

JUNE 1970

TAPE

RECORDING MAGAZINE

2¹/₆

SONEX REPORT

including notes on
four-channel stereo

Arrival of the
Video Cassette

BRC AT NEWHAVEN

Test Bench: Pye 9000

Cross Talk

Music Reviews

New Products

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FROM PRECISION TAPES: THE NEW SHAPES OF SOUND

You can't beat this new kind of L.P.
You can't even scratch it.
Or get dust on it.
Or have to chain yourself to a home-bound
record player to listen to it.
Precision's new Mono/stereo cassettes
and 8 track stereo cartridges, in fact, give
you all the sound you'd ever get from an
ordinary L.P.
With this difference:
They'll sound as good next year as they did
this year (heard your old discs lately?).
And you can enjoy them anywhere . . . on

the beach, in the car, even in the bath.
Also, if you think cassette-packed music
has been a little limited up to now, that's
another idea you can kick too:
Eyes down . . . they're just a few of the
new albums recorded on Precision
cassettes and cartridges lately.
So ask yourself: doesn't music play a very
important part in your life nowadays . . .
AND ISN'T IT TIME YOU GOT INTO SHAPE?

8 track stereo cartridges

mono/stereo
compatible cassettes.

PYE—World Cup Record England Team
Cyril Stapleton Plays Glenn Miller Cyril Stapleton
By The Light Of The Moon Baker Street Phil.
Sounds Gentle Val Doonican
Petula's Hit Parade Petula Clark
Good Morning Starshine Sounds Orchestral
Paint Your Wagon Al Hirt
Roger's Brazilian Brass Rogero's Brazilian Brass
Donovan's Greatest Hits Donovan
Reviewing the Situation Sandie Shaw
CLASSICS—Love Duets (Puccini) Sir John Barbirolli/Halle
Encore Sir John Sir John Barbirolli/Halle
Enigma Variations (Elgar) Sir John Barbirolli/Halle
Symphony No.6 (Pathetique/Tchaikovsky) & Two
Elegial Melodies/Grieg Sir John Barbirolli/Halle
Stravinsky 'The Firebird'/Berlioz/Debussy
Sir John Barbirolli/Halle
JANUS—Vintage Canned Heat
CREWE—Oliver Oliver
WARNER—New Ballads Rod McKuen
Sacha Distel Sacha Distel
REPRISE—Watertown Frank Sinatra
Goin's Great Sammy Davis, Jnr.

Cassette	Cartridge
ZCP18337	
ZCYP 1118	Y8P 18298
ZCP 28131	Y8P 28131
ZCYP 1117	Y8P 18321
ZCP 18159	Y8P 18159
ZCP 18333	Y8P 18333
ZCP 28130	Y8P 28130
ZCP 18320	Y8P 18320
ZCP 18283	Y8P 18283
ZCP 18323	Y8P 18323
ZCPC 502	
ZCPC 501	Y8PC 501
ZCPC 505	
ZCPC 503	
ZCPC 504	Y8P 28129
ZCP 28129	Y8CR 201
ZCCR 201	Y8W 1837
ZCW 1837	Y8W 3003
ZCW 3003	Y8R 1031
ZCR 1031	
ZCR 6339	

Something's Burning Kenny Rogers
Then Play On Fleetwood Mac
Gentle On My Mind Dean Martin
My Way Frank Sinatra
Ella Ella Fitzgerald
A & M—Greatest Hits The Sandpipers
What The World Needs Now Sergio Mendes/Brasil '66
Gift Of Song Judith Durham
Down Mexico Way Herb Alpert/Tijuana Brass
Greatest Hits Herb Alpert/Tijuana Brass
BUENA VISTA—Mary Poppins Original Soundtrack
Jungle Book Original Soundtrack
Disney Songs Satchmo Way Louis Armstrong
Mona Bone Jakon Cat Stevens,
Benefit Jethro Tull.
Liege & Lief Fairport Convention
EMBER—This Is Glen Campbell Glen Campbell
I Wanna Live Glen Campbell
Live From Las Vegas Vic Damone
Sarah Vaughan/Billy Eckstine Sarah Vaughan/Billy Eckstine
Mister Rock 'N Roll Bill Haley & The Comets

Cassette	Cartridge
ZCR 6385	Y8R 6385
ZCR 9000	Y8R 9000
ZCRP 369	Y8R 6330
ZCRP 374	Y8R 1029
ZCRP 375	Y8R 6354
ZCAM 940	Y8AM 940
ZCYP 1123	Y8AM 964
ZCAM 967	Y8AM 967
ZCYP 1124	Y8AM 974
ZCAM 980	Y8AM 980
ZCBV 4026	Y8BV 4026
ZCBV 4041	Y8BV 4041
ZCBV 4044	Y8BV 4044
	Y8I 9118
	Y8I 9123
	Y8I 9115
ZCE 5046	Y8E 5046
ZCE 5041	Y8E 5041
ZCE 5045	Y8E 5045
ZCE 3375	Y8E 3375
ZCE 3401	Y8E 3401

A FULL, UP TO DATE LIST OF RECORDINGS IS AVAILABLE FROM

Precision Tapes Ltd. ATV House, 17 Great Cumberland Place, London W1H 8AA, Telephone 01-262 5502, Cables and Telegrams, Pyrec London W1H 8AA



Three heads for the price of two; and built-in stereo speakers.

It's the new Akai 4000, brother of Britain's best-selling deck, the 4000D.

The new Akai 4000 is the only tape recorder in Britain to offer you 3 heads with off-the-tape monitoring and sound-on-sound recording for the modest price of £124.18.0d. (recommended). The heads, and indeed all the specifications, are identical to those of the Akai 4000 D, which has just become Britain's best-selling tape deck. So the 4000 has a great pedigree.

Like the 4000 D, the new model has the famous Akai one micron gap heads. But in addition, it has its own power amplifier, and a built-in pair of high quality monitor speakers. The power amplifiers supply a full 7 watts R.M.S. per channel into 8 ohms.

The Akai 4000 is ideal for those who don't have their own hi-fi system. And even for those who do; because it can be linked to an outside system and used just like the deck. Your next step is a listening test. Call in at your nearest hi-fi dealer.

PERFORMANCE SPECIFICATIONS

TAPE SPEED	2 speeds 3 $\frac{1}{2}$ and 7 $\frac{1}{2}$ ips
WOW AND FLUTTER	Less than 0.15% RMS at 7 $\frac{1}{2}$ ips Less than 20% RMS at 3 $\frac{1}{2}$ ips
FREQUENCY RESPONSE	30 to 22,000 Hz \pm 3db at 7 $\frac{1}{2}$ ips 30 to 16,000 Hz \pm 3db at 3 $\frac{1}{2}$ ips
SIGNAL TO NOISE RATIO	Better than 50db
LEVEL INDICATOR	2 VU meters
RECORDING SYSTEM	4 track stereo/monaural system
LINE INPUT	50 mV DIN INPUT 20 mV
LINE OUTPUT	1.28 V DIN OUTPUT 250 mV.

For further details write to:

AKAI

SAudio PRODUCTS
PULLIN PHOTOGRAPHIC RANK ALDIS
P.O. Box 70 Great West Road Brentford Middx.

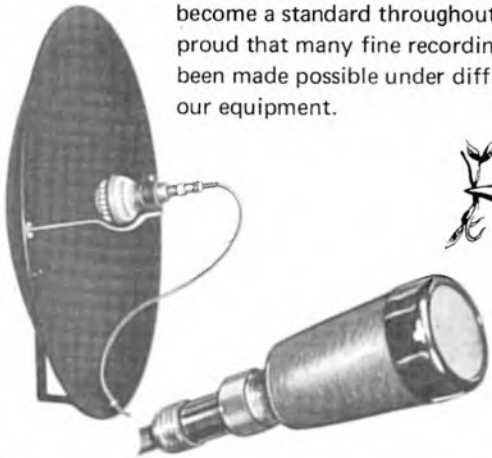


Capture all the charm with a

Grampian microphone

Made by a company of 40 years standing you may be assured of complete reliability in the field with a model (Type D.P.6) having a response matching our Parabolic Reflector.

The perfect partnership of these two units has become a standard throughout the world. We are proud that many fine recordings of wild life have been made possible under difficult conditions using our equipment.



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Feltham Middx
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JACW/X/58.

GUARANTEED QUALITY & SATISFACTION

4 TRACK STEREO/MONO

	Deposit		12 Monthly Instalments		Cash Price	
	£	s. d.	£	s. d.	£	s. d.
Philips 3312	23	4 1	3	14 5	67	17 1
Philips N4404	28	0 0	4	11 8	83	0 0
Ferguson 3232	33	5 0	5	1 10	93	5 0
Sanyo MR929	33	4 9	5	6 10	97	4 9
Sony TC252	33	5 0	5	10 10	99	15 0
Philips N4407	35	0 0	6	13 4	105	0 0
Akai 1710L	36	6 8	6	1 2	109	0 0
Sanyo MR939	38	13 6	6	2 3	112	0 2
Grundig TK247	37	10 0	6	5 0	112	10 0
Sony TC630	66	15 0	11	18 0	199	15 0
Sony TC230	40	11 9	6	15 0	121	11 9
Telefunken 204TS	41	19 0	6	13 4	124	19 0
Philips N4408	47	0 0	7	13 4	139	0 0
Tandberg 1241X	49	0 0	8	6 8	149	0 0
Sony TC540	50	15 0	8	5 0	149	15 0
Akai 1800	53	0 0	8	13 0	158	0 0
Akai 1800SD	66	6 8	11	1 2	199	0 0
Akai M9	65	0 0	10	16 8	195	0 0
Sony TC 130 cassette	38	10 0	6	3 4	112	10 0
Ferrogaph 722/4	68	16 9	11	6 8	204	16 9
Philips Pro 12	83	10 0	13	16 8	249	10 0
Revox 1122/24	78	15 0	13	2 6	236	5 0

STEREO TAPE UNITS

	Deposit		12 Monthly Instalments		Cash Price	
	£	s. d.	£	s. d.	£	s. d.
Sanyo MR801	24	3 0	4	0 6	72	9 0
Sony TC252D	24	9 0	4	0 6	72	15 0
Sony TC355	34	2 6	5	10 0	100	2 6
Tandberg 1641-X	30	0 0	4	19 2	89	10 0
Akai 4000D	30	18 8	4	18 4	89	18 8
Tandberg 62/64-X	52	6 8	8	14 6	157	0 0
Ferrogaph 702/4	64	15 8	10	16 8	194	15 8

SAVE £215.0. SANYO MR800

5 Stereo Tape deck including preamplifiers
3 speeds — 7 1/2, 3 3/4 & 1 7/8 I.P.S.
Sound with sound. Auto shut off.
2 VU Meters. 2 Audio leads.
Suitable for recording direct off magnetic cartridge
Brand new — 12 months maker guarantee
List price £90.15.0d. Our price £69.10.0d.
Deposit £23.10.0d. 12 monthly payments of £3.16.8d.

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Philips RR290	11	10 0	1	17 6	34	0 0
Grundig C200	12	7 6	2	0 10	37	17 6
Philips RR482	18	4 0	3	0 8	54	12 0
Telefunken 300TS	19	5 0	3	4 2	57	15 0
Telefunken 302TS	22	15 0	3	15 10	68	5 0
Uher 4000L	48	10 0	8	1 8	145	10 0
Uher 4200/4400	54	10 7	9	0 0	162	10 7

INTEREST FREE H.P. TERMS

OPEN SATURDAY 6 p.m. FRIDAY 6.30 p.m. IF UNABLE TO CALL, WRITE FOR BROCHURES, PART EXCHANGES, ALSO 18 and 24 MONTHLY TERMS.

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SANYO MR-990 STEREO: (illustrated)
* 4-Track * 3 Speeds * Sound-on-Sound * Sound-with-Sound * 2 Detachable Speaker Boxes * Output 2x10 watts Music Power * Natural Wood Cabinet * Supplied complete with 2 Dynamic Microphones, 7" Demonstration Tape, leads, etc. Makers 12 months guarantee and instructions * Automatic Shut-Off.

List Price £132 5 0. **OUR PRICE 110 gns.**
INITIAL DEPOSIT £38.10.0. 12 Monthly Payments of £6.8.4.

SANYO MR-910 STEREO:

* 4 Track * 2 Speeds, 7 1/2 & 3 3/4 i.p.s. & 7" Reels * 2x4" Permanent Dynamic speakers * Sound-on-Sound with optional adapter * Sound-with-Sound * Supplied complete with 2 Microphones, 7" Tape, Audio leads, Makers 12 Months guarantee and Full instructions.

List Price £84 15 0. **OUR PRICE 62 gns.**
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THE RECORDER CO.

(DEPT. T) 186-188 WEST END LANE . WEST HAMPSTEAD . LONDON . NW6 Tel: 01-794 4977

Introducing the 3000X.



We laughingly refer to it as an amateurs' tape deck.

Laughingly? Well the 3000X is about as amateurish as a moon shot.

Recording is based on the Tandberg Cross-Field technique.

Which means it gives quite sensationally good specifications for frequency range and signal-to-noise ratio. But people have come to expect that from any Tandberg tape deck, so we'll move on and talk about the other features.

It's fully transistorised, has off the tape monitoring facilities and Din and phono sockets.

Two moving coil meters indicate recording levels.

You can cue-in at fast wind and rewind, as well as monitor recording and playback.

And you can mix, copy and try echo and other special effect recording.

Fill in the coupon, we'll send you the complete low-down on this quite exceptional tape deck, which, believe it or not only costs £99. 18s. 0d (recommended price).

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Built by experts for experts

To Farnell-Tandberg Limited, Farnell House,
81 Kirkstall Road, Leeds LS3 1HR.

Please send me full details of the Tandberg 3000X

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TM4

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or PHONE 01-883 8874



To all TAPE Recordists: P.V.C. & Polyester Tapes
BUY BRITISH
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SAVE THE POUND

"... could hardly believe that top quality could cost so little..."
— T.H. of Teeside.

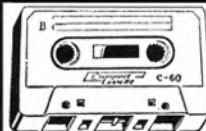
The playbacks are crystal clear and I am sure no better results could be obtained by other dearer brands on the market.

Yours sincerely,
W.S., Hants.
FREE Library case with £5 orders

	New	3"	5"	5 1/2"	7"
Standard Play each	150'	600'	850'	1200'	1200'
3 for 6 for	2/- 5/9 11/3	5/6 16/- 31/9	7/- 20/- 39/6	8/6 25/- 49/-	
Long Play each	240'	900'	1200'	1800'	1800'
3 for 6 for	3/- 8/6 16/9	7/6 22/- 43/3	9/6 27/9 54/9	12/6 36/9 72/6	
Double Play each	300'	1200'	1800'	2400'	2400'
3 for 6 for	4/3 12/3 24/6	11/- 32/3 63/9	15/- 44/- 87/-	19/9 58/3 115/3	

Postage 1/9 per order. Posted the same day. Money-back gtd.

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Standard pattern to fit Philips, Stella, Elizabethan, Dansette, Sansui, etc.

Compact Cassettes with 60, 90 and 120 minutes playing time. Brand new and packed in normal plastic library box. Available at this exceptional price.

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Multi-purpose phone attachment acts as an extension phone. Attached to the normal phone earpiece by means of springy bracket, it amplifies the sound, almost

twice. It allows two people to listen at the same time, improves reception in noisy places and is ideal around airports.

Shipped easily on and off the phone, it needs no fixing.
Price 19s plus 1s postage.
Mail only.

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Sony 355 3 sp. 4 tr. Stereo
Sony 255 Stereo
Tandberg 6000 X 3 sp. 2/4 tr. St.
Tandberg 1600 X
Telefunken 3 sp. 4 tr. Stereo
Revox 1102/4

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Ampex 2100 Stereo
*Akai 1710W Stereo
*Akai M.9 Stereo
*Akai 1800 Dual purpose stereo 8 tr. cartridge and tape recorder
*Brenell Mk. 5/M Series III Mono
*Brenell Mk. 5 Series III Mono
*Brenell ST200 2 tr. Stereo
*Brenell ST400 4 tr. Stereo
Ferguson 3232 Stereo 4 tr.
Ferguson 3247 4 tr. Mono
Ferguson 3248 2 sp. 4 tr. Mono
*Ferrograph 713
*Ferrograph 702/4
*Ferrograph 722/4
Fidelity Studio 4 track Mono
Fidelity 'Braemar' 2 or 4 tr. Mono
*Grundig TK320 2/4 tr. 3 sp. St.
Grundig 124 2 tr. Mono
Grundig 144 4 tr. Mono
Grundig 149 4 tr. Mono Auto
*Grundig TK340 DL 4 tr. 3 sp.
Philips 4307 4 tr. Mono

Philips 4308 4 tr. 2 sp. Monc
Philips Stereo 4402 2 sp. 4 tr.
Philips Cassette 3312 2 sp.
Philips 4407 Stereo 3 sp. 4 tr.
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Sanyo 939 4 tr. 2 sp. Stereo
*Sanyo 990 3 sp. 4 tr. Stereo
Sony TC230W
Sony 252 3 sp. 4 tr. Stereo
Tandberg 6X 3 sp. 2/4 tr. Stereo
*Tandberg 15 2 or 4 tr. 3 sp./M
*Tandberg 12X 3 sp. 2/4 tr. St.
*Telefunken M207 2 sp. 4 tr. St.
Telefunken 204 T.S. 4 tr. Stereo
Telefunken 501 4 tr./Mono
Telefunken 203 4 tr. 2 sp. St.
Telefunken 201 Mono 4 tr.
*Uher 4 tr. Mono
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Philips EL3302 Cassette
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Grundig Cassette C200
Aiwa Cassette Batt./Mains
Pye Cassette
Telefunken 302 2 sp. 4 tr. Mono
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● MAINS POWER PACKS by Philips, Stella, Telefunken, Uher

* Microphone extra

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- ★ Minimum Deposit and no Interest or Service Charges on H.P. up to 18 months
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Philips - Nikko - Goodman
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Pre-recorded tapes and music cassettes
Tapes and Cassettes, etc.

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7" L.P. 1800' (P)	21/-
7" Standard 1200' (A)	12/6
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Enter Sansui, and a new era in tape deck performance.

This is the all-new Sansui SD-7000. A quality 2-speed 4-track tape deck, it is the end product of three years of research and 10 prototype models. Our reputation as Japan's foremost audio-only specialist goes on the line with it. But we're confident that reputation is secure.

The SD-7000 compares favorably with the most expensive taping units on the market. Very favorably. Here's how it shapes up:

Three motors, four heads. Automatic Reverse, Repeat and Rewind

either by recording 20Hz signals or attaching sensing strips. Special Tape Protection Circuit and built-in Tape Tension Switch. FET-equipped 3-stage equalizer circuit, separate Volume controls for two line inputs, plus a headphone Volume control. Automatic resetting reel clampers. Self-locking Pause switch. Sleep switch that automatically cuts off power. Tape travel direction lamps. All pushbutton operation. Rear illuminated VU meters. Source/Playback tape monitor switch and Stereo/

Mono L+R recording mode switch. Six-position voltage selector. Output level attenuator switch.

The SD-7000 takes an honored place in the ranks of quality audio products, and presages a new era in tape deck performance.

But for those who know Sansui, it is no less an achievement than what was to be expected. Available soon at authorized dealers.



England: BRUSH CLEVITE COMPANY LIMITED Thornhill, Southampton SO9 1QX Tel: Southampton 45166 / Ireland: RADIO CENTRE 122A, St. Stephen's Green, Dublin 2 / West Germany: COMPO HI-FI G.M.B.H. 6 Frankfurt am Main, Reuterweg 65 / Switzerland & Liechtenstein: EGLI, FISCHER & CO. LTD. ZURICH 8022 Zurich, Gotthardstr. 6, Claridenhof / France: HENRI COTTE & CIE 77, Rue J.-R. Thorelle, 77, 92-Bourg-la-Reine / Luxembourg: MICHAEL SHEN, EUROTEX 12, Route de Thionville / Austria: THE VIENNA HIGH FIDELITY & STEREO CO. 1070 Wien, Burggasse 114 / Belgium: MATELECTRIC S.P.R.L. Boulevard Léopold II, 199, 1080 Brussels / Netherlands: TEMPOFOON BRITISH IMPORT COMPANY N.V. Tilburg, Kapitein Hatterasstraat 8, Postbus 540 / South Africa: GLENS (PTY) LTD, P.O. Box 6406 Johannesburg / Southern Yemen: BHICAJEE COWASJEE LTD, Steamer Point, Aden / Italy: GILBERTO GAUDI s.a.s. Piazza Mirabello 1, 20121 Milano Tel. 664981 / SANSUI ELECTRIC CO., LTD. FRANKFURT OFFICE 6 Frankfurt am Main, Reuterweg 93, West Germany / SANSUI ELECTRIC CO., LTD. 14-1, 2-chome, Izumi, Suginami-ku, Tokyo, Japan

Teleton *gives you sound satisfaction*



Teleton's 999 4 Track, 3 Head Stereo Tape Recorder Deck is a de-luxe 7 reel model with solid state pre-amplifiers using 20 transistors and 6 diodes to provide the highest possible performance.

Facilities include mono or stereo recording, sound on sound, sound with sound, echo and mixing effects. Tape counter, direct monitoring and sound on sound switch are included in this versatile set which will provide hours of high quality recording within your hi-fi set up.

Teleton Electro (UK) Co. Ltd.,

Teleton House, Robjohns Road, Widford, Chelmsford, Essex.

London Showrooms: 16 Savile Row, London, W.1. Tel: 01-437 6796

R.E.W. AUDIO VISUAL CO

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FERROGRAPH 722 / 4

A masterpiece in stereo equipment. 2 x 10 watt output. A speaker for each channel. All-silicon solid state amplifiers with FET input stages and wide input overload margins. Adjustable reel height control. 8 1/4" capacity. Re-record facility on stereo models for multiplay, echo effects, etc., without external connections. The ultimate machines for the enthusiast and professional Model 722 half track. Model 724 quarter track.

LIST PRICE £242.10.0
R.E.W. PRICE £204

FERROGRAPH 713

SAVE £14.10.0d

A mono machine of professional quality. 3 motors. 3 heads. Half-track. Tape speeds 1 7/8, 3 3/4, 7 1/2. Output 10 watts R.M.S.

LIST PRICE £188.10.0

R.E.W. PRICE £174

FERROGRAPH 702/4

SAVE £13.7.0

This is a superb stereo version of the 713 without a power amplifier. 8 1/4" spools, horizontal or vertical operation, variable spooling. Half or quarter track.

LIST PRICE £207.7.0

R.E.W. PRICE £194



**CASH OR
INTEREST FREE TERMS**

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TAPE

RECORDING
MAGAZINE

Incorporating TAPE RECORDING & HI-FI MAGAZINE
and STEREO SOUND MAGAZINE

Vol. 14

No. 6

June 1970

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Cover Photograph: This month we show a scene of the future, the Philips Video Cassette Recorder (VCR) in use. This equipment is referred to in detail in "Tape Trends" overleaf, but we now have some even later information. A number of important manufacturers have agreed to standardise on the Philips system, and these include Blaupunkt, Grundig, AEG Telefunken, Loewe Opta and Zanussi. The cassettes are "pocketbook size" and the system incorporates sound dubbing, independent recording of each of the two audio stereo tracks and "Stop Motion". It is said that there will be a wide variety of machines available ranging from economical black and white players costing less than 300 dollars (about £120) to colour players at around £140 and complete VCRs with tuner recording facility and RF playback at an estimated £220. As availability is said to be late 1971 we shall not have long to wait.

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SUCCESS FOR SONEX

SONEX '70 has been an enterprise of the audio industry. It was organised by the industry for the industry and has proved itself to be a resounding success in every way. Many delighted manufacturers were enthusiastically calling it the best show ever. There is no doubt that the exhibitors – and visitors as well – appreciated the hotel venue. Despite the snags – corridors too narrow, car parking inadequate, rooms smaller than might have been wished for – there were happy smiles all round. As sound mingled with sound through partly open doors, as queues formed in the narrow passageways there was the good-humoured comradeship that lies at the very foundation of this fascinating business of audio.

Unhappily we were able to see only a fraction of the more than fifty exhibitors, and of those people whose names are not mentioned in this report we would beg forgiveness. But we did fit in as many as we could and found much of interest. Typical of the thoughtful ingenuity now being displayed were the new products from Richard Allan, the well-known Yorkshire manufacturers of loudspeakers. They have felt for a long time that the "do-it-yourself" enthusiast has a very special need. The man who has the ability and facility to build his own loudspeaker enclosure can save himself a great deal of



The new Richard Allan loudspeaker kit for the do-it-yourself enthusiast.

money, and to meet his requirements they are marketing a completely new series of kits. Known as Twin Assemblies

or Triple Assemblies (two drive units in the former, three in the latter) they open up possibilities of home construction to many who might otherwise find the task too complicated.

Priced at £10 and £18 10s respectively, each kit is complete in every detail, including crossover components, insulating material and fixing ironmongery. The only item lacking is the timber and that can be purchased for a few shillings from any local yard. Within the kit will be found a reply paid card to which is attached small samples of grille fabric. The purchaser chooses the design and style he desires, marks the card and slips it in the post. Back will come the

Tape trends and tape talk

by DOUGLAS
BROWN

VIDEO RECORDING using half-inch tape in cassettes and handling colour as well as black-and-white is now possible on a Philips system produced in prototype. The Company hopes to have it on the market late next year.

The cassette will carry enough tape for 60 minutes recording and there will be erase and re-record capability, exactly as with an audio recorder. The tape will record, in addition to the visual information, twin audio channels, to cope with stereo.

The big selling points, I forecast, will be the ability to record one TV programme while watching another (because the recorder has its own built-in tuner), and the ease with which the recorder is linked to a TV receiver via the aerial connections.

Sony have indicated their hope to produce a colour video cassette a good twelve months ahead of Philips – it

should be on sale in Japan next November. The Cassette measures about 8 inches by 5.

So are we all set for a boom in domestic video in the not too distant future? I would feel more confident if the various manufacturers working so hard had agreed standards. Philips is aware of the dangers in the situation and has seven other companies committed to its system; but we all remember what happened in the case of audio cassettes, when an agreement between Philips and Grundig broke down. With video, Sony are developing their own system and other manufacturers are pursuing other paths.

The journal *Industry Week* recently made an apposite comment: "The problem is whether the video men will cook their own goose by failing to standardise."

IF YOU FANCY yourself as a serious composer of

electronic music, there is just time for you to apply to the British Society for Electronic Music at 49 Deodar Road, London, S.W.15, for a place on its first course in electronic music techniques and composition at its new studio in Putney.

Each would-be composer on the four-week course in June must present a project for a two or three minute electronic composition.

THE FIRST NUMBER in the new *Encyclopaedia of Tape Recording* will be on sale this month and orders may now be sent to our subscription department at Alverstone Avenue, East Barnet, Herts. This title, *Natural History Sound Recording*, by Richard Margoschis, is the first authoritative full-length treatment of a specialist subject, but it will be of great practical value to everyone with a recorder.

The *Encyclopaedia* will appear in 22 parts and will be

published approximately monthly. They will not all be of the same size or price – this will depend upon the space required to deal with a particular subject fully. For example, the second title, *Writing a Script*, by Terry Devereux, will be shorter than the first.

The price of *Natural History Sound Recording* will be 40P (eight shillings), post free. Readers who prefer to order immediately all titles in the series may do so and copies will be posted to them regularly as they appear. In this case, an advance payment should be sent (minimum £1).

MY SPACE is trimmed this month in order to give Denis Killick plenty of room for his Sonex report. It seems that we are now assured of two audio shows each year, for the success of Sonex will not, of course, affect the traditional autumn Audio Festivals run by Cyril Rex Hassan.

SUCCESS FOR SONEX *continued*

fabric of his choice cut to size at no extra cost at all. What a brilliant idea. There's a "Super Assembly" as well at £21 15s,

In the Akai trade room we uncovered a real Pandora's box of wonders. The star of the show, a new video machine, is unhappily *not* going to be available to the ordinary consumer but will be restricted to industrial and educational use. This is not the fault of the importer but relates to purchase tax complications. Handling this equipment, however, convinced us that the day cannot be too far off when sophisticated machines of this kind *will* be sold to the general public.

Very briefly the outfit comprises a battery portable video machine (record and playback) complete with camera and small integrated monitor screen, the whole costing around £500. A large monitor would cost another £80. It uses tape of standard width, ¼-inch, running at 11¼ ips to give 20 minutes programme time on a 5-inch spool. It has full Fast Forward and Rewind facilities and its recordings are compatible with the Akai mains video machine, reference X500 VT. This, too, is a beautiful piece of engineering reserved for industrial use and costing about £450.

But there was plenty to see and hear on the domestic audio side as well. The CS 50 is a Compact Cassette record/playback mechanism with highly original features. When one side of a cassette has been played the machine will automatically turn the cassette over and play the other side. It is the only machine we have ever seen that will perform this very tricky task. With its own built-in amplifiers, auto-loading and auto-turning the CS 50 specification is said to boast one of the widest frequency response specifications of any cassette machine anywhere. It is one of five new models that will be available in the UK before the end of the year.

How do you fancy a spool-to-spool machine that will record and play back both cassettes *and* cartridges as well? If you do then the X2000 SD is for you but it will set you back a cool £300.

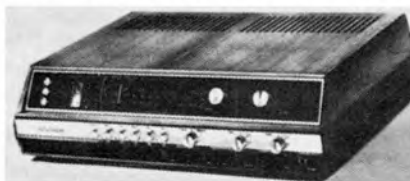


With facilities for working open spool. Compact Cassette and Stereo-Eight cartridge, the Akai X2000 SD is priced around £300.

Alternatively there is a cartridge record/playback machine complete with fast wind facilities costing £95 for the deck and pre-amp version or £115 with audio output stages. Other new Akai models are the X5000, a de luxe version of the well tried 1710 costing £177, the M10, successor to the M9, with automatic reverse and track change in both directions at £245.10s and the Model 4000. This latter is similar to the 4000D but includes final audio output and has its own built-in loudspeakers. At £124 18s it is remarkable value for money.

An attractive dual cabinet in teak is now available to house the Rotel 100-AMP amplifier on one side and the 120-ST stereo tuner on the other. The existing metal cases are removed and the equipment slides neatly in. Price £7.18.2

Big news from Rank Wharfedale is the arrival of their new powerful stereo tuner/amplifier, designated the "100.1".



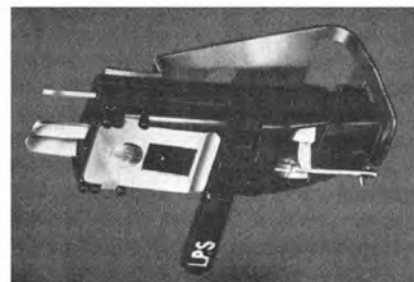
Wharfedale's new 100.1 stereo tuner/amp.

With a claimed 35 Watts RMS per channel and distortion as low as 0.1% at full power this Bradford designed and made device is said to bring a new dimension to stereo radio listening. Styled to suit the lady of the house with a performance that will satisfy the most particular of husbands the 100.1 is regarded as a major development by its manufacturers. Perhaps it is not quite accurate to refer to it as being wholly designed in Bradford; in fact the Wharfedale technicians were able to call on the knowledge and experience of their opposite numbers at

Leak, and this product is the first result of their co-operation in this way. We hope to be able to give detailed information on the use and performance of this appliance a little later in the year.

Discussing the future with senior Rank executives we are assured that the advantages of the merger with Leak are now really making themselves felt. With formidable development and marketing staffs they are setting about meeting genuine consumer requirements in a practical way. And one of their best men, Bob Cox, spends his time travelling the world visiting places as far away as Japan to sell British made products in those very countries that have made a name for themselves by exporting audio to us. We all wish him well on his journeys. Anyone at home wishing to buy a 100.1 will find that it costs him £131.5.0d inclusive of purchase tax.

As a change of price emphasis we looked into the Cosmocord room to hear the Acos 104 ceramic cartridge. This costs £4.10.5d complete with diamond stylus and is claimed by its makers to be the best stereo ceramic in the world. Its demonstration via a pair of Acoustic Research AR3a enclosures (over £150 each!) lent considerable substance to



Acos claim their 104 to be "the best ceramic stereo cartridge in the world".

their claim. Designed to match a magnetic pick-up in performance it gave a fine, clean bass sound with a delightfully silky string tone. It seemed to us to represent exceptionally fine value for money. Don't forget that the output from such a cartridge can be fed directly into the appropriate input socket of a tape recorder without the need for any equalisation circuitry.

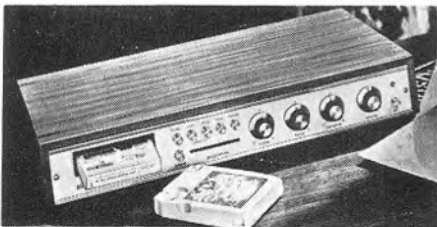
Dynatron were showing their new SA 90 amplifier, a model of high power at moderate cost. Full details are given in our New Products section this month. Also under development is an integrated tuner/amplifier and we believe that the realistic prices and excellent specifications of this equipment will appeal to many.

Returning to tape once again we were delighted to visit our old friends Brenell and to find that they have some very interesting new machines to offer. Their well-known "Hi-Fi Tape Link" has been

completely redesigned and up-dated to give us an outstanding performance in conjunction with the new Brenell deck. A complete system (less final output stages) based on a half-track or quarter-track three-head stereo deck would cost around £174 and would offer a very comprehensive range of facilities including inputs for ceramic and magnetic cartridges, two microphone inputs, full inter-channel mixing with automatic cross-fade, A/B monitoring and separate volume controls, four tape speeds up to 15 ips etc, etc. Output is 60 Ohms for feeding into a separate high-grade amplifier. An alternative machine using two heads but including the final audio output stage is £145. A new Series "M" (three-head mono) machine will be available in a couple of months priced at £155 and it will offer all the advanced facilities that are characteristic of the famous "M" models.

Still in search of tape recorders we called on Vortexion but are sorry to have to report that the music in that room was coming from disc. The fact is that in spite of our (premature!) review of their Series 7T machine production of the domestic model is still further delayed. We are assured that this firm has every intention of returning to the manufacture of tape recorders but they apologise to their many friends for not yet being able to name the date when models will be available. Since we happen to know that the real reason behind this reticence lies in their refusal to market a machine until it comes up to their very high technical requirements we can sympathise with them. When a new Vortexion does arrive it will have been well worth waiting for; in the mean time this firm is fully engaged building their comprehensive range of amplifiers and mixers for domestic, professional and industrial use.

Home units for the reproduction of Stereo Eight cartridges are available from Slot Stereo and Metrosound. Model 448



Slot Stereo offer a "home unit" for playing back Stereo-Eight cartridges.

has a claimed output of 4 Watts per channel, looks very handsome indeed and is priced at £45 plus tax. The SS30 is a more powerful 10 Watt version.

From the Bib division of Multicore Solders we found a vast collection of thoroughly practical accessories, the newest of which is the 12-inch Record Wallet (featured in New Products this

month) and a very clever indexing system that is so ingenious we shall have to discuss it in detail in a future issue. Called Indexa Record it comprises a padded index book with 12 slip-in filing pockets, 100 pairs of self-adhesive labels and a pad of pre-printed, colour coded index pages. The whole outfit is priced at 34s.

We heard some very pleasant sounds being reproduced in the Celestion room via their Ditton 10, Ditton 15 and Ditton 25 enclosures. Comparative switching enabled the listener to get a very good idea of the fundamental differences between these three enclosures with their wide variation in size. As we switched from the 10s to the 15s to the 25s we felt that the only adequate phrase to express the comparison would be to refer to "ascending degrees of solidity". With the big 25s (at £59.17.0d each) the bass fairly bounces out. For private listening we preferred the 15s (£29 each) as we found them less "obviously solid". The 10s make a very cheerful noise (at £21.3.7d) but it's worth spending the extra for the next size up if at all possible.

The Goldring demonstrators were frankly enjoying the sound of their own demonstration and we didn't blame them in the least. Using the G800E magnetic cartridge alternately with the Super E (cost approximately £18 and £26 respectively) and a GL 75 turntable the sound was coming from the same pair of IMF laboratory monitor speakers that this firm was using at Olympia. We then spoke of the end product as being "the best sound of the show" and at Sonex that impression was confirmed.

Of six new products from Toshiba four were tape machines. Model PT-850SA is a stereo tape deck costing £94, KT80 is a home unit Stereo Eight cartridge deck for use with an existing amplifier costing £49.19.9d with an alternative model, KT-81 at £63.4.4d, which includes the final output stages giving a claimed 10 Watts RMS per channel. Lastly there is a Compact Cassette record/playback deck at £61.9.9d. The other two new items comprise SA-2600M tuner/amplifier at £62.10 and HR-50 stereo headphones at £12.15. There is much to be said for the styling of this Toshiba equipment and we look forward to investigating its technical performance in our Test Bench reviews in the future.

We were sorry we did not have an opportunity to hear the Sinclair demonstrations. By the time we got around to them the demand for seats was so great we gave up the unequal struggle. A new module for their Project 60 equipment is described as an Active Filter Unit and this is claimed to remove scratch and rumble interference with less loss of the wanted signal than has hitherto been possible. Also new is the Z-50 40 Watt



The Active Filter Unit from Sinclair's Project 60 range of modules.

RMS amplifier costing £119.6d complete with power supply unit.

Radon Audio Products claim to take the price sting out of hi-fi, and to do it they offer nearly twenty pieces of equipment including amplifiers and a wide selection of speaker enclosures. Comment from their demonstrator: "The more you pay the less coloration you get." Very, very true. But some people like coloured sound, regarding it as more "realistic". Within the Radon range there's something to suit everyone.

Japanese styling at its best was to be seen in the Sansui displays. With a range of new tuner/amplifiers and a very impressive looking headset (supplied complete with dual extension cable at £16 10s) this firm has some very interesting products to offer. All business-like jobs they sound as well as they look and specifications are quite ambitious. By the way the Sansui Audio Guide is a slim, pocket-sized booklet all about audio. It contains a glossary of terms, discusses the pros and cons of various systems and makes not the slightest attempt to sell the reader Sansui. To get a copy free of charge write to the distributors, Brush Clevite Company, Thornhill, Southampton SO9 1QX, and it would be a nice gesture to enclose a large-sized stamped and addressed envelope. We can thoroughly recommend the booklet to you and would like to compliment the company for producing it. Do read it — you are sure to learn something from it. We did.

Our notes so far have covered only the first two days of the show, Thursday and Friday. Conditions were quite good when only trade and press were admitted on Thursday, but as the public arrived on Friday it became increasingly difficult for us to get around and write our reports. "Where," we asked ourselves, "did all the people come from?" Later we heard a rumour that a number of cars had been towed away by the police for obstruction. This was not the fault of the organisers but of the drivers. Remember that the facilities provided were free, and that included the special bus service to the car park. All the visitor had to do was to be a little patient and realise that each individual was only one amongst thousands.

From all the signs on Friday it was

Please turn to Page 195

Only Ferguson give you a 4 track stereo tape recorder for under £100!

This 4-track stereo tape recorder will satisfy the most exacting demands of the hi-fi enthusiast. Yet costs only **£97.18s.** And it's designed to match the Ferguson Unit Audio range. The specification speaks for itself.

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- Remote pause facility
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- Interlocked controls
- Comprehensive input/output sockets
- Includes two dynamic microphones, 1200 ft. of tape, take-up spool, connecting lead and remote pause switch.
- Teak veneered cabinet
- Neutral tinted transparent lid



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Ferrograph stereo amplifier F307

Ferrograph's F307 is one of the finest stereo amplifiers in the world. It has been designed to make the heart of great hi-fi systems.

It is an integrated stereo amplifier, built in the Ferrograph tradition to provide a unique combination of performance and facilities. Power output is 20 watts RMS per channel into a load of 8 ohms. Total harmonic distortion is less than 0.25% at 1 kHz at all levels up to its rated output. Silicon solid state devices are

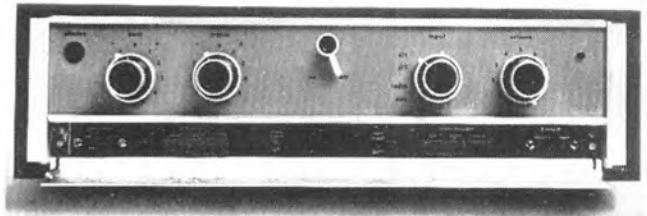
used throughout, with F.E.T.'s in certain input stages to provide high input impedances and large overload margins and thus to accommodate a wide range of input sources, including tape, ceramic and magnetic pick-ups, radio and auxiliary inputs, at their optimum levels. The signal-to-noise ratio, measured with volume control at maximum, is better than 65 dB. Controls include four-input selector switch, switched mains outlets, press-button HF filter, comprehensive mono/stereo input

and output switching. The main controls are readily to hand on the front panels; all others are conveniently placed under a hinged flap.

In appearance, the F307 amplifier continues the uncluttered lines of the Ferrograph Series 7 recorder, the two making an ideal combination which is matched both visually and technically. But the amplifier is equally compatible with most other good recorders and hi-fi installations, suits innumerable

amateur and professional uses, blends with any decor, stands attractively on any bookshelf or room-divider.

When planning your hi-fi system the F307 deserves your serious consideration. Your local Ferrograph specialist will be pleased to demonstrate it to you. Alternatively, please write or ring for details and address of nearest stockist. The Ferrograph Co. Ltd, The Hyde, Edgware Road, Colindale, London NW9
Tel: 01-205 2241, Telex: 27774



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obvious that Saturday would produce crowds of such proportions that our work would be virtually impossible. So we have to express special thanks to Mr Rogers of Rogers Developments Ltd. and Dennis Wratten of Bell & Howell Ltd (distributors of Acoustic Research equipment) for arranging demonstrations for us before ticket-holders arrived.

These two names are linked together in our report because both firms courageously demonstrated the new four-channel stereo system. Now we must make it quite clear that *no* equipment for four-channel is commercially available in this country, and to the best of our knowledge there are no plans to import any at present. Both these demonstrations were being staged out of purely academic interest to give the public a chance to hear what four-channel is, what it does for music and hi-fi and to form an opinion as to its possible value in the future. We are most grateful to Bell and Howell and to Rogers for taking so much trouble to keep British audiophiles up-to-date without necessarily thinking of possible financial gain for themselves.

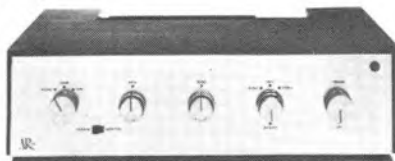
We have been sceptical about the advantages of four-channel and so as we settled in our seats in the Rogers room we were prepared to be critical. As we began to appreciate the benefits of four-channel as opposed to two-channel stereo our cynicism dissolved into admiration. We now know that four-channel offers the prospect of really reproducing within the home the feeling and the acoustic of the concert hall. It would be easy to use this system as two-channel was used in the early days, as a directional gimmick. That is not its proper function at all. With sympathetic handling of amplifier controls we had delicate and subtle effects that could not be achieved in any other way. It was a truly memorable occasion giving the listener a new aesthetic experience.

For their conventional stereo demonstration we are going to award Rogers the distinction of "best repertoire of the show". It was a tasteful collection of music beautifully presented with copious programme notes for the audience. The Ravensbrook 3-speaker enclosures (priced at £47 10s *per pair*) were standard production models giving a sound quality worthy of much more costly equipment, and the noise from a bank of Ravensbrook stereo amplifiers (£44 each) was remarkable for its absence. Congratulations, Rogers.

Upstairs in the Bell & Howell room the four-channel demonstration had the advantage of a more varied selection of

tapes. It was all on endless loop cartridge(!) and it was not long before we realised that it would be no exaggeration to claim that a completely new language is needed to adequately describe just what four-channel is and what it means.

The subjective impression depends to a considerable extent on the repertoire being reproduced. For sheer drama it would be difficult to beat the *Requiem* by Berlioz. The score calls for brass ensembles in the four corners of the auditorium. With four-channel we have fanfares literally coming from all directions. It sends shivers down the back and makes the hair stand on end. We have never heard anything like it before. Acoustic Research claim that the purpose of four-channel is "to reproduce music as accurately as present day knowledge of electronics and acoustics permits". With the advantage of the experience of listening under good conditions it can only be said that this is a statement with which we would not quarrel.

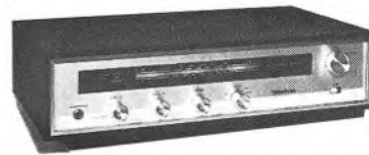


The clean lines of the Acoustic Research domestic stereo amplifier. This equipment is now being distributed in the UK by Bell & Howell Ltd.



Simplicity and clarity are the hallmarks of this Acoustic Research tuner/amplifier layout, in contrast to the superfluity of controls offered by some manufacturers.

Four-channel is so interesting and so important we shall be dealing with the subject in detail and at length in future editions of *TAPE Recording Magazine*. There are all manner of possibilities for the enthusiast who likes to experiment. But we cannot leave the subject before emphasising that all the four-channel recordings heard were on tape, they were all deliberately recorded for four-channel reproduction, all were commercial records, and none of them were two-channel "fakes". This would not work. At present the cost of a head conforming to the configuration of the system is in the region of £60 or even more. If any readers are prepared to spend that amount of money for the sake of experimentation they should write direct to Bell & Howell Ltd. who will be only too pleased to arrange for the special



A number of new items were introduced by Teleton at Sonex for the first time, and of these we show above model CR 10T AM/FM stereo radio system. The distributors claim that the increasing use of silicon transistors throughout the circuitry of many of their models has added greatly to their performance whilst prices remain extremely competitive. Teleton also market a Stereo-Eight home unit for the reproduction of cartridges and an interesting mobile mono-record stereo-playback Compact Cassette machine. Powered by the vehicle 12 volt battery (negative earth) this latter has Fastwind and Rewind facilities.

import from America. This head would be playback only, but we suspect that it could be used as a record/playback head in conjunction with a full-track erase head and in this way the enthusiast could himself experiment with four-channel recording. We shall carry out our own investigation and will regularly report back to our readers.

A full range of Acoustic Research conventional stereo equipment was shown and demonstrated by Bell & Howell who have only very recently undertaken distribution in this country. The manufacturer claims to be the largest in the world for loudspeaker production and of course the name is a household word in the States. Full details and prices will appear in due course in our New Products section.

It is at this point that we must close our Sonex Success Story. It has been a success – for the trade, for the organisers and for the public. Sonex is undoubtedly here to stay, and many of those firms who were dubious before it opened are now enthusiastic. The next Sonex show will certainly include many of the names that were conspicuously absent from this one. We regard Sonex as a new event in the audio calendar; for the real enthusiast perhaps *the* most important event of all.

Before closing we must mention that we went directly from Skyway Hotel to visit a very good friend who is both an accomplished violinist and the fortunate owner of a superb collection of fine instruments. As we arrived he was playing a three-hundred year old viola in the music room. With the greatest respect to all the exhibitors at Sonex we there heard a richness of tone and a beauty of sound that would put any manufacturer of expensive equipment to shame . . .

This is what it is all about. Let's keep our feet firmly on the ground. Hi-fi means musical quality. One day we might reach the standards of seventeenth century craftsmanship; as yet we have not.

'Its excellent performance is only exceeded by its extreme versatility'

Denys G. Killick, Tape Recording Magazine, May 1970.

Qualities for specialists in a brilliantly designed compact cabinet – that's the TC-800B. This 4-speed, servo-controlled portable has a 5-inch reel capacity and a built-in Sony Electret condenser microphone, giving professional standard sensitivity. Its speedy compensation for contrasting volumes on auto record, coupled with superb recording quality, make this the most advanced in a series already acclaimed as an aid to education. Here is a sensitive listener and a world of recording pleasure for the discerning – at a realistic price.

Recommended retail price £86 : 15 : 0

SPECIFICATIONS

Power requirements	AC: 110, 120, 220 or 240V, 50 or 60 Hz; DC: 12V (8 × LPU2 size batteries or car/boat battery)
System	2-track monaural recording and playback
Semiconductors	16 transistors, 9 diodes, 2 thermistors, 1 IC for microphone section
Reel capacity	5 inch
Tape speeds	7½, 3¾, 1½ and ¾ i.p.s. (19, 9.5, 4.8 and 2.4 cm/s)
Frequency response	30 – 18,000 Hz at 7½ ips; 30 – 13,000 Hz at 3¾ ips; 30 – 7,000 Hz at 1½ ips; 30 – 4,000 Hz at ¾ ips.
Speaker	3¼ in. × 6¼ in.
Power output	1 Watt
Input jacks	External microphone, 600 ohms, 0.19 mV; Auxiliary input, 100k ohms, 0.062V
Output jack	Monitor earphone, 8 ohms or 10k ohms, 0.775V at 10k ohms
Battery life	Up to 6½ hours in continuous recording (with Sony batteries).
Dimensions	12¼ in. (w) × 4¼ in. (h) × 10¼ in. (d)
Weight	11 lb 13 oz, including batteries
Supplied accessories	Microphone F-26S, reel R-5A, magnetic earphone ME-20A, connecting cord RK-69, 8 Sony super batteries, demonstration tape, AC power cord, head cleaning ribbon

Recommended optional accessories Telephone pick-up TP-4S, car battery cord DCC-2AW, foot switch FS-5, carrying case with shoulder strap LC-8B, voice-command microphone F-83.



SONY
RESEARCH MAKES THE DIFFERENCE
SONY (U.K.) LIMITED
Ascot Road, Bedfont,
Feltham, Middlesex

I HAVE always tended to be sceptical on matters psychical. Manifestations of ghostly apparitions certainly arouse my curiosity, but all too often there is an obvious earthly explanation for what are claimed to be unearthly phenomena. So I was particularly interested to read a report in the Sunday press (*News of the World*) of a group who claim to have actually recorded the voices of persons long since dead.

Well, we have spent a great deal of time and energy talking about "live" recording in the past — should we now refer to "dead" recording? What are the techniques for dealing with disembodied voices? Could be quite a problem.

Microphone to voice distance is obviously going to be tricky; unless one makes use of the services of a "medium" as was the case in the 200 recordings now claimed to originate from persons, who, as the Spiritualists say, have passed over.

Quite seriously the tape recorder could be a most useful tool in investigations of this kind. There is no suggestion that the voices "materialise" out of nothing (which is a relief!). At least we are dealing with the vibrations produced by living human vocal chords — those of the medium. It is claimed that the dead speak through him.

One of these recordings is said to be of the voice of Rupert Brooke, the poet, who died in 1915. It is a detailed description of what he experienced immediately after death. According to this account it involved nothing frightening, to the contrary it appeared to be the pleasantest of experiences.

A fascinating aspect of these recordings lies in the fact that the medium's voice changes. Although the sound is produced by the vibrations of his vocal chords it has the quality of the person who is "coming through". Brooke was a young man when he died, so that recording is of a young male voice. Another recording purports to be of Queen Alexandra. Here the sound is of a female, described as "precise, polished and hesitant". How does one reconcile that to the fact that the medium is undoubtedly male?

Such activities could be called intriguing, stupid or even dangerous, depending on the point of view of the critic. Although frankly sceptical I do think it is of the greatest interest that such recordings should be made. Unfortunately they prove nothing. One would have thought that intelligent human beings from "the other side" would have not the slightest difficulty in making one or two statements which would show without any doubt at all that they really are the persons they are supposed to be. But those key phrases appear to be the ones that are missing in

CROSS TALK

By Audios

this report. Perhaps some of my readers might have experienced phenomena of this kind?

There was, of course, the case of the lady who, without musical training, wrote the scores of completely new works and claimed that it was under the "direction" of the spirits of composers who died many years ago. Strange. So strange that it was featured on television when musicologists agreed that the new works displayed the characteristics of the various composers who were supposed to have influenced the writing.

There are certainly more things in heaven and earth than you and I have ever dreamed of, so I am inclined to treat such claims with sceptical respect. If you have encountered anything like this involving the use of tape recorders do please drop me a line about it and we will see if we can publish some of the most interesting ones.

* * *

THESE NOTES are being written on the day before the Sonex '70 exhibition opens at Skyway Hotel, London Airport. People in the trade to whom I have spoken are anxiously wondering what the result of this new show will be.

We shall very soon know the answer to that one, but in the mean time I have to gird up my loins for a direct assault on the various displays and demonstrations to assist in the writing up of our Exhibition Report. Even after many years of events of this kind I still thoroughly enjoy them. There's so much happening in the world of audio that one need never be bored. Far from being a dull chore it's an exciting, if exhausting, occasion.

* * *

AT THE PRESENT time there is a minor campaign by the tape manufacturers to point out the advantages of double play tape. In some cases prices have been rearranged so that in terms of playing time it costs no more than standard or double play.

I happened to be using a spool of this tape the other day, recording on a brand new machine of international repute. The tape, too, bore the name of one of our first-class manufacturers. I was horrified to find after about ten minutes recording time that the most horrible squeaking was ruining the recording. This squeak is caused mechanically as the tape passes the heads and in bad cases it will be found to be registered permanently on the recording. Which was what happened to me.

Now we could blame the tape or we could

blame the machine. It could even be six of one and half-a-dozen of the other. At one time it used to be a fairly common cause of trouble. I was astonished when it arose on modern equipment using the latest tape. Both should be above suspicion. But it happened. The moral is to be cautious when changing grades of tape or when using new, unfamiliar equipment. The day of the squeak is not yet over.

And in case anyone should want to know how to cure this trouble, let me add that I am quite baffled. Under these circumstances the only appropriate action would seem to be to change either the machine or the tape, remembering not to use that particular combination again.

* * *

THE NEW proposals for radio have raised a great deal of comment — some favourable and some adverse. But I have been delighted to find that all the critics are agreed on one thing: sound radio must in the future be taken more seriously and not allow itself to be overshadowed by the giant of television.

In fact there is now a reaction against the "magic box". The present generation of young adults comprise the children who have grown up in the television age. Many of them had their fill of flickering shadows before they left school. For them the box holds little or no fascination. They are disillusioned. After twenty years of mediocrity they want a change, and the obvious alternative is sound.

Since the techniques of sound radio are the techniques of recording we should experience a revival of interest in the medium. Pure sound, without pictures, demands greater intellectual participation from the audience. Young audiences are no longer prepared to allow themselves to be drugged by the opiate of the moving picture. They have brains and they want to use them. Sound radio offers that opportunity.

Under the pressures of television our sound programmes have deteriorated sadly in quality. The BBC has been parsimonious in its allocation of funds for sound and this meanness is transparently clear in many of the programmes. We want something better than endless hours of gramophone records, with or without puerile comments. There should be no time for pointless serials that drag on and on and on.

Sound radio could give us entertainment of the very best kind — programmes to stimulate the intellect and to get us all talking and thinking. This in turn will give an added impetus to the amateur who works seriously with his own equipment. The demand for such programmes is there. It's up to the BBC to provide them.

* * *

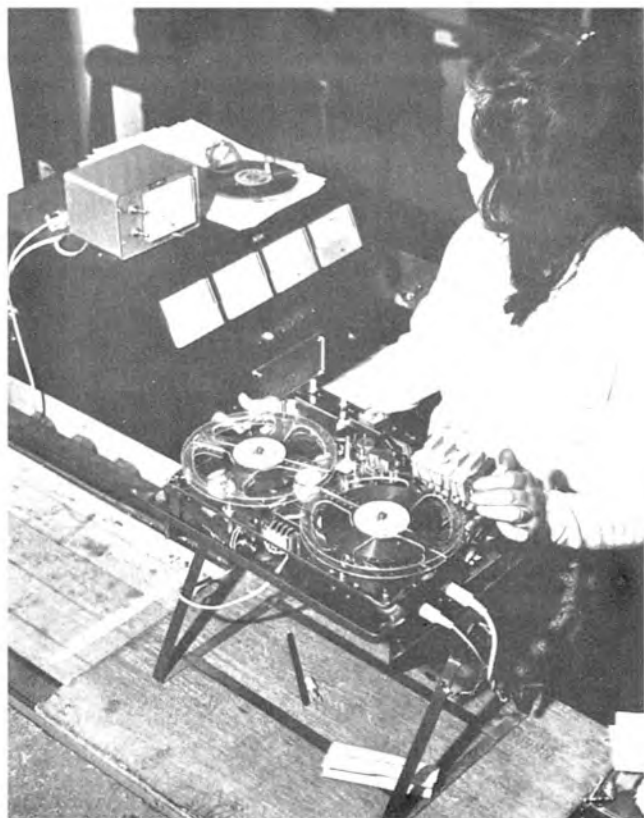
I HEARD an encouraging story the other day about an amateur's efforts in producing synchronised tape and slide shows. It came to me from a representative of the firm who made the tape recorder. This customer had worried him to death with all manner of queries regarding the operation of the equipment. Conscientiously every question was answered as courteously and helpfully as possible. One day the telephone rang in my friend's office and the now familiar voice of the enquirer was on the other end. With great excitement he told of an unexpected success.

Apparently he had given his tape and slide show at a meeting of the local camera club, and it so happened that a director of a travel firm chanced to be in the audience. This gentleman was so impressed by the technical excellence of the programme that he offered a free fortnight's holiday abroad for the operator and his wife in exchange for a similar documentary describing it. Which just goes to show that the people who profit most from their equipment are those who use it.

OPEN SPOOL OR COMPACT CASSETTE?
ONE MANUFACTURER WHO DEVOTES A GREAT
DEAL OF THOUGHT TO THIS QUESTION IS

BRITISH RADIO CORPORATION AT NEWHAVEN

VISITED BY TAPE RECORDING MAGAZINE



Above: The four-channel equipment used by BRC to test four frequency responses simultaneously.

Opposite: The Ferguson model 3245, one of the new cassette machines from BRC.

ONE of the most important manufacturers of tape recorders in Great Britain is the giant British Radio Corporation. It is claimed that 14% of open spool machines sold in this country bear one or other of the famous BRC brand names. So we were more than pleased to be able to accept an invitation to visit the works at Newhaven in Sussex where these machines are designed and built.

Some 600 people work in this modern industrial complex situated on an industrial estate on the outskirts of a delightful country town. Just a short distance away lies the flotsam of assorted week-end and pleasure boats. The place had a holiday feeling about it in spite of the continuous rain and grey mists from the sea. But, isolated within the factory all thought and conversation was dominated by one topic – what BRC call the “entertainment products” to which this single factory is entirely devoted.

The very first tape recorders made by BRC appeared in the shops seven years ago, in 1963. Right from the start the firm met with export successes, sending as much as one third of the production overseas.

Much of the thought that goes into the range of equipment built here is of the greatest interest. Over the period of the

last seven years there have been considerable changes in the market, the most significant of which has been the introduction of the Philips Compact Cassette. To meet this challenge the company began to manufacture their own Compact Cassette equipment and are now planning to expand into three completely new cassette models.

Although we might have many cassette machines bearing British names, the vast majority of these are imports – mostly from Japan. No-one would wish to under-estimate the value of these foreign-produced equipments; many of them offer exceptionally fine value for money. But it is encouraging to find that an organisation of BRC's ability and repute have realised that the real answer to the “cassette threat” is to build the decks at home. If you can't beat 'em then join 'em!

All this work on cassette equipment is being paralleled in the open spool department. A completely new tape transport system has been developed and this is now available on the latest models being delivered to the shops. All of these will accept seven-inch spools, although the smaller ones will only do so with the lid or cover removed. An important feature of this new equipment is the provision of a new automatic

record level control with switchable settings for either speech or music.

Automatic controls have been a source of criticism in the past. A poor system will tend to modulate *down* the loudest passages in a musical performance and then modulate *up* the softest. As a result the dynamic range of the recordings is completely upset and the programme is spoilt. Whilst BRC do not claim that their circuitry offers perfection they do say that in their opinion it will give very much better results than would be achieved if an unskilled user were to be heavy-handed in the use of a manual control. To demonstrate this a piece of music with a wide dynamic range was copied on to tape using the automatic control and the resultant recording was shown to retain the dynamic range of the original. Quite an achievement.

A different time constant is needed for recording speech; as a rule contrary requirements have to be met as compared to recording music. Typical is the application where recordings are to be taken of several persons speaking at a meeting or conference. Here the optimum recording would have the level deliberately brought up when a person far away from the microphone or with a very quiet voice starts to speak. So when switched for speech the automatic system

does just that. It will adjust itself to bring out all the voices at approximately the same dynamic so that all the speech will be intelligible.



It was particularly interesting to note that the lowest cost open spool machine, Ferguson 3245 costing £35.19.0, is exclusively automatic. Running at a single speed of 3¾ ips it is a mono, half-track recorder with its own built-in speaker. The philosophy behind this machine lies in the thought that those who buy at the lowest end of the price bracket are likely to require the minimum of complication and so would welcome the omission of a manual control. That is a point which some of our less wealthy readers would doubtless enjoy debating. . .

However, as soon as we proceed up the range then manual override is included as a matter of course. One item we did miss was the deck and pre-amp without audio output stages for use with existing hi-fi equipment. BRC say that they do not have any plans at present for the introduction of such a model, and we could do nothing to change their minds. A pity, that, because these machines are being sold in ever increasing numbers as more and more people invest in good amplifiers and loudspeakers. It is claimed by BRC that their equipment offers price advantages of from ten to forty per cent compared to the equivalent imported products, so why should an important section of the purchasing public be denied this benefit?

All manufacturers of recording equipment are bound to be guided in the selection of the models they produce by the actual – or estimated – needs of the buying public. This has influenced the company's present development of new cassette models. The battery operated machine, weighing only a few pounds and supplied complete with carrying case and shoulder strap, met with unexpected success. Since first going into production more decks have been sold for commercial, industrial and educational applications than as domestic recorders. With the certainty of improvements to heads and recording tape making still better audio quality possible through the cassette system they are determined to

capture a bigger share of the market. To do this they have brought an entirely new look to their cassette range.

We at *TAPE Recording Magazine* have always predicted that at some time cassette quality would improve to such an extent as to overtake the performance standards of many of the lower cost open spool machines now available. Without making invidious comparisons of individual makes it could be said that this has already happened in a number of cases. But the weakest feature of all cassette equipment lies in its lack of speed stability. With a wow and flutter figure of around 0.3% it is difficult to claim true "high fidelity".

In the opinion of the BRC engineers two steps must be taken to correct this weakness. First, the cassette deck must be engineered in such a way as to reduce this "wobble", and this they claim to have achieved in their latest mains models (which will not be available until later in the year, by the way). But secondly they feel there is room for improvements in the actual construction of the cassettes themselves.

This is an interesting thought. When we change cassettes we change – in effect – both the spooling and the pressure pad. Greater mechanical efficiency here could lead to better speed stability. Doubtless this is a matter that Philips as the designers have well in hand.

Walking around the works one could not help being impressed by the degree of care and control that is everywhere to be seen in the production lines. Many of the machine tools required to carry out complex tasks are designed and made on the premises and some of them display great ingenuity. The enormously heavy solid steel plate of a riveting machine moves forward with deceptive ease; closer inspection reveals the fact that it works on the hovercraft principle, riding on a cushion of air.

In the test departments calibration is carried out by using four-channel generators coupled to individual meters so that four frequencies can be read off at one and the same time. And speaking of calibration it was noted that the head assemblies have their optimum bias values determined before being incorporated into the recorder. This is done on a large and complex machine, half recorder and half test rig, and the heads mounted on their fixing plate are then given a label showing just how the machine of which they will be a part should be adjusted for correct results. Since the recommended tape is EMI Afonic one could say that this adjustment makes them suitable for the full range of the newer, high coercivity, low noise and high output tapes.

An important feature of BRC tape

recorders has always been the very wide range of accessories that are readily available. Mono four-track machines can be easily adapted for the play-back of four-track pre-recorded stereo tapes; remote control and slide synchronisation is simply accomplished through the use of the appropriate accessories. Styling of the new products is well up to the best of modern standards, and if one was to call it "un-British" then that could be regarded as a compliment. There is nothing heavy or cumbersome about either the appearance or the operation of these machines. Some models are offered in alternative hard-wood casings at extra cost, but even the standard finish is smart enough to evoke pride in ownership. We particularly liked the hinged, transparent covers which effectively protect against the entry of dust whilst at the same time giving an unimpeded view of the spools with free access to controls.

Important questions that any new owner is entitled to ask are: How reliable will it be? How long will it last? Here at Newhaven they have a special test room where production samples are literally tested to destruction. In one corner a deck is having its piano key controls continuously activated at intervals of a second or two, and this goes on "until something breaks". No user could ever put such a strain on the mechanism. In another part of the room half a dozen pulley assemblies are testing belt life; again the belts are run until they are destroyed. Only in this way can the careful manufacturer be quite sure that his products will stand up to the rigours of rough handling in countless thousands of homes.

It was a great pleasure for us to be able to see such effort and thought being devoted to tape recorders by a British manufacturer. BRC frankly admit that their equipment is intended for the "middle of the road" purchaser. They do not compete with the international names at the very top of the domestic market. This is not because they lack either the knowledge or the ability but because they prefer to confine their activities to what they regard as "their own sector". Perhaps they are right, although we should like to see them produce equipment to match some of the very fine recorders being imported from Scandinavia, Japan and other countries.

However, as electronic techniques develop and as mechanical engineering improves we are seeing a steady up-grading of standards in the performance of this medium-price equipment. Will there come a time when none but the most dedicated enthusiast demands anything more? After visiting the Newhaven factory we now know of one firm who sincerely believes that it will.



NATURE NOTES

FOR
JUNE

BY RICHARD MARGOSCHIS

IT IS the middle of March and I am beginning to write these notes as I practise one of the most important requirements of natural history sound recording – PATIENCE! Here I am, at Woodchester Park Field Centre, near Stroud in Gloucestershire, with a valley a mile long containing four lakes and a variety of habitats in which can be found birds, badger and fox. The lot, and it's blowing a gale! I am confident, however, that during my four days' stay there will be at least a few hours, by day or by night, when conditions are right and I shall make the most of them. There is a lot to be said for visiting the same place as often as possible for short-term breaks anyway; for longer holidays I prefer to vary the area of operation. Either way I cannot spend too much time at this field centre.

It is a private field study centre run by Reg Kelly and offers a wide variety of courses. From a sound recording point of view it is excellent, not completely lacking in extraneous sounds but, by present day standards, these are not too troublesome, and that is an important factor. My knowledge of the area is now such that without wasting any time I can make the most of the various habitats and prevailing weather conditions. For instance, I know that there are certain spots where I can get maximum protection from the wind and I also know that the valley has a remarkable quality of echo, more pronounced in some areas than others. This has given added 'life' to many of my recordings of fox made here.

Sure enough, the weather improved and over the last three days most of my time has been spent along the valley. On the lakes I found coot, duck, grebe and heron but none was particularly vociferous. Among the young conifers around the lakes I heard many different calls from great tits, blue, long tailed and marsh tits, and quite frequently I caught a glimpse of the diminutive gold crest, still feeding on the lower branches but already starting his rhythmic, high pitched song. Later, when the bird goes higher in the trees, I am often exasperated at not being able to decide exactly from where the song is coming. High above the ridge, with their great wings curled upwards at the tips, a couple of buzzards were soaring in the sunshine and frequently giving their 'mewing' call, whilst in the more mature woods, at the other end of the valley, green and great spotted woodpeckers were calling and drumming. Though I roamed around a lot I also sat for hours partly hidden among undergrowth to wait for the birds to come in close to me, recorder always at the ready.

At night the valley can be very still and eerie, especially when the moon lights up a huge mansion that stands there in ruins. The first time I ever heard the scream of a fox was here and I shall never forget it; sitting alone in the dark of the woods it's a hair raising experience and makes one realise how ghost stories originate! Now that I am used to it my reaction is entirely different; it is a thrill of which I never tire. This time I heard a distant fox call on several occasions but never near enough to record.

When I was here in January I heard, and recorded, a badger deep in his sett, snoring and scratching himself in a disturbed sleep as a dog fox went by calling for a mate. At dusk, on the last four evenings, I have sat by the sett and on each occasion was able to watch the badgers emerge. I had a couple of microphones out on long lines and heard several noises which I have not yet satisfactorily identified; the difficulty is that as darkness falls it soon becomes impossible to see what is happening. For a long period I heard a quiet cracking sound which I believe was coming from inside the sett. Now I had noticed before starting my watch that there was a long stick lying along the entrance tunnel; next morning it was gone. Norah Burke, in one of her books on badgers, has described how she discovered that such sticks appeared to be used to keep bedding off the ground. I wonder if I recorded the sound of that stick being broken up into shorter lengths? This is the sort of situation where the combined knowledge of experienced naturalists, especially an expert on a particular species, can be of great help in solving a problem.

Luck is with you sometimes, however. I listened in to a microphone for half an hour during the day and, for about thirty seconds, heard a tapping and soft chattering. Had I not happened to see a wren fly out of the entrance I might have thought it was noises from a badger – it goes to show how careful you must be on identification; take nothing for granted!



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FERROGRAPH 722/724	£242 10 9	£213 8 9
REVOX 1102/1104	£187 19 0	£169 3 2
FERROGRAPH 713	£188 10 0	£165 17 8
TANDBERG 64X	£157 0 0	£138 3 3
TANDBERG 12/41X	£154 0 0	£135 10 5
BRENELL ST200/400	£145 0 0	£127 12 0
BRENELL MKVM	£145 11 10	£128 2 5
UHER 4000L	£145 10 0	£128 0 10
BRENELL MK5 111	£116 15 6	£102 15 4
UHER 4000S	£187 5 0	£164 15 8
SANYO MR939	£112 5 0	£98 15 8
AKAI 1710W/L	£109 0 0	£89 5 0
SANYO 929	£97 5 0	£85 10 5
AKAI 4000D	£89 19 1	£79 3 1
TANDBERG 1600X	£89 10 0	£78 15 3
TANDBERG 15/41	£85 0 0	£74 16 0
SANYO MR801	£69 15 0	£61 7 8

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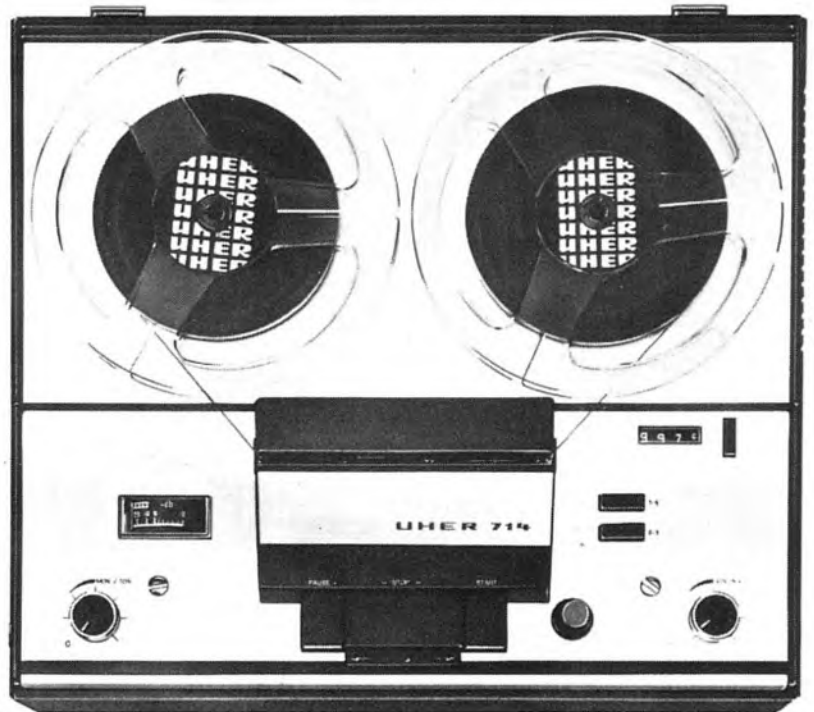
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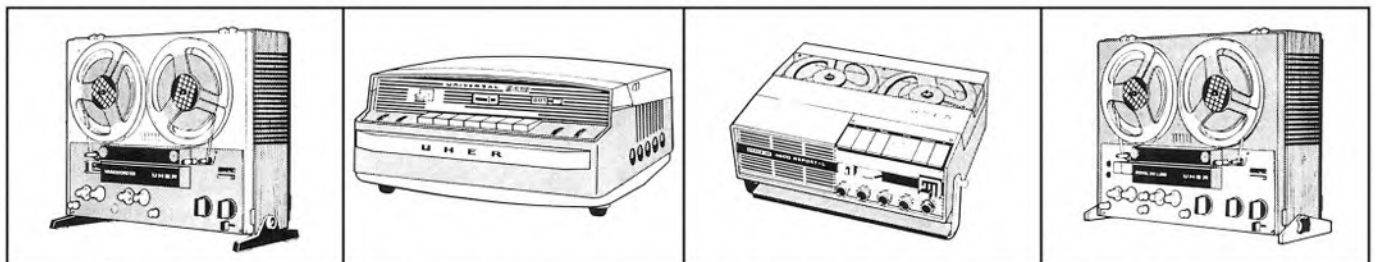
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- Light · Robust · Portable

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TEST BENCH



MANUFACTURER'S SPECIFICATION

Pye Model 9000

Aerials: Internal ferrite rod for AM; telescopic rod for FM.

Wavebands: Medium 181-552 metres (1650-525 KHz), VHF 87-109 MHz.

Loudspeaker: 2½-inches round; 8 ohm impedance.

Power Supply: AC mains via converter unit supplied or five 1.5 Volt dry cells (Ever-Ready U11 or equivalent).

No. of Tracks: Two.

Tape Speed: 1⅞ ips.

Power Output: 600 mW.

Controls: Push buttons for Stop, Start, Fast Wind and Rewind. Slide button (interlocking) for recording and monitoring. AM/FM/AFC/Tape selector switch. Radio tuning control; combined On/Off, Volume and Record Level control.

Cabinet: Black moulded casing with wood grain effect top. Black push buttons, silver coloured knobs and styling trim. Dimensions in carrying case; 3-inches high, 10-inches wide and 7-inches deep.

Accessories: Supplied complete with blank cassette, moving coil microphone with remote control Stop/Start switch and stand, mains converter unit, earphone, carrying case with shoulder strap, hand strap and microphone pouch.

Recommended Retail Price: £44 including purchase tax.

Distributors: Pye Group (Radio & Television) Ltd., P.O. Box 49, St Andrews Road, Cambridge, CB4 1DS.

PYE 9000

INVESTIGATED BY R. HIRST AND D. KILLICK

PYE MODEL 9000 TEST CHART

Frequency	Overall Response dB	Signal-to-Noise Ratio dB	Crosstalk dB	Distortion %
50	-4.0	48	50	3.6
60	-3.0			
100	-2.5			
250	0			
500	+1.0			
1000	0			
2000	+1.0			
4000	0			
6000	-1.6			
8000	-3.5			
10000	-6.8			
..... Wow & Flutter	0.28%			

NOTES. - The Overall Response figures relate to record and playback.

For Signal-to-Noise Ratio the tape was recorded at OVU and then the input signal was removed from the record amplifier. By reference to the signal level recorded and the resultant tape noise, the noise voltage was read off, with the tape still in motion. Distortion is quoted against a 1,000 Hz signal recorded at the same level and the figure is an R.M.S. value.

Wow and Flutter is also R.M.S. the test frequency being 3,000 Hz. Test equipment used includes: Bruel and Kjaer Signal Generator, B & K Frequency Analyser Type 2107, B & K Level Recorder Type 2305, Marconi Distortion Factor Analyser and Gaumont-Kaylee Wow and Flutter Meter.

IT IS STRANGE to think that the imposition of purchase tax on tape recorders could be of benefit, yet without that punitive demand on our pockets machines of the kind now being reviewed would not be available for sale in this country. So long as tape recorders were tax free it was uneconomical to combine them with other equipment - such as a radio - which would attract tax to the whole. Now we have to pay tax anyway so the possibility of marketing integrated recording/radio devices is a practical proposition.

In case what has just been said should be interpreted as defending purchase tax on recorders let us hasten to add that this

anomalous situation came about through the taxation of radios in the first place. As soon as values of commodities are changed artificially through governmental action the consumer's natural choice and selection is bound to be affected. That is one of the more serious evils of such taxation. The cure in this case has been to spread the tax further. How much better it would have been to remove it.

However, once we accept the possibility of a "marriage" between radio and recording it is quite obvious that cassette machines would be ideal for such integration. And that is what we have in the Pye Model 9000; a mono Compact Cassette record/playback mechanism

combined in a single case with an AM/FM radio receiver. The whole is fully portable, running on five 1.5 Volt dry cells or via AC mains through the separate converter unit supplied and included in the purchase price. The immediate advantages of such an arrangement lie in the convenience of having two-appliances-in-one. A single amplifier circuitry can perform a dual function and the one loud speaker serves for both the playback of tapes and for listening to the radio. So this could be quite a happy arrangement. How well does it work in the Pye Model 9000?

First of all we took a close look at the

overall record performance of the cassette side of the equipment. The cassettes used were Scotch by the 3Ms Company and our signals were recorded at the usual 20 dB below the indicated peak value.

The only criticism that can be raised as a result of these tests lies in the falling off of response at the upper end of the curve. We see that at 10,000 Hertz we are down by 6.8 dB which indicates the certainty of a lack of extreme top. The middle range (which by the way, we believe to be of great importance for realistic sound quality) is reasonably flat up to 8,000 Hertz; the steep decline occurs only after that point. At the other end of the curve the 9000 is behaving rather better than some of the cassette machines we have handled.

For signal to noise and distortion our measurements were taken by reference to a 1,000 Hertz signal at the indicated peak on the meter. This gave us a noise figure of 48 dB and distortion of 3.6%. Both of these may be regarded as quite acceptable for equipment of this type. In fact, to be realistic, the noise level and distortion both closely approach the figures that we were at one time used to quoting for valved mains equipment; now we can get comparable results from a miniature battery powered machine at 1⁷/₈ ips. Too few people appreciate what a tremendous breakthrough this represents.

Of course our modern, hundred-pound mains recorders will do better than this, but that is not the point. Here we are considering a recorder *plus* AM/FM radio which, with a full complement of accessories, costs just £44. So let us try to keep these figures strictly in perspective.

The crosstalk measurement of 50 dB is very satisfactory, as is the established output power of 625 mW against the claimed 600 mW. Speed stability of cassette equipment is something we shall be watching very closely in the future, and in this case our readings gave us a value of 0.28% for wow and flutter. Under 0.3% can be regarded as normal for machines using this system so we cannot fault the 9000 here. This does not alter the fact that we look forward to a fundamental design change that will improve speed stability dramatically in all Compact Cassette machines, but until that happens then the model now being investigated can be said to offer a good average performance standard.

To summarise our laboratory findings we must again repeat that phrase "good average". The only real complaint relates to the falling off of the upper limit of the response curve and that might well worry the real purist. We suspect, however, that this equipment is primarily intended for much more generalised use and for

ordinary entertainment purposes we should not regard this as a prohibitive disadvantage. It might, of course, be peculiar to the particular sample we examined. Some too-clever cynics believe that all published machine reviews are "rigged" because manufacturers or distributors go to extraordinary lengths to make sure that the equipment submitted will reach or exceed the advertised specification. Such suggestions are completely false to the best of our knowledge. Review equipment invariably comes straight out of stock and readers would be surprised to know how frequently we find that the service manager of the firm is blissfully unaware that a review is being undertaken at all. Since he is the gentleman who would have to be concerned with any unethical manoeuvring the honesty of the business is only too transparent.

But to return to the subject, the Pye 9000. Technically it performed well with the single reservation noted. From this stage we were happy to pass on to our user examination.

The equipment is supplied complete with a very smart black carrying case fitted with a conveniently short hand strap. The shoulder strap, also supplied, merely has to be buckled in to extend it to full length. The top of this case can be completely removed to reveal first-class contemporary styling with a ribbed finish that simulates hardwood so well that one has to look twice to realise that it is, in fact, plastic. On the right-hand side we have the AM/FM tuning scale beneath which runs a brilliantly coloured red cursor which helps to make visual tuning delightfully easy. A slide switch at the side of the scale gives Monitor On/Off and this mutes the internal speaker if it is desired to record from the radio in silence.

Next on the top of the machine we have a hinged flap which when raised reveals the cassette compartment. Ejection is not mechanical as it is on some other cassette type machines and we do regard this as being a minor disadvantage. The Record function is controlled by a large, clearly marked slide switch beside the cassette compartment.

The rest of the control assembly is mounted on a bright metal strip running along the front of the machine. On the extreme left is a rotary knob which combines the On/Off switch with Volume and Record Level. Adjacent to it is the edge-type meter; when listening only this indicates battery condition, but as soon as the Record function is engaged the needle shows the programme level going on to tape. A pair of press keys give Stop and Play, and next to them another pair

of similar controls provide Fast Forward and Rewind. The main function selector comes next, and this is a rotary control with four switched positions marked: Tape, AFC, FM and AM. An interesting and very sensible feature of this selector lies in the fact that when turned to Tape all the power supplies to the cassette side of the equipment are governed by the various transport controls. If, therefore, one should accidentally leave the On/Off switch in the On setting there will be no loss of battery power so long as Tape has been selected. This can easily happen – we did it ourselves – but the protection in such conditions is complete.

Last of the control knobs is for tuning and this can be adjusted accurately to reasonably fine limits. Exiting from the right-hand side of the machine is the FM telescopic rod aerial; a separate ferrite rod for AM is built in. The instruction manual warns that both these aerials are directional and the instrument should be rotated for maximum signal strength.

Two pairs of recessed sockets on the left provide for the connection of External Amplifier and Radio in one pair and Microphone and Remote Control in the other. This latter is the usual slide switch on the microphone provided. A similar cut-out in the front houses a pin for the connection of an external 7.5 Volt DC supply (via mains adaptor provided) and a socket for External Speaker.

It was the work of a moment to flip out the FM antenna and check the quality of radio reception. Our three FM stations came in well with plenty of volume at a mid-way setting of the volume control. A certain amount of drifting took place when the selector was set to FM, but by changing to AFC (Automatic Frequency Control which is only operative on the FM stage) this was at once cured. That, of course, is the purpose of AFC; once the FM station has been tuned in it locks on to that frequency and prevents objectionable drifting away. In the 9000 it works admirably.

Selectivity on AM is up to the general standard expected of a small portable; plenty of stations can be brought in at acceptable listening strengths with a minimum of interference. For recording purposes one would, of course, always use the FM wavelengths for stations that transmit on them. Sound quality is generally not at all bad – much better than that obtained from the smallest cassette machines and infinitely better than that to be heard on the smaller transistor radios.

Our next test involved the repro-

Please turn to Page 206

This is Pye's all-new Radio/Tape Recorder. Tick off its remarkable features.

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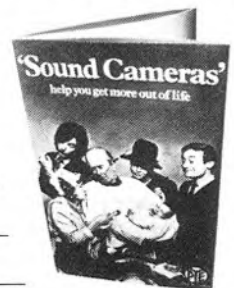
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duction of pre-recorded music on cassette. For this we played back some familiar Musicassettes and were pleasantly surprised to hear that in spite of the overall response curve there was no obvious falling off of response at the upper end. To the contrary the machine gave us a remarkably cheerful audio output, apart from a lack of bottom which one could not expect to hear from a small internal speaker anyway.

Recording from the radio required no external connections at all. One merely switches to FM, tunes in the station, flick over to AFC and then go right ahead and record. As mentioned earlier the meter will now indicate recording modulation and what was the volume control becomes the record level control.

Playback of such recordings did reveal a pretty close comparison with the original radio signal, although we were now experiencing the effect of the drop in response between 8,000 and 10,000 Hertz. There is no tone control in the equipment so it is not possible to apply fractional treble boost to correct matters. But, remembering the cost of this duplex package, can one really complain about that?

The microphone provided is housed in a matching black wallet. It is of the stick type and is complete with slide On/Off switch and the usual simple cut-out stand. In addition we have an earphone for private listening and the various straps and mains adaptor previously mentioned. Quite a comprehensive outfit. A complete, self-contained entertainment centre, in fact.

In summarising this machine we have to bear in mind its extreme versatility. It is not difficult to imagine applications where its dual function could be most useful. On holiday, for instance. We are always stressing the importance of taking a recording machine away at such times; now one can – with a private radio as well. Against this advantage there is the snag that the machine is rather larger and heavier than some cassette models and the serious recording enthusiast might prefer to do without his wireless listening for the sake of greater portability. It's really all a matter of personal choice.

There is no doubt that the Pye Model 9000 performs all the functions it was designed to carry out with a standard that is surprisingly good in view of the cost. We can therefore recommend it to those who feel the need for the combined facilities it has to offer within this price range. It is the first machine from Pye that we have been privileged to review and we look forward to examining more of their models in the future.

TWO FIRMS HELD EXHIBITIONS OUTSIDE SONEX BUT IN CONJUNCTION WITH THE MAIN SHOW SO HERE WE REPORT ON

THE 'OTHER' SHOWS

EXCITING POSSIBILITIES for precise lip synchronisation of sound with amateur cine films were demonstrated by Farnell-Tandberg Ltd. at the Norway Trade Centre in London. Heart of the system is the Tandberg Series II half-track battery portable tape recorder. This is now available in a new version, designated 11-2M and priced at £191 inclusive of purchase tax compared to £179 10s for the standard 11-2. We are advised that the distributors will be pleased to modify existing Series 11-2 machines to conform to the 11-2M specification at a cost of approximately £19.

It is claimed that by the use of the 11-2M the standard of the professional film-maker now lies within the reach of the amateur for the first time. Operation is based on the proven professional method of pulse recording. An accessory pulse generator is connected to the camera on one side and the recorder on the other. During shooting the camera (running "wild") has its speed recorded as a sequence of pulses on one track of the tape whilst the audio signal is recorded on the other. After filming and whilst the negative is being processed the recorded audio/pulse tape has to be transferred to perforated tape (Cinetape Type A1). To do this the tape from the 11-2M is played back on any suitable stereo machine and re-recorded at 3¾ ips; the recorded synch pulse is taken from an extension speaker outlet and fed via an 80:1 transformer to a neon lamp. The Tandberg FT1 variable speed attachment is plugged into the 11-2M. By using the flashing of the neon in conjunction with the perforations in the tape a stroboscopic effect is produced. Now the re-recording can be made to precisely parallel camera speed at the time of shooting so that each frame of film corresponds with a tape perforation. It only remains to transfer this "corrected" version to magnetic stripe, and to assist in this a new device will shortly be marketed by Farnell-Tandberg Ltd.

It might sound complicated – simple technical processes usually do when expressed in print. None of this is difficult and the results as demonstrated were the best we have seen of any

amateur attempts at lip-synch. There are no half measures possible. Either the film is in synch or it is out. As demonstrated sound and vision were locked perfectly (perforation for frame as the professionals say) and the result was as one might expect to see at the commercial cinema. This system could be of the greatest value to industrial and educational organisations as well as the amateur.

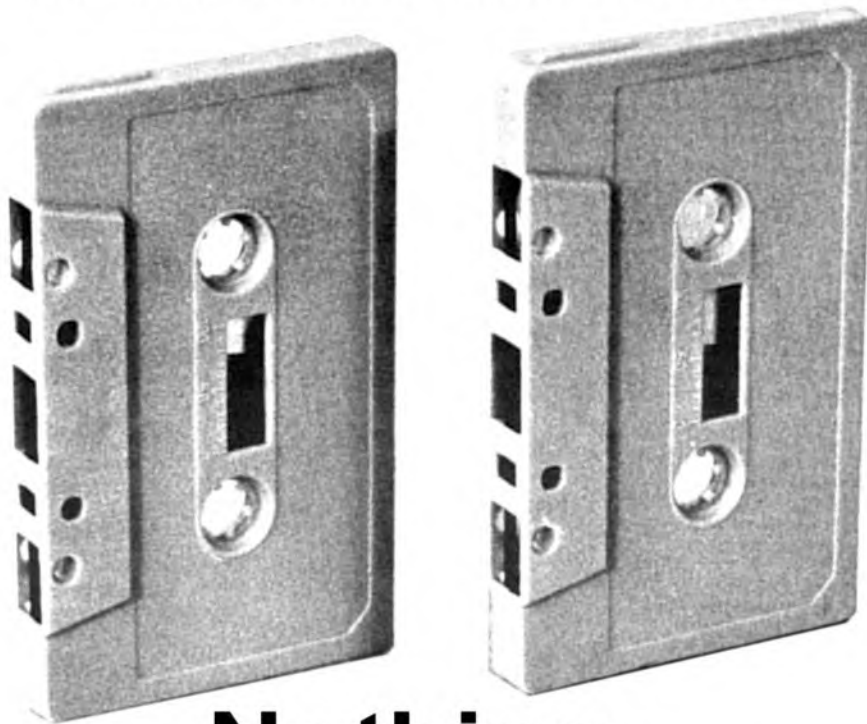
In addition Farnell-Tandberg were showing their full range of audio equipment, including the new Series 3000X and 6000X. Both these tape recorders have been designed for the enthusiast; the former at £99 18s is a three-head stereo mains deck and pre-amp utilising a forth Crossfield head. The more expensive 6000X has a similar head configuration but offers a very advanced range of facilities including a built-in limiter, push buttons for electrical functions and a professional-type tape transport system. Cost of the 6000X series in £193 10s.

Also on display were the Tandberg Huldra tuner/amplifiers, Tandberg speaker enclosures and the Tandberg 150 disc transcription unit as well as a new colour TV set. A fine show of excellent Scandinavian styling.

For startlingly different design features one had to go to the Kenilworth Hotel where Telefunken products were being shown by AEG (Great Britain) Ltd. There we found the CC Alpha, a Compact Cassette machine that is revolutionary in conception. Shaped rather like a medium-to large-sized portable radio it has a most ingenious slide key set in the handle. Through the single-handed operation of this key the operator can engage all the normal functions of the machine, including fastwind, record and play.

Telefunken also make a full range of audio equipment styled in matched designs so that the user can build up a complete "suite" of items, all of contemporary appearance. We also saw the many Telefunken radios, recorders and speaker systems. These, and a new colour television set, made up the Telefunken display.

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PHILIPS

Music

Musicassette Reviews

Consultant Critic Katinka Seiner

TCHAIKOVSKY. "The Sleeping Beauty" (Excerpts). London Symphony Orchestra conducted by Anatole Fistoulari. Philips CPC 0081 49s 11d including purchase tax.

With excellent playing, phrasing, recorded quality and what can only be called "lovely" string tones we here have an album devoted to the most popular excerpts from this most popular of ballets. It is such a pleasure to be able to refer to fine performance together with equally high recorded quality. In this album there is no doubt that both are of the very best standard.

The composer himself was very pleased with this work, although it was not well received at its first performance in St. Petersburg. Tchaikovsky wrote to Mme. von Meck to say that compared to some of his earlier works he believed that *The Sleeping Beauty* ballet would be one of his best. With typical modesty he referred to "traces of hurry and lack of true reflection" in his previous writing.

Within this music we have lovely melodies full of feeling and excitement – ideal for dancing. Knowing the stage version one can so easily visualise the unfolding of the ballet; it takes on life, movement and action in the listener's imagination. The court scenes in their spectacular splendour, the romantic love and all the ingredients of the fairy-tale are portrayed in the music; in particular in the violin and cello solos (Hugh Maguire, violin, and Kenneth Heath, cello) where we have such delightful string tones – thanks, too, to the recording engineers.

The excerpts comprise: *Introduction and march* (Prologue) *The palace garden* (Act 1), *Waltz* (Act 1), *Aurora's variation* (Act 1), *Panorama* (Act 2), *Rose adagio* (Act 1), *Polacca* (Act 3), *Vision of Aurora* (Act 2), *The lilac fairy* (Act 1), *The diamond fairy* (Act 3), *Puss in boots* (Act 3), *Adagio* (Act 3), *Russian dance* (Act 3), *Sarabande* (Act 3) and *Finale – Apotheosis* (Act 3).

The story itself is not very apparent, or, for that matter, very important either. What does matter is Tchaikovsky's treatment of the well-known and well-loved fairy-tale. Is there a more popular ballet than this in the entire repertoire? Almost everyone who has ever been to the ballet has seen it. This album provides both a reminder of such occasions and also a cassette that can be listened to with enjoyment by all. As such I can only strongly recommend it with the hope that you will enjoy it as much as I did.

VIVALDI. Concerti for Violin, Strings and Continuo, Opus 8 Nos. 5 to 8. 1 Musici. Philips CPC 0079 49s 11d including purchase tax.

In this album we have four concerti: *No. 5 in E Flat Major, P 415 "La tempesta di mare"*, *No. 6 in C Major, P 7 "Il piacere"*, *No. 7 in D Minor, P 258* and *No. 8 in G Minor, P 337*.

These are four of the twelve concerti that together make up Opus 8; the first four of which are so well known under the collective title of "The Four Seasons". There have been many recorded versions of this first part of the opus, in fact I reviewed a Musicassette by 1 Musici (Philips CPC 0002) in June 1967. It is, therefore, of particular interest to be able to consider the same performers now dealing with the middle section of the opus. Back in 1967 we spoke in glowing terms of the performance and recorded quality of the cassette. What changes might have taken place in the three years that have now elapsed?

There has been a definite improvement in recorded quality, and this is very much to our advantage. So far as performance is concerned, both albums display a high standard as might be expected from this ensemble of international fame. Let me then at once recommend the tape to all who have a liking for the music of the baroque period, whilst at the same time indulging in a little speculation as to its true significance.

At the present time baroque music is "in". It is now more popular than ever it has been. Which is strange when one considers that the ornate decoration which is one of its main characteristics would nowadays never be tolerated in architecture, furniture or any other form. In fact the music of this period is both similar, and yet at the same time dissimilar, to the other artistic forms of expression. We find a direct discipline in the music of the time – and in literature too – whilst in graphic and glyptic art there is a love of detail, an appreciation of the sensuous value of the curve with a tendency towards overstatement. Yet as we listen to Vivaldi we hear a love of ornamentation and decoration that exactly parallels the other art forms.

For a return to the seventeenth century one could hardly do better than acquire this album. May I repeat both the recording and the performance leave little to be desired, so it can be strongly recommended.

THE SHADOW OF YOUR SMILE. The Bill McGuffie Quartet. Philips CPP 1069. 47s 6d including purchase tax.

After listening to this cassette I tried to list all the things I liked about it. There are many. Choice of repertoire is excellent; varied yet sentimental without stickiness. Handling of the piano by Bill McGuffie is certainly one of the highlights of the collection. And it would be just fine for cheek-to-cheek dancing – given the right partner.

So, all-in-all, we have a thoroughly good album here. And I nearly forgot to say that two of the other things I liked were the recorded quality, and – with a sigh of relief – the lack of a vocalist.

If a choice must be made then I would vote a preference for side two against side one. These

numbers are: *Smile* (from "Modern Times"), *Two for the road, Theme from "A man and a woman"*, *Once upon a summertime* (La valse des lilas), *The shadow of your smile* (from "The sandpiper") and *They told me* (from "Woman seven times").

But selection in this way is invidious; the whole is thoroughly successful so we must not belittle the first side which gives us: *Carnival* (Theme from "Black Orpheus"), *Wait until dark* (from "Wait until dark"), *This old man* (from "Inn of the sixth happiness"), *Stella by starlight* (from "The uninvited"), *For your love* (from "Corruption") and *Whistle down the wind* (from "Whistle down the wind").

John Franz, the Philips recording manager, is named in the sleeve notes, and he is to be complimented on the quality of the sound in this album. It is outstandingly good. The balance between the four instrumentalists is well maintained throughout, but with McGuffie dominating by sheer performing skill.

So much light music of this kind tends to be either boring, repetitious or offensive – or even all three at once. I found this album to be none of these and so have no hesitation in recommending it for background music, dancing, or, as I enjoyed it just as very pleasant listening.

MORE MUSIC FOR ROMANTICS. George Chisholm. Philips CPP 1067. 47s 6d including purchase tax.

George Chisholm the comic has always contained another George – George the musician whose performances on the trombone were well known in London even before the war. In this album he picks up his instrument again to give us a collection which, by the implication of the title, is suited to the romantic occasion. Sorry, George, but if this is your idea of romance it's not mine.

The selection comprises: *I wish I didn't love you so*, *Caravan*, *What's new?*, *How insensitive*, *There will never be another you*, *Laura*, *The shadow of your smile*, *Stella by starlight*, *It's getting late*, *Here's that rainy day*, *Say it isn't so* and *Blues for two*.

I expected this cassette to offer sticky sentimentality. It doesn't. For me it offers no romance either. But then I find it difficult to associate either Chisholm or his trombone with the mood he is trying to exploit. In fact he plays better musically than he does on the emotions.

So frustration is one of my feelings about this tape. But there's pleasure too; pleasure that the recorded quality should be so good. No complaints there. Apart from that it does nothing for me at all. The numbers are popular enough, and some of the arrangements are not bad, but there's too much noise and exuberance to suit the quiet, intimate moments.

Music

Open Spool Reviews

Consultant Critic Katinka Seiner

7½ ips STEREO

Equipment used for review tapes: Amplifiers—Quad valved and Ferrograph F307, Loudspeakers—Celestion and Jordan-Watts. Tape Recorders—Akai 3000D and Tandberg 64X

THE GOLDEN AGE OF MELODY. Larry Moreton and his Orchestra. Coronet CSL 7425 7½ ips four-track stereo. 57s 5d including purchase tax.

With Larry Moreton tinkling his way through a familiar selection of numbers, this 7½ ips stereo tape covers the period from the mid thirties to the late fifties. This is his "golden age of melody".

There's plenty of nostalgia here as we glance through the repertoire, which includes: *Stardust, St Louis blues, Begin the beguine, All the things you are, Volare, Tonight, Body and soul, Love is a many splendored thing, Somewhere over the rainbow, Arrivederci Roma, Terry's theme, Tenderly, Three coins in a fountain, Autumn leaves and September song.*

I should have preferred to hear a little more delicate quality from the strings of the Moreton orchestra. They rather tend to let down what is otherwise quite good recording of piano, percussion and brass. But that is a small point and the nostalgic value might well outweigh such considerations.

And nostalgia is very much there to remind us of a bygone age. Was it truly golden in its melodies? They still live and can be heard with continuing pleasure in the seventies, so perhaps we should not quarrel too much with the title. On the whole I enjoyed listening once again to these tunes; the Larry Moreton treatment did not distract, in fact it has a "period" quality about it that suits the collection ideally.

A good tape for those who enjoy looking back.

THE FABULOUS ORGAN SOUNDS OF LAURIE LEIGH. Coronet CSL 7412 7½ ips four-track stereo. 61s 6d including purchase tax.

This collection of numbers is performed by Laurie Leigh at the Hammond organ with percussion accompaniment by Don Ashton. The popularity of the Hammond organ cannot be denied; it produces a sound that appeals to a great many people, although to my ear always seems to be somewhat "wishy-washy". Hardly a musical instrument at all, in fact.

It is difficult to judge the quality of a recording of the Hammond sound, because it could sound like almost anything. Which is one reason why it is not a very good medium for the demonstration of audio equipment. In the present album we have what appears to be a trace, or even a little more than a trace, of

distortion running throughout the tape, but this could be a peculiarity of the review sample. Laurie Leigh is well in command of the key-board, and he shows great talent as a performer.

The numbers he gives us are: *Crazy rhythm, Pagan love song, Lullaby of Broadway, That old black magic, Memories of you, It all depends on you, Frenesi, Peanut vendor, Let's fall in love, Between the devil and the deep blue sea, They can't take that away from me, I cover the waterfront, Heatwave and Softly as in a morning sunrise.*

Recorded quality improves on track two where we have some very interesting treatments and displays of pyrotechnics on percussion. The whole offers quietly soothing listening, but buyers should check for quality. It should be mentioned that these Coronet tapes distributed by Audio Magnetic Products Ltd of Salisbury do carry a written guarantee in every box, and this instructs that faulty tapes must be returned within seven days of purchase with brief details of the alleged fault and, of course, the purchaser's name and address. Which sounds to be fair enough.

Not an album I would buy, but you might like it. Best to hear it and make your own decision.

3¼ ips STEREO

PEER GYNT - Incidental Music, Grieg. The Halle Orchestra conducted by Sir John Barbirolli with Sheila Armstrong and the Ambrosian Singers. EMI Columbia TD-TWO 269, 3¼ ips four-track stereo, 42s including purchase tax.

This incidental music to the play by Ibsen was first published as a piano duet and afterwards rewritten as two orchestral suites, since when they have become two of Grieg's most popular works. There can be few who are not familiar with the haunting melody of *Death of Ase* or the oriental magic of *Anitra's dance*. And one of his most famous songs, *Solvejg's song*, is performed for us here by Sheila Armstrong.

Recording is good with a full frequency range and low background noise. There is a feeling of presence and reality that does justice to the efforts of the Halle Orchestra; the album therefore makes a valuable addition to any library of music.

It might be worth mentioning, however, that in spite of the popularity of the Peer Gynt music it has many structural weaknesses compared with some of Grieg's songs. These latter might well be regarded as minor masterpieces whereas the former is truly incidental to the action of the play. Nevertheless, full as it is of the atmosphere and the fragrance of his native Norway it has retained the hearts and love of concert audiences all over the world.

When in Norway earlier this year I was fortunate enough to have the opportunity to be able to visit the composer's house. From it I at once gained the impression of the scenery to an Ibsen play. Although he died as long ago as 1907 his home in Bergen has been restored and is now maintained in precisely the same manner and style as existed there during his lifetime. It was a moving experience to feel the great man's presence. His walking stick, his rucksack, his lamp - all these personal possessions are there. The house is not only open to the public but during the Bergen Festival in the Spring some of the musical recitals are held there.

To return to the album - it is a good recording of a good performance of one of Grieg's most popular works. As such it can be recommended.

REFLECTIONS. Manuel and the Music of the Mountains. EMI Columbia Studio 2 Stereo TD-TWO 266. 3¼ ips four-track stereo. 41s including purchase tax.

This is one of a number of albums recorded by Manuel and his Music of the Mountains, several of which we have reviewed in the past. All have a consistent quality and performance standard. Perhaps that is one criticism; there is a sameness, a uniformity, which however pleasing at the start of an album does tend to pall.

In addition, from a purely musical point of view I would question the typical Manuel sound. One must compare with, say Melachrino. The Melachrino Strings have a singing sweetness and melancholic tenderness which, whilst still both popular and commercial, reveal the orchestra as true musicians. To my ear this quality is lacking in Manuel.

As to recording, this is EMI's Studio 2 Stereo, and as such its only fault is a tendency towards over-brilliance; there is a suggestion of harshness on the strings. However as this can be corrected it is to be preferred to a dull, muddy sound about which one can do little.

The repertoire, perfect for background listening, comprises: *Theme from a summer place, Romance, Bali Ha'i, Till, Fools rush in, None but the lonely heart, Reflections, Ebb tide, Baia, Moon river, Intermezzo and Moonglow and Theme from Picnic.* Nothing objectionable, but, alas, the way the numbers are offered nothing outstanding either.

Here we have a perfect example of "musical wallpaper", a collection of items which by their presentation provide one with unobtrusive sound to fill an otherwise silent void. A pity, really, because many of the numbers here would otherwise be worth the effort of concentrated listening, but this treatment demands inattention rather than attention.

So for wallpapering purposes thoroughly recommended, but for real listening give me Melachrino every time. Not, by the way, that I have any fault to find in the actual performance standard of Manuel, but rather it's the repetitious uniformity of the arrangements.

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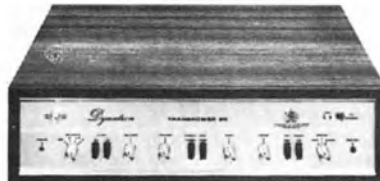
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NEW PRODUCTS

DYNATRON'S NEW HI-FI EQUIPMENT

DYNATRON is a name that has always held considerable prestige in the radio world, and now this firm has announced a new series of audio equipment.

Described as "High Fidelity", their model SA90 integrated amplifier uses 24 silicon transistors, 8 silicon diodes and 1 silicon controlled rectifier and is designed for mains operation.



Claimed power output is 45 Watts RMS per channel, or 80 Watts per channel at IHFM rating with a distortion level of better than 0.2% at 0.5 dB below rated outputs into a 3 Ohm load with both channels in operation. The amplifier is said to match two loudspeakers of 3 to 16 Ohms impedance.

Overall frequency response measured with tone controls level and filters out is given as: Radio and Tape Replay, 30 to 20,000 Hz plus or minus 1 dB and 15 to 35,000 Hz within 3 dB; Phono-Magnetic 35 to 20,000 Hz plus or minus 1.5 dB and equalised to RIAA. Hum and Noise with volume control at minimum is said to be 90 dB below rated output and channel separation better than 40 dB at 10,000 Hz.

All input and output connections are by DIN sockets, apart from the stereo headphone output which is by P.O. jack. The specification includes provision for A, A+B and B speaker switching, tape monitor, magnetic or crystal pick-up, channel reverse switching, low and high pass steep slope filters stereo/mono switching and a loudness contour control. Protection against short-circuiting the output stages is provided electronically. This is also operative if speakers of a lower impedance of 8 Ohms should be connected in the A+B configuration.

Sensitivities are given as: Radio and Tape Replay, 150 mV for rated output, Phono-Magnetic 2.3 mV and Phono-Crystal 75 mV. These figures are all plus or minus 2 dB.

The recommended retail price of the SA90 is £62. An alternative version is the Dynatron



Model HFC90. This is basically the same amplifier but with a Goldring-Lenco GL75 transcription motor fitted with a G800H Goldring magnetic cartridge mounted on the teak veneered cabinet. This equipment is supplied complete with a smoke-grey perspex lid, and the suggested price is £122.

Dynatron Radio Ltd., Maidenhead, Berkshire.

CASSETTE HEAD CLEANER AND NEW AUTOCHANGER

THE SMALLNESS of Compact Cassette equipment tends to make the essential task of head cleaning rather difficult. To overcome this Philips Electrical Ltd. have now introduced a special Cassette Cleaning Tape.

Approximately 59 feet of a new kind of cleaning "tape" is enclosed within the body of an ordinary cassette bearing a label on both sides to serve for identification and also as a written record of the date on which cleaning was last undertaken so that the user will know when this simple maintenance attention is next due.



It is claimed that the Compact Cassette Cleaning Tape can be used approximately ten times before it needs replacement. The method of use is, of course, to "play" the tape as if it were an ordinary recorded cassette; as the impregnated ribbon is pressed against the head assemblies it will remove the residual oxide dust and at the same time clean the capstan and pinchwheel as it is subjected to the pressure of these two components.

The device is supplied complete in a library-type box of standard size and has a recommended retail price of 17s 9d including purchase tax.



Also new from Philips is the latest model stereo Cassette Recorder and Autochanger Model N2401. This is the first time we have seen an autochanger offered with integrated record facilities, and this model also has an audio output of a claimed 4 Watts per channel. The model N2401 will accept up to six cassettes at a loading and in operation each cassette is played in turn and then ejected into a cassette storage compartment. The equipment can be purchased with or without loudspeakers and the suggested selling prices are £95 and £81 respectively.

Philips Electrical Ltd., Century House, Shaftesbury Avenue, London, W.C.2.

PIONEER AMPLIFIER AND STEREOPHONE HEADSET

PIONEER have introduced what they describe as a new "high performance" stereo tuner-amplifier at a price considerably below their more elaborate and powerful systems. It is said that in spite of its moderate cost the equipment offers features generally found in more expensive units.

The KX-330 has an FET front end, all-silicon transistors, OTL complementary circuitry in the audio section and a built-in loopstick aerial serving the AM/FM/SW receiver. For FM multiplex there is a stable time-switching type demodulator which is claimed to give better stereo separation, whilst the AM tuner section covers a range of 525 to 1605 KHz with a sensitivity that is claimed to make the use of other aerial equipment unnecessary in most areas. Short wave reception covers the range 3.8 to 12 MHz.

Frequency response is given as 40 to 100,000 Hz plus or minus 3 dB overall and the power output is said to be 17 watts total at 8 Ohms in accordance with IHFM ratings.

Styling matches the looks of the KX-330's more costly brothers in the Pioneer range with a slim wooden case and black front panel. The tuning needle lights up behind the smoked glass panel for easy reading when room lights are low. Recommended retail price of the KX-330 is £63.12.8d plus £14.19.4d purchase tax.

In announcing the release of new "high quality" headphones from Pioneer the distributors, Shiro (UK) Ltd., rightly point out that headphones capable of matching the very high performance standards of modern hi-fi systems tend to be costly. To meet this need they are bringing into Britain their Model SE-30 at £12.12. and Model SE-50 at £19.3.8d.



Both have similar basic specifications, the difference lies in the fact that the dearer set has horn and tweeter units and separate volume and tone controls on each earpiece. These are independent of the amplifier controls and are said to make it unnecessary for the listener to get up out of his chair when he wants to adjust balance. This luxury feature costs an extra £6.11.8d.

Pioneer make a special feature of the comfort of their headsets. The ear pads are claimed to be soft and close-fitting, soundproof and light. They are held in place by an adjustable steel head-band which is cushioned. Each 'phone can be adjusted separately, both vertically and laterally, so they will suit any listener. The weight of Model SE-30 is given as 13.4 ozs and Model SE-50 with volume and tone control circuitry 1.35 lbs.

Each assembly contains a cone-type loudspeaker unit giving a claimed frequency response of from 20 to 20,000 Hz, and the units are said to be compatible with any stereo system having an impedance rating of from 4 to 16 Ohms and a stereo headphone jack. Connection is by an eight-foot cable; a special Pioneer junction box is available for use with amplifiers lacking a stereo jack socket.

Shiro (UK) Ltd., Lynwood House, 24/32 Kilburn High Road, London, N.W.6.

LOW COST WALLET FOR CARRYING TEN GRAMOPHONE RECORDS

CARRYING 12-inch gramophone records has always been something of a problem. Now the Bib division of Multicore Solders Ltd. announce the introduction of their 12-inch Record Wallet.



Made in PVC with a "Pig-skin" type finish it is designed to hold up to 10 l.p. records in their sleeves. The wallet is padded for extra protection and is light in weight, so making an ideal means for carrying a few records from one place to another. Cost of the Record Wallet is 19s 11d.

Multicore Solders Ltd., Hemel Hempstead, Hertfordshire.

NEW IDEAS IN THE LATEST NIVICO RANGE

DURING 1970 a new range of Nivico equipment will be released by the distributors Denham and Morely Ltd. Amongst these will be a number of "Sound Effect Amplifiers" with a built-in feature which is claimed to be a remarkable way of controlling individual frequency responses.



Of particular interest to recording enthusiasts is a portable AM radio combined with cassette recorder of advanced and unusual design. On the hi-fi side there will be three tuner/amplifiers and one amplifier, all with "S.E.A.". Speakers

will include Model GBS IE Non-directional Spectrum in which there are four free-edge woofers matched with the same number of 2-inch horn-type tweeters. This enclosure is specially designed to produce a non-directional effect. Housed within a globe, hermetically sealed and fabricated in black metal, a new acoustic material is used to prevent standing waves building up within the globe itself. It is said that the stereo effect is assured over an angle of 60 degrees. Power handling is given as 80 Watts at 8 Ohms and the frequency response is claimed to be 20 to 20,000 Hz with crossover at 5,000 Hz.

Three radio models, cassette, cartridge and spool-to-spool recorders will complete the range.

Denham & Morely (Overseas) Ltd., Denmore House, 453 Caledonian Road, London, N.7.

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Further details from SOUNDEX LTD., 18 Blenheim Rd., London, W.4. 01-995 1661.

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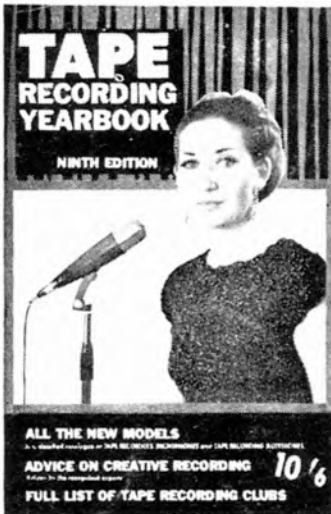
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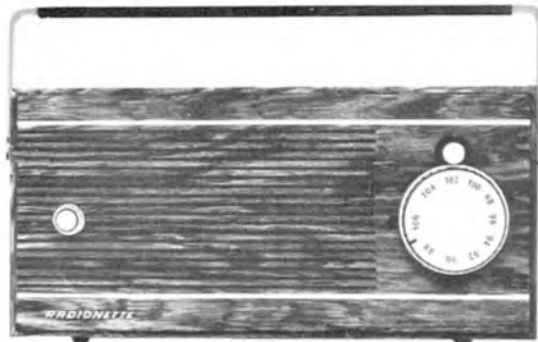
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