

TAPE

RECORDING MAGAZINE

APRIL 1962

1'6

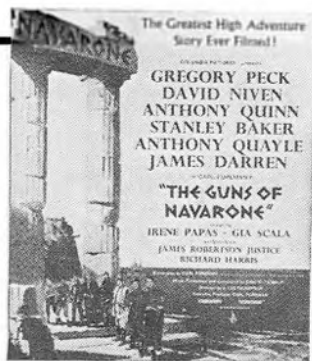


FIRST AND FOREMOST IN THIS FIELD

MIDLANDS
SUPPLEMENT
A survey of tape
recording activities



**YOU'LL KNOW GOOD SOUND
WHEN YOU SEE IT!**



If you've seen "Ben Hur" or "The Guns of Navarone" you'll know what we mean. Both these outstanding films were recorded on Zonastripe—a fact worth remembering when you are buying tape and want to buy the best. Zonatapes are supplied in handsome case bound library containers and are obtainable from most high class radio, music and photographic shops.

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If that's what you want when you buy a tape recorder then you most certainly will not come to us to purchase one. We cannot and will not give you these things for our reputation as Britain's leading tape recorder specialist company is not built on sales gimmicks but on SERVICE. What we do give you is two whole years of worry-free, trouble-free and above all cost-free servicing. Every new tape recorder over £35 carries our unique and exclusive two years' absolutely FREE SERVICING GUARANTEE, that many thousands of more than satisfied customers have found to be the best obtainable anywhere. Make your choice when buying that new tape recorder. Gimmicks or superlative free servicing by a company specialising in nothing but recorders and servicing.

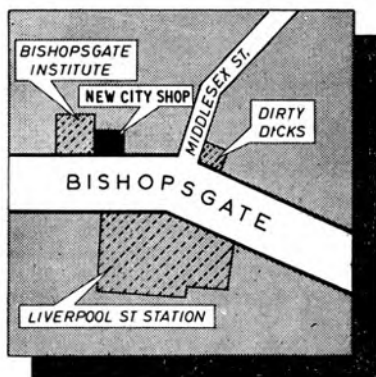


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GRUNDIG . REPS . ETC

- ★ OVER 250 NEW AND LOW PRICED SECOND-HAND RECORDERS ON DISPLAY ★
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2 MARYLAND STATION, LONDON, E.15 (Adj. Maryland Station)
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CITY & ESSEX TAPE RECORDER CENTRES

Great newcomer to the Greatest
range of Tape Recorders

STAR
VALUE
AT ONLY

27 GNS!

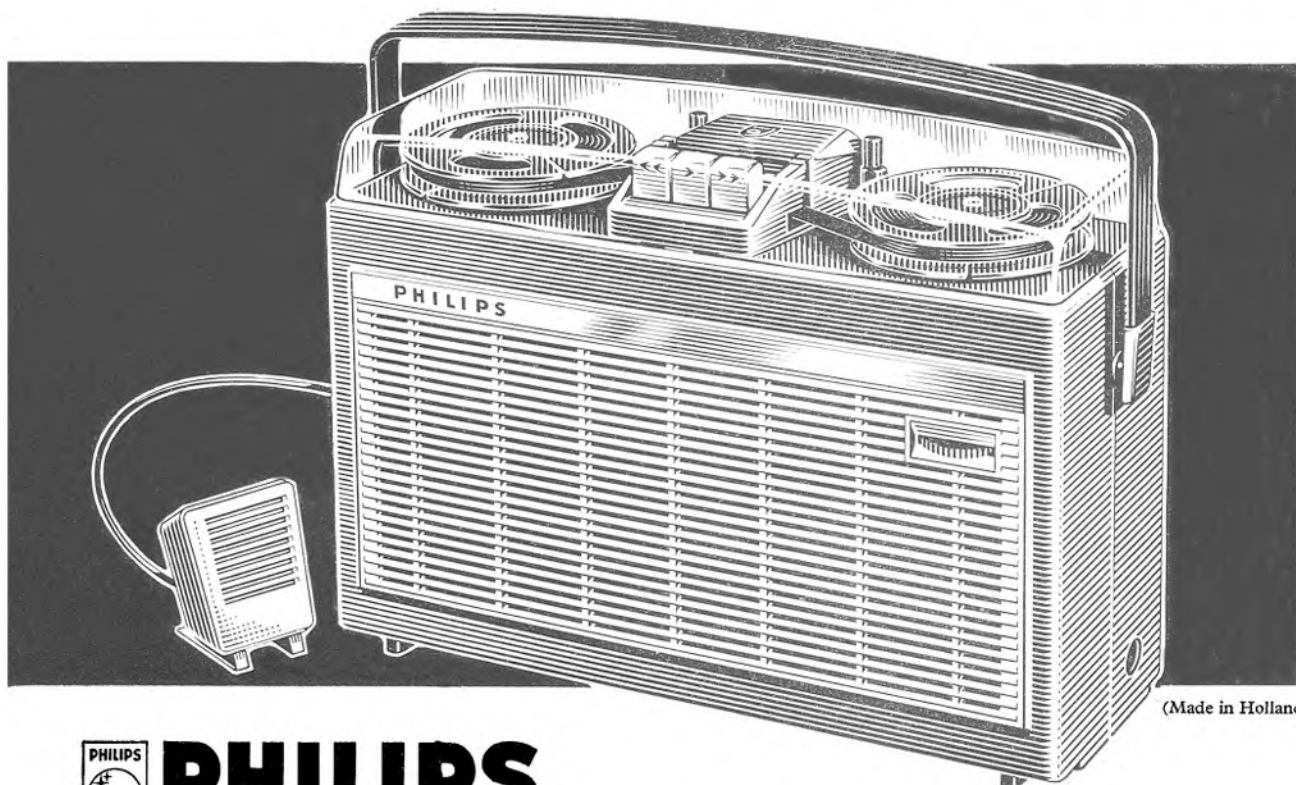
*including
microphone, 4"
reel of L.P.
tape and radio
connecting lead.*

Now the world's finest range of tape recorders gets a brilliant addition – the fabulous Philips 'Starmaker'. Combining snag-free ease of operation with revolutionary design and outstanding performance, it opens up a fascinating new world of exciting entertainment for the newcomer to tape recording.

Everything the 'Starmaker' does is governed *completely* by just six error-proof controls. It's got a whole host of other advantages, too: economical mains operation, 4-track recording and playback; 4 hours playing time on a 5" reel of double-play tape; fast winding and re-winding; moving coil microphone; *plus* brilliant reproduction from the 6½" loudspeaker.

The vertical design and lightweight compactness of this sleekly styled recorder make it exceptionally *portable*.

See the Philips Starmaker in operation and hear it play at your local Philips dealer. It will convince you that no other machine in its price range can give you such a marvellous performance.



(Made in Holland)

 **PHILIPS**
STARMAKER TAPE RECORDER

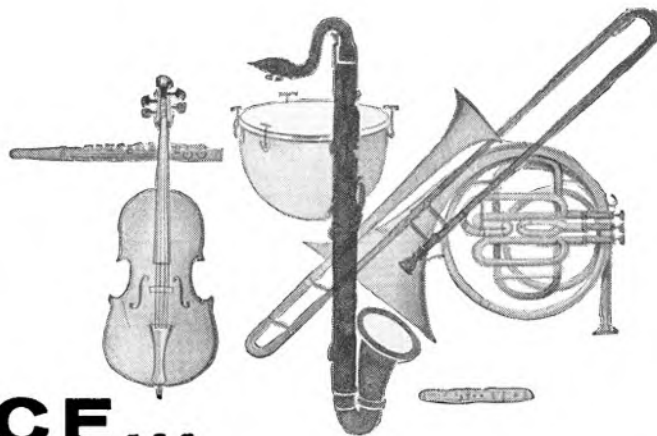
... the unique new mains 4-track machine

PHILIPS – THE FRIEND OF THE FAMILY

PHILIPS ELECTRICAL LTD., CENTURY HOUSE, SHAFTESBURY AVENUE, LONDON W.C.2

(PR3897)

THE PATTERN OF PERFORMANCE...



. . . is not to be found in a tape recorder's outward appearance. It lies within the deck, and by and large, a recorder is only as good as the components and engineering qualities that are built into the deck.

The Brenell Mark 5 deck, at 28 gns., has greater precision and dependability than you are ever likely to find elsewhere, at anywhere near the price.

Its main motor is an hysteresis synchronous motor, an ideal type for recorder operation. 'Wow and flutter' is below 0.1 per cent at $7\frac{1}{2}$ ips!

The specification below speaks for itself, but only your personal observation can give full recognition to the individual skill and thoroughness lavished on the assembly. Such care may not be fashionable these days. We find it both desirable and economic . . . we are sure you will too.

MARK 5 DECK
28 GNS



MARK 5
64 GNS



MARK 5
TYPE M
88 GNS

Abridged Specification

3 INDEPENDENT MOTORS (Capstan motor-hysteresis synchronous)
4 RECORDING SPEEDS— $1\frac{7}{8}$, $3\frac{3}{4}$, $7\frac{1}{2}$ and 15 ips. FAST REWIND (1,200ft. reel rewind in 45 seconds in either direction)

ACCEPTS $8\frac{1}{4}$ in. REELS (Modified Deck to accommodate up to $10\frac{1}{2}$ in. reels—7 gns. extra). PAUSE CONTROL. DIGITAL REV. COUNTER.
PROVISION FOR EXTRA HEADS (Mono or Stereo)

'WOW AND FLUTTER'

Below .05% at 15 ips. Below .15% at $3\frac{3}{4}$ ips.
Below .1% at $7\frac{1}{2}$ ips. Below .25% at $1\frac{7}{8}$ ips.

Other Tape Recorders in the range:

3 STAR: 58 GNS.

3 STAR STEREO: 89 GNS

MARK 5 STEREO: £99.12.0.

Brenell

Sole Manufacturers:

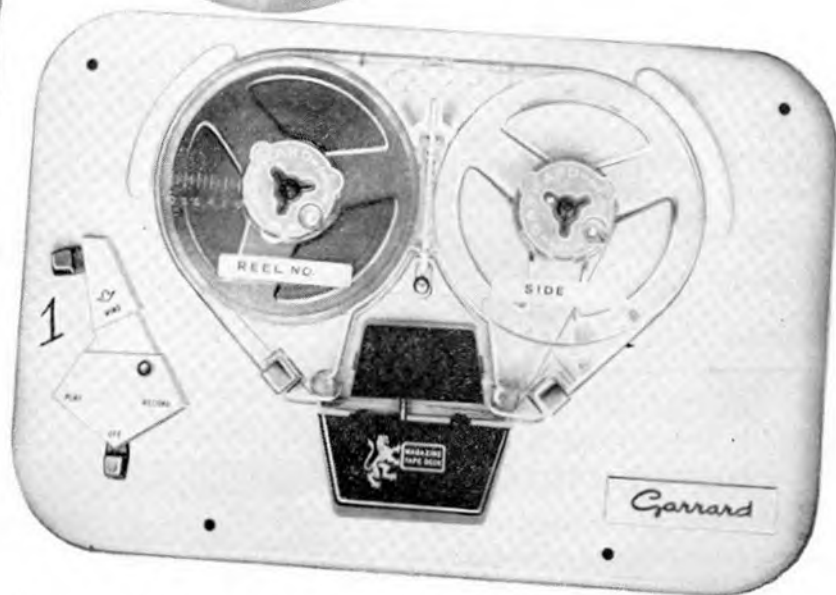
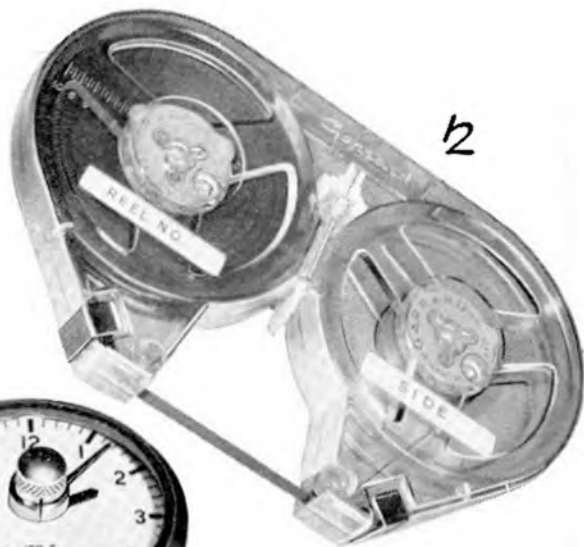
**BRENELL ENGINEERING
COMPANY LIMITED**

**1a DOUGHTY STREET,
LONDON, W.C.1.**

Tel: Holborn 7356 (3 lines)

GD965

4 REASONS THAT MAKE THE **Garrard** TAPE SYSTEM SO SIMPLE



1 SIMPLE TO OPERATE

Anyone can operate the Garrard system. Controls have been simplified. There are three positions only—PLAY · RECORD · WIND.

2 MAGAZINE LOADING

No tape threading. No spilling. No anchoring of tape. Just place the magazine on the deck and it's ready to operate.

3 EASY STORAGE

The Magazine is the same size as an average book. It fits neatly on a bookshelf using the Library Storage Unit.

4 GARRARD TAPE POSITION INDICATOR

Gives precise and accurate indication of recordings on the tape.

CONTINUOUS—EASY TAPE RECORDING & PLAYBACK WITH THE GARRARD MAGAZINE METHOD

MAGAZINE TAPE DECK ACCESSORIES

	£	s.	d.
Magazine containing 650 ft. Double Play Tape in container	1	13	4
Magazine only with one empty spool	...	...	8 0
Reel of 650 ft. Double Play Tape	...	...	1 4 0
Garrard Spool only	...	...	3 3
Library Storage Magazine Container	...	...	3 6
Tape Position Indicator	...	...	1 19 6

THE GARRARD ENGINEERING & MANUFACTURING CO. LTD.
SWINDON · WILTSHIRE

The miniature 'mike' with the great performance

Miniature ribbon type RB is by far the smallest high quality instrument of its class ever produced, and the beautiful styling and finish place it in the front rank of industrial design. Nothing has been lost by this streamlining and much indeed has been gained. The detachable pre-set ribbon remains, but in greatly improved form with simplified assembly and near automatic accuracy in setting. This self-servicing feature originated with RESLO and is still the only practical example in use. An entirely new magnet system, smaller in size but higher in energy produces a very useful increase in output whilst linearity is bettered beyond the already outstanding characteristic.

SPECIFICATION:

Figure of '8' Polar diagram.

Attachment threads $\frac{1}{8}$ " \times 26 or $\frac{3}{16}$ " \times 27

RB/T 'T' Base RB/W 'W' Base

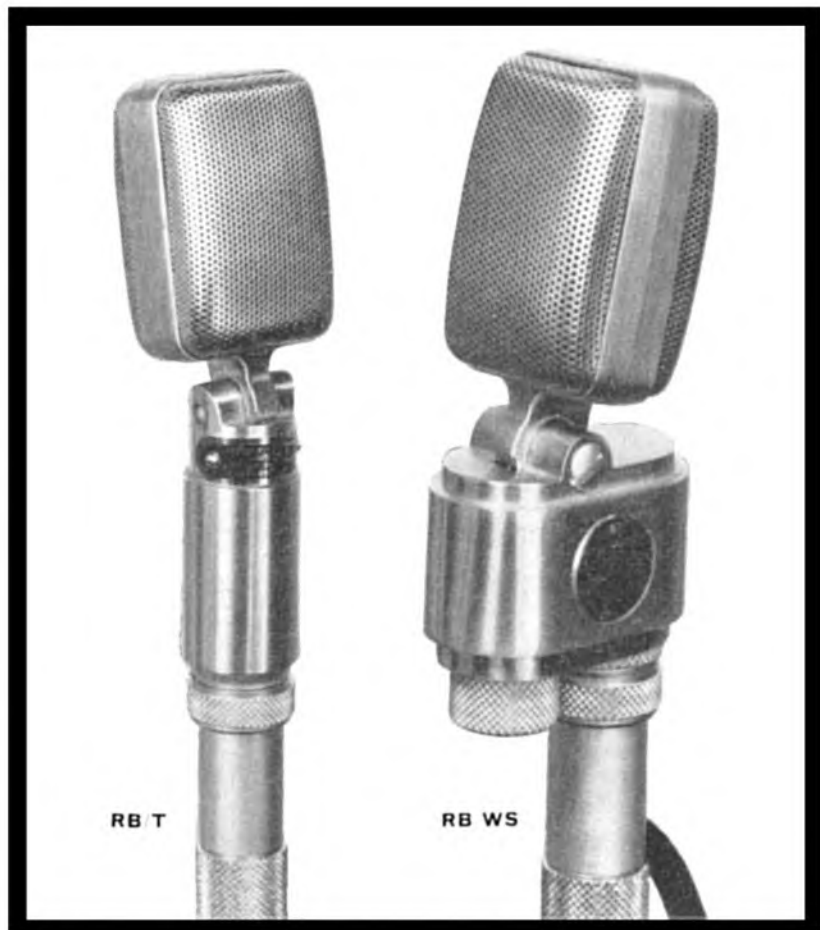
RB/WS 'W' Base with Switch

EACH AVAILABLE IN FIVE IMPEDANCES

30-50 ohms 30 ohms and Hi-Z
250 and 600 ohms 30 ohms and 10,000
30 ohms and 1,000

Alternative Cable Sets available any impedance

Frequency Response \pm 2dB 70 c/s to 12 Kc/s



The *NEW* RESLO Miniature Ribbon Microphone



RESLOSOUND LIMITED

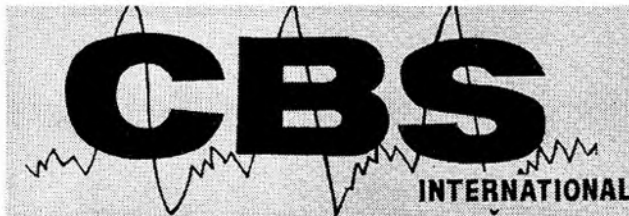
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TELEPHONE: HYDE PARK 2291/2/3



1R 362 TR

PROFESSIONAL TAPES

BY



DIVISION OF

COLUMBIA BROADCASTING SYSTEM

available
now
to all
recorder
users



Specially prepared fine magnetic iron oxide dispersion; precision and uniformity in processing with quality control at all stages—these are some of the features that result in C.B.S. Tapes giving you extended frequency range, better wearing; better transients and the chance to make magnificent recordings from all sources even on quarter track at $3\frac{3}{4}$ i.p.s. In all sizes—standard, long play and double play. Particularly recommended for $\frac{1}{4}$ track and stereophonic uses.

BETTER QUALITY FOR LESS COST

		5"	5 $\frac{3}{4}$ "	7"
STANDARD	1 $\frac{1}{2}$ Mil	600' 17.6	900' 23.-	1200' 27.6
LONG PLAY	1 Mil	900' 21.-	1200' 25.-	1800' 35.-
DOUBLE PLAY	$\frac{1}{2}$ Mil	1200' 34.-	1800' 45.-	2450' 56.-
STANDARD MYLAR		600' 21.-	900' 28.-	1200' 35.-
LONG PLAY MYLAR		900' 25.-	1200' 32.-	1800' 47.-
DOUBLE PLAY MYLAR (Tensilised)		1200' 42.-	1800' 55.-	2400' 68.-

- ★ WITH LEADERS AND STOP FOILS
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- ★ LONG WEARING
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- ★ CONSISTENTLY HIGH QUALITY IN ALL GRADES

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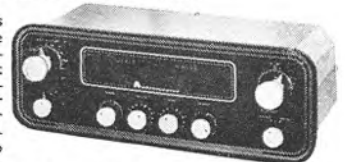
Lee Electronics

TAPE RECORDER & HI-FI AUDIO SPECIALISTS

Audiomaster

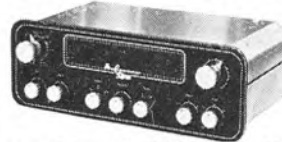
"COLWYN" STEREO CONTROL UNIT

Suitable for connecting to all types of Amplifiers. Inputs—tape equalised to C.C.I.R. standards—accepts signal direct from heads at $3\frac{1}{2}$ and $7\frac{1}{2}$ i.p.s. Pick-up Input—4 mV adjustable. Suitable for Decca FFSS Pick-ups and other low outputs. Tuner Input—100 mV. Mic. Input—3 mV. Audio Output—250 mVs or 2 volts. Tape Recorder Output Socket—1 v. Controls: 8 position selector switch: 4 monaural, 4 stereo. Volume Control: On and Off. Bass Control—Plus or Minus 15 dB at 100 c/s. Treble Control—Plus or Minus 15 dB at 10 Kc/s. Phase Reversal Switch. Balance Control, Crystal Magnetic Input Switch. Listed at £21. Offered at £12 10s. P. & P. 3s.



"CONWAY" STEREO CONTROL UNIT

De Luxe version of the above. Provision for direct connection to Tape Heads to C.C.I.R. standards. Equalised for $3\frac{1}{2}$ and $7\frac{1}{2}$ i.p.s. Sensitivity—2 mV. Pick-up Input—Suitable for all magnetic and crystal types. Sensitivity—2 mV and 500 mV. Mic. Input—2 Tuner Inputs and Auxiliary Input. Apart from the normal controls (as on the "Colwyn") the "Conway" Stereo Control Unit has the addition of a switched treble filter control at 6 and 9 Kc/s and also a switched rumble filter control at 90 & 60 c/s. This unit suitable for connection to all types of Power Amplifiers. Listed at £28 10s. Offered at £15 10s. P. & P. 3s.



STEREO POWER AMPLIFIER

This Power Amplifier is ideally suitable for use with either of the above Control Units. Specification as follows: 8 watts per Channel. Using EL84 Mullard valves in ultra-linear connection. Distortion less than 0.1 at 8 watts. Frequency response 30 to 20,000 c/s. -1 dB. Partridge Transformers used throughout. Special price for the above amplifier when supplied with either the "Colwyn" or "Conway" Stereo Control Unit—"Colwyn" Control and Stereo Power Amplifier: £29 10s. P. & P. 8s. 6d. "Conway" Control Unit and Stereo Power Amplifier: £32 10s. P. & P. 8s. 6d.

Other Main Amplifiers can also be supplied if required.

SPECIAL OFFER OF MONAURAL and STEREO TAPE DECKS, COMPLETE WITH PREAMPLIFIERS

MONAURAL TAPE PREAMPLIFIER

$3\frac{3}{4}$ i.p.s. $5\frac{1}{2}$ in. Spools. Frequency response 50 to 10,000 c/s. +3 dB. Running time 60 minutes each track with L.P. Tape. Inputs—Mic. 1.5 mV, Diode 1.5 mV, Gram. (radio, loudspeaker)—100 mVs. Fitted with temporary stop device. Automatic Tape Stop switches. Output for feeding to hi-fi equipment approximately 400 mVs. Supplied new and boxed with cut-out template. Listed at £39. Offered at £27. Carriage 10s.

MONAURAL STEREO HALF-TRACK TAPE DECK COMPLETE WITH RECORD PLAY-BACK PRE-AMPS

Technical specification—110 to 250 volts AC. Recording Level Indicator EM84. Tape speeds— $7\frac{1}{2}$ and $3\frac{3}{4}$ i.p.s. Frequency response—at $7\frac{1}{2}$ i.p.s.—50 to 15,000 c/s. -3 dB. At $3\frac{3}{4}$ i.p.s.—50 to 10,000 c/s. +3 dB. Recording sense—Monophonic top track left to right—International standards. Stereophonic—stacked in Line Heads—International standards. Running time—Monaural—45 minutes each track at $7\frac{1}{2}$ i.p.s. Signal to noise ratio—better than 40 dB. Wow and flutter less than 0.2% at $7\frac{1}{2}$ i.p.s. Less than 0.25% at $3\frac{3}{4}$ i.p.s. Cross talk—better than minus 50 dB. Automatic switch at end of tape. Provision for superimposing. Remote control button. Temporary stop to start and stop the tape instantly. Inputs—Mic. 1.5 mV for each Channel, Diode 1.5 mV for each Channel, Radio loudspeaker, Gram Pick-up, 90 mVs each Channel. Hi-fi output—400 mV from each Channel. This unit is supplied new and boxed—with spare connecting cables—cut out template and tape spool. Listed at £94. Offered at £65. Carriage 10s.

These Units can be Inspected at our Edgware Road Showrooms and Home Demonstrations can be arranged by appointment

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1962

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*Ferrograph 4AN	81 gns.
*Ferrograph 4AN/S	88 gns.
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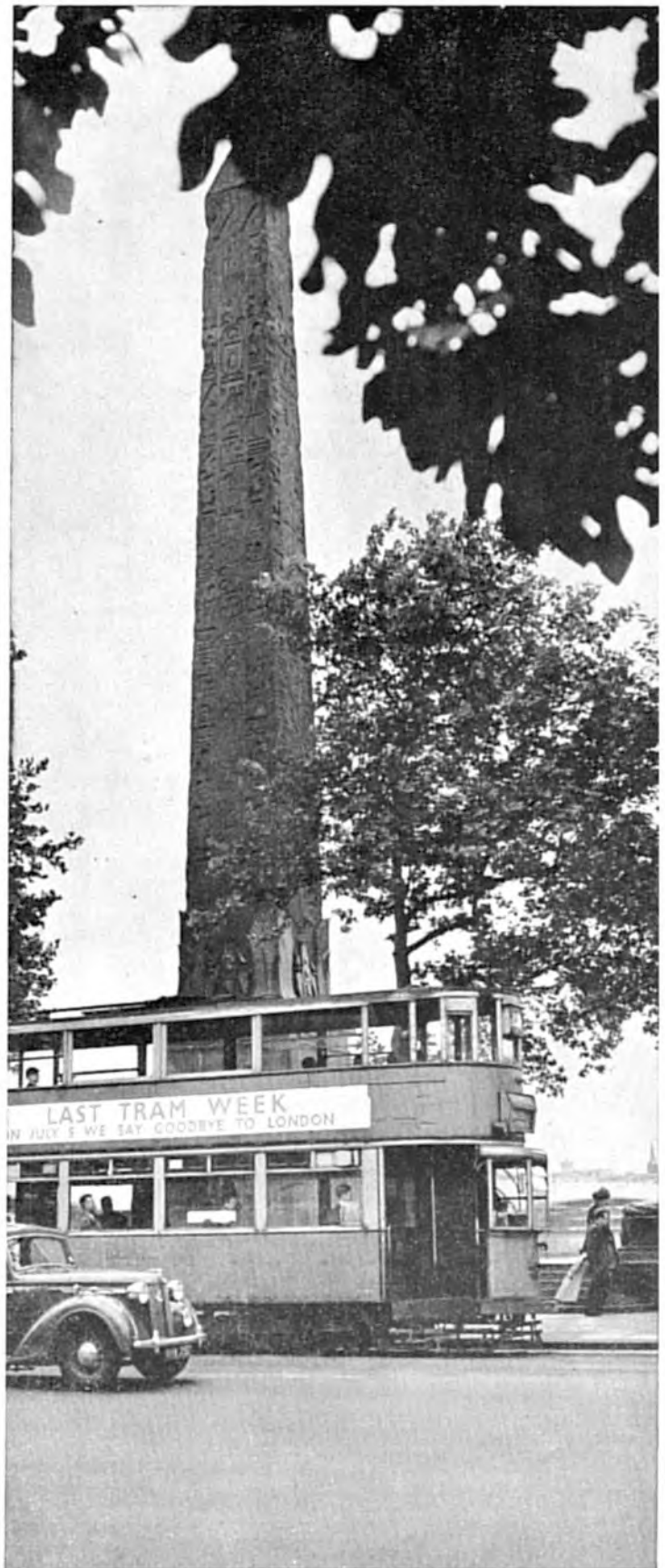
All these miles of Emitape at Stagesound keep ITV, commercial radio and film studios well supplied with any effects they may want. Incidentally, Stagesound also supply most of London's West End theatres with alarums, excursions and noises off.

There simply *must not* be any mistakes in this business. That's why Stagesound always use Emitape—the world's finest magnetic recording tape.



E.M.I. TAPE LIMITED, Hayes, Middlesex.

ET30



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VR/64
Ribbon
LFV/59
"Full Vision"
Dynamic
LD/66
Dynamic



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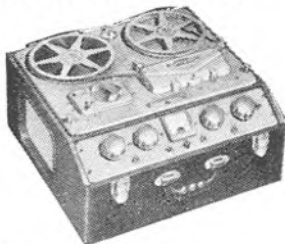
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Large stock of shop-soiled and used Tape Recorders at bargain prices.

THE LEADING TAPE-RECORDER AND HI-FI MAIL SPECIALISTS

- No interest terms on tape recorders over 12 months (18-24 months available).
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TAPE

RECORDING
MAGAZINE

Vol. 6

No. 4

April, 1962

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EDITORIAL

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Cover photograph: Interviews on tape (see page 26)

THE EDITORIAL VIEW

THE International Federation of Sound Hunters (FICS) is organising an "International study week" for recording enthusiasts at Interlaken, Switzerland, from July 28 to August 5. There will be courses, demonstrations and conference discussions in three languages—English, French and German—and excursions to Grindelwald, Jungfrauoch, Lucerne and Berne.

A variety of accommodation will be available, ranging from luxury hotel at about £3 10s. per person per day all-in, through other types of hotel to a more modest level at just under £2 a day, and with a rock-bottom offer of beds in new military accommodation at about 5s. a night (without meals).

Those who would be interested in details of this event should write immediately to *TAPE Recording Magazine*, as firm bookings are required in Switzerland by March 25.

TAPE recording played a crucial part in the space flight of the American astronaut, Colonel John Glenn, and the US manufacturers had a field day as they revealed the parts they had played.

Glenn carried a miniature recorder in his space-ship recording on one channel his own commentary on

events and on six other channels multiplexed analogue data. Physiological phenomena, temperatures, pressures, acceleration and shock were thus recorded.

The recorder, which measured only 11 x 13 x 3½ inches and weighed 12 lb. operated at 1¼ ips. It used two stacked 10½-inch reels of tape.

On the ground tape systems recorded all the telemetered information received from the capsule during its flight. Recordings were made at all 14 tracking stations.

Oh, and the manufacturers? CEC made the on-board recorder and Ampex those on the ground, Scotch made the tape and Colonel Glenn rode with a Shure microphone by his side.

CONGRATULATIONS to Miss Daphne Oram, the one-time BBC girl who set up on her own in a Kentish oast-house and developed one of the finest electronic workshops in the country. Her story was told in this magazine in the May 4, 1960 issue.

Now the Gulbenkian Foundation has recognised the importance of the pioneer work she is doing and she has been given a grant of £3,550 over the next three years to further her research into electronic music.

Miss Oram's great aim now is to

establish a suitable notation for electronic music. "What I aim to produce," she has explained, "is a chart which can be fed into the instrument and will reproduce the composer's design automatically. My idea is to use a television scanner which will follow the drawings on the composer's score."

TAPE recording, which already has its BBC *Sound* programme, has now arrived on the TV screen. John Borwick, who was the first compere of the *Sound* programme, has been appearing regularly on Independent TV in "Tuesday Rendezvous" explaining to young viewers the essentials of recording as a hobby.

John is also doing a lot of lecturing and is responsible for the splendid Emiguides to recording technique. Very few people in this country have done so much for the hobby. We are particularly pleased to announce, therefore, that he is to become a contributor to this magazine.

A SUGGESTION that radio stations might add a tone to broadcast music so that amateurs could not secure satisfactory recordings caused a furore in American tape circles. The latest issue of the *US Tape Recording* tells the story.

A Texan inventor came up with the necessary equipment to add the tone. He issued a Press statement that it was being used by a local radio station.

The first result was a shoal of letters from listeners abusing the radio station and promising it that it would lose a lot of its regular listeners.

The second result was an unofficial view by a spokesman of the Federal Communications Commission, which controls American radio, that "tampering" with a radio signal would be illegal.

The third result was a cynical reaction from recording engineers that, if such a device were used, it would only open the way for firms to market another device to extract the offending tone before it reached the recorder!

All in all, our American contemporary appears to think that there isn't much future for the Texan invention!

THE EDITOR

LAUGH WITH JEEVES



"The postman pushed your tape letter under the door while I was out shopping."

Introducing children to tape recording

We built a "silence cabinet" in our classroom studio

By

B. A. M. HERBERT

Headmaster of a London Junior School

AFTER considerable experience of using the tape recorder in school it became apparent that certain factors were undeniably reducing the quality of the tapes being produced.

These could be grouped as minor defects due to the actual recorder in use—a longer acquaintance with the equipment has enabled procedures to be adopted which circumvent most of these; and major defects in the "studio." All recording proposed has to be done on some site within the school premises and nowhere gave really good conditions—external noise being the chief trouble.

In an attempt to improve the "studio" it was decided to build a "silence cabinet." This has proved so successful and the following constructional details may prove of interest.

Not being blessed with any spare rooms the first essential was that the structure be easily dismantled and re-erected thus conferring the advantage of relative mobility. The sections had to be light enough to be handled by the average man or woman, and designed to store flat in order to take up the minimum space when not in use. A survey of the available materials revealed that the best for walls was one-inch (nominal) insulating board, this has reasonable inherent stiffness, it is light, offers excellent soundproofing and is not costly.

It was projected to build a structure with approximately six feet cube; this dimension was agreed upon as being adequate for child performance, yet keeping the structure within reasonable size.

To further stiffen the insulating board, a framework was added. This, incidentally, became an essential at top and bottom when the question of assembly came to be considered. Battens across top and bottom of the four walls, suitably placed so that they overlapped at the corners, made possible the introduction of a "peg hole" fixing using half-inch dowelling. This held all secure.

The roof, made of the same material, locates on top of the four walls, and it is secured by the same dowel peg which pins the adjacent walls together (reference to the diagrams will make this clear).

A door was produced in one wall and needed suitable timber-framing. In the opposite wall a large window was provided and filled with $\frac{1}{4}$ -inch perspex sheet. On the outside, just below the window, a large shelf was arranged as part of the structure and suitably braced to carry the recording and ancillary apparatus. The shelf, covered with foam plastic to a depth of one inch, absorbed all mechanical noise and shock possibly caused in operating the recorder. It also prevents mechanical hum or whirr, manifest in greater or lesser degree with some tape recorders, from being transmitted back to the microphone via the framework of the cabinet. The insulation board below the window was replaced by a strip of plain timber to which switches, etc., could be screwed and through which suitable holes could be drilled to take microphone, leads, etc.

On first erecting the cabinet it was found to be very effective. However, in a short while it became a little airless. To overcome this a series of one-inch holes were drilled in the roof. These proved satisfactory without materially lessening the soundproof qualities of the structure.

Having proceeded thus far, the problem was to supply power to the cabinet to operate the recorders, light the interior of the cabinet and also provide signal lamps to cue the artist. These latter were considered necessary since the object of the structure was to prevent noise penetrating, and gesticulation via the windows was liable to misinterpretation!

Accordingly, a supply panel was designed. Attached to a suitable mains point, although in itself was fully portable, this provides all the necessary facilities.

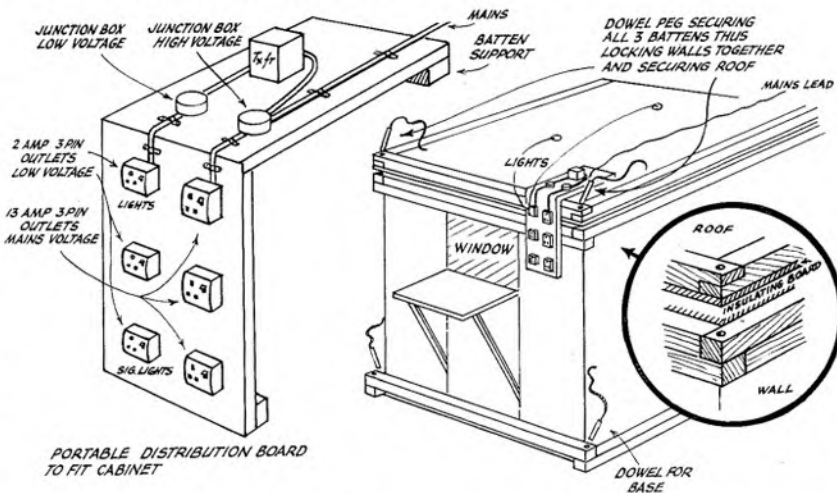
The sketch will show its construction which was adopted so that the board

Lighting for the interior is achieved by two 6-volt car bulbs on flexible leads which can be inserted through two ventilation holes. These are fed from one point. The signal lights, which are fixtures, are fed from another point. The third point is spare.

The recording engineer operates outside the cabinet, viewing the interior via the window. He can call the performer's attention by flashing the main lights and show when actual recording starts by switching on the signal lights. These remain at "red" throughout the recording period.

The techniques for suspending and using microphones are inexhaustible, but the structure is such as to permit a wide variety of installations and experiments.

In use, the cabinet has fully justified the time and cost expended in construction, and the absence of untoward extraneous noises in the tapes produced is noticeable.



might "sit" on the angle formed by the wall and roof and bring the power points adjacent to the shelf and window.

It was decided that three 13-amp three-pin sockets (switched) would cope with all the mains power needed and these points were installed. How to cope with lighting and signalling lighting in a portable structure was more of a problem and was eventually solved (on the score of safety in operation) by transforming the 230v mains down to 6 volts. The transformer for this was mounted in the upper (horizontal) surface of the distribution board—this helps to keep it in position—and the 6-volt output was wired to the three 2-amp three-pin socket (switched) on the front face.

Additional notes of interest are that where the recorder gives monitor facilities via the output loudspeaker, it is possible to monitor at a quite audible level without any feedback taking place. Two recorders can be used on the shelf at the same time, and it is quite feasible to introduce noise and music effects from the second recorder if an extension loudspeaker is located inside the cabinet (a project is in hand to mount this in one wall). Using two recorders two-way communication between inside and outside is available if desired by direction.

Cost of all materials at retail rates amounted to rather less than £20, which is a remarkable reasonable outlay for the facility provided.




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INTERNATIONAL AUDIO FESTIVAL

"More exhibitors than ever before"

THE largest-ever number of exhibitors have taken the largest-ever amount of space," said C. Rex-Hassen, Festival Director, after the ballot had been held for space at the forthcoming International Audio Festival. Tickets for this annual show, to be held as usual at the Hotel Russell, London, April 26-29, are available from *TAPE* offices or direct from Audio Festival, 42, Manchester Street, London, W.1.

Among the manufacturers taking part this year are the following:—

Acoustical Mfg. Co. Ltd.; A.K.G.; Ampex (Great Britain) Ltd.; Armstrong Wireless & Television Co. Ltd.

Bang & Olufsen; B.A.S.F. (Chemicals) Ltd.; Brenell Engineering Co. Ltd.; Chapman (Ultrasonics) Ltd.; Collet Ltd.; Clairstone Sound Corp. of Canada, Inc.; Clarke & Smith Mfg. Co. Ltd.; Cosmo-

cord Ltd.; The Decca Record Co. Ltd.; Denham & Morley Ltd.; Elstone Electronics Ltd.; E.M.I. Electronics Ltd.; Fi-Cord Ltd.; The Ferrograph Co. Ltd.; N.S.B. Field & Co.; Garrard Eng. & Mfg. Co. Ltd.; Geveart Ltd.; Goldring Mfg. Co. Ltd.; Goodmans Industries Ltd.; Grampian Reproducers Ltd.; Grundig (Great Britain) Ltd.

Highgate Acoustics; K.E.F. Electronics Ltd.; H. J. Leak & Co. Ltd.; Leevers-Rich Equipment Ltd.; Lustraphone Ltd.; Lowther Mfg. Co. Ltd.; Metro-Sound Mfg. Co. Ltd.; Minnesota Mining & Mfg. Co. Ltd.; M.S.S. Recording Co. Ltd.; Mullard Ltd.; Orr Industries, Inc.; Pamphonic Reproducers Ltd.; Parman Electronics Ltd.; Philips Electrical Ltd.; Pye Ltd.; Reslosound Ltd.; Radford Electronics Ltd.; Recording Devices Ltd.; Reflectograph Tape Recorders; Rogers Developments (Electronics) Ltd.; Robuk Electrical Industries Ltd.; Rola Celestion Ltd.

Simon Equipment Ltd.; Saga Records Ltd.; Shure Electronics Ltd.; S.M.E. Ltd.; Soundcraft Magnetics Ltd.; S.T.C. Ltd.; A. R. Sugden & Co. (Engineers) Ltd.; Tannoy Products Ltd.; Tellux Ltd.; Teppaz S.A.; Truvox Ltd.;

Vitavox Ltd.; Vortexion Ltd.; Welme Corporation Ltd.; Wharfedale Wireless Works Ltd.; WyndSOR Recording Co. Ltd.; Whiteley Electrical Radio Co. Ltd.; Zonal Film (Magnetic Coatings) Ltd.

THE WORLD OF TAPE

THE purchase of tape recorders and other electrical equipment by teenagers is to be surveyed in 1962 by Market Investigations Limited of Berners Street, London, W.1. This section of the market was found to be worth over £1,000m. in 1959.

The new survey will report on the equipment purchased, distinguishing portable and transistorised models, and provide such information as ownership by make, type, and whether new or second-hand; purchases during the last twelve months; prices paid and method of payment, and where bought.

* * *
Two boys have been expelled from Groton, the United States' Eton, for making secret tape recordings of masters' conferences in their headmaster's study.

* * *
LAST year on "Sound," the BBC's programme for recording enthusiasts, part of a fascinating gramophone record was played which took the listener behind the scenes at a professional recording studio. This LP disc is now available in this country on the Warner label. Title: *Behind Closed Doors at a Recording Session.*

* * *
THE Canadian Radio Technical Planning Board has completed its recommendations for stereo broadcasting in Canada. The system will, of course, be compatible for mono radio receivers.

* * *
AUSTRALIAN airliners are to carry flight recorders to tape cockpit conversations and instrument readings which could be useful in inquiries after crashes to establish their causes. This has been decided after an inquiry failed to find the cause of a crash in Queensland.

At the end of each flight the pilot will erase the recording unless needed for an accident inquiry. It is believed Australia will be the first country in the world to use this system.

A NEWS ROUND-UP

TAPE RECORDER SALES

THE first substantial increase in the sales of tape recorders is shown in the latest sales index figures released by the Radio and Television Retailers Association.

The figures, taken from the membership of the R.T.R.A., are given as the average units sold per shop. In September last year the figure was 1.8 (with 48 per cent being sold on H.P. terms). In October it dropped to 1.5 (50 per cent on H.P.), and in November rose to 2.4 (50.8 per cent on H.P.).

£80,000 export order

WYNSOR RECORDING CO. LTD., announce that since Christmas they have received export orders for WyndSOR tape recorders valued at more than £80,000. One is believed to be the largest single export order ever received by a British tape recorder manufacturer.

At least until the beginning of May the WyndSOR factory will be working at full capacity solely for export. Two new tape recorder models, now in a late stage of development, are due to be announced shortly. The firm is hoping to extend its production facilities to increase total output.

Mr. H. M. Creek, Managing Director, declared "it is vital to consider the national interest and to give export orders priority. But if anyone having difficulty in obtaining a WyndSOR recorder writes to our sales department, we will try to put them in touch with a stockist."

\$500,000 USA order

FOLLOWING the recent visit to the United States of Elizabethan's Mr. Lubin and Mr. Thomas, orders in excess of \$500,000—with possibly even larger orders to come—were secured at the Chicago World Fair.

Equally pleasing to Elizabethan is the fact that this company's products are able to compete favourably with the products of both the largest and the longest established manufacturers of tape recorders throughout the world.

BRITISH AMATEUR TAPE RECORDING CONTEST 1962

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If you missed the earlier announcements giving full details, write now for entry form and information to British Amateur Tape Recording Contest, 7, Tudor Street, London, E.C.4.

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 TAPE RECORDING

SEVERNA PARK,
MARYLAND, U.S.A.

THE article published in the February issue dealt with the effect of the stiffness of the air trapped behind the cone on the final resonance of a totally enclosed loudspeaker system. It was shown that the resonance is changed by an amount depending on the cone area and the acoustical capacitance of the enclosure.

It is a short step from making a completely sealed box to cutting a hole in it. Very often this is done on the grounds that it relieves the pressure on the cone and removes the "tautness" of the reproduction in the upper register (whatever that might mean). The size of the hole is adjusted to sound right at the time and the whole process of listening and cutting is repeated the following week.

Cutting a vent in a cabinet has two effects. A certain amount of sound is radiated from it and also the mass of the air which is moving in the vent modifies the total mass of the system. In order to learn more about the behaviour of the air in the vent let us decide upon its position in the analogous circuit.

The fact that we are considering mass means that the corresponding analogy is inductance and the radiation resistance is represented by a resistance in series with it. At high frequencies the mass reaction increases and the current falls towards zero. The loudspeaker circuit

A PRACTICAL GUIDE TO LOUDSPEAKERS

Vented enclosures

by **PETER MILTON**

is in series with that of the cabinet and any limitation of the current (i.e. velocity) would involve a decrease in the power radiated. This is contrary to our experience and so the only place for the inductive part of the circuit is across the capacitance representing the compliance of the enclosure.

The actual mass of the air in the vent

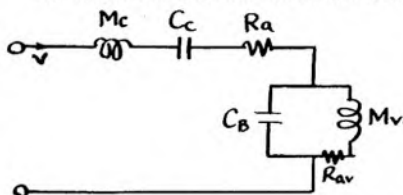


Fig. 1. The analogous circuit of a loudspeaker in a bass reflex cabinet. M_c = cone mass; C_c = suspension compliance; R_a = resistive part of air load on cone; C_b = compliance of cabinet; M_v = inductance of vent; R_{av} = resistive part of air load at vent; V = velocity

is obtained by multiplying the volume of the vent, taking into account the end correction, by the density of air. A given volume can be made up of any combination of length and diameter each giving differing results using the same enclosure volume. For instance, a long, thin tunnel would offer a high impedance to the flow of air in it and carried to the limit, the impedance would eventually be so high that it would have no effect. Conversely, a wide, short tunnel acts as a short circuit to the capacitive element the limiting case being a loudspeaker on a plane baffle.

This leads to the conclusion that the narrower a tunnel is made, the higher its effective inductance becomes. For this reason the unit used when dealing with acoustical mass is inductance, M , and it is the actual mass divided by the square of the cross sectional area of the port.

Like any other combination of mass and stiffness or inductance and capacitance, the vented enclosure has its own natural resonance at which the air in the

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vent can be set in motion easily. In this way it behaves as an overgrown bottle, sounding when one blows across the neck.

From this discussion we deduce that the resonance is lowered by an increase in the volume of the enclosure or the length of the tunnel, and by a reduction in the area of the vent. The converse also holds. It is not affected by the size, shape or resonance of the loudspeaker.

The practical experimenter, tuning his cabinet by ear has the choice of tuning to a room resonance or that of the loudspeaker itself. The latter course has the advantage that the impedance of the cabinet is at maximum and is resistive at its resonance. At this frequency the mechanical impedance of the loudspeaker is at a minimum and the velocity (current) is limited by the enclosure. The consequent reduction in cone excursion lowers the distortion and the damping of the resonance means that the power does not fall quite so rapidly below it.

All these advantages are obtained in addition to the extra radiation from the port. This type of loading is known as the *Bass Reflex* enclosure. The name is derived from the fact that the radiation from the rear of the cone has changed in phase through 180 degrees and appears in phase with that from the front at resonance. Let us kill the myth that the sound bounces from the back of the cabinet, once and for all.

There is no simple formula taking into account all the factors involved which will give the optimum design for a particular loudspeaker, even were the information available.

Fortunately, good results can be obtained within fairly wide limits provided a few simple rules are followed. The formula for obtaining the volume of a resonant enclosure is derived by equating the reactances of the inductance at the vent with that of the acoustical capacitance. (See right.)

Start by deciding upon the amount of space which can be given to the enclosure. As a rough guide, 5,000 to 7,000 cubic inches would be suitable for a 10-inch diameter loudspeaker and 3,000 to

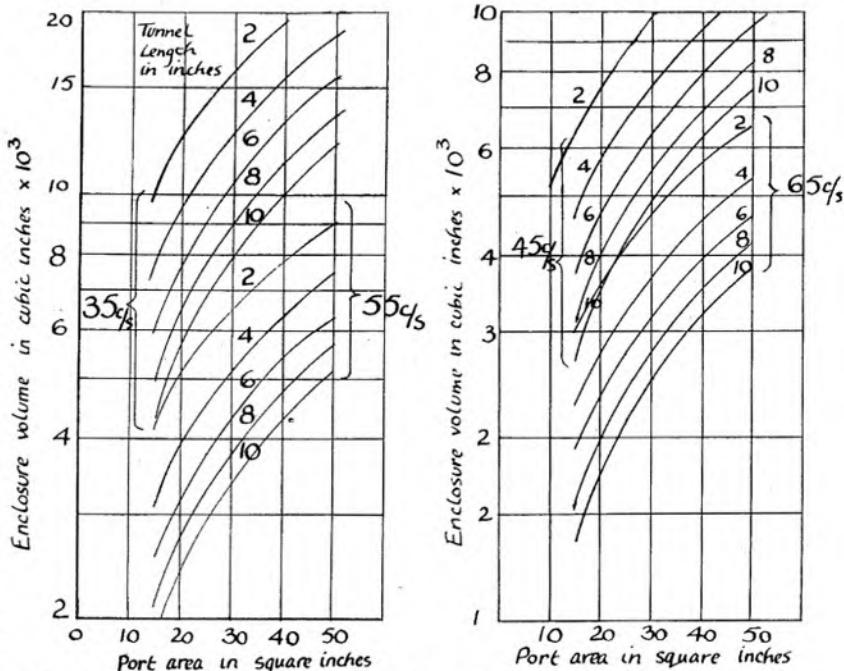


Fig. 2. Enclosure volume versus port area for various tunnel lengths (in inches), for resonant frequencies of 35 cps and 55 cps (left), and 45 cps and 65 cps (right)

4,000 cubic inches for an 8-inch diameter loudspeaker. These figures could be reduced slightly, but there is a danger of bringing into prominence the

$$V_{\text{box}} = A_{\text{vent}} \left[\frac{4.64 \times 10^6}{f^2} \times \frac{1}{1.7R+L} + L \right]$$

R = effective radius of vent (inches);
 l = length of tunnel (inches); f =
 loudspeaker resonance; (V box in
 cubic inches)

sonance between the stiffness of the enclosure and the combined mass of the cone and air load. (Mc, Cc, Cs of Fig. 1.) This is often the cause of the expert's knowing nod and remark about "boxiness."

The internal volume is then estimated from a knowledge of the thickness of

wood and the height of the legs. This is the volume which appears on the left-hand side of the equation.

The area of the vent is generally made equal in area to that of the cone, but if the box is to be slightly smaller than usual the vent area could be reduced to about half the cone area without serious loss in bass performance. It remains then to balance the two sides by juggling with the length of the tunnel. It is tempting to try to re-arrange the formula to calculate the length directly. Several sheets of paper later, one has an even longer formula to use so it is hardly worth the effort.

Fig. 2 is a set of four graphs giving port area, tunnel length, and box volume for the more common resonant frequencies in use today.

During the design of the enclosure, be careful to include the thickness of the baffle board when measuring the tunnel and ensure that the end is free from obstructions for a distance of at least its own height.

The exact position of the port is not critical, but it is not advisable to place it less than one chassis diameter from the edge of the cone. In long thin cabinets it has been found that the port opening should be fairly near to the loudspeaker rather than near the floor. A possible reason for this is that standing waves could upset the phase of the radiation at the port.

It is worth noting that the end correction has been calculated assuming a port of circular cross section, and it is therefore advisable to use this or at least a low aspect ratio rectangle. Long narrow ports are not very practical since not only do the walls introduce friction in series with the radiation resistance, but there is a certain amount of difficulty in covering the slot, particularly when it is at the end of a baffle board.

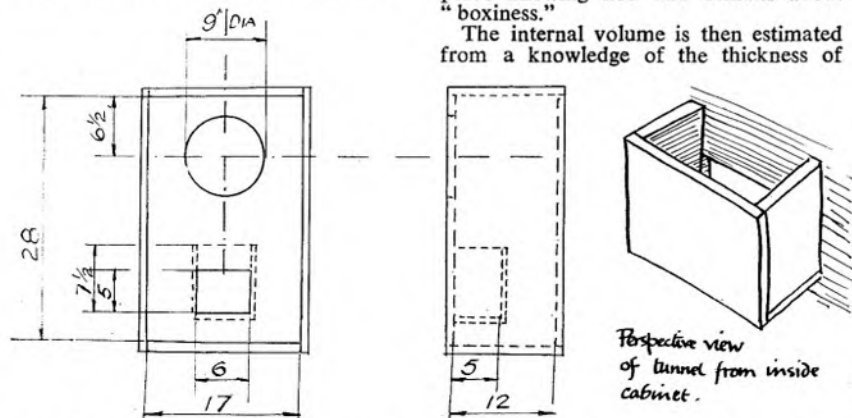


Fig. 3. Example of a design for a bass-reflex enclosure suitable for a ten-inch loudspeaker, resonance 45 cps. Notes on construction: Wood: 3/4-inch chipboard, tunnel 1/2-inch plywood. Construct sides first, reinforce corners with one-inch square battens; set battens at depth of cabinet back and baffle around edges; cut baffle board to allow for thickness of cloth or silk cover; drill clearance holes in front of battens, fix grille material and draw on baffle from rear; Line top, bottom, sides, and back with one-inch thick cellulose wadding or similar material. Hang a curtain loosely full width down centre of cabinet

Make way for the LADIES

By VIVIENNE GOODING

I DELIBERATELY went out of my way this week to talk to a dozen women who were complete strangers to me.

I wanted to know how many of them actually owned a tape recorder, and for this purpose family ownership was counted as actual ownership; how many had operated a machine themselves; how many had heard it but not used it; and how many had no experience of tape recorders at all.

The results of my private survey were very interesting. Of the 12 women, four either owned or had immediate access to machines, and of those only one had never dared touch it herself. After a brief conversation, this particular person hurried home with a look of grim determination in her face! Of the remaining eight ladies, only two would admit to never having heard a machine or seeing one used; the other six had "fooled around" with a recorder when visiting friends. A rough guide to the replies received can be obtained from the following:—

"They're all right at a party, but they're not much good really, are they?" "You can't do anything sensible with them, can you?" and "I'm sure my voice doesn't really sound like it did that night round at Alf's!"

These opinions are, of course, typical of those expressed by people with the minimum of experience and no knowledge, but it's disturbing to find them so freely given by no less than half the people I spoke to. This doesn't pretend to prove anything, but it does indicate a trend of public opinion which is in urgent need of correction.

Writing in this column is preaching to the converted; I don't need to convince my readers of the sheer nonsense of those statements. But what I do suggest is that we who know better should by our own example and conversation try to educate the public and induce in them a new respect for recording.

If the general standard of recording in the home were to be better than it now is, a great many people would not get this completely false impression that "it's good for a lark and nothing more." The best way in which we can counter this notion is to make quite sure that those we come in contact with ourselves understand that ours is basically a serious hobby, and not just a succession of childish pranks. I can assure you that the six ladies referred to in this column left me with more than a suspicion that they could have been wrong!

DO-IT-YOURSELF

By L. REID

IN a previous article I suggested ways of tidying up and standardising mains supplies with a view to greater reliability and safety; this can be followed by similar attention to all other cables used to connect your equipment together.

As input cables are such a common cause of hum and crackles any extra care taken in their assembly will be well repaid. Screened cable is usually specified for this position, although inputs coming from extension speaker sockets, or balanced lines to a microphone (see below) can be of ordinary flex.

Usually single cored screened cable is used, the screening itself forming one conductor as well as earthing the microphone to the recorder chassis. Sometimes, as an extra precaution against hum, twin screened cable is used on balanced line; this means that the twin conductors are connected to the ends of a transformer winding which is usually C.T. to earth. The screening in this case is *not* used as one of the conductors and has a separate earthing contact by means of a three-pin jack plug. Alternatively, when a balanced line transformer is used, the cable may be of ordinary flex *provided the recorder is earthed.*

The illustrations show four different types of plug suitable for use with screened cable; some of these plugs



Fig. 1. Standard co-axial plug

are available in two forms, fully screened or unscreened. If an unscreened plug is touched hum will usually be introduced into the input, so I prefer to standardise with fully screened plugs in all positions . . . they only cost a little more than the plain variety.

The insulation of most cables and plugs is some form of plastic which melts with heat, so some care must be taken when soldering or wires may become exposed and cause a short circuit. Too cool a soldering iron will cause the plastic to melt long before the solder runs, so make sure that the iron is always at the right temperature.

The usual procedure is to clean the parts to be soldered, then thread the wire into the hollow pin (or other type of socket) and hold everything in position. Resin-cored solder of radio quality, is then applied to the joint and touched with the hot iron, when the solder should melt instantly. Remove the iron at once but continue to hold the parts in position for a few seconds until the solder sets. The operation is



Fig. 2. Three-pin plug used by continental manufacturers

quite simple; the whole secret lies in cleanliness of the parts, a *small* bead of solder, and an iron at the right heat.

Fig. 1. This is a standard co-axial plug as used for TV or pick-up cables. The central core contains a hollow pin into which the cable is threaded and soldered. As the plastic core softens with heat be sure to hold the pin central until the core has hardened again. First, however, the screwed top of the plug is threaded on the cable, followed by the cable grip. The screening is unpicked for about $\frac{1}{4}$ inch and turned back over the cable grip after the soldering operation is complete.

In **Fig. 2** is shown the three-pin type of plug used by continental manufacturers. In this case the unpicked screening is twisted together at one side to form a cable and soldered to the appropriate pin; the central conductor goes to one of the other pins.

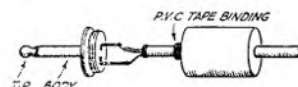


Fig. 3. Standard two-pin jack plug

A standard two-pin jack plug **Fig. 3** is also available in miniature form. The conductor wire is soldered to the insulated centre leg of the jack, and the screening (twisted as above) is soldered to the other leg connected to the jack body. No strain must be put on these joints, and this can be avoided by thickening the cable insulation so that the jack plug sleeve (previously threaded on the cable) grips the cable when screwed into position. This is

Pay attention to your cables

done by binding the cable with PVC insulating tape, or using a rubber sleeve.

Fig. 4 shows how to wire the standard three-pin jack plug which is used for balanced line. Remove the sleeve from the jack and thread it onto the cable. Then strip off sufficient insulation from the cable and unpick the screening, which is then turned back on the cable. The plug body is then "screwed" on to the cable, forming the earth connection with the screen. The twin conductors are now cut to length; the tip of each bared and soldered to its connection. Some jack plugs have small screws, but I prefer to remove these and use solder. Care



Fig. 4. Standard three-pin jack plug

is needed not to short either connector to the plug body by using too much solder.

It is advisable to have at least one spare cable, particularly if your cables are handled much, as joints often pick the most awkward times to come asunder.

Input and output connections to my Vortexion and Ferrograph recorders are by means of standard jack sockets, so I fitted all my other equipment with similar sockets, and used standard jack plugs on all connecting cables; these

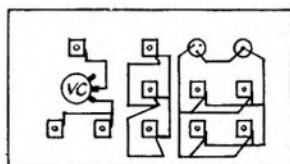
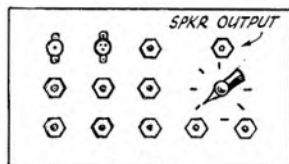


Fig. 6. Multi-socket unit designed by the author

being interchangeable, I do not have to hunt for cables with special plugs when connecting up any of my apparatus.

However, to provide for the odd occasion when I make use of a borrowed recorder having three-pin sockets, I made one connecting cable in

two sections, joined by a co-axial connector. This (Fig. 5) consists of a standard co-axial plug (Belling Lee L734/P) which fits into a free co-axial socket (Belling Lee L734/J). Interchangeable sections of cable terminate in a co-axial plug at one end, and alternative types of plug at the other. Thus a co-axial socket (costing around 1s. 3d.) is used instead of a jack plug



Fig. 5. Standard co-axial plug and free co-axial socket

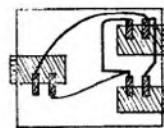
(price 5s. to 7s. 6d.) on one end, instead of making up complete cables for each recorder.

If much dubbing is to be done, and different makes of recorder are in use, the easiest way to connect up is by means of a Multi-socket unit, somewhat similar to the mains switchbox described in the January issue. With the unit described below it is possible to connect recorders instantly and securely merely by plugging them into the appropriate socket.

The unit consists of an assortment of standard sockets wired in parallel and mounted in a sheet metal case to avoid hum. (A suitable flat tin could be used). Leave room on the panel for additional sockets which may become necessary later on, but a start might be made with several jack sockets, standard and miniature, a few

My own unit has a special section containing a volume control for reducing volume on the large external speaker when this is used for monitoring. My scrap box yielded a 1,000 ohm potentiometer which serves the purpose well enough (a higher value would be needed to silence the speaker completely). This was wired in series between input and output sockets; actually I fitted two input sockets so that two recorders could be used alternately for quick comparison of recordings. Fig. 6 shows the layout.

Fig. 7. Multi-socket variation



A variation of this multi-socket idea is shown in Fig. 7 and consists of a two- or three-way adaptor which would be useful for connecting say, two microphones, if a mixer was not available.

Output Cables. The lead to an extension speaker can be of ordinary lighting flex, as can an extension lead for headphones. The latter is useful as it allows you to monitor through phones while you walk about with the microphone.

One end of this extension cable terminates in a standard jack plug to suit the recorder, whilst the other has a matching free jack socket of the type shown in Fig. 8 to take the jack plug on original phone lead.



Fig. 8. Standard jack plug and matching free jack socket

Finally, a connecting cable of a more specialised type is that used for recording telephone conversations. The "business end" of this consists of a small coil of wire (an old bell bobbin will serve, or you can wind about 200 turns of enamelled wire on a soft iron core) held against the back of the telephone, and connected to the recorder mike input by a short screened cable. Conversations in both directions can be recorded.

Long cables should be wound on reels, rather than coiled by hand, and they should not be bent or twisted excessively. A plug in which the cable is not firmly gripped will soon cause a broken connection, and this is not easily remedied if you are away from the workshop. So look after your cables.

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G59TR

THERE is still much controversy amongst stereo enthusiasts as to the best type of loudspeaker system in order to give the optimum stereo effect. Some advocate forward facing loudspeakers, that is speakers having some directional properties in the direction of the listeners, while others suggest upward facing loudspeakers having an almost circular distribution pattern. Still others have suggested facing the loudspeakers into the corner of the room in order to achieve even wider dispersion. Which of these methods is the best?

To some extent it depends upon the type of sound that one wants to achieve from stereo. Some people consider that the most important effect is that of a widely dispersed sound source spread between the loudspeakers. Others may consider that sharpness in positioning the various component parts of the sound picture is all important. A third group will probably want to hear the positioning of the parts but possibly to a slightly less degree, and think that both the previous concepts of good stereo should be present as required.

Most people will have heard stereo mainly in terms of music, either serious or popular, and some may have heard the dramatic presentations occasionally transmitted on the BBC Saturday morning transmissions.

Thinking in terms of a "complete" stereo service, the system of reproduction should ensure that the spread of sound with instruments in their respective places, associated with the symphony orchestra, should be as well reproduced as the movements of the cast of a play or other dramatic presentation. For this last, it is clearly necessary that positional information shall be conveyed as precisely as possible.

stereo

SPECIAL SUPPLEMENT

H. BURRELL HADDEN discusses the placing of loudspeakers to give the optimum stereo effect in the normal living-room.

In order to see which of the systems of speaker placement will give the most accurate positioning of images, let us consider the mechanism by which we hear things stereophonically.

Recent research at London University has shown that in everyday life (not via a reproducing system), we appreciate the positions of sounds by virtue of the fact that a given sound will arrive at one ear slightly before it arrives at the other. It is this *inter-aural* time difference which the brain uses to determine the position of the sound (Fig. 1).

Turning to loudspeaker stereophony, it is thus evident that a system that will produce a similar inter-aural time difference will probably achieve the best results. It can be easily proved that in order to create an inter-aural time difference using two loudspeakers, it is only necessary to vary the *amplitude* difference between them (Fig. 2).

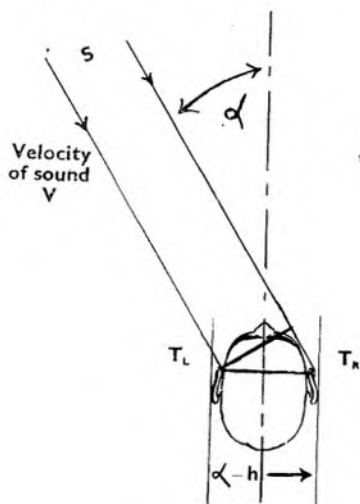
The research team further discovered that *inter-channel* time differences be-

tween the loudspeakers only confused the positional information, and made the images less distinct. These inter-channel time differences could be caused by sound arriving at different times at two spaced microphones, or they could be caused by reflected sounds from the loudspeakers reaching the listener's ear. It is therefore, important that as little as possible "secondary" sound should be created in the listening room, so that the information given by the "primary" sound shall not be confused.

From the above argument it will be evident that in order for the primary information to reach the ears quickly, the loudspeakers must be pointing directly at the listener. Furthermore, it is undesirable that any reflected sound at all shall be present in order that no confusion can take place.

This would seem to suggest, an acoustically "dead" listening room, and indeed,

(Continued on page 22)

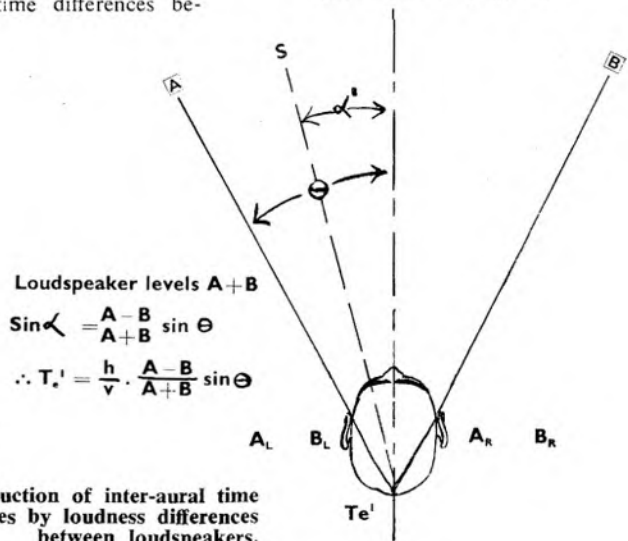


Inter-aural time difference

$$T_e = T_R - T_L$$

$$= \frac{h}{v} \sin \alpha$$

Fig. 1 (Left): Inter-aural time difference.



Loudspeaker levels A + B

$$\sin \alpha = \frac{A - B}{A + B} \sin \Theta$$

$$\therefore T_e' = \frac{h}{v} \cdot \frac{A - B}{A + B} \sin \Theta$$

Fig. 2 (Right): Production of inter-aural time differences by loudness differences between loudspeakers.

THE TWAIN CAN MEET

I HAVE always found that selecting loudspeakers for stereo, or for mono come to that, is not a thing that can be done quickly; and it is not something that can be settled by studying response curves and similar technical details — although they naturally help a great deal.

During the next few months I am planning to try out some of the exciting smaller loudspeakers that are now being produced, and I intend to do this by savouring them in pairs over a longish period. The opinions I form of them will be to some extent conditioned by the rooms I try them in, the equipment employed and also by the type of recordings most often played. But I believe that this approach is the most likely one to produce the results I am after, a reliable picture of the overall possibilities inherent in smaller speakers in normal domestic surroundings.

I think that the most useful contribution to stereo that I can make at the present time is to help in settling this question because many people are. I am sure holding back, out of a vague fear of spoiling the ship for a ha'porth of tar—while realising that bigger speakers are out of the question.

The first pair of speakers to come along, the Wharfedale Slimline, clearly represents remarkable value for money, to say the very least about it and first

impressions are very favourable, quite apart from the low cost.

I will say more about the Slimline later on, but my first experiment was to imagine that I had acquired only one of them as a step towards a stereo pair, and that I was in the common position of already having an older speaker that was too large for a companion—in this case



a Decca corner speaker. The exercise was to see how much stereo could be obtained with the old and the new speaker. I soon had confirmation of my belief that one should not hesitate over this sort of operation. Pending the arrival of the second compact speaker there is much pleasure to be derived from having two such dissimilar assemblies in action as a stereo pair. The effect was satisfyingly stereophonic, even if it fell short of the ideal.

It is true that speakers for stereo should match, but it does not follow from this that ill-matched speakers are to be avoided at all costs. Unless the discrepancy is very great indeed, in the

sense that one of the speakers makes horrible noises or cannot cope with a wide enough range, then the result should be, at worst, a considerable improvement on mono reproduction.

I found this to be true in the present case even when I had all the controls set for an equal output. After trimming the controls to obtain better balance the effect was very good indeed.

The Emisonic 555 amplifier enabled me to add the right amount of treble to the Decca speaker in relation to the Slimline to allow for the treble diffusion of the corner unit, and the right amount of bass to the Slimline in relation to the Decca in order to adjust a difference in response in the lower range. These moves and a little further adjustment to the total relative outputs very soon made it seem that the speakers were pretty well matched after all.

This treatment may well save the day for people who sacrificed much earlier on to get a massive speaker assembly and cannot face the prospect of throwing it out "just because" stereo has come on the scene. Sentimental attachment to loudspeakers can be a powerful force in the breast of even the most critical of listeners.

Ideally, I feel, one should plan to give the old faithful an honoured place in another room, carrying the combined stereo signals for mono reproduction—as well, perhaps, as doing full justice to FM radio.

Stereo loudspeaker positioning (continued from page 21)

the best possible reproduction of a stereophonic demonstration can only be achieved under these conditions. Such a room, however, would be very unpleasant to live in, and since most of us listen to stereophonic sound under domestic conditions, an uncomfortable room would be intolerable.

Fortunately, it is not necessary to go to such extreme lengths in order to achieve reasonable results, even though these may be slightly less than best. All that is necessary is to ensure that there are no sound reflecting surfaces between the loudspeakers, for a short distance on either side of them and preferably on the wall opposite the two units. This in itself may seem difficult but ordinary house curtaining can be used successfully to reduce reflections (Fig. 3).

The desirability of reducing all reflected sound in the vicinity of the loudspeakers to a low value, immediately rules out the use of speakers sounding into the corner and deliberately intending to use these reflections. These will produce such poor primary sound, that the images will be very blurred. Upward-facing loudspeakers, in the absence of absorbing material near to them so that their sound is reflected in all directions, will also produce very blurred images.

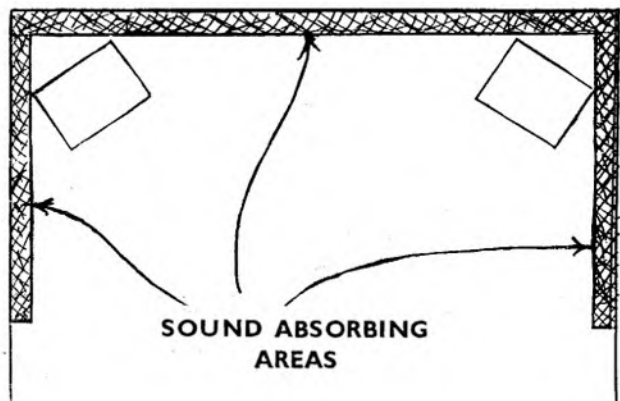
All may not be well, however, with our forward-facing loudspeakers. Many cone units are markedly directional in

the middle and upper frequencies, and so the full frequency range is only audible on their axis. If two of these speakers are used in the stereo set up, the full frequency range will only be heard when the listener is sitting on the axis of both units, and only one person can sit at this point. Other persons listening to the same loudspeakers will hear different amounts of middle and high frequencies from each side, depending on where they are sitting, and these differences will alter the position of the image at those frequencies.

It is thus essential that the forward

facing loudspeakers should not be too directional, and much of the present design work in loudspeakers is concentrated upon this aspect. One possible solution is to use an upward facing loudspeaker mounted in a corner, the walls having non-reflecting surfaces and to mount some form of reflecting device so that the sound is turned towards the listener in a controlled wide forward angle. From the author's experience, however, most systems of this type introduce other complications in the form of colouration of the sound at various frequencies.

Fig. 3: Desirable regions of non-reflection for best stereophonic effect. Ordinary house curtaining can be used successfully to reduce reflections.



STEREO TAPES REVIEWED

"STEREO 21" is the impressive-sounding trade name for the first stereo tapes from the World Record Club, though just why "21" I am still at a loss to say. Perhaps like Mr. Heinz's "57" it is a magic number, and I certainly don't object to it when the results are as good as the first three tapes I have sampled. In every way these match the quality of E.M.I. stereo tapes and like E.M.I. tapes (and unlike previous single-channel World Record tapes) they play at 7½ ips, coming on Emitape spools with Emitape-style leaders and trailers.

On the credit side there is commendably low tape-hiss, and the stereo separation is excellent. Anyone used as I am to hearing stereo discs every day notices the added separation of tape, sometimes carried too far in a momentary impression that there is nothing in the middle between the two speakers. So far so good. But what a stereo-disc man must also notice is that even at 7½ ips the frequency range is noticeably more restricted than on disc.

It is some months since I had any stereo tapes for review and in that time the quality of stereo on disc has improved on an already high standard with the latest Decca issues in particular achieving a breathtaking standard of reality. Not surprisingly stereo-tape has apparently not yet shared this improvement. These latest stereo-tapes match the quality of stereo-tapes issued by E.M.I. three and four years ago but not if I am really discriminating more than that.

Let me make it clear at once that I am not complaining at all, simply getting the comparisons straight, hoping meanwhile that stereo-tape will get even better. Why I labour the point too is that for one of these tapes—a particularly impressive one with Sir Arthur Bliss conducting the Sinfonia of London in his own *Checkmate* ballet suite as well as Handel's *Water Music Suite* and a *Suite of Act-tunes and Dances* by Purcell—I was present during the recording session. I remember clearly that the master-tape (at 30 ips I imagine) had far greater range than this.

What troubles me a little more than the lack of range is that as with stereo-tapes in the past some attempt appears to have been made to counteract the restricted range by boosting the top a little. Not so much that the whole becomes unmanageable, but enough for me to be compelled to notch the treble down several degrees to get the fizz out of the string-tone. The result is still very good, and I emphasise again that in every way these World Record tapes match the quality of previous commercial issues.

As to performances Bliss's conducting is masterly. Few composers know so well how to draw enthusiastic playing from orchestral musicians, and not merely in his own music. The Handel

THE CLASSICS

by Edward Greenfield



(Recorded music critic of the *Guardian*)

Suite (in Anthony Baine's arrangement, not the usual Hamilton one) and the Purcell (arranged Bliss) are as impressive as *Checkmate* (STT52 [35 minutes] £2 10s.).

My second tape has Leon Goossens playing Mozart's *Oboe Concerto in C major* (K.314) on one side with Colin Davis conducting the Sinfonia of London. On the other Davis conducts the orchestra in Mozart's *Symphony No.*

34 (STT59 [41 minutes] £3). At this rate Goossens' fabulous technique, his artistry and his unique tone-colour, somehow velvety and sparkling at the same time, need no commendation, and my only worry here is in case the slight exaggeration of top will prevent some purchasers getting the true Goossens' tone-colour. Davis in Mozart believes in strength rather than delicacy, and though in places this begins to sound a little like early Beethoven it is all very strong and lively.

The third tape is from an American recording—Stokowski conducting the New York Stadium Symphony Orchestra in Tchaikovsky's *Francesca da Rimini*, and *Hamlet*, this last strangely neglected in recent years. (STT98 [43 minutes] £3.)

The performances are red-blooded and not without the usual Stokowskian exaggeration but very impressive. There is greater reverberation than in the home-produced recordings, giving a momentary impression of greater range, and the gap between speakers seems to be a shade more positively filled, but there is a lack of bloom on the strings.

All told then an encouraging start, and my very readiness to make no allowances for a product that is after all originally cheaper than commercial rivals must be taken as a high compliment.

STAR STEREO DISCS

THE CLASSICS

Richard Strauss: Salome. Birgit Nilsson, Eberhard Waechter, etc., Vienna Philharmonic Orchestra conducted by Georg Solti. Decca SET 228-9.

Performance and recording require superlatives: Decca's new Sonic-stage recording process vividly demonstrates its merits in what is certainly the most opulent opera recording yet.

Beethoven: Symphony No. 3 (Eroica). Philharmonia Orchestra conducted by Otto Klemperer. Columbia SAX 2364.

In this remake of the "Eroica" for stereo Klemperer's measured speeds, slower than before, bring added stature and tension to Beethoven's monumental architecture.

Bach: Suites Nos. 1-4. Stuttgart Chamber Players conducted by Karl Münchinger. Decca SXL 2300-1.

Deeply satisfying performances beautifully recorded: the Stuttgart players straightforward and finely disciplined return to the form which ten years or so ago first made them famous.

EDWARD GREENFIELD

JAZZ

Gerry Mulligan and the Concert Jazz Band at the Village Vanguard. HMV CSD 1396.

Virile yet sensitive performances by a star-studded orchestra that has a refreshingly personal sound.

Perceptions. HMV CSD 1426.

The great trumpeter Dizzy Gillespie is chief soloist of this twenty-two piece orchestra, conducted by Gunther Schuller, playing ambitious new compositions by J. J. Johnson.

The Chico Hamilton Special. Fontana STFL 584.

Hamilton, one of the quietest and most intelligent drummers in jazz, leads his latest Quintet through seven delicately swinging samples of chamber jazz.

ROBERT GOWER

LIGHT MUSIC

Over the Waves. Capitol S.O. Dragon. Capitol SP 8547.

A collection of pieces inspired by the sea and mostly in clever and very musical arrangements by the conductor, Carmen Dragon. The splendidly rumbustious "Rule Britannia," enhanced by quite superb recording, sets a fine opening mood for a very attractive concert.

Canta La America del sur. Trios Los Panchos. Philips SBBL 617.

A talented trio of musicians provide an enchanting, intimate late-evening record. Both singing and guitar accompaniments are delectable and the recording has plenty of atmosphere. How agreeable to find musicians who know how to make an effect by singing quietly.

Italia Mia. Mantovani. Decca SKL 4135.

Mantovani tends to use his cascading string gimmick less these days and relies instead on the strong personality (and fine playing) of his orchestra. The present issue is full of charm and atmosphere, and superbly engineered. A highlight is a clever piece—arranged Milner—introducing a famous Italian popular song (ravishingly played) and then, using full orchestration, Tchaikovsky's transformation of the piece into part of his "Capriccio Italien."

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STAR FEATURES

Three tape speeds

1½, 3½, 7½ i.p.s.

Frequency response

60 to 10 Kc/s at 1½ i.p.s.

60 to 15 Kc/s at 3½ i.p.s.

60 to 18 Kc/s at 7½ i.p.s.

Wow/Flutter

± 0.1% at 7½ i.p.s.

± 0.12% at 3½ i.p.s.

± 0.2% at 1½ i.p.s.

Four-tracks

Selected by positive piano-type keys.

Signal to noise ratio

Better than 50 db at 7½ i.p.s.

Better than 45 db at 3½ and 1½ i.p.s.

Pressure sling

This, unlike the conventional pad, is flexible and maintains even pressure over the whole surface of the head. It gives better H.F. response and minimises "drop-out" effects.

Multi-disc clutches

In addition to the normal slipping clutches the TK.40 embodies additional multi-disc clutches to remove excessive tape strain. Using *double-play* tape you can switch immediately from fast-forward to fast rewind or vice versa without tape breakage or stretch.

Inching

Fast-forward and rewind are controlled by a slider actuating a progressive clutch. Inching is thus unusually easy and accurate. A lock position is also provided.

Cine-socket

To connect magnetic heads from a cine projector to the TK.40 to record sound films or play back from them.

Built-in tape cleaner

Retractable, and press-button operated.

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The digital indicator is provided with a button for immediate zero re-set.

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Synchronous recordings

Output for monitor amplifier provided.

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Push-button provided for adding effects or commentary to existing recordings at will.

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HMV MODEL 2202



THE HMV tape recorder model 2202 is an attractively styled portable mains operated machine, designed to record monophonically on four tracks. It uses the popular BSR "Monardeck" tape transport mechanism, with a single, $3\frac{1}{2}$ ips, speed, and which accommodates five inch spools.

The recorder is very simple to operate, there being only two controls and four push buttons in addition to the two controls on the deck. The "on/off" switch is combined with a playback tone control and the second knob on the control panel serves both as record gain control and replay volume control. Two of the four push buttons are concerned with track selection, bringing into operation either tracks one or four, or two or three. Track one is the top track on the tape as it is passing through the machine from left to right.

The third push button enables the machine to be used as a straight-through amplifier, either for microphone, record player or another source, a very useful facility. The fourth push button is the superimpose

control. Interlocks are provided to prevent any accidental erasure of a valuable tape, the machine always reverting to the play condition when the tape is stopped.

The amplifier unit is well designed using only two valves an ECC83 and an ECL82 with an EM84 magic eye indicator. Valve replacement necessitates removal of the deck unit but this is easily accomplished when necessary. The loudspeaker is a good-sized elliptical capable of good quality reproduction, although for the highest possible quality, the use of an external loudspeaker would be desirable.

The machine was given the usual tests and the overall record/play characteristic is shown in the accompanying graph. As can be seen it is very good indeed, being no more than 3 dB down at 50 and 10,000 cps, and virtually flat between these frequencies. The signal-to-noise ratio was some 40 dB, but there was a difference in this quantity depending upon whether the button for tracks 1/4 or 2/3 was pressed. The hum level was slightly worse in the first condition. In either case however, hum or noise was not significant at normal recording level.

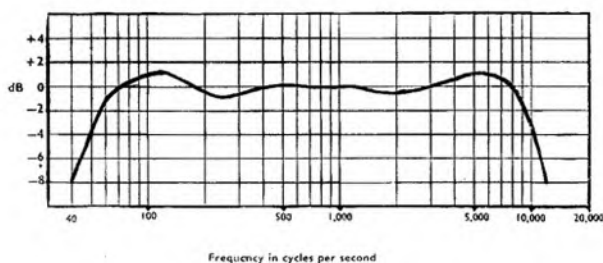
These factors, good frequency response and signal-to-noise ratio, combined with a lack of noticeable wow and flutter made the quality of reproduction from this machine very good indeed, the smoothness of the frequency response

reels from falling off their hubs, and if the machine were carried any distance, this might result in a tangle of spoilt tape inside the lid, as the reels became unwound. The remedy would obviously be to carry the tape separately.

The machine is provided with a crystal hand microphone, and an extra lead fitted with a plug to fit either the input or output sockets of the machine. This can be used for recording from the radio for example or for playing back into additional equipment. A second spare plug is provided. Ample carrying space for the microphone, signal lead and mains lead is provided, and easily accessible under the main lid. A well-written instruction leaflet is supplied.

I consider the H.M.V. 2202 to be very good value for money at £35 14s.

H. BURRELL HADDEN



Record/replay characteristics of HMV 2202.

control. This disconnects the erase head enabling a second track to be recorded on top of an earlier one.

Sockets for input and output connections are conveniently situated on top of the machine and five of these are provided. The first three, reading from the left, are for microphone, radio and pick-up inputs, and the last two for outputs, first to feed a high quality amplifier and secondly for an extension loudspeaker.

Recording level is controlled by means of a magic eye type indicator, situated on the control panel close to the volume

particularly producing a very life-like effect.

With a machine of such a high standard in its price range, it is a pity that two minor adverse comments must be made. The first is that the lid is not completely removable, although when opened it stands up on its own and does not seriously get in the way. Furthermore, the machine can be operated with the lid closed, thereby reducing to some extent, the mechanical noise from the tape deck. The other adverse comment concerns the fact that when the machine is packed up for transporting, there seems to be nothing to prevent the tape

MANUFACTURER'S SPECIFICATION

- Price: 34 guineas.
- Speed: $3\frac{1}{2}$ ips.
- Frequency response: Not quoted.
- Wow and flutter: Not quoted.
- Maximum spool size: $5\frac{1}{2}$ inches.
- Playing time (4 tracks): Six hours using double-play tape.
- Rewind time: Three minutes either direction.
- Recording sense: Quarter, half or full track, standard left to right.
- Loudspeaker: 8 x 6 inch elliptical PM.
- Power output: $2\frac{1}{2}$ watts.
- Power consumption: Six watts record or replay.
- Power supply: 200-250 volts, 50 cycles.
- Inputs: Microphone (2 mV into 10 Megohms); Radio (2 mV into 22,000 ohms); Pick-up (100 mV into 1 Megohm).
- Outputs: To radio or amplifier (500 mV at 22,000 ohms); extension loudspeaker (automatic internal loudspeaker muting; $2\frac{1}{2}$ watts at 3 ohms).
- Recording level indicator: Magic eye.
- Dimensions: $17\frac{1}{2}$ x $14\frac{1}{2}$ x $7\frac{1}{2}$ inches.
- Weight: 16 lb. including microphone, reel of tape and spare spool.
- Manufacturers: **British Radio Corporation Limited, 21 Cavendish Place, Cavendish Square, London, W.1.**

SPECIAL SURVEY: The Midlands

The tape recording centre of Great Britain

IN the second of a new series of articles spotlighting tape activities in various selected areas of Great Britain, "TAPE" takes a look at the Midlands.

If astronaut John Glenn during his orbits around the world had taken a look at the lay-out of the tape recording clubs in this country, his eyes would have been immediately drawn to this Midlands area. It is here that the majority of tape clubs have formed, and there are roughly 16 clubs in the Midlands.

We have been overwhelmed at the wide variety of activities carried out at club meetings. Productions of documentary tapes, social visits between clubs by individual members, social services, drama productions, location recordings, and hosts of other innumerable exercises without a doubt earns the Midlands the title of the tape recording centre of the UK.

There is not space to deal with each of the clubs in this area, and the following groups are offered as a selection.

* * *
Formed early in 1959, the **Birmingham** club, known as B'trac, began with about a dozen members. Over thirty members are now boasted, with average weekly attendance of about 25. Club nights are of a diverse nature, and a visitor is certain to find either a lecture, demonstration, technical talk, discussion or recital included in any night's programme. Activities include a drama group, hospital and welfare services, with some members specialising in outside recording and unusual sound effects. A library of tapes keeps a record of special events, and social occasions, treasure hunts in the summer and parties and dances in the winter, are very much to the fore.

A club journal is in course of production and a competition has been launched to find a suitable cover. Keeness and drive on the part of the committee combined with the support of the members is resulting in steady progress. The enrolment of a number of new members augurs well for 1962.

* * *
The **Chesterfield** club was formed in October 1958 when one or two enthusiasts met over a tankard of beer. During the first year of its life the club met monthly in the showrooms of a local radio and TV dealer. Eventually independence was sought, and they now meet every three weeks in a room over the Yellow Lion Inn.

Membership has remained fairly constant with always the nucleus of permanent members. Meetings average 15 out of a possible twenty members.

Their most ambitious tape was a twenty-minute documentary of Chesterfield's "Crooked Spire" Church, including an interview with the Archdeacon and recordings of the choir, organ and bells. Copies of this tape are held by World Tapes for Education in Oklahoma, and it has been broadcast over a Melbourne Radio Network. Other recordings include the local Girl's High School choir

and orchestra and about fifty discs have been made from the master tape. Individuals provide sound effects, etc., for local drama groups and two members specialise in recording weddings for transfer to disc. Close liaison has been established with the Nottingham club, and the members have also helped a new club formed in New York, and Sheffield.

Most popular recorder is the Vortexion, six being owned, with the Ferrograph a close second.

* * *
A comparative newcomer to the field is the club in **Hinckley**, formed March 1961.

To begin with the 21 members discarded the idea of subscriptions. After a few months, however, they realised the need for regular donations, and as a result lost about half of their membership. One of their first exploits was the start of a hospital service but no co-operation was received from the hospital and this fell through. Their disappointment was shortlived, however, for they then started and have successfully continued to help out at the local Darby and Joan club. Here again a variety of activities are enjoyed and various groups exist within the club.

One member, John Thorpe, is still trying to record video on a domestic recorder although he has had success with the equipment described in *TAPE* last year. Another group is interested in the production of electronic music and is currently constructing Keyed Oscillators, Ring Modulators, etc., and using up yards of splicing tape!

Some members record weddings, parties,

etc., and the most successful group is the hi-fi section which within three months has recruited three more members. A documentary tape on Hinckley is currently being compiled by Edgar Hurley, Donald Hall and Keith Smith with a TK1 and a Clarion.

Their equipment includes a Brenell Mk. 5, three Philips, two Elizabethan Princesses and an FT1, an early Baird machine, two home-made recorders, and a Clarion. In addition 50 per cent of the members own Grundig machines ranging from the TK1 to the TK14.

* * *
The **Kidderminster** club first met on May 8 last year, and since that date they have been established in four different venues meeting on three different nights. They have now settled for alternate Wednesdays at the N.F.U. Meeting Rooms. Their meetings have included technical experiments including stereo, and the presentation of film shows of Yorkshire and Cornwall. Recordings of unusual instruments have also been featured, with the bagpipes being next on the list. Their outside activities have taken in organ recordings in local churches, aid for blind persons, a village fair, and the Land and River Carnival in a nearby town.

Individual interests amongst members takes in trains, brass band, light, folk and church music recordings, 16 mm cine photography, and home construction.

Three Simon SP4 recorders are owned, plus two Philips, two Grundigs, a Ferrograph, Reflectograph, EMI Portable, Stella, and custom-built BSR special.

* * *
Assistance from Mike Brown, secretary of the Rugby society enabled John Buckler and Peter Starrie to call the inaugural meeting of the **Leicester** club in January 1959.

Within a year membership totalled 38 but then dropped to 29 at the end of 1961 when they changed their meeting place to a school two miles from the city centre. Earlier this year they moved back into the city centre and have regained members to a total which now stands at twenty.

Their new rooms at the Leicester Museum provide unlimited scope regarding facilities, and the museum's director has now enrolled. Among their special activities has been the filming of *Club Life* (running time 25 minutes), for which a sound track is now being prepared.

COVER PHOTOGRAPH: Gerd Trauerft talks to a party of Germans who are helping to rebuild Coventry Cathedral.

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This will be shown at the Leicester Co-op's Audio Show later this year. Their visits have included journeys to the BBC studios at Birmingham, to Dudley Zoo, and to Leicester fire station.

Play production is not taken seriously, club members seemingly rather shy at playing parts in the two plays they have attempted. *Cosmic Appetite*, a play written by two club members finished up with the committee members playing all the roles!!!

Individual members have visited clubs at Rugby, Nottingham, Coventry and Hinckley. When the Coventry and Leicester clubs met half way at a public house for a social evening of beer and skittles, Leicester won at skittles although it is not reported who won in the beer stakes. It has now been decided to make this event an annual affair.

Equipment construction is not part of the normal club procedure, but some members have constructed their own equipment. Ferrograph and Telefunken recorders are mostly in evidence regarding mains models, and the most popular battery portable is the Fi-Cord. An EMI portable has recently been added to the list.

* * *

The Nottingham society was inaugurated in 1956 and holds weekly meetings at the educational building of the Nottingham Co-op. Membership has varied between twenty and thirty and average attendance is 12. The club is part of the arts theatre group of the Co-op and the two sections occasionally integrate to provide one another with services such as sound effects for drama productions and interchange of lecturers. Members have visited the Rugby, Northampton, Leicester and Chesterfield clubs, and originated the idea of circulating Christmas greetings on tape to neighbouring clubs. They have also participated in a Round Robin tape with other Midland clubs.

Practical experience is included in their programmes, one of their first efforts being the construction of a simple mixing unit. The equipment available from club members varies from a distribution board to a Ferrograph.

The club issues a monthly magazine in the form of a calendar which includes a miscellany of material collected and implemented in a programme focusing *The Month*. For this club also the greatest difficulty is in getting manufacturers to provide suitable demonstrations and technical lectures.

* * *

In January 1958, Mike Brown purchased a tape recorder and shortly afterwards saw a copy of *Tape* on the book-stall. As a result he was introduced to World Tape Pals which he joined, to

(Continued on page 31)



Some of the members of the Coventry club who read the first edition of the "Shire and Spire" newspaper in sound. Back row, left to right: Peter Warden, M. V. Payne, Ron Walker, Henry Hopfinger, Roy Reynolds, Stan Day, K. Twitty. Front row, left to right: C. Lucas, W. S. Harris, Mrs. J. Walker, Roy Penfold, Tom Bagley and Les Skingley

A newspaper in sound

WHEN Henry Hopfinger, photographer, and member of the Coventry Tape Recording Club first thought of helping the blind people of Coventry, he could have had no idea of the reception his suggestion would get.

The Bishop of Coventry publishes a monthly newspaper, and Mr. Hopfinger's intention was to read on to tape each issue of the *Shire and Spire* for the benefit of those unable to read it themselves. There are almost 600 such persons in the diocese, and his task loomed before him seemingly unanswerable.

Undaunted, however, he rallied his fellow club members and they soon worked out a system to read, record, and distribute the tapes.

Some of the blind persons do not own their own tape equipment, and in these cases the club members offered to take along their own recorders. Quickly the enthusiasm for the task gripped the other members.

A news item appeared in the *Shire and Spire*, and other local newspapers took the story up. This started a chain reaction that left Mr. Hopfinger and his fellow stalwarts nonplussed. Letters started arriving from other enthusiasts in the city, and soon a team of twenty readers, recording engineers and distribution agents was formed. Such was the news value that *Shire and Spire* published a double-page spread of photographs showing the team at work.

The result was further letters of offers of help, plus requests from blind persons to be included in the scheme. More news was published asking for volunteers, and again help, plus re-

quests for tapes, swelled the mail box. The husband of a blind lady writing for the tapes, also offered his help to send out tapes, and so the scheme multiplied.

In the Christmas Eve BBC *Sound* programme Mr. Hopfinger, in an interview with the Editor of *Tape*, outlined his scheme and later, still further requests arrived.

One of the snags encountered was to get suitable readers. Many people, able to recognise and understand long words when reading aloud, stumble over the pronunciation. Others read perfectly well, and then suddenly stop in their tracks, gripped by a form of stage fright. He requires persons used to reading in front of a microphone without being conscious of its presence, and able to read fluently without much rehearsal. He is now appealing to local amateur dramatic societies to undertake the readings each month, leaving the club members free to look after the technical side.

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TAPE RECORDS REVIEWED

NOT many of today's pre-recorded tapes, particularly in the pop field, are newly made. I was pleasantly surprised to receive two tapes that were this month.

The most interesting genealogy belongs to a **Music on Tape** issue, *Tea and Trumpet* by the Harold Geller Orchestra (CR 243 or CR 287). Recorded by a British group, most of the titles are the work (often with a collaborator) of an American songwriter, Frank Stanton.

He wrote the theme music of the Bob Cummings television show and had a major hit some years ago when Rose Murphy recorded his *Busy Line*.

Married to a Britisher, he spends a lot of time here. At present he is on an extended stay in this country and has been producing a lot of sessions for his US disc company, Caprice.

Tea and Trumpet; the result of some of them, was recorded in London last autumn and has been issued here before America.

Mr. Harold Geller is a well-known figure on the British scene. He is one of the leaders who provide a cheerful start to the day by the Light Programme on Friday morning. He also wrote the music for two British films, *Fury at Smuggler's Bay* and *Jungle Street*, last year. His most famous composition is probably *Green Cockatoo*, which became a world-wide success.

On this record, Geller helms an interesting instrumental group, with several features for a Calvert-type trumpet soloist.

Some of Stanton's songs are given a very spirited treatment by an excellent singer, Rosemary June, with the assistance of Hugo Montenegro's orchestra and chorus.

Recorded for Caprice in New York some years ago they are now issued here as *Introducing Rosemary June* by MOT (CR143 or CR187). Now the leading singer of jingles in America, she has had hit parade success in Britain—with *Apple Blossom Time* on Pye-International in 1959 when on leave from her then regular job with the Ray Charles Singers on the "Perry Como Show."

Another of MOT's collection of singles once issued by Rank Records is *Presenting Sheila Buxton* (TR223 or TR387). It starts well with *All I do is Dream of You*; but the rest of the material is not worthy of one of Britain's very best singers. However, it is one of the very few records of Miss Buxton available.

MORE up to date in recording, though perhaps not in composition, is a **World Record Club** tape issue *The Peaceful Side of Jazz* (TT 128).

Quite the best record of the batch, it features Duke Ellington's long-time arranger-collaborator Billy Strayhorn

in a piano selection of ten of his compositions (some jointly with Ellington).

They range from the over-familiar *Take the A-Train* to the less well-known *Day Dream* and *Passion Flower*. All have an air of Ellingtonia about them despite the entirely quiet mood. It was recorded in France last May with local musicians in support while Strayhorn was there assisting production of the *Paris Blues* film.

After enthusing, in November, over *Saga's* Caesar Giovanni's *Silk Satins and Strings* I looked forward to *Caesar Plays at two Steinway Pianofortes* (STG8054). It turned out to be a disappointing collection of tinkly piano solos.

DON WEDGE

* * *

FOLLOWING the success of their two previous theatre organ tapes—*Echoes of Christmas* by Lenny Rawle and *Sentimental Journey* by Jackie Brown—Esoteric have made a fast move in following up with four more organ tapes. Issued under the **Tape of the Month Club** label, the four tapes are recorded monaurally at 3½ ips, half-track, and sell at 27s. 6d.

Mr. Brown's new tape, *Intermission*, captures the real spirit of a cinema organ recital, largely because it was recorded with an audience in the theatre. On this four manual sixteen rank Wurlitzer he plays extremely well, and the audience reaction lends atmosphere to the recital.

The titles include: *John Brown's Body*; *So In Love*; *The Folks who Live on the Hill*; and *I'm Forever Blowing Bubbles*.

His second tape is entitled *I Love*. This time he is at the console of the four manual sixteen rank Wurlitzer in the Gaumont State, Kilburn. Although the recording was made without an audience, the magic of the theatre remains as the organist plays his own very fine arrangements of famous popular songs. *Sweet and Lonely*; *Because I Love You*; *Always Guilty*; *I Don't Know Why*; *Moonlight on the Ganges*; *Brazil*; *Granada*; and *The Song is You* are included among the titles.

Lenny Rawle takes to the console of the 4-16 Wurlitzer for his musical journey through the USA in his *Lenny Takes the States*. This talented young organist makes good use of the powerful pipe organ, and his selection of tunes associated with America cover many years in the history of popular music. The organ sounds wonderful on this recording. Titles include: *Lullaby of Broadway*; *Manhattan*; *Chattanooga Choo-choo*; *California, Here I Come*; and *Carolina Moon*.

Jack Helyer conjures up some musical memories on his recording *Jack Helyer at the Console*. Jack was resident organist at the Nottingham Odeon from 1934 (then known as the Ritz) to 1950.

(Continued on page 38)

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LETTERS TO THE EDITOR

COPYRIGHT: *The law as it stands*

IN the chapter entitled "Copyright Problems" in the 1961-62 Tape Recording Year Book there are statements on both law and policy. Although in matters of policy the differences between the Society and the Federation of Tape Recording Clubs appear to be fundamental, we would like to make it clear at the outset that the purpose of this particular letter is not to criticise any statements which the author of the article made as to policy, but to point out that while the article expressly states that one should know the law as it stands, it does not succeed in presenting the law with the degree of accuracy which readers of *TAPE Recording Magazine* are entitled to expect.

For example, had the author read Section 2(3) of the Copyright Act, 1956, he would not have said that the copyright in a work created more than fifty years ago "would have expired". Section 2(3) clearly states that the copyright subsisting in a work by virtue of that Section shall continue to subsist until the end of the period of fifty years from the end of the calendar year in which the author died. Copyright in a literary, dramatic or musical work can, therefore, quite easily subsist for as much as one hundred years from the date of its creation.

To make a statement such as "There is a copyright in the performing right of a work" is to fail to understand the very nature of copyright protection. Section 2(5) (c) of the Act lists "performing the work in public" as an act restricted by the copyright in a literary, dramatic or musical work; what is commonly called the performing right is, therefore, a part of copyright and not the subject of it. There is, incidentally, a performing right in sound recordings (and to some extent in television broadcasts) as well as in literary, dramatic and musical works.

The author of the article contradicts himself on the question of the recordings of a musical work. He points out, quite rightly, that the BBC has issued a helpful statement indicating, among other things that before a musical work may be recorded, permission must be obtained from the copyright owner. We certainly have no quarrel with that.

It is surprising, therefore, that he goes on to say that we made it clear early in 1959 that, in our view, copyright would be infringed if music was recorded from the radio without licence from the copyright owners; this statement, contrary to what was said by the author himself early in the article, implies that this restriction may merely be the opinion of this Society. We can only reply that Section 2(5) (a) of the Act makes it quite clear that this restriction is the law of the land.

Although, as you know, this Society would never consent to a policy which deprives the composer of his just rights in the works he has created, whatever interests might oppose those rights, we have often noticed the fairness with which *TAPE Recording Magazine* has

published comments, including our own, with which it does not necessarily agree. That is why we are very surprised to find that the Year Book contains an article on an important and complex matter, containing mistakes based not so much on misinterpretation of the law as an apparent failure to study it with necessary care.

If we may give an additional example of this failure, the Dramatic and Musical Performers' Protection Act, 1925 has now been superceded by an Act bearing the same title and dated 1958.

B. DINNING,
Mechanical-Copyright Protection Society Ltd.

EDITOR'S NOTE.—*The fifty years' copyright protection operates, of course, as stated by Mr. Dinning and the Act of 1925 has been replaced by a later, similar measure. We regret these errors.*

Mr. Dinning's other points arise from our attempt to express the law, which is extremely complicated, in a style that would be easily comprehensible to the layman. We hope that the exposition above clarifies the situation for our readers.

Recommendations : Francis ; Ferrograph ; R.E.W. and Robuk

I WOULD like to put on record the help and satisfaction given to me by Francis of Streatham. I recently purchased a Ferrograph 4A/N from them and received prompt replies to all the necessary correspondence during the purchase. When I received the model I discovered a fault with one of the idler wheels. I phoned Mr. Francis and he immediately put a replacement part in the post free of charge and I was able to correct the simple fault myself. I can definitely state that anyone contacting with this dealer will get service with a smile and above all, satisfaction guaranteed.

Other admirable service was received from Robuk Electrical Industries. My next door neighbour has since purchased the Robuk RK3 on my recommendation and was also exceptionally pleased with the service received.

I would also like to pay tribute to British Ferrograph. A spool ordered from them came loose in transit and was damaged. I returned it, and a replacement was received by return post completely free of charge.

M. D. ROBINSON,
Kingswinford, Staffs.

REFERRING to *Tape Talk's* dealer service search, I have dealt with R. E. W. Earlsfield for some time and have been completely satisfied. Mr. Murray, the "Guy," is very helpful and has given me quite a lot of advice.

EDWIN SEADEN,
Tooting, London, S.W.17.

CONGRATULATIONS on your new lay-out. It is a great improvement, and certainly lives up to the name of the finest recording periodical on the market. I am only sorry that it cannot still appear twice monthly.

THOMAS SUTTON.

Hall Green, Birmingham.

I MUST praise the work that goes into *TAPE*, the best monthly book published for recorder users. Now I have to wait longer for each issue, but it is well worth it, the information contained is worth its weight in gold. Please keep up the good work and keep *TAPE* the finest ever printed. I was expecting the price to go up, but no, instead we get bigger and better value.

I believe Jeeves' cartoons are very funny, how does he do it? I spilled a cup of tea when I saw the February issue.

B. SPARKES.

Newport, Monmouthshire.

WITH the demise of the successful *Tape Recording Fortnightly*, I should like to pay a tribute to it.

Once upon a time I used to subscribe to two other tape magazines but was introduced to yours by accident. I have taken it ever since.

I am a mere amateur tape bloke but your publication has increased my enjoyment in this sphere by a tremendous amount. In fact, I bought a new tape machine purely on your technical report and it has worked well and true since last March.

Some of your items are far too technical for me but by reading them I get some idea of what is happening and to uplift any standard seems to me to be a worthwhile project. I shall miss the fortnightly appearance but I look forward to the future issues with confidence. I am sure that they will contain everything that is relevant to tape recording and its associated relations.

S. BRIANT.

Brixham, Devon.

I AM in receipt of the Christmas edition of *Tape Recording Fortnightly*. I am sorry to learn, however, that you intend to begin publishing monthly once more. I looked forward to every alternate Wednesday with eager interest, it now seems that I shall have to wait a little longer. And that grieves me greatly.

Nevertheless, I am confident that you will continue to give the tape enthusiast the service he has always received through your excellent magazine.

R. F. DREW,

Secretary, Kidderminster and District Tape Recording Society.

I should like to take the opportunity of telling you how much I enjoy your magazine—easily the best in the field...

R. WATERFIELD,

Solihull, Warwickshire.

Tape recording in the Midlands (Continued from page 27)

eventually meet Brian Race of the Warwick and Leamington club. With another Rugby person listed in the WTP roster, Alec Lovett, he then set-to to form the Rugby club and the first meeting was held in June 1958.

Membership has varied between an initial 29, up to 53 in May 1961 and back down to 45 where it stands at present. They are strong believers in the value of inter-club visits, and have visited and received visits from Coventry, Warwick, Leicester, Hinckley, Northampton, Nottingham and Kettering. Individuals have also visited Bournemouth and York. Tape exchanges with these clubs are also a regular feature of meetings.

Among equipment constructed for the club are a plug board and a mixer unit, both by Peter Scott. As a result of a raffle, a club tape recorder, a Magnavox three-speed mains machine, was purchased entirely from funds.

Their special activities include hospital and homes services, play production, language learning, technical group, and special recordings. They also have a library of tape recordings, books, data and blank tapes.

They have provided sound effects for the Girl Guides' Jubilee celebrations, recorded aircraft at Elmdon Airport, and each Christmas have taped the annual Carol Service at the Rugby hospital of St. Cross.

A treasure hunt, two early-morning attempts to record the "Dawn Chorus," numerous weddings, visits to the Birmingham ATV and BBC studios, local printing works and telephone exchange, fire station, radio station and the Midlands railway stations have also featured.

* * *

The South Birmingham club was first formed by a group of seven in February last year. Membership is now at 28 with average attendance around the 15 mark. They have held competitions, quizzes, lectures and demonstrations from within the club, and have started a service of helping to supply tapes to the Birmingham Hospital Broadcasting Association.

Inter-club visits with the Coventry, Warwick and Birmingham clubs have also taken place and the members were recently presented with a demonstration of a home-built stereo recorded by T. Gilbert of Warwick.

* * *

Through a notice in *TAPE* and in the window of a local retailers six people arrived at the opening night of the Walsall club in October 1960. This membership has now reached 28 with an average attendance of 80 per cent.

Outstanding among tape clubs, they are honoured by the Presidency of Jack Jackson the humorous disc-jockey.

Talks and demonstrations are also in abundance at their meetings. In the past they have included building a simple mixer, basic recording techniques, editing, stereo, and two tape slide shows.



Two of the typical clubs in the Midlands. Top photograph shows members of the Walsall club, who apparently have a deficiency of female members. Perhaps there are more in the remaining fifty per cent membership who were not present for the photographer

Below: The Kidderminster line-up, with just a selection of the tape recorders owned by members. Once again, there are no prizes for recognising the various models, although full marks to anyone who can see a copy of "TAPE"



Surely amongst the minority when it comes to having demonstrations, for they have yet to call in the services of an outsider. They believe in calling upon their own members for their entertainment. One of their members is very good at script writing once given a theme, and they have acted two plays and a pantomime written by him.

Among their visits have been the Warner's Audio Studios at Wolverhampton, Coventry club (plus a return visit), a local organist's home, a car treasure hunt, and to the Herbert Art Gallery in Coventry for a lecture on Electronic Music.

* * *

Perhaps one of the most encouraging beginnings of a tape recording club was experienced by that in Warwick. About forty men and a woman were present in February 1958 following an announcement in the local press. The membership moved to different rooms in Warwick and gradually acquired a stable membership of about thirty with average attendance at twenty.

With half of these resident in Leamington, it was decided in 1959 to meet in the Leamington Town Hall where they still congregate on the first and third Wednesdays in each month. Of the original total only six members have persevered throughout the club's history. Attendances now range from 16 to 25, depending on the programme.

Tape slide shows, in good supply, always draw good attendances but many

of the members are very keen to get technical and practical instruction. The club is unique among many in that all are pure amateurs as far as tape recording is concerned.

Local dealers will sometimes provide a programme but on the whole seem not to be interested in the club and no dealers are members. They have four blind members and three members who are patients in hospital.

Although group tape exchanges are rare, many individuals continue this form of recording. A hospital message scheme was run for a while in co-operation with the local League of Friends but this proved a bit expensive and gradually fizzled out.

Among recorders owned are five portables, four Philips and a Fi-Cord. The most popular machines seems to be the Philips with others owned including two Grundigs, two Ferrographs and an old Scophony Baird.

The substance of a tape recording is of more importance to most members than the hi-fi quality. Several prefer to make live recordings but a few depend on the quality recording obtainable from VHF or disc. They have many 35 mm enthusiasts and three cine enthusiasts.

As with the majority of clubs the professions from which members are drawn are varied and interesting. The Warwick club list includes a factory director, an undertaker, an organist, postman, government officials, teachers, clerks, a travel agent, a journalist, an antique dealer and a housewife.

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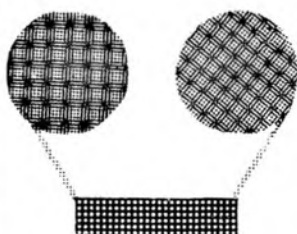
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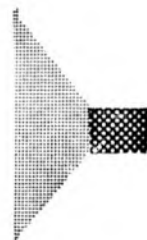
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NEW PRODUCTS



LATEST WYNSOR MODEL

FULL specifications of the new WyndSOR four-track recorder first announced in our January issue are now available, and suggest a trend to upright styling in tape recorders.

Their new model, the International, has a reduced base area and increased height, the dimensions being $19 \times 15\frac{1}{2} \times 10\frac{1}{2}$ inches. As a result of the vertical build, providing a minimal working area, and an efficient form of ventilation, they have also managed to incorporate an 8 inch round loudspeaker unit, which provides an output of 3 watts.

Two speeds are available, $7\frac{1}{2}$ and $3\frac{1}{2}$ ips, on the modified Truvox deck. The quoted frequency response is 40-20,000 ± 3 dB at the top speed, and 40-16,000 cps at $3\frac{1}{2}$ ips. Wow and flutter is given as better than 0.15 per cent at $7\frac{1}{2}$ ips, and better than 0.2 per cent at $3\frac{1}{2}$ ips, and signal-to-noise as better than -50 dB.

The International will accommodate 7-inch spools, providing a playing time of 96 minutes per track using 1,800 ft. of double-play tape. Rewind for this length is accomplished within 90 minutes.

Apart from the vertical styling, numerous other features are incorporated. These include a meter recording level indicator illuminated red for "record" and green for "playback," separate bass and treble controls, pause control, facilities for loudspeaker



monitoring, digital rev. counter, locking nuts for the spools, and provision for straight-through amplification with the response flat ± 2 dB from 40-20,000 cps.

Three inputs are provided, low and high impedance for microphone, and radio/pick-up. Mixing facilities are provided for the first or second with the third input. Three outputs are provided plus a stereo output.

On either side of the deck are vertical storage cabinets to accommodate the ribbon microphone, tape, spare spools, and leads. The price is 75 guineas including microphone, and 69 guineas without.

WyndSOR Recording Co., Ltd., 2 Bellevue Road, Friern Barnet, London, N.11.

Single speed machine—25 guineas

RADIO AND ALLIED INDUSTRIES LIMITED announce their entry into the tape field with a new single-speed recorder, the Sobell Festival.

This 25-guinea recorder has an unusual design giving a tapered top which emphasises its briefcase portability feature.

Tape deck specifications include maximum spool size of $5\frac{1}{2}$ inches providing a total playing time of 3 hours using double-play tape, automatic interlock to prevent accidental erasure, and simple one-knob operation.

Audio performance with frequency compensated amplifiers is said to be 60-8,000 cps, and the power output is rated at $2\frac{1}{2}$ watts into a $7 \times 3\frac{1}{2}$ inch elliptical loudspeaker.

Other features include volume control operative on record and playback, extension loudspeaker sockets with automatically muted internal speaker, two neon lamps indicating recording level and on/off, and inputs for microphone, radio/pick-up.

Accessories supplied include 600 feet of standard tape, spare spool, crystal microphone, mains lead, recording leads, and a phone-type plug.

The two-tone blue-grey leathercloth



case is edged with "satin brass" plastic trim and has storage space for microphone, spare spool and leads. The dimensions are $14 \times 14 \times 6\frac{1}{2}$ inches and the weight is 18 lb.

Radio and Allied Industries Limited, Langley Park, Slough, Buckinghamshire.

GRUNDIG INCREASE RANGE

A FOUR-TRACK three-speed tape recorder incorporating a host of features is the latest addition to the Grundig range.

Described as being designed to semi-professional standards, their latest model—the TK40—is the second of the new Grundig style models. It has a quoted



The New Grundig TK40

frequency response of 60-18,000 cps ± 3 dB at 7½ ips; 60-15,000 cps ± 3 dB at 3¾ ips; and 60-9,000 cps ± 3 dB at 1¾ ips. Wow and flutter figures for these respective speeds are better than 0.1 per cent, 0.12 per cent, and 0.2 per cent. The signal-to-noise ratio is given as better than 50dB at 7½ ips, and 45dB at the remaining speeds.

Controlled by simple piano push key buttons, the TK40 includes among its features facilities for synchronised superimposition; mixing; inputs for microphone, radio, and pick-up; output sockets for extension loudspeaker, monitor amplifier for synchronised recording, extension amplifier, and for magnetic heads fitted to cine projectors. It also features a digital rev. counter, neon recording level indicator, pause control, auto-stop, and tone control. Provision

is also made for inching the tape forward or backward past the heads.

Multi-disc clutches are incorporated to ensure smooth tape start, and the model also features a retractable tape cleaner to facilitate removal of dust and other foreign bodies from the tape.

Maximum spool size is 7 inches with the lid removed. This provides a playing time of 4¼ hours per track using double-play tape. With the lid in position the largest spool to be accommodated is 5½ inches. A 6 x 4 inch ceramic magnet loudspeaker is employed, providing an output of 2½ watts. The microphone is the GDM18 moving coil.

Dimensions are 16½ x 15 x 7½ inches, and it weighs 27½ lb. The price is 75 guineas.

Grundig (Great Britain) Limited, 39-41, New Oxford Street, London, W.C.1.

JAPANESE RECORDER

ONE of the cheapest transistorised tape recorders on the market, the Japanese-made Petcorder, Model TRT-41, is now available from Connevans Ltd, the sole distributors in the UK.

Priced at 12 guineas, it is suitable for use by teenagers, and its size, it weighs only 2½ lb., makes it useful as a dictation memo book.

A four-transistor circuit with push-pull amplifier is incorporated, and the output is rated at 200 mW through the 2.2-inch loudspeaker. Battery line-up includes U11 for the motor and PP3 for the amplifier. The recording system employed is twin-track with DC bias.

Playing time is twenty minutes using long-play tape. Sold complete with microphone, earphone, reel of tape and spare spool, batteries and carrying strap. The Petcorder measures 7½ x 5½ x 2¼ inches. Spares are available.

Connevans Limited, High Street, Wimbledon Common, London, S.W.19.

NEWS FROM THE TRADE

GRUNDIG (GREAT BRITAIN) LIMITED announce the appointment of Mr. P. G. Moger as Manager of their Service Department in place of Mr. D. Smith.

Mr. Moger has been a member of the Grundig staff for six years. Starting on the test benches he transferred to the Technical Department where he finally became assistant to Grundig's Chief Engineer, Mr. H. Spring. Before joining Grundig, Mr. Moger served with the RAF where he was engaged in Technical Research on Radar Development.

Mr. Smith, together with Mr. A. Whelan, has left to form his own company.

MR. V. L. GRIMOLDBY, Manager of the Pamphonic Special Systems Division, has been appointed Marketing Manager. He will be responsible for the Sales Administration of the five Pam-

phonic Divisions for Natural Sound, including the Recorder Division which manufactures the Reflectograph tape recorder.

RCA Great Britain Limited announce the appointment of G. J. Graham-Browne as executive in charge of their ¼-inch Magnetic Tape Sales. Mr. Graham-Browne served in the R.A.F. as aircrew during the Second World War and subsequently became very well known in the studios and in the film trade as sales director of Cinecolor (G.B.) Ltd. and Radiantcolour Laboratories from 1946-1957.

TELLUX LIMITED announce the appointment of Mr. F. W. Turner as Sales Director, as the first step in the development and expansion of the company's activities in the home market, importing and sole distributors in the UK of the Sony tape recorders.

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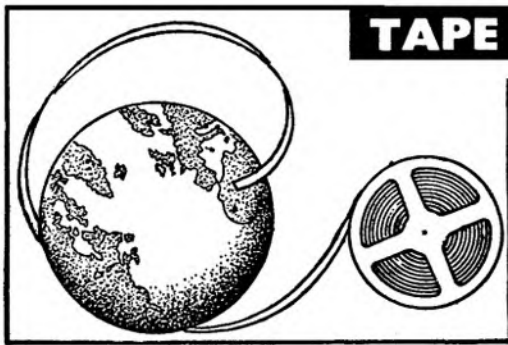
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TAPE EXCHANGES

Tape goes round the world! There is no comparable means—except costly travel—to form friendships with men and women in other countries and continents. Every month, in this feature, we list enthusiasts who are seeking tape contacts.

Adamson, John F. (31). 4, Lenton House, 42, Kesteven Road, Holme Wood, Bradford, Yorkshire, 35mm photography, cycling. 3½ ips, 7-inch spools. Cossor CR1602, 4-track. USA and Australia.

Aron, D. 334, Lordswood Road, Harborne, Birmingham 17. Philately, chess, swimming, gardening. 3½ ips, 5½-inch spools. Grundig TK14.

Atkins, R. (40). 16, Highfield, Meridan, Near Coventry, Warwickshire. Location recording, stereo, archery, gardening, music. 15, 7½, 3½, 1½ ips. 8½-inch spools. Brenell, Countess, Stella, Elizabethan. UK female contacts required.

Bates, Ken. (20). 42, West Side, Clapham Common, London, S.W.4. Automobiles, 7½, 3½, 1 ips. 7-inch spools. Sound "Bermuda." French-speaking contacts required.

Beaton, Royston, F. (34). 109, Westbury Lane, Sea Mills, Bristol. General interests. 15, 7½, 3½, 1½ ips. 7-inch spools. Brenell Mk. 5. Overseas preferred.

Bird, Dick (27). 76, Elmbridge Lane, Woking, Surrey. Motoring, open air sports, films. 7½, 3½ ips. 7-inch spools. "Sound" recorder.

Blaydon, Eric R. (44). 95, Sandgate Road, Hall Green, Birmingham 28. Photography, camping, motoring, reading. 3½, 1½ ips. 5-inch spools. Butoba portable, France (French spoken).

Blakeley, Jim (40). 10, Kenn Road, Clevedon, Somerset. 8mm cine, 35 and 2½-inch photography, all music, travel. 3½ ips. 5½-inch spools. Grundig TK20, and 24, and Kolster-Brandt TR20. Letters not needed.

Blaxland, John (44). 30, Victoria Road, Shoreham-by-Sea, Sussex. Colour photography, music, painting. 3½ ips. Message tapes preferred. Ferrograph, Victor, Fi-cord.

Burridge, David (26). Unit Accounts, RAF High Wycombe, Buckinghamshire. Scouting. 7½, 3½, 1½ ips. 7-inch spools. Reps R10, 4-track. English-speaking only.

Carrier, Laurence (30). 47, Green Street, Eastbourne, Sussex. Hi-fi, motoring, music. 15, 7½, 3½ ips.

Charman, Arthur (22). 2, Ridge Cottages, Mid Street, South Nutfield, Surrey. Motor-cycling, electronics. All speeds. 7-inch spools. Home-built Studio deck.

Diamon, Miss Sue E. (18). 31, Clifton Road, Heaton Moor, Stockport, Cheshire. Riding and show-jumping, car racing, travel. 3½ ips. 5½-inch spools. Grundig TK20.

Eastoe, Harry, G. (38). 28, Mickleham Way, New Addington, Surrey. Home-built hi-fi, tropical fish and reptiles. 15, 7½, 3½, 1½ ips. 7-inch spools. Stella ST455, 4-track, Wyndor 2-track.

Eddie, Perry (28). 88, King Edwards Road, Hackney, London, E.9. Spanish dancing, bull-fighting, Flamenco guitar, 8mm cine, 7½, 3½ ips. 7-inch spools. RGD Mk. 103.

Geller, G. B. (32). 63, Lancaster Road, Leytonstone, London, E.11. Films, dancing, general interests. 3½ ips. 7-inch spools. Philips 3541, 4-track.

Hoath, A. E. (63). 77, Plumer Road, High Wycombe, Buckinghamshire. Light classical and orchestral music. 3½ ips. 5½-inch spools. Grundig TK14.

Huddle, Bert (36). 1, St. Saviour's Crescent, St. Heller, Jersey, Channel Islands. Salvationist Bandsman. 7½, 3½, 1½ ips. 7-inch spools. Cossor 4-track.

Judd, W. A. (Bill) (48). 1, Jeremy Grove, Jolihull, Warwickshire. Do-it-yourself, motoring. 7½, 3½, 1½ ips. 3½-inch spools. Stellaphone ST445, Countess TR60. Commonwealth and USA. Letters not needed.

Lansbury, Basil (41). 6, Granville Road, Hillingdon, Middlesex. Pin-up photography, travel, cars, organ, most music. 7½, 3½, 1½ ips. 7-inch spools. Vogue (Studio deck). UK, Europe, Canada, USA.

Lockie, Miss Fiona (29). 4, Maryfield Place, Bonnyrigg, Midlothian, Scotland. Reading, music, swimming, pottery. 3½ ips. 3-inch spools. Philips. Scotland first preference.

MacArthur, Dugald (36). 3, Henderson Road, Troon, Ayrshire, Scotland. Electronics, biology, Scandinavian languages. 15, 7½, 3½ ips. 7-inch spools. Collaro Tape Transcriber and home-built amplifier. Scandinavia, particularly Sweden.

Mackenzie, Harry (37). 29, Polwarth Gardens, Hyndland, Glasgow, W.2, Scotland. Ice-hockey, writing, music (not Trad). 7½, 3½ ips. 8½-inch spools. Brenell Mk. 5, and Mk. 5 Type M.

Mason, Frank (36). 1, St. Barnabas Street, Blackburn, Lancashire. Music shows, amateur theatre, opera. 3½ ips. 7-inch spools. Carousel. USA if possible.

Meyer, Hans-Jürgen (20). 85, Hoferhofstrasse, 4, Dusseldorf-N, Germany. Photography, all music, general interests. 3½ ips. 7-inch spools. Philips EL3515, RK30. England and America.

Ollier, Reginald (42). 30, Crawley Avenue, Hebburn-on-Tyne, Co. Durham. Photography, music, travel, gardening. 3½ ips. 5½-inch spools. Grundig TK1 and TK20.

Pickering, Charles (38). 56, Conifer Road, Coxford, Southampton, Hampshire. General interests. 7½, 3½, 1½ ips. 7-inch spools. Philips EL3536.

Preston, Reg. (51). 4, Queen's Road, Maidstone, Kent. Electronic organ, sound effects, light music, 8mm slides. 7½, 3½, 1½ ips. 7-inch spools. Brenell 3-star, Elizabethan Essex, Knightbrider.

Price, E. (36). 123, Vicarage Road, Blackrock, Near Chorley, Lancashire. Radio, "pop" music, dancing, football.

Redgrave, Clive (23). 40, Marston Street, Ifley Road, Oxford. Theatre, horse-riding, cinema. 7½, 3½ ips. 8½-inch spools. Ferrograph 4A/N. Female contacts preferred.

Richardson, William S. (43). "C" Flat, Avonmore Mansions, Avonmore Road, London, W.14. Fromology and similar collecting hobbies. 7½, 3½, 1½ ips. 7-inch spools.

Rigby, Frank G. (50). 31, Coalpool Lane, Rye-croft, Walsall, G. and S. music, general interests. 7½, 3½ ips. 7-inch spools. Cossor CR1601, 4-track.

Riggall, John (38). 7, Purley Avenue, Cirencester, Gloucestershire. Amateur reviews and pantos, costume and masks, photography. 7½, 3½ ips. 7-inch spools. Ferrograph 4A/N. Males and UK preferred.

Roberts, G. F. (55). 246, Tufnell Park Road, London, N.19. Stories of famous London Institutions. 3½ ips. 7-inch spools Vogue, 2-track. USA, Australia.

Robinson, Keith (31). 33, Myrtle Avenue, King's Heath, Birmingham 14. Current affairs, people, music, films, TV, photography. 7½, 3½, 1½ ips. 7-inch spools.

Stampton, W. C. (42). 67, Park Place, Gravesend, Kent. General interests, light show and jazz music. 3½, 1½ ips. 5½-inch spools. Telefunken 75-15, 2-track. USA, Australia.

Stothard, David, S. (21). 79, Houses Hill, Kirkheaton, Huddersfield, Yorkshire. Motor-racing, target shooting. 3½ ips. 5½-inch spools. Fidelity Major, Sweden and Denmark.

Strong, Brian D. (23). C/o Station 22a, Palmerston, New Zealand. Sound effects, documentaries, satirical humour, "pop" Flamenco, Latin-American, and folk music. 15, 7½, 3½, 1½, 7-inch spools. Sony 521 Stereorecorder, 2- or 4-track, M.R.I. (local make). Ampex (full track).

Unger, Fil, Lt. C. (37). R.C.A.F., c/o 70 Rte. de Sarrebruck, Metz, Moselle, France. Classical music, general topics. 7½, 3½, 1½ ips. 7-inch spools. Philips EL3526. No letter required.

FAMILY EXCHANGES

Dengate, Roy and Audrey (32). 77, Marine Parade, Tankerton, Kent. 8mm cine, modern dancing. 7½, 3½, 1½ ips. 7-inch spools. Robuk RK3 and BSR mono deck with own-built amplifier. No letters needed.

Edge, Mrs. Connie (29). Station House, Whalley, Blackburn, Lancashire. Amateur dramatics, bride. 3½ ips. 5½-inch spools. Housewives anywhere.

Gilbert, Mr. & Mrs. R. W. (30). 11, Ashurst Road, Cosham, Portsmouth, Hampshire. Classical music, photography, cooking. 7½, 3½, 1½ ips. 7-inch spools. Collaro Studio and home-built Mullard 3w amplifier. Family exchanges anywhere.

O'Callaghan, Dennis (23). N. Hartley Street, West Covina, California, USA. Import/export in Commerce, transportation. 7½, 3½ ips. Message spools only. Requires contacts with similar interests in UK.

Standfield, G. E. (24). 35, Lorne Road, Dorchester, Dorset. Theatre, records, TV. 3½ ips. 5½-inch spools. Grundig TK14. English-speaking family contacts abroad required.

Small, Mike (33) and **John Miller** (34). 19, Deacon Road, Kinson, Bournemouth, Dorset. Photography, chess, philately, motoring, all music. 7½, 3½, 1½ ips. 7-inch spools. Two Philips, Civic. Carousel. Wives to join in family chatter.

TEENAGE EXCHANGES

Barnes, Norman (18). 19, Mount Road, New Malden, Surrey. Classical music, Modern jazz, electronics, chess. 15, 7½, 3½, 1½ ips. 8½-inch spools. Brenell Mk. 5, 2-track.

Binch, Carol (15). 22, Lindum Avenue, Old Trafford, Manchester 16. Trad. jazz, art, horses and ponies. 7½, 3½ ips. 8½-inch spools. Two Ferrograph 4A/N.

Bransom, Paul (15). 73, New Park Drive, Hemel Hempstead, Herts. Guitar, all music. 1½ ips. 4-inch spools. Stellaphone 470. American contacts required.

Ellis, Keith (18). 30, Walker Street, Hoole, Chester. Sound effects, light classical, rock, and Modern jazz. 3½ ips. 7-inch spools. Philips 4-track.

Hume, Ian (18). 47, Nigel Avenue, Birmingham. 31, 8 and 35mm photography, most music, canals. 7½, 3½, 1½ ips. 7-inch spools. Philips EL3542. USA and Continent preferred, English-speaking only.

Mazumdar, Miss Mishru (18). New End Hospital, Hampstead, London, N.W.3. Arts and crafts, reading, music. 3½ ips. 5½-inch spools. Grundig TK14.

Risley, Michael (19). 24, Wensley Avenue, Fleetwood, Lancashire. Art, music in general. hi-fi. 3½ ips. 7-inch spools. Philips 4-track. New Zealand and America.

Taskis, Charles, B. (17). 281, Victoria Road, St. Budeaux, Plymouth, Devon, Scouting, Trad, jazz, campanology, chess. 3½ ips. 5-inch spools. Philips EL3527/54. USA preferred.

Weller, Ian Robin (18). 4, Berthon Gardens, London, E.17. Hi-fi equipment construction, records, ballroom dancing. 3½ ips. 5-inch spools. Philips AG8107. Female contacts in UK preferred.

Woyth, Wolfgang (17). Cologne-Lindenthal, Dutener 59, Germany. Languages, travel, general interests. 3½, 1½ ips. 5½-inch spools. Grundig TK28, 2-and 4-track. Speaks English, French and German.

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

Name Age

Address
(BLOCK LETTERS PLEASE)

Other interests

Speeds to be used Maximum spool size

Recorder owned

Special areas to be contacted

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



BRIXTON

A colour slide show with tape commentary was the main event of a recent meeting of the Brixton club. Albert Porter and Australian Dale Griffiths provided the slides which transported members in turn to the Highlands of Scotland, sunny Italy, say Paris, the beautiful bulb fields of Holland, and then back to London aglow with Christmas lights and snow.

Earlier the club had completed a session recording sound effects for a play. This exercise was carried out at the request of Charles Standen who required material for his *Tape Magazine for the Blind*. The play, produced and acted by members of a local Evening Institute was inserted into the tape magazine together with recordings of a carol service and readings from the New Bible by the children of Vauxhall Street Primary School.

The tape of the 1961 Lambeth festival, presented to the Borough Council by members, has been offered to the local Old Peoples' Welfare Association, together with colour slides taken during the festival.

Membership of the club is increasing, the latest recruit being Peter Rodgers, one time Secretary of the R.A.F. tape club, now serving in Aden.

CAMBRIDGE

The first AGM of the Cambridge Society was held at the beginning of the year. A most successful year was claimed, with a variety of activities being enjoyed. Increased activity by the technical group was forecast, and the social services are to be stepped up this year.

Among their activities since the first quarterly schedule was drawn up have been demonstrations by Messrs. Grundig, Truvox and Wharfedale, play-reading sessions, and a competition.

The members are looking for a workshop and new clubroom, and it is hoped that when this is found members will construct a sound-proof studio and control room.

A handbook, to include the meeting programme for the remainder of the year, constitution, annual report and accounts, and an enrolment form was scheduled for publication in March. The booklets will be distributed by dealers with recorders purchased or when machines are returned for servicing.

COTSWOLD

A fascinating gadget, destined to worry many a dealer in the future, was demonstrated at the latest meeting of the Cotswold club, when Eric Jones presented his home-built transistorised audio oscillator. This gives a single frequency of approx. 3,500 cps, and is intended for use when choosing a tape recorder.

Carried in the pocket, it includes a jack plug which can be easily fitted to the recorder being demonstrated. Switching to the "record" mode, the tone is put on to the tape, and the recorded tape when played back indicates the wow and flutter standard of the recorder far more accurately than any musical recording. It is a great reassurance and particularly more of a safeguard than any demonstration tape which may have been recorded on more expensive equipment.

Earlier in the evening Tom Bolt lectured on tape copying and its implications. The equipment used included a Ferrograph 4A/N, plus a Collaro Studio deck connected to a pre-amplifier and power amplifier. Among his illustrations Mr. Bolt showed the effects of repeated copying, less disastrous on speech than music, and of various faults in copying, such as over and under-recording, hum loops, etc.

For their March 5 meeting the members welcomed Mr. George Tillet, Chief Engineer of Daystrom Ltd., manufacturers of the Heathkit electronic equipment. He gave a demonstration which took the form of a concert of stereophonic music played through amplifier and loudspeakers such as a number of members have already constructed for themselves. The concert included a record on which famous violinist Yehudi Menuhin gave a commentary on individual instruments of the orchestra.

The meeting concluded with a round of questions

News from the Clubs

and a general talk on the range of Heathkit reproducing and test equipment.

The society's latest hospital's service tape includes, amongst many local items, specially recorded interviews with pop singer Cliff Richard and John Moore, the author, who talked about the Cheltenham Literary Festival.

COVENTRY

Recognition to the Coventry club, with the London and Eastbourne clubs, was given in the BBC *Sound* programme broadcast at the beginning of the year. The subject was interviewing, amateur and professional, and Henry Hopfinger represented the club.

Peter Warden, chairman, and secretary, Stan Day, were also busy on the day of the broadcast, concerned with dubbing work. Unfortunately their progress was not so easy, they being subjected to a power failure.

Roy Penfold, a stalwart of the club, has taken over the new role of Public Relations Officer. No easy task this, as he will be responsible for keeping the club in contact with local organisations and people of interest—an important job during this year with so much of the city's efforts being directed to the Cathedral Festival.

Other re-arrangements include Roy Reynolds and Ted Ruff. These two gentlemen will be responsible respectively for the sales of tapes and accessories at meetings, thus giving treasurer Tom Bagley more time to collect subscriptions. Crafty move that!

Visits to other clubs are still high up on their list of exercises. On February 7 members journeyed to Walsall, and on May 31 they are to travel to Rugby to attend the Midland Club Rally.

At one of the recent meetings, Keith Smith, their out-of-town member, and also a member of the Hinckley group, took along a film and tape show of the wilds of Africa.

FRIERN BARNET

Assistance for the local council's town-twinning arrangements with Chaville in France is planned by the members of the Friern Barnet club. A delegation is to travel to France for the May Festival, and will present a series of colour slides of Friern Barnet. The club members are currently preparing the taped commentary.

Further assistance was provided on March 3, when the council organised a party at the Town Hall. Bingo, of course, Finchley Operatic Society, and the selection of a beauty queen were among the highlights. The funds raised were to go towards financing the trip.

Other of the recent activities have included the preparation of a reply tape to Charles Hooker in Tanganyika. Joe Neal and Kay Franklin in charge, and a demonstration of the Veritone tape recorders. The latter were presented by Mr. A. Wakeford of Veritone Ltd. Among the tests carried out to prove the recorder's versatility was a solo "duet" played by Peter Winterton.

As the winning entry in their five-minute tape contest was a joint effort, two silver medals have been awarded to Messrs. Green and Inman. They also share the Jim Fulton Cup for a year.

ILFORD

A steadily increasing membership as they entered their third year was announced by Jimmy Hunter, chairman of the Ilford Society in a recent newsletter. Latest of their activities has been the inauguration of a hospital service. This is to be a self supporting section with a secretary and small organising committee so that the club's normal ventures can proceed on the usual lines.

Early in February the members were given a demonstration of the recently announced Japanese Sony 521 stereophonic tape recorder. This 124 quinea model was presented by local dealers Newbury Radio Limited.

This was followed on February 20 by editing illustrations and exercises, and on February 27 a lecture by Messrs. Hirst and Taplin, technical designers to Balmoral Electronics Ltd. They discussed how to get the best from a tape recorder.

Demonstrations of the Philips and Grundig recorders were scheduled for later meetings.

LONDON

One of the latest meetings of the London club began with a talk on "The working and principle

functions of a tape recorder." Presented by Mr. Buttle, this was the main item on the agenda, and held the interest of members for a full hour.

Afterwards he laid himself open to a questions-and-answers session.

Ken Blake, chairman, followed with his production of an edited version of the BBC's *Sound* programme. The extracts heard included interviews with a number of the London members, but unfortunately he had axed one of the voices completely. It is rumoured Mr. Blake is to be "defluxed" at a later meeting.

Their last item for the evening was a short talk, prepared by Godfrey Mousset, on how to solder a reliable joint.

MEDWAY

Sounds I would like to have with me on a desert island is the subject for a competition organised by members of the Medway club.

This, together with a variety of proposed subjects, including talks on the use of microphones, using two recorders, and exchanging tapes, plus a visit to an air-show to make recordings, are the society's plans to encourage greater membership.

At one of their latest meetings a new secretary was elected, the post now being filled by Miss Brenda Ridden, of 88, Broadway Gillingham, Kent. Meetings are continuing to be held every Monday at 23, Edwards Close, Wignore, Gillingham, the home of the former secretary.

ROTHERHAM

Members of the Rotherham club are now established in their own club rooms in St. John's Church Hall, Masbrough. This is in easy reach of the town centre, but without neighbours that might complain if the stereo and hi-fi members let themselves go.

According to a recent newsletter, the clubs interests takes in tape exchanges, electronics, photography and cine (black and white or colour), instrumental, classical and popular music, languages and travel. That should certainly keep them going for some time to come.

The chief item on their programme for 1962, however, is to provide regular entertainment for the Old People and Hospitals. Church services have been recorded and played back to local Homes for the Aged.

An interesting demonstration was recently given by the club's Hostess on the Butoba, and tapes from America, Japan and other countries have provided several entertaining and instructive evenings.

At present, members are engaged building a multi-channel mixer. Other "gadgets" are lined up for the coming months.

RUGBY

Synchronisation of tape and cine was the main item at the January 18 meeting of the Rugby club. Terry Davis was the speaker and he presented a test film showing the different methods—optical and magnetic—of achieving acceptable synchronisation. He also showed a colour film, shot on a continental holiday last year, which had a taped commentary synchronised by means of a stroboscope. The journey took members from Ostend, through Belgium, France, Switzerland to Italy and back.

A week earlier, Mike Brown, secretary, paid a visit to the Nottingham club, where Norman Littlewood gave a talk on head alignment and tape speed checking. Still pursuing the personal contact theme, a number of members travelled to Leamington Spa on January 31, to attend a lecture by Mr. W. M. Tyson.

Other members attended a special meeting of the Borough Council on January 29, when the Freedom of the Borough was presented to Dr. C. R. Hoskyn. A copy of the recorded ceremony is to be presented to the Council's archives. This will be the second tape in the archives, as last July, when the new Town Hall was opened by the Queen Mother, A.E.I. Sound Ltd. provided a recording of the ceremony.

A return to tape and cine sync, was made at their February 15 meeting when Terry Davis once again took the chair. On this occasion he presented a film made at the previous meeting, and called for volunteers to record a commentary. Alec Lovett was the first to try his hand, and after

a break accompanied by the usual quiz, Mr. Dawson stepped up to have a go.

SOUTH DEVON

A record number of members and visitors met at the January 31 meeting of the South Devon club, when Mr. Albert Pengelly, 1961 B.A.T.R.C. contest winner, and two of his colleagues, paid a return visit to the club. Once again he demonstrated the art of achieving high quality recordings, and was described later by members as being "as good as ever."

At another of their January meetings, chairman Gordon Furneaux lectured on the nature and effect of sound on the human ear. His talk was illustrated with film strip and tape recordings specially prepared for the occasion.

Present at the meeting and a welcome visitor was Mr. R. Judd, chairman of the Tanganyika tape club. He was on holiday in Torquay with his wife.

WALTHAMSTOW

For the third year in succession, members of the Walthamstow club are proposing to present to patients in the Connaught Hospital who would otherwise miss the fun, a recorded description of the 150-odd floats in the Whitsun Carnival procession. They will also try to capture on tape the festival atmosphere before the floats start their five-mile journey through the streets of Walthamstow.

A more comprehensive coverage is intended than hitherto. Plans are laid to set up recording equipment at the busiest junction on the route. At this

point they hope to pick up the cries of the stallholders in a nearby market, and the bustle of the shopping crowds, to serve as a background to the general description.

They are also organising the laying of a telephone line from a vantage point, some 75 yards along the route, back to the studio so that advance information can be passed to the commentators. All the work will be carried out in the High Street and the tapes will then be rushed back to the hospital for playback on the internal headphone circuit. As for previous years, all the recorded material will have been played to the patients and the broadcast ended before the procession actually passes the hospital, situated a short way from the end of the route.

WARWICK AND LEAMINGTON

Blind member Peter Joy and his wife, Muriel, presented a programme of tapes at the latest meeting of the Warwick and Leamington club. One of his tapes, of sounds heard in and around his own home, included a dream sequence. Old time medleys were included on his second tape, and he brought his show to a climax by presenting his own composition of a song sung by the *Joy-munks*!—a humorous tape that had the members astounded at the careful splicing and overall production.

A likely prospect for the future generation of tape enthusiasts is promised by the activities of 13-year-old Derek, son of club-member Fred Villet. A few weeks ago he attended a meeting and won a three-inch spool of tape in the raffle.

This he now uses (and won't let father touch) to record the BBC News Bulletins throughout the week. When his school's Current Affairs period arrives Derek is way ahead on nearly every point, and he uses the tape over and over again.

WEST MIDDLESEX

The work West Middlesex club members are doing for the Teddington Theatre Club's forthcoming production of the *Rape of the Belt* is proceeding apace. They have been fortunate in receiving an offer from a local Doctor who will play her harp for the song being written by Ken Phipps, and for other Greek-style harp music that is required.

Three new members have been enrolled, taking their membership to 45.

Latest activities include a demonstration of his own design stereo amplifier by Stan Mace, and a talk on Variacs by Phil Pratt. On February 22 they received a visit from Truvox Ltd. for a demonstration of their range of recordings. This was followed on March 8 by a talk on microphone placing and technique presented by Angus MacKenzie of Olympic Sound Studios. Mr. MacKenzie, honorary president of the club, went over the ground he covered in BBC *Sound* programme broadcast the previous Sunday on Network Three.

A live recording session of a local operatic society was scheduled for March 22, and this is to be followed on April 12 by a demonstration of the Simon SP5 tape recorder. Another live recording session, this time with a local rock'n-roll group is announced for the April 26 meeting.

CLUB MEETING DIARY

ABERDARE: Alternate Wednesdays at Cwman Institute, Cwmanan, (March 21.)

ABERDEEN: 1st Tuesday in every month at 8 Deer Road, Woodside.

AYLESBURY: Monthly at Hazell's Club, Britannia Street. (April 12.)

BARNSELY: Every Tuesday at YMCA, Eldon Street.

BATH: Every Wednesday at 24, Green Park.

BATH (2): Alternate Wednesdays at 41, Herbert Road, Oldfield Park. (March 21.)

BEDFORD: Final Tuesday in month at 131, London Road.

BELFAST: Every Thursday at 44, Dublin Road, Belfast 2.

BIRMINGHAM: Every Monday at the Chapel Tavern, Ludgate Hill.

BIRMINGHAM (SOUTH): Alternate Mondays at The People's Hall, Oak Tree Lane, Selly Oak, Birmingham 29. (March 26.)

BLACKBURN: 1st and 3rd Tuesdays at Blackburn YMCA.

BLACKPOOL: Alternate Wednesdays at the Albert Hotel, Lytham Road. (March 28.)

BOURNEMOUTH: Alternate Tuesdays at the Queen's Hotel, Queen's Road, Bournemouth West. (April 3.)

BRIDGWATER: Every Tuesday at Evis' Radio Shop, West Street.

BRIGHTON: Every Wednesday at The Brunswick Arms, 38, Ditchling Road.

BRISTOL: Alternate Wednesdays at 6, Royal York Crescent, Clifton. (March 21.)

BROMLEY: 2nd and 4th Thursdays at St. Mary's Church Hall, College Road.

CAMBRIDGE: Every Wednesday at the Mitre Hotel, Bridge Street.

CARDIFF: 1st and 3rd Tuesdays at 46, Caroline Street.

CHESTERFIELD: Every 3rd Monday at the Yellow Lion Inn, Saltergate. (April 2.)

CLACTON: Every Monday at Ebor Lodge Hotel.

COTSWOLD: Fortnightly, alternating Monday and Thursday at Bayshill Hall, Royal Well Lane, Cheltenham. (March 22.)

COVENTRY: Alternate Wednesdays at Holy-Park Hotel. (March 28.)

COVENTRY (audio and cine): Alternate Tuesdays at the Liberal Club, Union Street. (March 27.)

CRAWLEY: 1st and 3rd Mondays at Southgate Community Hut.

DARTFORD: Every Thursday at 41, Winsor Drive.

DERBY: Alternate Wednesdays at Osmaston Park Hotel. (March 28.)

DONCASTER: Alternate Thursdays at Lancaster House, Westlaine Gate. (March 29.)

DOVER: Alternate Mondays at the Priory Hotel, Dover. (March 19.)

DUBLIN: 1st Monday at "Hardy House," 6, Canal Street.

DUNDEE: Alternate Mondays at the Salvation Army Hostel, 31, Ward Road. (March 26.)

EASTBOURNE: Alternate Saturdays at Hartington Hall, Bolton Road. (March 31.)

EAST HERTS: Alternate Mondays at 3, Chadwell, Ware. (March 26.)

EDINBURGH: 1st and 3rd Fridays at 22, Forth Street, Edinburgh 1.

GLASGOW: Fortnightly, alternating Tuesday and Thursday at the Highlands Institute, Berkeley Street, Glasgow. (March 29.)

GRIMSBY: 1st Monday at 21, Langton Drive, Nunthorpe, Grimsby.

HARROGATE: Every Wednesday at 4, Belford Road.

HARROW: 1st and 3rd Thursdays at St. George's Hall, Pinner View, North Harrow.

HASTINGS: Every Tuesday at the Citizens' Advice Bureau, Cambridge Gardens.

HINCKLEY: Alternate Wednesdays at The Wharf Inn, Coventry Road. (March 21.)

HOVE: Every Thursday at 44, Hogarth Road, Hove.

HUDDERSFIELD: 1st and 3rd Wednesday and last Monday at the Public Library, Ramsden Street.

HULL: Alternate Tuesdays at 281, Hesse Road. (March 27.)

ILFORD: Every Tuesday at the RAFA Rooms, Cranbrook Road.

IPSWICH: Alternate Thursdays at the Art Gallery, High Street. (March 29.)

JARROW: Alternate Mondays at Jarrow Central School. (March 26.)

JERSEY: 1st and 3rd Mondays at "Santa Barbaba" Maufant, St. Saviour.

KEIGHLEY: Alternate Wednesdays at the Spencer Street School Rooms. (March 21.)

KETERING: 2nd and 4th Wednesdays at the Rising Sun, Silver Street.

KIDDERMINSTER: Alternate Wednesdays at the NEU Meeting Room. (March 28.)

LEEDS: Alternate Fridays at 21, Wade Lane, Leeds 1. (March 30.)

LEICESTER: Alternate Thursdays at the Leicester Museum. (March 22.)

LUTON: 2nd and 4th Tuesdays at Flowers Recreation Club, Park Street West, Luton.

MAIDSTONE: Every Wednesday at the Ex-Services Club, Ashford Road.

MANCHESTER: Every Saturday, 6 p.m., at 20, Naylor Street, Hulme, Manchester 15.

MEDWAY: Every Monday at 23, Edward's Close, Wigmore, Gillingham.

MIDDLESBROUGH: Every Wednesday and Friday at 130, Newport Road.

MILLOM: Every Wednesday at Millom Centre.

NORTHAMPTON: Every Tuesday at the Peacock Room, Grand Hotel.

NOTTINGHAM: Alternate Thursdays at the Co-operative Educational Centre, Heathcote Street. (March 22.)

NORWICH: 4th Tuesday at "Lady Chamberlin Hall," 38a, St. Giles' Street.

PETERBOROUGH: Alternate Thursdays at The Youth Centre.

PONTYPOOL: Every Monday at the Hospitality Inn, Crumlin Road.

PLYMOUTH: Alternate Wednesdays at Virginia House, Plymouth. (March 21.)

READING: Every Monday at Abbey Gateway.

REDDITCH: 4th Thursday at The White Hart Hotel, Healds Cross.

RHYL: Alternate Tuesdays at Studio A, Bedford Street. (March 27.)

ROTHERHAM: Alternate Thursdays at St. John's Church Hall, Masbro'. (March 22.)

RUGBY: Alternate Thursdays at the Red Lion, Sheep Street. (March 22.)

SHERNESS: Alternate Fridays at Arthur Gisby's, 136, High Street. (March 30.)

SOUTHALL: Every Monday at Southall Community Centre.

SOUTHAMPTON: Alternate Tuesdays at Prospect House, 8, Manchester Street. (March 27.)

SOUTH DEVON: Alternate Wednesdays at the YMCA, Castle Circus, Torquay. (March 28.)

STAFFORD: Alternate Tuesdays at The Grapes, Bridge Street. (April 3.)

STEVENAGE: 1st and 3rd Tuesdays at the Tenants' Meeting Room, Marymead.

STOCKPORT: 1st Friday at the Unity Hall, Green Street.

SWANSEA: Every Thursday at the YMCA Buildings, St. Helen's Road.

URMSTON: Alternate Thursdays at Davyhulme Scout Hut, Barton Road. (March 29.)

WALSALL: Every Wednesday at the New Inn, John Street.

WARWICK & LEAMINGTON: 1st and 3rd Wednesdays in Room 18 of the Royal Leamington Spa, Town Hall.

WEST HERTS: Fortnightly alternating at the Cookery Nook, High Street, Watford (April 4) and Heath Park Hotel, Hemel Hempstead. (March 21.)

WEST MIDDLESEX: 2nd and 4th Thursdays at Dormers Wells Primary School, Dormers Wells Lane, Southall.

WEST WALES: 1st and 3rd Fridays at The Meeting House, New Street, Aberystwyth.

WEYMOUTH: Alternate Wednesdays at The Waverley Hotel, Abbotbury Road. (March 21.)

WHITSTABLE: Alternate Mondays at The Granary, 1, Borstal Hill. (March 26.)

WINCHESTER: Every Friday at 45a, St. Swithen's Street.

WINDSOR: Every Thursday at The Guildhall.

YEovil: Alternate Thursdays at the Mermaid Hotel, Princess Street. (March 22.)

YORK: Every Thursday at 62, Micklegate.

LONDON

ACTON: Alternate Fridays at the King's Head, Acton High Street. (March 30.)

BETHNAL GREEN: Every Friday at Shoreditch Tabernacle, Hackney Road, E.2.

BRIXTON: Every Tuesday at The White Horse, 94, Brixton Hill, S.W.2.

CATFORD: Every Thursday at the Black Horse, Rushey Green, Catford, S.E.6.

FRIERN BARNET: 2nd Friday at 7, Harnsworth Way, N.20, and 4th Thursday at 146, Friern Barnet Lane, N.20.

LEYTONSTONE: Alternate Wednesdays at Harrow Green Library, London, E.11. (March 21.)

LONDON: 2nd Thursday at the Marquis of Granby, Chandos Place, Charing Cross, W.C.2.

NORTH LONDON: Every Wednesday at Bush Hill Park School, Main Avenue, Enfield.

SOUTH-WEST LONDON: Every Wednesday at Mayfield School, West Hill, S.W.15.

STOKE NEWINGTON: Every Wednesday at 53, Londesborough Road, N.16.

WALTHAMSTOW: Alternate Fridays at 22, Orford Road, E.17. (March 30.)

WOOLWICH: Alternate Mondays at the North Kent Tavern, Spray Street, Woolwich. (March 26.)

Unless otherwise stated, meetings start between 7 and 8 p.m.

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(Continued from page 29)

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cludes *Imperial Echoes March; Second
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The final tape this month is *Merry-go-
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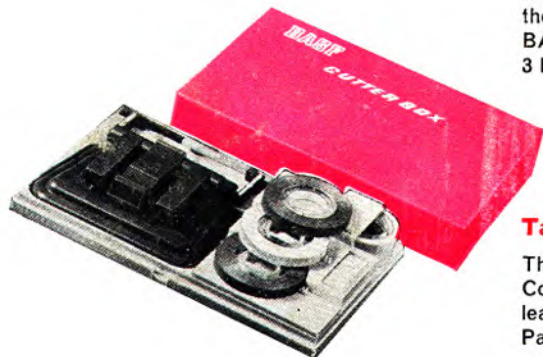
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