being on the right, and those of the replay amplifier on the left. By this it

will be apparent that a three-head system is used, enabling monitoring of the tape to be carried out whilst actually recording. The version of the SP5 actually reviewed was the monophonic one—the makers insist on calling it a "monaural" one, although I guess they listen to it with two ears—but all the amplifier controls for stereophony are provided, only the top track ones being normally used.

On the record side, mixing facilities are provided for microphone and radio or gramophone inputs, and a master record gain control is incorporated. This is a most unusual and useful feature. Also on the record panel is a control used for re-recording: by its use it is possible to transfer from one track to the other, mixing in an extra input if required. A recording track selector, combined with the mains on/off switch, and bias adjusting controls complete the recording equipment.

The replay amplifier is as comprehensive, having a track selector, a control for setting the correct equalising for the tape speed in use, and a control for the built-in monitoring amplifier. This last has a volume control and bass and treble tone controls, and feeds a twin matched loudspeaker system. A switch enables the monitor amplifier to be connected to either the input or the tape, so that comprehensive checking is possible. The volume and tone controls are not operative on the low level output.

Input and output sockets are of the standard tip and sleeve type, and are found on the side of the recorder close to their respective amplifiers. On the recording panel are sockets for microphone and high level signals, and a switch used with the recording level meter to enable bias readings to be made. On the output panel low level and extension loudspeaker sockets are available.

The frequency response measured at both speeds was well inside the maker's specification, and, as can be seen in the accompanying graph, is very impressive indeed. Signal-to-noise ratio was 52 dB at maximum recording level. Wow and flutter were not noticeable at 7½ ips, and were not serious at 3¼ ips. On practical tests the machine gave a good account of itself, and the monitoring facility was much appreciated; it is a pity that more manufacturers do not incorporate this, although I suppose cost is in many cases against it.

Altogether this is a very good recorder; it does everything that could be expected of it. What a pity that it is so large and heavy, and so unattractive to look at, at least when its lid is on. Open, it has an interesting appearance and makes a good static machine.

An excellent instruction book is provided, and the equipment sells at £97 13s.

Manufacturer's Specification

Maximum spool size: Seven inches.

Recording sense: Half track, left to right.

Playing time: At 7½ ips (LP tape), 45 minutes each track; at 3¼ ips (LP tape), 90 minutes each track.

Rewind time: Approx. 75 sec. for 1,200 ft.

Heads: One stacked record head, one stacked playback head, two half-track erase heads.

Frequency response: 30-20,000 ± 3 dB at 7½ ips; 30-10,000 cps ± 3 dB at 3¼ ips.

Wow and flutter: Better than 0.15 per cent at 7½ ips; and better than 0.2 per cent at 3¼ ips.

Signal-to-noise ratio: Better than 50 dB, weighted against frequencies below 50 cps.

Loudspeaker: Main unit 10 x 6¼ inches with 4-inch tweeter built-in.

Input sockets: Microphone (2 M ohms, 1.8 mV), radio/pick-up (150 mV).

Output levels: Five-six watts into 15 ohms; low level output from tape 350 mV.

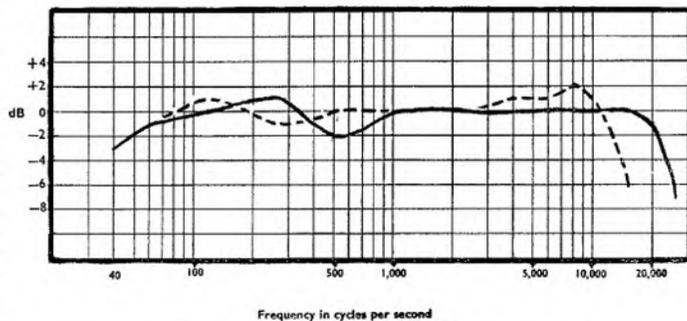
Power amplifier distortion: At 1,000 cps rated output, better than 0.5 per cent.

Power consumption: 105 watts (maximum).

Power supply: 103-117, 118-132, 192-209, 210-232 and 233-255 volts, AC, 50 cycles.

Weight: 50 lb.

Manufacturers: Simon Equipment Limited, 48 George Street, London, W.1.



Record/replay characteristics of the Simon SP5
7½ ips ————— 3¼ ips - - - - -

Tape records reviewed

One tape's impact on modern life

CLASSICS



By Edward
Greenfield

BEYOND THE FRINGE. Alan Bennett, Peter Cook, Jonathan Miller, Dudley Moore. Parlophone (TA PMC 1145), 3½ ips, mono. 35s.

A Labour frontbencher commented to me the other day after an important censure debate that watching the Prime Minister wind up from only a few feet away was just like "Beyond the Fringe"—Peter Cook only better. I doubt if Mr. Macmillan would appreciate that as a compliment, and reports say his face was unbending when he actually visited the show, but it is some measure of its impact on public life. More than any other single effort it has summed up the current wave of satire with negative revolt raised to something like a positive philosophy. No doubt in fifty years' time sociologists will be writing learned theses on this very tape.

Now fortunately we need not dwell too closely on what it all means and can settle back and laugh. Without the benefit of the performers' appearance the record provides a severe test. Even the famous take-off of the Prime Minister has its weaknesses as a script: the parody would have been much more wicked had the subject-matter been closer to what Mr. Macmillan actually might say. One item that really does have the right degree of perception is Alan Bennett's "Take a pew"—a sermon that guys every parsonical trick in the book. I am told it is required listening in theological colleges, and no compliment could be higher than that.

Dudley Moore's parody of Peter Pears singing a Britten folk-song is cruelly exact, but even there the imitation of the voice is much closer and therefore much funnier than the imitation of Britten's music. Some have complained of the tastelessness of "Aftermyth of War," a send-up of a BBC sentimental feature programme about 1940, but by chance I recently came across what must have been the original provocation, "Scrapbook for 1940" now issued as a disc by Fontana. That, believe me, is far more tasteless in its gush of emotion.

Some argue that funny recordings do not stand repetition, but in fact with the original disc and now this tape I find the

items actually seem to improve after the first hearing, and one comes to mind their limitations less and enjoy their humour more. A good sign. The recording was made during an actual performance at the Fortune Theatre.

BEETHOVEN. Symphony No. 8. London Symphony Orchestra conducted by Josef Krips; and Sonata No. 31 in A flat, Opus 110. Ernst von Dohnanyi. W.R.C. (TT 205), 3½ ips, mono. 29s.

This completes Krips's cycle of the nine Beethoven Symphonies. The Eighth, Beethoven's "little one" as he called it, does not inspire Krips quite so intensely as some of the earlier works. Ideally I want more spring in the rhythm of the first movement, but the relaxed approach to the slow movement is most convincing, a genuine slow movement for a change rather than a slow scherzo. The finale opens with a feathery lightness and though Krips sometimes lets the beat run away with him, the delicacy matches his whole conception of the work.

Beethoven's last but one sonata, a golden product of his last maturity, is given an extraordinary performance by the composer of the famous "Nursery" Variations. Dohnanyi was about 80 when he recorded it, and not only are there inevitable "fluffs," the style of the performance is incredibly old-fashioned. Hearing this really does provide a lesson in style of performance. Dohnanyi pulls the rhythm about with great abandon, and—worst of all—lets the left hand strike the keys before the right in expressive passages. That was Paderewski's besetting fault, and any amateur who has ever recorded his own playing will know how easy it is to fall into the habit. All the same, blemishes and all, it is a genuine interpretation, and that is far more than can be said of many glossy products of the recording studio.

LIEDER RECITAL. SCHUBERT. Der Lindenbaum; Am Meer; Der Doppelgänger; Der Wanderer. STRAUSS. Morgen; Traum durch die Dämmerung. BRAHMS. Wie bist du, meine Königin; Die Mainacht. SCHUMANN. Wanderlied; Die Beiden Grenadiere. WOLF. Gesang Weylas; Der Freund; Der Musikant; Heimweh. Matti Lehtinen (baritone), Hubert Giesen (piano). W.R.C. (TCM 37), 3½ ips, mono. 29s.

It is good to have a tape of German songs, and this one includes a fine, representative collection of some of the most expressive in the language. It is perhaps unfair to represent Schubert with such predominant gloom as here, but such songs as these four show the composer's power of illuminating deep emotions with the simplest of melodies. I suspect the choice was designed to bring out the qualities of Lehtinen's voice, clear and even over any legato melody.

The two Strauss songs have a velvety beauty and so do the Brahms items, two of his loveliest pieces. The two Schumann songs including the one about the two Grenadiers provides a needed contrast in strong, forthright tone, and the recital ends with some characteristically sophisticated and expressive Wolf songs.

After Fischer-Dieskau Lehtinen may at first seem a little straight-faced, but in fact I quickly found myself enjoying

such musical singing enormously. The range of tone colour is not specially wide but in the "Two Grenadiers" Lehtinen opens out with splendid richness.

Poor labelling and most important of all absence of any indication of what the songs are about are annoying faults in an otherwise excellent tape. The Brahms songs are listed in the wrong order, and without the help of any words the newcomer will find it hard identifying the individual numbers. The recording originally made by Ariola is fair enough but rather restricted.

GERSHWIN. Piano Concerto in F; Three Preludes for Piano; Porgy and Bess Suite. Sergio Fiorentino (piano), London Philharmonic Orchestra conducted by Hugo Rignold. Saga (STG 8037), 3½ ips, mono. 32s. 6d.

Gershwin always benefits from serious treatment by first-rate soloists and orchestras, and the young Italian pianist Sergio Fiorentino, who has made a number of excellent Saga recordings, has just the right muscularity. I wish the orchestra sounded similarly forthright all through. There are moments when the string tone sounds undernourished, and in the big tune of the first movement the balance is poorly managed. But with such a soloist the overall impression is fresh enough.

The orchestra sounds more enthusiastic in the suite arranged from the opera Porgy and Bess, rich, fruity music richly and fruitfully played. But my favourite items are the three short preludes for piano solo, wonderfully played by Fiorentino.

Although unlike WRC Saga does not appear to be using LP tape, there is plenty of room on a five-inch spool. My copy was marred by faint hints of the reverse track coming through in quiet passages.

TCHAIKOVSKY. "Manfred" Symphony. London Symphony Orchestra conducted by Sir Eugene Goossens. W.R.C. (TT 209), 3½ ips, mono. 29s.

Tchaikovsky's "Manfred" is described as a "Symphony in Four Tableaux after the dramatic poem of Byron," and though each tableau contains a programme, the four movements are balanced together in the proportions of a genuine symphony. It is surprising in fact that it has never been numbered with Tchaikovsky's other symphonies, for with its memorable and often lush ideas and rich orchestration it is well worthy of a place beside them. Even more surprising is the work's comparative failure to catch on with a wide public. Anyone who has ever enjoyed a Tchaikovsky symphony—and what music-lover has not?—should certainly sample this.

The most impressive performance of "Manfred" I remember was by Toscanini and I have to admit that by comparison with his towering example this one is of a much lower voltage. But it is both dramatic and sympathetic, and the excellent Everest recording helps enormously in doing justice to the glorious orchestration. This is a work which is almost always cut in performance, and Goossens makes rather more snips in the score than most. I am sorry about that but happily he does leave the delectable second movement alone with its extraordinarily memorable central melody.

These themes make up the best collection

POPULAR



By Don
Wedge

DANCE TO THE TV THEMES. Steve Race and his Orchestra. W.R.C. (TT 285), 3½ ips, mono. 29s.

Film and television themes have provided many entrants to the hit parade in recent years. Usually, they have been instrumentals but there has been the odd vocal version.

Steve Race, while staying close to the originals, has stamped on an individual personality of his own and produced a hit LP.

This collection is probably the best that has been issued in the theme class. The Parisian flavour of Ron Grainger's *Maigret* is retained without the use of accordions. Though completely recognisable in mood and style to the original, it has an added excitement which Race has injected throughout the record.

Tracks vary from the well identified *Z Cars* to the well-known but not always linked *Stranger on the Shore*—which began its success as the theme of a BBC children's series.

Tubby Hayes' sax solo on the *Perry Mason* theme is outstanding and you will be surprised at the development of the Palladium Show's *Startime* signature tune.

This is an outstanding record. Few to equal it have been made in this country.

LET'S FACE THE MUSIC. Shirley Bassey with Nelson Riddle and his Orchestra. Columbia (TA-33SX 1454), 3½ ips, mono. 35s.

The teaming of two such brilliant music personalities, one British and one American, is rare. Both have now obtained the standard where everything they do is near absolute perfection and it would be hard to get higher.

The combination here, then, is something of a gimmick—though a very worthwhile one—rather than an improvement on what either has done before.

Riddle's arranging genius shows through in the trick introduction to the title song. There is an unusual use of a fade out on *All the Things you are*.

But the best of the performances undoubtedly comes from Shirley Bassey with her intensely dramatic *What now My Love* as she brings the record to a strong climax.

JEROME KERN SPECTACULAR. Ray Ellington and Valerie Masters. W.R.C. (TT 207), 3½ ips, mono. 29s.

Ray Ellington's new approach to Richard Rodgers' standards, reviewed five months ago, coupled with the

brilliant orchestration of Alan Braden, comes off even better in the *Jerome Kern Spectacular*.

Here, Ellington is coupled with Valerie Masters, once the singer with his quartet, now an artist with a considerable reputation as a soloist.

Ellington's mannerisms are more acceptable. His versatile performances range from the brilliant *Ol' Man river* to the broad comedy of *Who* and a track *The folks who live on the hill*.

Valerie Masters is best with a torch treatment of *The last time I saw Paris* and the Mike Sammes Singers give an amusing rendering of *She didn't say yes*, recently revived most effectively in another context by Mr. Harold Mac-Millan.

OH! LOOK AT ME NOW. Bobby Darin with Orchestra conducted by Billy May. Capitol (TA-T 1791), 3½ ips, mono. 35s.

After Capitol lost Frank Sinatra, they looked around for singers who could replace him. An obvious candidate was Bobby Darin. This, his first album for the label, takes its title from a song Sinatra first recorded with the Tommy Dorsey Orchestra when he was submerged by the Pied Pipers and Connie Haines.

He recorded it again 15 years later on "A Swinging Affair" and now it provides the theme for this Darin treatment.

Many of the titles have been recorded by Sinatra—*You'll Never Know, I'm Beginning to see the Light* and *Roses of Picardy* among them.

Darin has a flexibility in his voice which is now missing from Sinatra's. He sings with tremendous confidence and gives classic performances even in the Jolsenesque *Blue Skies*.

Perhaps Darin has made better records, but this—his first on tape—leaves him nothing to be ashamed of.

TRIBUTE TO ART TATUM. W.R.C. (TT 208), 3½ ips, mono. 29s.

The late Art Tatum was one of the world's most talented pianists. His command of the instrument was rarely equalled. The tracks that form this WRC album were recorded in 1949 and 1952, but include some of his greatest recordings.

Aunt Hagar's Blues is regarded as a classic. It is one of the early batch. All piano solos.

Other titles in this set include a quite magnificent *Nice Work if you can get it* and the moving *I got a right to sing the Blues*.

Tatum's technique is perhaps best illustrated in *Out of Nowhere* one of the 1952 tracks on which he is accompanied by guitarist Everitt Barksdale and Slam Stewart, whose bass solo is fantastic on the last chorus of *Nowhere*.

There is a fair amount of jazz available to tape record buyers but few examples match this quality.

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

"Columbia," "Capitol," "Parlophone," E.M.I. Records Ltd., 20, Manchester Square, London, W.1.

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

"W.R.C." World Record Club, Box 11, Park-bridge House, The Little Green, Richmond, Surrey.

AMERICA'S ONLY TAPE RECORDING MAGAZINE

Since 1953, this magazine has totally been devoted to tape recording. In addition to its timely articles, our columns also feature:

- Tape Reviews
- New Products
- Industry News
- Questions and Answers
- Feedback (letters from readers)
- Crosstalk (an editorial)
- Club News (tape correspondence clubs)
- Tape in Education
- Book Reviews

A one year subscription, including overseas postage, \$4.75



SEVERNA PARK,
MARYLAND, U.S.A.

HIGH QUALITY RECORDING TAPE

AMERICAN—PLAYRITE
5 inch 600 ft. 14s. 900 ft. 18s. 1,200 ft. 32s.
5½ inch 900 ft. 18s. 1,200 ft. 22s. 1,800 ft. 38s.
7 inch 1,200 ft. 22s. 1,800 ft. 30s. 2,400 ft. 48s.
Splice Free on Non-Warp Non-Squeal
reels and includes stopfil and leaders
at both ends

—FULLY GUARANTEED—
Postage 2s. Two or more post free, or
sample on 3 inch spool 1s. P.O.

ADVANCE T.V.S.

3, West Street, Baildon, Yorkshire

Tape-to-Disc Services

—RAPID— Recording Service

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

Associated Company—

EDUCATIONAL RECORDINGS LTD.

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

Brochures on request from:—

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



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

LONDON

HI-FI CENTRE

Branch of KINGS ELECTRONICS

178, HIGH STREET, E.17

Walthamstow's Leading Stockist of all makes of

TAPE RECORDERS

AMPLIFIERS, TUNERS, etc.

Free Demonstration in the comfort of your own home

PHONE AMH 6242 or COP 4488

Lee Electronics

THE TAPE RECORDER & HI-FI AUDIO SPECIALISTS

400, EDGWARE ROAD, LONDON, W.2

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

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

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

PADDINGTON 5521

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

MAGNEGRAPH

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

▶ SIGNAL—TO—NOISE RATIO

JAMES MOIR - Continued from page 15

value and the value obtained with the "bass cut" response as the "weighted" value. This latter is usually the most significant because it gives rough indication of the loudness of the noise under working conditions and when judged by ear. When the noise contains little energy at the low frequency end of the range there is very little difference between the weighted and unweighted readings but if mains frequency components are present the unweighted reading will always be higher than the weighted reading.

However the important factor is not the noise itself but the ratio of the maximum signal that can be recorded to the inherent noise level of the system. The maximum signal is always limited by the onset of harmonic distortion but if this permits a signal to be recorded that is large in comparison to the inherent noise level, then the noise can be ignored. Thus it is the signal/noise ratio that is useful in indicating this aspect of the performance of a recording and reproducing system.

It may help if the method of measuring the signal/noise ratio is described. Two values are clearly required, one of the maximum signal that can be recorded

without harmonic distortion exceeding some arbitrarily chosen value, commonly two per cent, and a second measurement of the residual noise level when there is no signal.

Taking a tape recorder as an example, a 1,000 cps signal would be recorded at the level at which the harmonic distortion reached two per cent, a hundred feet of tape being recorded. The tape would then be run through the machine a second time and the signal on the last fifty feet of tape erased. On replaying, the signal level would be measured on the first fifty feet of recorded tape and the residual noise level measured on the erased section, the noise-level meter being used for both checks. The difference of the two readings (in decibels) would be quoted as the signal/noise ratio.

An exceptionally good system will have a signal/noise ratio in excess of 60 dB., a typical pre-war 78 rpm disc, a signal/noise ratio nearer 25 dB. There is no sharply defined signal/noise ratio that is just acceptable, for this depends on the type of music being played, the room noise level, the outlook of the listener and many other factors but **Table 1** suggests the sort of result that is acceptable in various circumstances.

THE WORLD OF TAPE

LAS VEGAS—The Magnetic Recording Industry Association has set its face against the Federal Trade Commission's attempt to define "high fidelity." At its board meeting here, the MRIA decided to ask the Government not to continue its quest for the definition.

It would seriously mislead consumers, the MRIA alleged, because they would believe all products which qualified for the endorsement were also Government approved.

MRIA president Bill Gallagher said there were three reasons for the associations' view. Agreement for acoustic measurement standards did not exist; measurement equipment needed to be agreed; and manufacturers of high and low cost equipment had widely conflicting definitions of their own.

Gallagher asked that the industry adopt a programme to cover the development of the measurements of audio standards of each component in the system, devise better methods of testing procedures and set up independent testing laboratories.

CHICAGO—The links between the home movie and tape manufacturers took another step forward when Argus

Inc., a leading photographic equipment firm, branched into the tape market with three new recorder-playback units.

Only last year Eastman-Kodak entered the field with its own brand of blank cartridge tape.

The Argus units are all portable. The most expensive, costing £196 is a four-track stereo and mono machine, which has an additional feature called simul-sound, making possible the monitoring of previously recorded material on one track while recording new material on another.

Herbert Leopold, head of the Argus firm, said they had entered the tape market because they expected it to double in the next five years, with quality machines taking the larger share.

LOS ANGELES—The new 3M cartridge player was one of the main centres of attraction at the Hi-fi Show held here. Los Angeles has become the latest city to see the revolutionary new development.

What is surprising, however, is the extreme caution in which 3M is unveiling the machine to U.S. enthusiasts. It is not likely to have national impact until September—nearly ten months after its original launching—when it will be shown at the New York Hi-fi Show.

LETTERS to the editor

I HAVE read with interest the letter from Maurice L. Chambers (*April issue*).

We at the R.N.I.B. have been aware of the good work Mr. Chambers has been doing in the Birmingham area in providing recorded tapes for those blind people who possess tape recorders. Indeed, the potentialities for blind people of the domestic tape recorder were realised soon after tape recorders became commercially available to the general public, and there are many organisations and individuals throughout the country who now provide, on a local basis, services of one sort and another to blind people. Sometimes the local blind society takes the lead, sometimes the local tape recording society, sometimes the local newspapers: between them, they provide a variety of services on tape—local news, correspondence facilities, magazines, "pictures in sound" and so forth. This network of local voluntary service which, as Mr. Chambers points out, supplements the work of the Nuffield Talking Book Library, administered by the R.N.I.B. and St. Dunstan's, performs a valuable task for blind welfare.

What I think Mr. Chambers does not realise is that the high proportion of blind people in Holland who have tape recorders is accounted for by the fact that the Dutch have no Talking Book Library such as ours, which is specially designed for blind people. Our Talking Book Library, which started in the 'thirties, using long-playing discs before they ever became a commercial proposition, began to convert early in 1961 to new tape equipment pioneered and developed by the R.N.I.B.'s Sound Recording Department, and designed specifically for the elderly blind people who form the majority of the Library's membership.

It has a present membership of some 9,000, and plans are afoot for a massive expansion of the service which may well bring the membership, within a few years, to something like 30,000, so that in effect every blind person in the U.K. who wishes to use the Talking Book Library services will be able to do so (the demand hitherto has always been so great that elderly blind people, those who lose their sight late in life and cannot master embossed type, are given priority).

Mr. Chambers gives three reasons for convincing the uninitiated that a tape recorder is an essential piece of equipment to a blind person; in brief, (1) many people lose their sight late in life when learning braille is difficult, (2) it is desirable that a general "Spoken Weekly for the Blind" be put into production, and (3) although the Talking Book is chiefly intended for recreation and general education, there should be special facilities for students.

May I make the following comments on these points? :—

(1) Our experience, over many years of experimental work in the development of

our Talking Book equipment, is that the great majority of blind people, who are elderly, cannot cope with the intricacies of the domestic tape recorder, and the equipment we have developed takes full account of this. Indeed, it is so simple to operate, that, with minor modifications, it can easily be operated by handless St. Dunstaners and blind people crippled with arthritis.

(2) Various programmes of the BBC cover adequately the "better quality Sunday newspaper" field. Apart from which, I do not think Mr. Chambers realises the technical problems of copying and despatching thousands of copies of a weekly magazine.

(3) The R.N.I.B. and St. Dunstan's have under very active consideration the establishment of a student tape library, which will provide a full service on request for blind students and professional people.

One further point: I wonder whether Mr. Chambers is fully aware of the complexities of copyright? The special equipment used by the Talking Book Library does not use open tape (the blind user has no access to the tape at all), and copyright is protected thereby, to the satisfaction of the Publishers' Association, with whom we have a special agreement.

I feel sure that the use of open tapes on equipment which is readily available to the public would severely limit the potentialities of any scheme such as that Mr. Chambers has in mind.

To summarise, the sort of scheme Mr. Chambers has been operating, and which is being operated in various parts of the country, is admirable, as long as it is kept on a local and easily manageable basis, but once this sort of scheme becomes too ambitious, it runs, as we well know, into serious difficulties, difficulties to which we feel we have over the years evolved a satisfactory answer.

J. C. COLLIGAN.

*Secretary-General,
Royal National Institute for the Blind.*

Tape recorder presentation

HAPPY to state that two weeks after launching appeal for funds, we have been able to present the first tape recorder to a blind girl in Birmingham. It was presented on behalf of TPB to Miss Lorna Nash of Highfield Farm, Headley Heath, Kings Norton, by comedian Norman Wisdom at the Birmingham Hippodrome.

I recorded the event on the Philips battery portable. Afterwards, Mr. Wisdom invited Lorna and her mother to watch him play in the panto "Robinson Crusoe."

MAURICE L. CHAMBERS.

Tape Programmes for the Blind.



YOUR LOCAL DEALER

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

LONDON

Masseys Centre of Sound

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

APPOINTED FERROGRAPH DEALER

AT
CHISWICK, W.4

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

◀ TEL: CHI 2082 ▶

(not closed for lunch)

Leonard G. Francis presents—

SHEEN

TAPE RECORDER CENTRE LTD.

*Specialists in Tape Recorders
and Accessories etc.*

—THE CENTRE FOR—

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

CALL—WRITE—PHONE

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

THE SOUTH

HAMILTON

ELECTRONICS

HIGH FIDELITY
TAPE RECORDERS

35 LONDON ROAD
SOUTHAMPTON

TELEPHONE 28622



YOUR LOCAL DEALER

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

SOUTH

PORTSMOUTH and SOUTHAMPTON

Tape Recorder Specialists

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

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

RECORDING MACHINES LTD.

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



TAPE RECORDERS

(Bournemouth) (Exeter)
LTD
Southern England's
Biggest Centres for
PHILIPS . FERROGRAPH
GRUNDIG . TELEFUNKEN
BRENELL . AND ALL LEADING MAKES

Accessories by return Call, write or phone

THE TAPE RECORDER PEOPLE

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

SCOTLAND

GLASGOW

Tape Recorder Specialists

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

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

RECORDING MACHINES LTD.

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

NEW PRODUCTS

UHER ANNOUNCE TWO NEW RECORDERS

A MAINS-OPERATED all transistor recorder requiring no "warm-up" procedure is the latest model to be announced by the West German Uher manufacturers. The new machine, the Uher 712 U-Matic, illustrated below, will accommodate seven-inch reels, has a single tape speed of $3\frac{1}{2}$ ips, and provides a playing time of 64 minutes for each of its two tracks using standard-play tape.

The quoted frequency response is 40-16,000 cps. Main feature of the U-Matic is the automatic adjustment of the record level control operated by the in-going signal. Among the other features are facilities for earphone monitoring, a rev. digital counter, pause control, VU meter, tone control, safety lock against accidental erasure, tape end stop, and push-button controls.

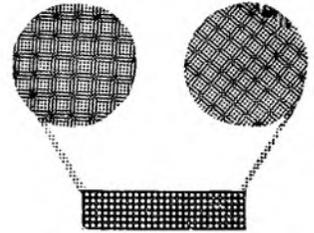
The mains supply required is 110-250 volts, AC. 50 cycles (conversion to 60 cycles possible). Power consumption is approximately 23 watts.



Housed in an attractive grey leatherette covered wooden case with detachable lid, it measures 15 x 14 x 7 inches, and weighs 18 lb. The price is 69 guineas, including dynamic microphone and LP tape.

Uher have also announced the Universal 6000 transistorised mains recorder. Two track operation, four tape speeds ($7\frac{1}{2}$, $3\frac{1}{2}$, $1\frac{1}{2}$, 15/16 ips) and accommodation for $5\frac{1}{4}$ -inch spools make this a most versatile recorder. Using standard-play tape, over thirty minutes playing time is available per track at the top speed.

Full details of this 83-guinea recorder are not yet available, but preliminary information mentions an automatic level control, a remote control microphone with switches for record, stop, playback, and rewind, that can also be used as a



speaker. Recordings can be made up to 30 ft. away from the recorder and instantaneously played back. The Universal 6000 does not need a carrying case, and can be operated by foot or hand control. All controls are located on the front panel.

The price includes a dynamic microphone, and LP tape.

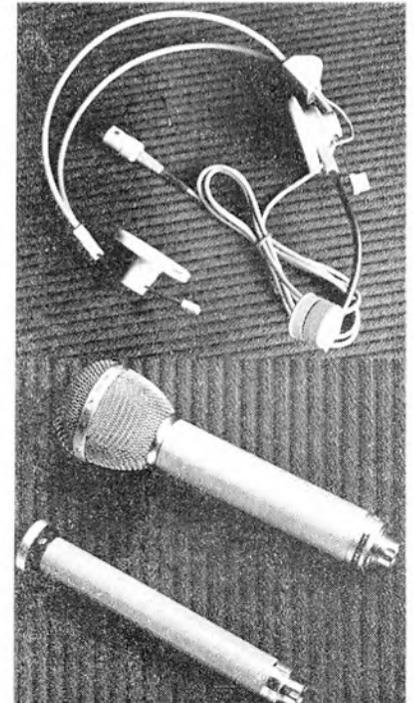
Bosch Limited, 205, Great Portland Street, London, W.1.

MORE MICROPHONES FROM WEST GERMANY

TWO new microphones and a headphone set are announced by Beyer, the West German firm, whose products are marketed in Britain by Fi-Cord International.

First of the microphones is the M 66 cardioid dynamic moving coil unit, which is a highly sensitive instrument selling at £42 17s. 0d. It is illustrated centre of the photograph below.

It has a quoted frequency range of 40-16,000 cps. The output impedance is



200 ohms. The M 66 suppresses all unwanted sounds, even for the lowest AF frequencies, in an arc of 180 degrees. The makers claim there is no distortion even with high sound pressure. The microphone is housed in a dull chrome plated cylinder-shaped metal housing with wire mesh and retainer ring. The system is suspended on rubber to minimise noise pick-up through the body. It measures $5\frac{1}{2}$ inches long, $\frac{7}{8}$ -inches diameter, with the mesh $1\frac{1}{2}$ inches long, and weighs approximately seven ounces.

The second unit is an omni-directional dynamic moving coil microphone for high quality studio and outdoor recording. The frequency response is 50-16,000 cps \pm 3 dB. The output impedance is 200 ohms. The head is $1\frac{1}{2}$ inches long, and the shaft is $\frac{3}{4}$ -inch diameter. Overall length is $5\frac{1}{2}$ inches, and it weighs approximately three ounces. The price is £16 10s. 1d.

The new D 96 headphones, illustrated top, cost £9 14s. 0d., and are designed for high quality music reproduction and acoustical tests. The quoted frequency response is 30-17,000 cps. The speaker capsules are connected to a resilient headband without special leads, thus eliminating breakages, the frequent cause of trouble. The input impedance is 200 ohms mono, or twice 100 ohms for stereo. The voltage required is approximately 30 mV. The speaker capsules measure $2\frac{1}{2}$ x $1\frac{1}{2}$ inches, and the headset weighs approximately five ounces. The capsules are also available with input impedances of five, ten, fifty and 200 ohms.

Fi-Cord International, 40a, Dover Street, London, W.1.

COSSOR INCREASE RANGE WITH NEW STYLE

A NEW two-speed tape recorder has been introduced by Cossor to replace the single-speed CR 1602. The new machine, model CR 1604 has all the technical features of its predecessor plus an extra tape speed. It will sell at 39 guineas complete with low impedance moving coil microphone, screened connecting lead, five-inch reels of LP tape, and empty take-up spool.

A distinguishing feature of the new model is the sloping console fascia at the front of the machine, on which are situated most of the controls, and the $6\frac{1}{2}$ -inch loudspeaker. The controls on the panel are push buttons for record, pause, playback, fast forward wind, stop, fast rewind; plus separate rotary controls for microphone/tone, pick-up/radio and playback volume. Above these controls is a four-digit programme indicator with push button reset, and combined mains control and ribbon type record level indicator.

The quoted frequency response at $3\frac{1}{2}$ ips, is 60-13,000 \pm 3 dB, and 60-10,000 cps \pm 3 dB at $1\frac{3}{4}$ ips. Signal-to-noise is rated as better than 40 dB, and wow and flutter is given as less than 0.6 per cent peak.

The output power is rated at $2\frac{1}{2}$ watts. Using the seven-inch spool accommoda-



tion, the playing time available on standard-play tape, is 64 minutes on each of the two tracks at $3\frac{1}{4}$ ips. Rewind time for 1800 ft. is approximately three minutes.

Among the features are mixing facilities, footswitch connection, straight-through amplification, and Multiplay and Duoplay facilities, plus playback of stereo recordings using an additional amplifier are also available.

The valve line-up includes an ECL 82, and EM 87, plus five transistors and one diode. Mains consumption is estimated at 55 watts. Mains supply is 110-127, 200-250 volts, AC, 50 cycles.

Inputs are available for microphone (1 K ohms, 1 mV), pick-up (500 K ohms, 150 mV), and diode (20 K ohms, 3 mV). Outputs are provided for loudspeaker (3-7 ohms), headphones ($1\frac{1}{2}$ -5 K ohms, 200 mV), diode (20 K ohms, 1 V approximately), and a stereo socket for use with an EL 3787 pre-amplifier.

The CR 1604 measures $14\frac{1}{2}$ x $14\frac{1}{2}$ x $7\frac{1}{2}$ inches, and weighs 18 lb.

Cossor Radio & Television Limited, 233, Tottenham Court Road, London, W.1.

DAYSTROM MARKET MORE HEATHKIT MODELS

DAYSTROM announce that by special arrangement with the American Heath Company, they are now able to accept orders for any of the wide range of American Heathkit models for direct delivery for customers in the U.K. This move opens up to British customers the world's widest range of electronic kit models, many of which have been unobtainable in this country.

All the models can be obtained at economic prices due to the saving in administrative costs effected by direct delivery.

To facilitate selection of models, copies of the latest American catalogue and full details of the scheme are available from Daystrom at a nominal price of 1s., post paid.

Daystrom Limited, Gloucester, Gloucestershire.

YOUR LOCAL DEALER

MIDLANDS

Audio Electronics (Midlands) Ltd.

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

Full After Sales Service on all Equipment

PHILIPS, GRUNDIG, TRUVOX, ELIZABETHAN, ETC,

203 STAFFORD STREET, WALSALL.

Tel.: 21086

SOUND BUSINESS

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

Backed by a First-Class Service Department

TYSONIC

W. M. Tyson, M.Brit.I.R.E.

41 Russell St., Leamington Spa phone 24935

THE NORTH

CUSSINS & LIGHT LTD.

YORK'S LEADING RADIO TV & ELECTRICAL STORE

Visit our First Floor TAPE RECORDER CENTRE

LARGEST RANGE OF RECORDERS & ACCESSORIES IN THE NORTH

KING'S SQ. YORK



TAPE RECORDER CENTRE (Halifax)

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

30 King Cross St., Halifax. Phone 66832

"Advice on buying a tape recorder"

Reprint edition now available

TAPE RECORDING YEARBOOK 1962-63

— 2s. 6d.

THE latest edition of the **TAPE RECORDING YEARBOOK** is now on the bookstalls. This fifth edition contains the popular "at-a-glance" comparison charts of every currently available tape recorder, microphone, tape deck, and mixer unit together with illustrations, and a valuable miscellaneous accessory guide and magnetic tape price list.

Other contents include a full review of tape developments during the past year; advice on choosing—and using—a tape recorder; tape and cine; copyright; tape records; and a full directory of manufacturers, agents, and tape club addresses.

POST NOW to: TAPE Recording "Magazine,"
7, Tudor Street, London, E.C.4.

Please send me.....copy(ies) of Tape Recording Yearbook 1962-63 at 7s. 6d. a copy (including postage) (£1.25), I enclose remittance herewith.

Name

Address

TAPE RECORDING HANDBOOKS

(Others in our series)

INTRODUCTION TO THE TAPE RECORDER

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

HI-FI FOR THE MUSIC LOVER

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

TAPE AND CINE

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

HOW TO RECORD WEDDINGS

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

FRANCIS OF STREATHAM

Akai M6 Stereo ... 30 gns.
Akai M69 ... 79 gns.
*Brenell Mk. V. Model M ... 88 gns.
*Brenell Mk. V ... 64 gns.
Cossor 4 Tr. 1602 ... 38 gns.
Cossor 4 Tr. 1605 ... 62 gns.
Cossor 4 Tr. 1603 ... 28 gns.
Elizabethan Popular ... 24 gns.
Elizabethan L.Z. 30 ... 32 gns.
Ferguson 3200 ... 26 gns.
Ferguson 3202 2Sp 4Tr ... 33 gns.
*Ferrograph Series V ... 85 gns.
*Ferrograph 422 or 424 ... 110 gns.
Fidelity Argyll Minor ... 22 gns.
Grundig TK14 ... 35 gns.
Grundig TK23 ... 45 gns.
Grundig TK40 ... 75 gns.
Grundig TK41 ... 75 gns.
Grundig TK46 Stereo ... 99 gns.
Loewe Opta 403 2Sp ... 45 gns.
Loewe Opta 404 ... 53 gns.
Philips 4 Tr. 3514 ... 27 gns.
Philips 4 Tr. 3541 ... 36 gns.
Philips 4 Tr. 3549 ... 62 gns.
Philips new 4 Tr. Stereo ... 92 gns.
*Reflectograph 'A' ½ Tr. ... 105 gns.
Robuk ... 36 gns.
*Simon SP5 ... 93 gns.
Sony Stereo 464 ... 75 gns.
Sony ½ and ¼ Track 521 ... 124 gns.
Stellaphon 4 Tr. 456 ... 28 gns.
Stellaphon 4 Tr. 454 ... 38 gns.
Stellaphon 4 Tr. 459 ... 62 gns.
Stuzzi 4 Tr. Junior ... 26 gns.
*Tandberg Series VI ... 110 gns.
Stereo ½ or ¼ Tr. ... 93 gns.
*Tandberg Series 7 ... 93 gns.

*Telefunken 85KL de Luxe ... 82 gns.
*Telefunken 95 ... 59 gns.
*Telefunken 96 4 Tr. ... 69 gns.
*Telefunken 97 Stereo ... 95 gns.
*Telefunken 98 Stereo ... 95 gns.
Truvox Series 60, ½ & ¼ Tr. ... 39 gns.
Truvox Series 80/2 Tr. ... 55 gns.
Truvox Series 80/4 Tr. ... 59 gns.
Uher Universal ... 82 gns.
*Vortexion WVA ... £93.13.0
*Vortexion WVB ... £110.3.0
*Vortexion C Stereo ... £148.10.0
*Vortexion CBL ... £160
*Windsor International 69 gns.

BATTERY PORTABLES

Philips Portable ... 24 gns.
*Butoba ... 66 gns.
Grundig TK1 ... 29 gns.
Clarion Phonotrix ... 39 gns.
Fi-Cord 202 ... 66 gns.
Stella ... 25 gns.
Stuzzi Memo-Cord ... 25 gns.
Optacord 412 Batt/Mains Uher 4000 ... 93 gns.
Cossor ... 25 gns.
*Microphone extra

Mains Power Pack for Philips or Stella ... £5.0.0

TRUVOX Decks with Pre-Amps
PD 82—Standard Twin Tr. £42.0.0
PD 85—Professional 4 Tr. £52.10.0
PD 86—Professional 4 Tr. Stereo ... £63.0.0
Decks also Brenell and Wearite

LEADING STOCKISTS OF EQUIPMENT FOR TAPE and HI-FI

... and NO EXTRA FOR CREDIT TERMS

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

Prices subject to alteration as announced by manufacturers

- Gramphon Reflector... £5.15.0
- MICROPHONES & MIXERS
Gramphon Ribbon GR102 £10.15.0
Gramphon DP/4 Dynamic £8.0.0
Lustraphone VR/70 Miniature Ribbon ... 10 gns.
Lustraphone Ribbon ... £7.17.6
Lustraphone LFV/59 Dynamic ... £8.18.6
Simon 'Cadenza' Ribbon £10.10.0
Reslo Ribbon or Dynamic £7.12.6
Reslo Cardioid ... £9.12.6
Reslo Pencil Ribbon ... £8.0.0
A.K.G. Stereo D.88 ... £19.19.0
A.K.G. K.50 Headphones £7.10.0
Grundig Mixer ... £16.16.0
Microphones by ACOS, and TELEFUNKEN All Walgain Products. Brenell and Philips mixers.
- TAPES & ACCESSORIES
Standard, Double Play, Long Play and Triple Play in all sizes by all leading makers.
- Pre-recorded Tapes by Columbia, H.M.V., Saga, Music on Tape, etc. Bib, Bond and Romagna splicers. Matching transformers. Plugs, sockets, etc.
- Defluxers by Walgain, Wearite.

HI-FI DEPT.

- STEREO AND MONO AMPLIFIERS by Quad Scott Chapman Tripletone Walgain Leak Rogers Armstrong B. & O.
- TUNERS by Quad Rogers Chapman Leak Armstrong Pye
- LOUDSPEAKERS by Quad Philips W.B. Wharfedale Goodmans Tannoy Leak Lowther Kef
- MOTORS, PICKUPS, by Garrard Tannoy Goldring-Lenco Connoisseur Shure Decca'Deram' Stereo Ronette Philips SME B & O Thorens Ortofon

All types of Diamond and Sapphire styli, stereo and mono. Microlifts, Garrard SPG3, Acos Dust Bag.

- CABINETS Record Housing Design Furniture

Please note our only address as below

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

Between St. Leonard's Church and Streatham Station

STReatham 0446/0192



News from the Clubs

COTSWOLD

A lecture on the various types of microphones was given by Mr. M. L. Gayford, chief engineer of the acoustics division of S.T.C., a world authority on this subject. He described the design of crystal, moving coil, ribbon, and condenser microphones, and also spoke about the development of transistor microphones. After his talk a number of the S.T.C. microphones were used in conjunction with a Ferrograph recorder and Daystrom loudspeaker system. Of particular interest was the noise-cancelling unit which Mr. Gayford addressed quietly while the members applauded and shuffled around him. Despite the background hubbub, his recorded remarks were clearly heard. The same test with a dynamic microphone completely lost the commentary.

At their A.G.M. on May 16 joint secretaries Peter Duddridge and Peter Turner reviewed the year's work. Among their achievements had been the extension of the circulation of the club's monthly tape programme so that it was received by blind clubs and Old Folks' Homes; the continuation of the international message service; and the recording of a First Performance of a work performed by the Cheltenham Young People's Orchestra.

The musical piece, a work by Christopher Wiltshire, had been recorded in stereo by Peter Duddridge who used a Ferrograph 404, with Reslo ribbon microphones; and by Peter Turner who used the mono Simon SP4 and a Beyer 119 microphone.

After the evening's business was concluded members entered two competitions. First they tried to identify a series of advertisements, and afterwards attempts were made to identify brief snatches of tunes associated with national events. Both contests were won by Eric Jones and his wife who thus carried off the prizes donated by Peter Duddridge.

Members recently staged an exhibition of tape recorders and equipment in a large departmental store. Piles of leaflets specially produced for the event were displayed on the stand which was backed by photographs of incidents in the club's life. Tom Bolt's Ferrograph 4S/N played a continuous loop cassette which had been produced in stereo by Colin Woods and Eric Jones. The programme was played through AKG headphones through a transistorised amplifier designed and built by Colin Woods.

As part of their display the two stereo tracks were also taken separately to the X and Y plates of an oscilloscope loaned by Daystrom Ltd. This produced a fascinating display, visually illustrating the difference between mono and stereo. Recordings included trains in a London terminus, a jazz band, and a string quartet.

During Nature Week, members prepared tapes for the continuous relay of birdsong from a tower in the centre of Gloucester. Two tapes were prepared. One, a selection of solo birds with a few choruses, was played during the daytime, and the other, for the night session, was of nightingales.

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

DERBY

A change of venue for the Derby club is announced. The members now meet on alternate Wednesdays at the Telegraph Inn, Traffic Street. The next meeting is scheduled for July 3.

Secretary: R. J. Carlidge, 20, Maple Avenue, Alvaston, Derby, Derbyshire.

MIDDLETON

Members of the Middleton club have recently been assisting the local Citizen's Advice Bureau by recording a series of weekly lectures for its workers. The venture began as a result of local press publicity for the club, which also brought a number of new members into the club.

Members are now producing a number of documentary tapes, including one entitled "A History of Middleton and its churches." They have recently enrolled two young members who showed interest in the club during the Oldham exhibition.

Members would be pleased to hear from other clubs regarding the circulation of Inter-Club magazine tapes. They propose compiling

a list of clubs and circulate tapes in one of two ways. (a) Each club making a complete tape to be passed around the circuit, or (b) one club compiling material forwarded by other clubs and issuing one tape for circulation. In either case clubs receiving a tape and unable to play it at the next meeting would dub and pass the original on to the next club on the list. Interested clubs should contact the secretary.

Secretary: John R. Wills, 119 Heywood Old Road, Rhodes, Middleton, Lancashire.

READING

A comprehensive survey of tape recording equipment was given by Douglas Noyes at a recent meeting of the Reading tape and cine society. Surrounded by tape recorders, items of equipment and blackboards, he dealt with the technique of recording, providing many tips for the novices in his audience. He also spoke at length about combining tape and cine.

Two of the club's annual competitions have been held. The Grosvenor Cup for the best tape of the year went to "Paddy" Ower for his amusing tape entitled "Knock, knock, who's there?" about a very inexperienced salesman. The prize for the best tape/slide show went to Jack Lee for his "Sound and Vision" which illustrated the combination of the two complementary hobbies.

On April 1 Mr. Martin of Zonal Films Ltd. gave a talk on the application of sound to professional and amateur films. He presented a film on the famous Bluebell Line, and treated the members to a fifty-minute extract of the "Guns of Navarone," the film having been reduced to 16 mm. gauge. Members have also seen a programme of professional documentary films chosen to provide members ideas for their own programmes.

The club visited the photographic section of the M.G. Sports Club at Didcot to present a slide show. Later their hosts repaid the visit with a varied film and slide show. Other visits included one made by Mr. Noyes who journeyed to the Bracknell Film Society to give a talk on adding sound to films. Again, his hosts repaid the visit to present a programme of films including an animated cartoon using plasticine figures and Cinecolor sound.

The Reading members have been invited to judge a film competition organised by members of the Wallingford society. Still with sound and cine very much in mind, the members filmed (in black and white and colour) and recorded (both mono and stereo) the local Drama Group's production of Gilbert and Sullivan's "Patience." Meanwhile, Mr. A. Mitchell had taken a Philips recorder to a concert by the Dunstable Consort, and recorded some rare instruments playing medieval music. Other groups took battery portable recorders on a tour of Reading to interview the public on the Budget. All returned safely, and the edited tape will be listened to with interest.

Secretary: T. Fisher, 5, Mapledurham Drive, Purley, Reading, Berkshire.

RUGBY

The Rugby club held its annual convention on May 31. Present for the evening were representatives of the clubs in Birmingham, Coventry, Kettering, Northampton, Nottingham, and Warwick

and Leamington, and apologies were received from the Bedford and Cambridge societies.

One of the first items on the agenda was a tape entitled "World Tour." Produced by President John Bannister, Bob Pick, and Peter Scott, this contained several items from the club's library and included brief visits to Northampton, London, France, Scotland, Oslo, South Africa and New Zealand. After an interval the programme continued with Question Time and a panel of experts including Mr. L. W. Saunders of E.M.I. Tape Ltd., Trevor Gilbert of the South Birmingham club, and John Bannister. Peter Warden of the Coventry club asked the inevitable question on why manufacturers and retailers do not do more to educate their customers into using their equipment more creatively. Others asked about the advantages of joining the British Federation of Tape Recording Clubs; and how soon would it be before we had quadruple-play tape. (You tell me!)

Also inevitable was the bar service and free buffet which had been prepared by the lady members. Almost one hundred persons attended the function, the last event in the present club year. Their A.G.M. is to be held at the Red Lion, Sheep Street, on June 20.

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

TUFNELL PARK

A change of secretary is announced also for the Tufnell Park Club. The new official, Mr. Harris, replaces Carol Wilgrove who succeeded Mr. Wilgrove at their February A.G.M.

Among recent activities of the members have been a demonstration of *Musique Concrete*, presented by Peter Tassell, followed by a lecture on the same subject at a later meeting; a lecture and demonstration on recorder maintenance, again by Peter Tassell; and regular quiz programmes.

Monthly competitions have been arranged to encourage the newer members to use their machines effectively, and to allow the experienced members to vie with one another.

Secretary: L. K. Harris, 16-20, Seven Sisters Road, Holloway, London, N.7.

WALTHAMSTOW

Patients in Connaught Hospital will again be able to hear a commentary on the Walthamstow Carnival procession within hours of the event being completed. This was among the decisions made at the club's AGM held on March 29.

Don Cooper, one of the club's four blind members, will again serve as first sound engineer on the project, controlling an impressive array of equipment including sound mixers and effects microphones. The Mayor-elect, who will be in office on the day, has agreed to introduce the broadcast in a specially recorded interview. This year, the members will increase their audience by making the tapes available to many Old Age Pensioners' clubs, physically handicapped clubs, and clubs for the blind.

During the evening a new secretary was elected. The post is now filled by Tony Norton. Former secretary Ken Perks is now club chairman.

An outing to meet members of the Hove club had been arranged for June 9. Members were to be greeted on arrival at the South Coast resort and escorted around and about for the afternoon by members of the host club.

The society, now in its fifth year, recently collected some publicity by arranging an evening's entertainment for the local Over-60's club. They have been asked to lay on another programme in the future.

Members recently completed their third play production. Written and produced by Vi Burnett, *The Strong Call*, is a radio-type thriller. It was acted by members who also collected and produced all sound effects. The club plans to enter the tape in the British Amateur Tape Recording Contest. "We have always had some reservations before, and decided against entering our previous attempts, but this time we feel we stand a good chance," says the producer.

The club's next production will be in the series "Walthamstow—our town," and will cover Civil Defence in the borough.

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

WINDSOR

The new secretary of the Windsor club is Peter Streamer. All correspondence and inquiries should now be addressed to him at 33 Frances Road, Windsor, Berkshire.

Lecture/Demonstrations

CLUBS wishing to invite demonstrations and/or lectures are invited to contact the following companies who have offered their services:—

BASF Chemicals Ltd., 5a, Gillespie Road, London, N.5.
Fi-Cord Ltd., 40a, Dover Street, London, W.1.

Grundig (Great Britain) Ltd., Newlands Park, Sydenham, S.E.26.

Lustraphone Ltd., St. George's Works, Regent's Park Road, London, N.W.1.

Simon Equipment Ltd., 46/50, George Street, Portman Square, London, W.1.

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

Further names will be added as received.

**ORDER TO NEWSAGENT FOR
"TAPE RECORDING MAGAZINE"**

Published on the third Wednesday
in every month. Price 1s. 6d.

To
(Newsagent's name and address)

Please deliver me one copy of
"TAPE Recording Magazine"
each month until further notice.

(Signed)

Address

*TAPE Recording Magazine is published by
Print & Press Services Ltd., 7, Tudor Street,
London, E.C.4, and distributed by Trans-World
Circulation Co., Park Royal Road, N.W.10.*

**ORDER FOR ANNUAL
SUBSCRIPTION TO
"TAPE RECORDING
MAGAZINE"**

Please post me one copy of
"TAPE Recording Magazine"
monthly for one year. I enclose
£1 in payment.

(Signed)

Address

**REQUEST FOR
IMPROVED
DISTRIBUTION**

Will you please contact the
newsagent(s) named below, who
report difficulty in obtaining
copies of "TAPE Recording Maga-
zine" for sale.

(Name of newsagent(s))

(Name of informant).....

CLASSIFIED ADVERTISEMENTS

Rate—Sixpence per word (minimum 5s.); Trade,
ninepence per word (minimum 10s.); box numbers,
one shilling extra. Payment with copy. Copy should
be sent to Advertising Department, "Tape Record-
ing Magazine," 7, Tudor Street, London, E.C.4.

NEW EQUIPMENT

Ferroglyph 5 A/N, 422 and 424, Revox E36, etc.,
always in stock. City and Essex Tape Recorder
Centres. (See page 9).

TAPE RECORDERS. SAVE FROM 30 per
cent to 60 per cent on the original price. Large
stocks of second-hand, new, shop soiled machines.
All guaranteed. Obtainable on our **NO INTEREST
TERMS**. Best part exchange allowances on your
existing equipment. CALL, WRITE, PHONE to-
day for free list. Quotation and details. Our Mail
Order covers the whole Country.—R. E. W.
Earlfield Ltd., 266, Upper Tooting Road, London,
S.W.17. Balham 7710.

MAGNETIC TAPE

A SERVICE FOR THE CONNOISSEUR.
Ferrotape available by post, all sizes in stock.
Also Hublok empty spools. Send for price list.
J. Turner, 51, East Street, Horncastle, Lincs.

A UNIQUE BUY! Recording tape top brand,
5½ in., 1,200 ft., 19s. 6d.; 7 in., 2,400 ft., D.P.,
28s. 6d. P. & P., 1s. 6d. per spool. Bargains in
all sizes. S.A.E. for list. E. C. Kinsley & Co.,
132, Tottenham Court Road, London, W.1.
EUStON 6500.

TAPES post free. High quality, low price. Long
play, 4 in., 450 ft., 8s. 6d.; 5 in., 900 ft., 12s. 6d.;
5½ in., 1,200 ft., 16s.; 7 in., 1,800 ft., 22s. 6d.;
Double play, 3 in., 400 ft., 9s.; 4 in., 600 ft., 12s.;
5 in., 1,200 ft., 20s.; 5½ in., 1,800 ft., 28s.; 7 in.,
2,400 ft., 36s.; Discount on four or more. Refund
guarantee. M.S. Recording Tapes, 21, Hoyle
Street, Radcliffe, Manchester.

MISCELLANEOUS

A BINDER is the ideal way of keeping your
copies of *Tape Recording Magazine* clean and
ready for easy reference. Prevents torn covers and
dog-eared edges. Each copy is inserted as received
to form a completely bound volume. All pages
open flat and effect secure binding with steel bars
from first to last copy. Strong board binders
covered with rexine with the title printed in gold
on spine. Price 14s. 6d. (post free) from
Tape Recording Magazine, 7, Tudor Street,
London, E.C.4.

8mm. Home Movies. Send 1s. for fully illustrated
catalogue. (Dept. 31), Mountain Films Ltd., 1,
New Burlington Street, London, W.1.

Good cash prices for tape recorders—Tel: Mary-
land 5879. (See page 9).

Recorder need repairing? Then let City and
Essex Tape Recorder Centres do it for you expertly
and economically. (See page 9).

SOUND BOOKSHELF. Books on audio, hi-fi,
records, tape, music. . . S.A.E. for catalogue.
World Audio Publicity, 34f, Great Windmill
Street, London, W.1.

TAPE RECORDING HANDBOOKS. The new
edition of the popular "Advice on Buying a Tape
Recorder" booklet is now available. Chapters in-
clude Preliminary Considerations, The Tape Deck,
The Amplifier, Other Factors, and Testing Tape
Equipment. Ideal for the novice seeking informa-
tion on tape and tape recorders. Price 2s. 6d.
(post free). Others in series include: "Introduc-
tion to the Tape Recorder," 3s. 6d.; "Recording
Weddings," 3s.; "Tape and Cine," 3s.; and
"Hi-fi for the Music Lover," 3s. Available from
"Tape Recording Magazine," 7, Tudor Street,
London, E.C.4.

Wanted BBC recording of "Keep up your
French." B. Kindermann, 7, Lassa Road,
Eltham, S.E.9.

WANTED FOR CASH. Good quality tape
recorders and audio equipment—Part exchanges
—Sales—Recording Services. Magnegraph, 1,
Hanway Place, Oxford Street, London, W.1.
Tel.: LANGHAM 2156.

TAPE RECORDS

FOREIGN LANGUAGES ON TAPE from
38s. 6d. French, Italian, Spanish, German, Russian.
Full money-back guarantee. — Details from
Visaphone Co. Ltd., 28, Brookland Hill, London,
N.W.11.

PRE-RECORDED TAPES. Unique complete
catalogue listing all makes, Mono, Stereo, 7½ and
3½ ips, including World Record Club tapes. Call
for FREE copy or send 1s. mailing fee.—Dept.
T.R.I., Teletape Ltd., 33, Edgware Road, W.2.
PAD 1942.

SLEEP LEARNING. Of fascination to all T.R.
enthusiasts. Send 6s. 6d. for book. Refund
guarantee. York House, Huddersfield.

TAPE RECORDINGS. World-famous Hypnotist
and Harley Street Psychoanalyst, W. J. Ousby
(Instructional Recordings). Self-Hypnotism and Yoga
for increasing confidence, overcoming inferiorities,
lessening nervous tension. Send name and address
for list of Mr. Ousby's tape recordings. Details
sent in plain envelope without obligation. W. J.
Ousby, Home Farm Estate, Northchurch, Berkham-
stead, Hertfordshire.

TAPE TO DISC

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

JOHN HASSELL RECORDINGS. Taps to Disc.
50-minute LPs—Lowest prices. Studio and mobile
services.—21, Nassau Road, London, S.W.13.
Riverside 7150.

TAPE TO DISC RECORDING
Reduced prices. Finest professional quality. 10-inch
LP—35s. (32 mins.), 12-inch LP—40s. (45 mins.),
7-inch EP—17s. 6d.

48-HOUR POSTAL SERVICE
S.a.e. for leaflet to Deroy Sound Service, 52, Hest
Bank Lane, Hest Bank, Lancaster. Tel.: H.B. 2444.

TAPE-TO-DISC RECORDING SERVICE. All
speeds. 50-minute LPs. Photographic sleeves with
all recordings.—E.R.S., 162, Shirland Road, Lon-
don, W.9

TAPE EXCHANGES

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

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

Index to Advertisers

	Page
A. Brown & Sons Ltd.	4
Advance T.V.S.	25
Audio Electronics (Midlands) Ltd.	29
Berean Forward Movement	6
City & Essex Tape Recorder Centres	9
Cussins & Light Ltd.	29
Daystrom Ltd.	2
Educational Recordings Ltd.	16
Elstone Electronics Ltd.	4
E.M.I. Tape Ltd.	8
A. C. Farnell Ltd.	35
Francis of Streatham	30
Grampian Reproducers Ltd.	4
Hamilton Electronics	27
Hi-Fi Centre Ltd.	26
Horntons Electronics	3
Howard Tape Recorders	6
Lee Electronics	26
Magnegraph	26
Massey's Centre of Sound	27
Planet Projects Ltd.	6
Rapid Recording Service	25
Recording Machines Ltd.	28
Reslosound Ltd.	Back Cover
R. E. W. Earlfield Ltd.	2
Sheen Tape Recorder Centre Ltd.	27
Simon Equipment Ltd.	7
Stereoelectrics Ltd.	6
Tape Recorder Centre	5
Tape Recorders (Bournemouth) Ltd.	28
Tape Recorder Centre (Halifax)	29
Tysonic	29
Valradio Ltd.	2
Wharfedale Wireless Works Ltd.	35

Tape Exchanges

(Continued from page 33)

Smith, Bruce Frederick (20). Pathological Laboratory, Royal Herbert Hospital, Woolwich, London, S.E.18. Jazz, classical and guitar music. Swimming. 7½, 3¼ ips. 8½-inch spool. Ferrograph 5/N. Medical Laboratory Technicians in UK, Germany, Italy.

Stott, Peter (29). 11, Arundel Square, London, N.7. Photography, skating, people, classical, pops and ballet music. 3¼ ips. 5½-inch spools. Grundig TK20. Male contacts only 20-29.

Wells, George (48). 94, Dupont Road, Raynes Park, London, S.W.20. Tape plays and sound pictures, science fiction, hypnotism, and the occult. 15, 7½, 3¼ ips. 7-inch spool. Repts R40, Grundig TK21. Malaya, Japan, Isle of Man, USA, China, Borneo.

TEENAGE EXCHANGES

Beck, Carol Ann (16). 40, The Ridgway, Sutton, Surrey. Historical buildings, cycling, light and classical music, radio and TV. 7½, 3¼, 1½ ips. 7-inch spool. Robuk RK3. Letters first please.

Beckwith, J. A. (18). 83, Hundens Lane, Darlington, Co. Durham. Pop music, not jazz. 7½, 3¼, 1½ ips. 7-inch spool. Carousel recorder. Female contacts in U.K. preferred.

Brockway, Susan Pauline (15). 14, Hursley Road, Leighpark, Havant, Hampshire. Films, football, dancing, pop music. 3¼ ips. 5-inch spool. Philips and Stella recorders. Male contacts in UK.

Garner, Roy (15). 9, Sefton Street, Whitefield, near Manchester, Lancashire. Biology (wild life), chemistry, reading, science fiction, walking, gardening, most music. 7½, 3¼, 1½ ips. 7-inch spool. Elizabethan LZ29, four-track.

Kimberley, R. (13). 41, Keeper's Farm Close, Windsor, Berkshire. Photography, postcards, motor cars, most music. 3¼ ips. 5½-inch spool. Cossor, four-track.

Riall, David (18). 26, Nursery Avenue, Hale, Cheshire. Political satire, people, dancing, pop and light classical music. 7½, 3¼, 1½ ips. 7-inch spool. Wyndor Victor. Female contacts preferred.

Thornton, Peter (16). 11, Ashley Street, Oldham, Lancashire. Cinema, pop music. 3¼ ips. 5½-inch spool. Elizabethan, four-track. UK only. Letters not required.

Wathen, Frank R. (16). 18, Dockar Road, Northfield, Birmingham 31, Warwickshire. Motor mechanics, films, pop music. 7½, 3¼, 1½ ips. 7-inch spool. Civic recorder. Female contacts preferred.

FAMILY EXCHANGES

Allen, Ken (38). 18, Godfrey Close, Stevenage, Hertfordshire. Family, all music, general interests. 3¼ ips. 7-inch spool. Philips EL3541. Germany, U.S.A., U.K.

Nye, Mr. and Mrs. R. J. H. (26). 49, Ousedale Close, De Montfort Estate, Lewes, Sussex. Handicrafts, records, music. 7½, 3¼, 1½ ips. 7-inch spool. Elizabethan FT3. UK, USA, Belgium, Holland, Norway, Sweden, France, Switzerland.

Welling, Mr. and Mrs. F. S. (29). 17, Mayflower Road, Shirley, Southampton, Hampshire. Outdoor recording, people, all music. 7½, 3¼, 1½ ips. 7-inch spool. Robuk RK3, Philips EL3583. Japan, Spain, UK. No letters required.

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

Name

Address

.....

..... Age.....

Special interests

.....

Speeds to be used..... Spool size.....

Recorder owned.....

Special areas to be contacted

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

FLAP B

SECOND FOLD HERE

POSTAGE
WILL BE
PAID BY
PRINT AND
PRESS
SERVICES
LIMITED

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

BUSINESS REPLY FOLDER
Licence No. ND 922

TAPE RECORDING MAGAZINE

7, TUDOR STREET,

LONDON, E.C.4.

THIRD FOLD HERE

FIRST FOLD ALONG THIS LINE

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

CUT ALONG DOTTED LINES

FLAP A



for the professional
IRISH

—the recording tape that gives the finest fidelity possible. How? Through the unique Ferrosheen process. Exclusive to Irish tape, this process produces a mirror-smooth surface to a magnetic tape with distinct technical advantages to satisfy even the most meticulous professional. The Ferrosheen process makes for exceptional high frequency response (due to precise perfection of tape/head contact) . . . head wear is minimal . . . external lubrication unnecessary — less oxide abrasion, no lubricant build-up on recorder head . . . minimum drop out . . . maximum reduction of background noise. Your Irish Tape stockist, and other details including technical data, from A. C. Farnell Ltd. Hereford House, Vicar Lane, Leeds 2 Tel: 35111.

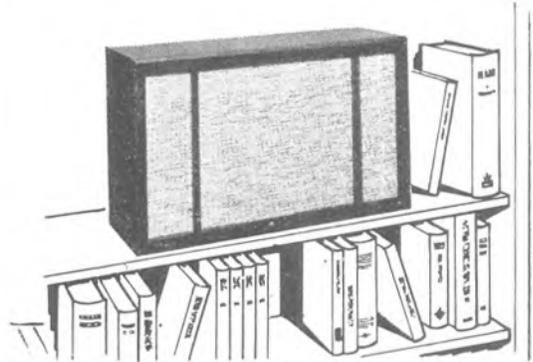
'IRISH', 'FERROSHEEN' and 'Signature Binding' are registered trade marks of Orradio Industries Inc., Opelika, Alabama.

Introducing THE WHARFEDALE BOOKSHELF 2

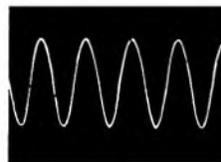
Where space is limited or where mobile external speakers are required for use with a mono or stereo Tape Recorder or Record Player, the "Bookshelf 2" gives a remarkable performance judged on a size/price/mobility basis. Its outstanding performance is due mainly to the efficiency of its modern 10-in. unit (with the very low resonance of 25/30 c/s) and is fitted with flexible roll surround and polystyrene diaphragm to improve the bass and act as an acoustic filter. The special 5-in. treble unit is fitted with a volume control so that H.F. response can be adjusted to suit listening room conditions and position of speaker. Two of these handy speakers give very good results on stereo.
 SIZE: 19 in. x 11 in. x 6½ in. deep. IMPEDANCE: 8-16 ohms.
 UNITS: Specially designed 10 in. WEIGHT: 18 lb.
 and 5 in. Speakers are fitted with Wharfedale Silver Magnets 12,500 lines flux density.

Polished walnut, oak or mahogany veneers **£16.10.0**

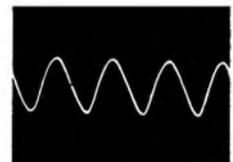
Unpolished **£15.15.0**



The clean low-frequency performance is clearly illustrated by the wave form oscillograms taken with an input power of 3 watts.



50 c/s



60 c/s

LOAD MATCHING: When used with a set or tape recorder with small output at 2/3 ohms a WMT. 1 transformer is worth fitting for optimum results.

Free leaflet on request



WHARFEDALE WIRELESS WORKS LTD.

Idle, Bradford, Yorkshire

Telephone: Idle 1235-6

Telegrams: 'Wharfedel' Idle, Bradford



The outstanding
NEW RESLO
STUDIO
MICROPHONE
type SR1

The new Reslo "Studio" professional ribbon microphone has been specially developed for studio use by broadcasting authorities and professional recording companies throughout the world and is manufactured to the highest possible standards.

The overall frequency response which covers a range of 30 c/s-20,000 c/s is outstandingly smooth and straight giving a very clean and natural quality of reproduction.

The Reslo SR1 is ideal for general studio musical use, due to excellent transient response and freedom from non-linear distortion. It is also ideal for orchestral recording.

Features of the design are the very low hum pick-up and the ability to alter the response characteristic for high quality speech announcing. Each microphone which is individually checked to within 2 dB of the publicised response curve, is supplied complete in a padded instrument case together with a set of mounting adaptors and 6yds. of screened cable.

Send for literature and price list of the complete range of Reslo microphones and loudspeakers.



RESLOSOUND LIMITED, 24, UPPER BROOK STREET, LONDON, W.1.

Telephone: HYDE PARK 2291/2/3