CELEBRATING FORTY YEARS

March 1999 $7.20 £3.75

Studio sound

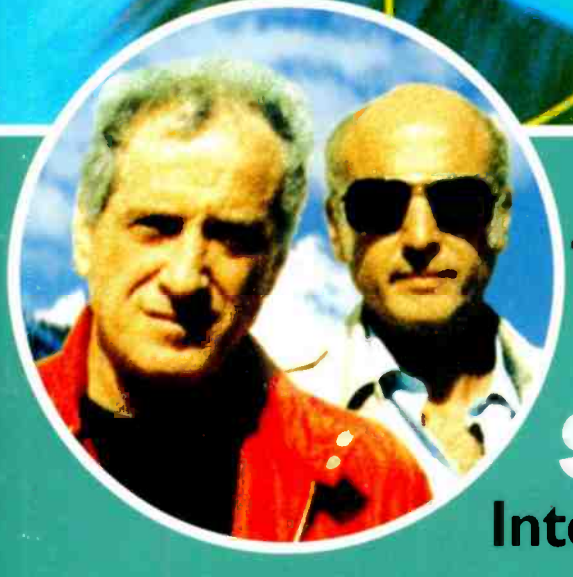
AKG C4000 B microphone and other exclusive reviews

THE INTERNATIONAL PROFESSIONAL AUDIO MAGAZINE FOR RECORDING, POSTPRODUCTION AND BROADCAST

FORTIETH ANNIVERSARY ISSUE

40 years of sound advice

Documenting four decades of progress through professional audio's first international magazine



The LEIBER & STOLLER Interview

GETTING PROFESSIONAL ON THE INTERNET
PROJECTING PICTURES IN THE STUDIO
TAKING TEA WITH MUSSOLINI
PRESENTING DOLBY EX 6.1

9 770144 594031 03

Live
Designed for broadcast

Libra Live is designed for versatile operation in a broadcast production environment.
It provides all the advantages of digital control and a digital signal path with the ease of use of a conventional analogue console.

- Full processing on all channels
- Soft configurations for user/application
- Built-in I/O router
- 12-48 faders, 12-96 inputs
- Mix-minus/IFB output, including talkback and AFL on every fader
- Full surround sound capability
- Snapshot reset
- Up to 16 mono or stereo auxes
- Up to 8 mono or stereo sub-groups
- Up to 4 mono or stereo main outputs
- Redundant PSUs

Libra Live users include:
ABC, All Mobile, Astro, CBS, Central TV, Cinetel, France 2, King TV, Korean Broadcasting System, MSNBC, Nickelodeon, Nihon TV, NTV, Radio & TV Hong Kong, YTV

First

AMS NEVE

HEAD OFFICE – AMS Neve plc · Billington Road · Burnley · Lancs BB11 5UB · England · Tel: +44 (0) 1282 457011
Fax: +44 (0) 1282 417282 · *LONDON* – Tel: 0171 916 2828 · Fax: 0171 916 2827
GERMANY – Tel: 61 31 9 42 520 · Fax: 61 31 9 42 5210 · *NEW YORK* – Tel: (212) 955 1100 · Fax: (212) 965 3739
HOLLYWOOD – Tel: (818) 753 8789 · Fax: (818) 623 4839 · *TORONTO* – Tel: (416) 365 3363 · Fax: (416) 365 1044
e-mail: enquiry@ams-neve.com – http://www.ams-neve.com

6 **Editorial**
On technology investment and the written word

8 **Soundings**
Professional audio, post and broadcast news

10 **SSAIRAs**
Voting time for *Studio Sound*'s 1999 awards

12 **World Events**
The events calendar for the attentive professional

14 **Letters**
Your chance to have your say in your magazine

91 **Anniversary supplement**
Celebrating 40 years of Studio Sound

REVIEWS

18 **XTA DP226**
Exclusive: digital sound system management

20 **Akai S5000 & 6000**
Sound samplers for sound design

24 **Adgil Director 9800**
Exclusive: surround monitor management

28 **Alesis GT mics**
New mics from the Groove Tubes stable

30 **HHB Circle 5A**
The definitive loudspeaker review

33 **Drawmer Front End One MX60**
Exclusive: British voice channel development

34 **Soundcraft Series 15**
On-air analogue broadcast console

36 **AKG C4000B**
Exclusive: new side-fire contender

38 **Mindprint En-Voice**
Exclusive: German voice channel debut

FEATURES

41 **Postproduction: Projector round-up**
Watching pictures for sound

47 **Interview: Leiber & Stoller**
The hound dogs' yakety yak

65 **Postproduction: Dolby Digital EX6.1**
Surround developments and *The Phantom Menace*

69 **Postproduction: *Tea with Mussolini***
Mixing film music in surround

75 **Horizons: The Internet**
The cyberspace race

81 **Facility: OceanVu Recording**
Miami's latest recording venue

COMMENT

122 **Comment**
From our UK and US-based correspondents

123 **Broadcast**
Digital media fight it out to retain interest

130 **Open mic**
Listening out for high sample-rate recording

TECHNOLOGY

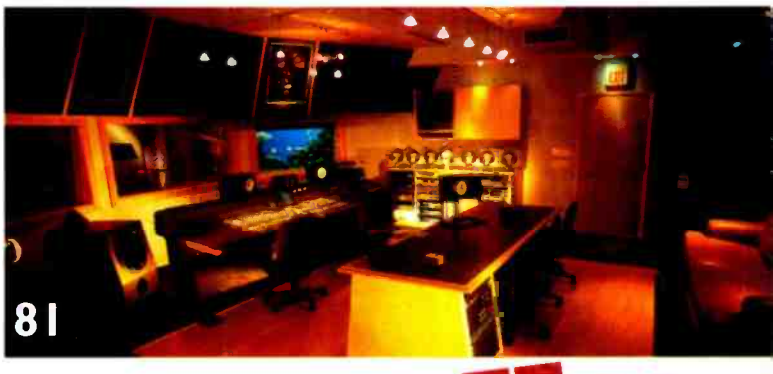
125 **Dr John**
Feedback and feedforward

SSAIRAs. Time to Vote

Vote for the equipment of your choice for inclusion in *Studio Sound*'s 1999 Audio Industry Recognition Awards. See page 10.

www.prostudio.com/studiosound

33



Studio Sound

FROM THE PRODUCERS OF THE CRITICALLY ACCLAIMED...

CSII
CS2000
CS3000

Recording and Mixing Consoles. Best known for:

Superior Sound Quality	Precision Surround Panning	Hi-performance Dynamics	High Reliability
Total Automation	Instant SnapShot™ Recall	Powerful Machine Control	Modular Expandability

Headquarters (Palo Alto, West US) Tel:(650)855 0400 • Los Angeles (West US & Int'l) Tel:(818)766 1666 • New York (East US) Tel:(212)889 6869
Nashville (Central US) Tel:(615)327 2933 • London (Europe) Tel:(171)602 4575 • Tokyo (Japan) Tel:(03)3288 4423

EUPHONIX INTRODUCES THE NEXT INNOVATION...

R-1 MULTI•TRACK RECORDER

Ideal for use with large-format recording and mixing consoles:

• Euphonix • SSL • Neve

Replaces reel-to-reel 24-track recorders

Coming soon to a studio near you

Highest Sound Quality

24-bit, premium converters, 40-bit DSP

Reel Feel™

Familiar tape-style remote and transport feel

Solid Reliability

Rugged construction, premium components, fault tolerant design

Recording and Editing

24-track punch in/punch out, no need to transfer to an editor for basic edits

Modular and Expandable

Open architecture supports future I/O options, sample rates, machine control, track expansion, editing and networking

Non-Destructive Recording

No fear of erasing tracks, multiple takes per track, records hundreds of tracks, plays any combination of 24 tracks

Non-Degrading Storage

No head wear or media degradation during repeated use, long shelf-life media

Random Access

No waiting for locates, ultra-fast looping

Web site: http://www.euphonix.com

Euphonix

Investment value

MANY FALSE CLAIMS ARE SPREAD about the relative merits of investing in one technology as opposed to another. Indeed if you do the rounds then you will hear some preposterous claims made about ludicrous depreciation values of high-end gear generally by lower-end manufacturers who would dearly like to see themselves as competitors. One thing is certain though, buy in the early stages of any technology, and unless you are exceedingly lucky, then you will be penalised harshly if you look upon that purchase from the perspective of investment. For example, does anybody out there want to buy my old 14.4 modem? Think about that and get back to me. On the other hand, I'd feel fairly confident that I could get an acceptable proportion back on the purchase price of certain large-frame analogue consoles after a year or two of making money using them or I could buy particular bits of new outboard that I know will hold their prices if I ever wanted to sell them.

When you buy into quality you buy into something that lasts and if you use it to make money rather than leave it covered in a dust sheet then it is even better. Quality was never the issue with that 14.4 modem because at the time it was state-of-the-art, it was about price. It seemed expensive, but now something else does the same thing a few times faster for much the same money and now I would probably only just be able to give it away to someone who knows even less about modems than I do.

The trick is to invest in quality and in something that is proven to be a good idea in the first place. Quality lasts and if you can use it in your business and it makes your life easier and a little more pleasurable then what ever it costs it is worth it.

You may have noticed that this is *Studio Sound*'s 40th anniversary issue. No other professional audio magazine has lasted 40 years. That tells you that it has proved to be a good idea, that readers use it in their business, and that it brings them enough little pleasure each month for them to continue reading it. You have to take the quality as read.

Zenon Schoepe, executive editor

Code red

I LIKE TO READ. I read all sorts of stuff—you never know where you might find something interesting or useful, or both. I know it is unfashionable, but I even read equipment manuals. Read what you want into that.

Reading about other people reading manuals puzzles me. It happens almost every time I read an equipment review. As far as I can make out, people want manuals but they don't want to read them. The implication is that an ideal piece of kit—whether it is being judged from a review or usage point of view—is self-explanatory. It is either so straightforward that it needs no explanation or its operating system is capable of guiding you through its use at whatever level is appropriate to your needs—with the reservation that the manual covers all aspects of operation and backs this up with specifications and diagrams in a multitude of languages. Obviously.

So what do you want of an equipment manual? Should it be a big, thick paper volume that covers everything from plugging in and switching on through block schematics to component listings, complete with a comprehensive table of contents and an index (as demanded by most reviewers)? Or should a single sheet of A4 littered with bullet points and signed off with a help-line number suffice?

Even the concept of an equipment manual is up for discussion. Should it be a conventional paper affair, its floppy electronic sister or a distant cousin with an email address? The paper option is reassuringly tactile and useful in a remarkable number of situations, but electronic media are more readily updated; manual downloads from a Web site being second only to software downloads in terms of currency.

But what makes our current situation unique is not just the intervention of electronic means of disseminating a set of operating practices and parameters, it is the hard fact that there has never been so many pieces of equipment and systems to learn about. And the healthier and more diverse their respective development curves, the greater the necessity for reading about them.

So you tell me (or you might prefer to write), what do we need from a 21st Century equipment manual: reference, guidance or a set of contact numbers?

Tim Goodyer, editor

Studio Sound

Incorporating Broadcast Engineering

March 1999. Vol 41. No 3. ISSN 0144 5944

Miller Freeman Entertainment Group, A division of Miller Freeman UK Ltd, 4th Floor, 8 Montague Close, London Bridge, London SE1 9UR, UK.

Tel: **+44 171 940 8500**
Fax: **+44 171 407 7102**
Email: **studiosound@unmf.com**
Net: **www.prostudio.com/studiosound**

Editorial
Executive Editor: **Zenon Schoepe**
Email: **studiosound@unmf.com**
Direct line: **+44 171 940 8513**
Editor: **Tim Goodyer**
Email: **studiosound@unmf.com**
Direct line: **+44 171 940 8578**
Production Editor: **Peter Stanbury**
Email: **pstanbury@unmf.com**
Direct line: **+44 171 940 8523**
Secretary: **Eileen Sullivan**
Email: **esullivan@unmf.com**
Direct line: **+44 171 940 8524**
Consultants: **Francis Rumsey; John Watkinson**
Columnists: **Dan Daley; Barry Fox; Kevin Hilton**
Design Consultant: **Ben Mallalieu**
Regular Contributors: **Jim Betteridge; Richard Buskin; Simon Croft; Ben Duncan; Dave Foister; Bill Foster; Tim Frost; Yasmin Hashmi; Neil Hillman; Rob James; Caroline Moss; Philip Newell; Terry Nelson; Stella Plumbridge; Martin Polon; George Shilling; Patrick Stapley; Simon Trask**

Advertisement Sales
Group Sales Manager: **Chris Baillie**
Email: **cbaillie@unmf.com**
Direct line: **+44 171 940 8517**
Deputy Ad Manager: **Phil Bourne**
Email: **pbourne@unmf.com**
Direct line: **+44 171 940 8542**
Business Development Manager: **Duncan Clark**
Email: **duncan.clark@unmf.com**
Direct line: **+44 171 940 8561**
US Representative: **Bill Ford**
Email: **bford@coastside.net**
Classified Sales: **Chris Baillie**
Email: **cbaillie@unmf.com**
Direct line: **+44 171 940 8517**
Advertisement Production: **Desrae Procos**
Email: **dprocos@unmf.com**
Direct line: **+44 171 940 8540**

Publishing Editor: **Joe Hosken**
Direct line: **+44 171 940 8602**
Circulation Manager: **Caroline Sharpe**
Direct line: **+44 171 940 8579**
PA to the Publisher: **Lianne Davey**
Managing Director: **Doug Shuard**
Publisher: **Steve Haysom**

Great Studios Of The World

PRODUCTION NOTES

Founded in 1984, Medley Studio plays an important role in the Scandinavian recording industry, attracting major European projects for both recording and mixing. The recent installation of a 64 channel SL 9000 J Series continues Medley's commitment to providing its clients with the highest possible level of sonic performance, with the new console already used by the renowned producer/remix team Cutfather & Joe on a number of sessions, including the mixing of 4 tracks on the hit CD release 'Another Level'.

"Clarity, depth and punch are essential to the way we work" says the team. "The 9000 has it all and easily takes you where you wanna go. The automation is accurate and at the same time easy to use. The console structure also leaves a door open for a last minute overdub... It makes life so much easier..."

MEDLEY STUDIO
c o p e n h a g e n

Vesterbrogade 107 E. DK - 1620 Copenhagen V.
Phone: +45 33 31 75 07 Fax: +45 33 23 95 96

Solid State Logic

International Headquarters
Begbroke, Oxford, OX5 1RU, England
Tel: +44 (0)1865 842300
Fax: +44 (0)1865 842118
E-mail: sales@solid-state-logic.com
http://www.solid-state-logic.com

SL 9000 J SERIES
SL 9000

New York	Los Angeles	Tokyo	Paris	Milan	Toronto	Singapore
+1 (1)212 315 1111	+1 (1)323 463 4444	+81 (0)3 5474 1144	+33 (0)1 3460 4666	+39 02 2622 4956	+1 (1)416 431 9131	+65 (0)438 2272

■ **Seoul**'s Rodeo Sound recording and mastering studios has installed an SSL SL4048 G+ console. Part of the region's largest record company, Korea's Rock Records, Rodeo Sound is responsible for helping break local artists such as Juju Club and Clon to the wider SE Asian audience. Also in Seoul, Korea's Motion Picture Promotion Corporation (MPPC) has installed a 40-fader Euphonix CS3000 console to partner an existing 24-fader Euphonix console.

SSL, UK. Tel: +44 1865 842300.
Euphonix, Europe.
Tel: +44 171 602 4575.

■ **Manchester**'s new post facility, The Sound House, has opened with its 24-fader Amek DMS centre stage in Studio 1 and a 56-input digitally controlled analogue Amek Big in Studio 2. The facility has Avid AudioVision nonlinear machines in both studios with AudioFile and DAR Sigma systems if required.

The Sound House, UK.
Tel: +44 161 832 7299.
Amek, UK. Tel: +44 161 834 6747.
Avid Europe, UK.
Tel: +44 1753 655999.

■ **New York**'s George Gershwin Theatre on Broadway has purchased an Otari LW10 Lightwinder Concert Series fibre optic system. The system was first used on a production of On the Town at the request of sound designers Jon Weston and Andrew Keister due to the length of the cable runs and interference from the lighting system.

Otari, Europe. Tel: +49 2159 50861.

■ **Switzerland**'s Radio and Television Society has opted exclusively to use Junger d05 digital transmission processors after a two-year evaluation period. German broadcaster SZM studios has also committed to eight d05 processors. Dutch public broadcaster Omroep Gelderland has taken four Orban Optimod FM8200 (v4) and four Optimod 8200ST studio chassis as part of an initiative to counter competing commercial stations. Based in Arnhem and addressing the eastern province of Gelderland, Omroep Gelderland provides television and text services as well as radio news, sport, information and music broadcasts.

Junger Audio, Germany.
Tel: +49 30 6777210
Orban, US. Tel: +1 510 351 3500.

■ **French** horse racing specialist GTHP has installed a pair of SSL Aysis Air digital broadcast consoles in a new mobile truck scheduled for completion next year. The mobile will have a 48-channel Aysis Air and a 16-channel stereo Aysis Air will occupy each of two production rooms linked by an SSL Hub Router. Meanwhile, French console manufacturer LaFont Audio has taken a 36-channel Uptown 990 automation system for installation on a new Panorama console.

SSL, UK. Tel: +44 1865 842300.
Lafont Audio Labs, France.
Tel: +33 1 3473 6539.
Uptown, US. Tel: +1 410 381 7970.

■ **London** post facility Molinaire has taken six Micron MDS2 modular diversity systems complete with a custom antenna allowing the MDS2 receivers to be shared between the facility's studios. The British National Film and Television School, meanwhile, is to be equipped with eight Audio Ltd RMS2020 radio mics and an additional HX2000U transmitter as part of a National Lottery funded upgrade worth more than £6m.

Molinaire, UK.
Tel: +44 171 439 2244.
NFTS, UK. Tel: +44 1494 671234.
Audio Engineering, UK.
Tel: +44 181 341 3500.
Audio Limited, UK.
Tel: +44 1494 511711.

■ **American** Game Creek Video has placed an order for a 60-channel Calrec Q2 analogue console to be installed in a new OB truck. The 53-foot vehicle will be based in New Hampshire and will provide remote facilities for Game Creek's regular customers including ESPN, ABC, CBS and NBC.

Game Creek Video, US.
Tel: +1 603 882 5222.
Calrec, UK. Tel: +44 1422 842159.

■ **The Netherlands**' Koch MM Music and Studio Alfred Klaassen are both installing new Euphonix consoles. Arnhem's Koch MM Music is having a 64-fader CS3000D with dynamics and 48 x 8 Cube installed in Studio One to further its recording of light classical and pop music. Amsterdam's Studio Alfred Klaassen, meanwhile, is to install a second Euphonix desk for Studio 3, where it will handle audio post work for leading agencies and television commercials, including PPGH and JWT and Saatchi & Saatchi.

Koch MM Music, The Netherlands.
Tel: +31 26 384 0500.
Studio Alfred Klaassen,
The Netherlands.
Tel: +31 20 627 4530.
Euphonix, Europe.
Tel: +44 171 602 4575.

■ **UK** hire company TourTech has bought six TL Audio Ivory 5021 compressors for use with its Midas XL200-L-Acoustics ARCS rig. Already blooded on Julia Fordham's Bloomsbury Theatre dates, the rig is busy with Runrig, the Lighthouse Family, and the Levellers. The New York Sound Company has also adopted 5021s for Radio 1's Sound City festival in Newcastle. Meanwhile Northern Light Hire has taken a 'large quantity' of Sony Freedom UHF radio mics recently.

TourTech, UK. Tel: +44 1604 30322.
The New York Sound Company,
UK. Tel: +44 191 521 1469.
TL Audio, UK.
Tel: +44 1462 680888.

▲ UK: At the end of last year, the Liverpool Institute for Performing Arts renamed its studio theatre, 'the Sennheiser Studio Theatre' in recognition of the German-based microphone, headphone and wireless communication company's sponsorship activities in support of the institute's Sound Technology BA (Hons) degree course.

Principal among these is the Sennheiser LIPA Student Scholarship Scheme, so it was appropriate that during the ceremony hosted by LIPA CEO, Mark Featherstone-Witty, Stefan Exner, President Marketing & Finance Sennheiser electronic and Paul Whiting, Managing Director Sennheiser UK, should present the latest two scholarship awards. These were to Chandra Fleig, a first year student from Cologne and Canadian Adam Fulton, who has already obtained a Honours Graduate Diploma in Recorded Music Production from the Trebas Institute in Toronto, which this year has become affiliated with LIPA.

LIPA came to the attention of Sennheiser's management due to the unique multidisciplinary approach to performing arts and sound technology training. The Sound Technology curriculum covers studio recording, audio post for film and video, broadcast sound, concert and theatre sound design and production. The Sennheiser Scholarship Scheme is designed to reflect the international aspect of the institute, providing assistance at any one time to a student from the UK, mainland Europe and the rest of the world.

The award provides for the payment of tuition fees and provides assistance with living and travel expenses. Candidates are not selected on a means tested basis, though in two cases so far, students of particular promise have been able to take up or continue with the places they have gained at the institute as a result of the Scholarship.

Sennheiser has also supplied a 16-channel theatre RF system for use in teaching workshops and student production activities (these are publicly performed in both the main McCartney Auditorium and the Sennheiser Studio Theatre), and a DAS Audio PA rig to enable students to design sound systems for everything from theatre reinforcement and conferencing to full-blown rock concerts. The company also arranges work placements for the scholarship students; last year Chris Beech, the first Sennheiser Scholar (and local Merseyside lad) graduated with First Class Honours and went out on the road with Autograph Sound Recording, on touring productions of Madam Butterfly and Martin Guerre. A programme of sponsored lectures and workshops arranged by the company, is continuing this year with visits from former BBC OB personnel, theatre sound designers and some of the company's own in-house expertise having already taken place.

Bob Auger memorial

UK: There will be a memorial celebration for Bob Auger, the celebrated recording engineer, on 30th April. A service will be held at St George the Martyr, Queen Square London WC1 at 2pm featuring personal and musical tributes from some of those who worked with Bob during his 42 years of music recording. Although best known for the hundreds of classical recordings he made for leading record labels, Bob was also involved in rock, jazz, brass, live and film and TV recordings. He died suddenly last December while in the middle of a recording for Opera Rara with whom he had enjoyed a relationship with for more than 20 years. Bob was 70 and is survived by his wife and two children.

DVD-Audio specifications

Tokyo: Although details are still scarce, the DVD Forum has announced the approval of v1.0 of the DVD-Audio disc following some three years' discussion and last June's v0.9 spec. The announcement makes DVD-Audio the fifth DVD format to be ratified following DVD-Video, DVD-ROM, DVD-RAM and DVD-R.

Briefly, sampling frequencies cover 44.1kHz, 48kHz, 88.2khz, 96kHz, 176.4kHz and 192kHz; 16-bit, 20-bit and 24-bit rates are supported; up to six channels may be used to a capacity of 9.6Mbps transfer rate; compatibility will exist between DVD-Audio and video and ROM formats; multi-channel recordings will be 'folded down' to provide stereo compatibility. Copies of the DVD-Audio Format Book detailing the full specification should be available in the spring. Victor Company of Japan. Tel: +81 45 450 1488. DVD Forum. Tel: +81 3 5444 9580.

▲ Japan: Disney has shifted its attention to Tokyo's Shiki Spring Theatre for the next production of its *Lion King*. Staged by one of Japan's leading theatre companies, the Shiki Theatrical Company, and with sound design adapted from Tony Meola's earlier work by Shiki's Mr Kanamori, the production uses a 98-input Cadac J-type FOH console with 106 motorised faders and eight programmable dual-input channels. Next stop for is Osaka's MBS theatre and another Cadac console. Cadac, UK. Tel: +44 1582 404202.

White House, White Paper

US: The AES has presented a White Paper entitled *Networking Audio and Music Using Internet2 and Next-Generation Internet Capabilities to the American White House*. The presentation was made to representatives of the National Economic Council, the Office of Science and Technology Policy, and the Office of the Vice President to highlight the technical and policy steps the AES regards as necessary to assure improved audio quality over advanced networks. It is the first time the AES has presented a formal White Paper.

'The history of leaving scraps of bandwidth for audio should not be repeated,' said Elizabeth Cohen of the AES. 'The AES believes that preserving and creating pathways for high-quality audio experiences should be an essential part of all next-generation Internet initiatives. We are committed to helping establish full compatibility between the pro-audio world and Internet technology.'

The presentation involved John Strawn introducing the AES Internet2 White Paper and focused on improving the practicability and technicalities of audio and music applications. 'Our meeting was very encouraging,' Strawn commented. 'We are in a position today to expedite the move to improve audio over the Internet2 and other NGI systems and the administration is eager to move forward with this work.'

The National Economic Council subsequently enlisted the AES Committee to prepare a comprehensive list of university-based R&D-orientated music and audio departments that the White House then intends to mandate to advise it of music and audio research over Internet2. Net: www.aes.org www.internet2.edu

◀ The Netherlands: NOB has commissioned a new 16-channel OB radio production vehicle. The van, christened D16 and equipped with a Dalet hard-disk recorder, DAT and MD recorders is capable of linking, with the studio over ISDN, Scoop and GSM telephones and will accommodate a satellite trailer. It was designed by NOB in collaboration with NOB subsidiary Broadcast Technical Projects and will be used for news and current affairs programmes, sport, conferences and small musical productions. NOB, The Netherlands. Tel: +31 35 677 5115.

▲ UK: Abbey Road found Studios 1, 2, 3 and its Penthouse involved in making the music for Richard Curtis' romantic comedy, Notting Hill recently. Produced by Duncan Kenworthy (who was responsible for Four Weddings and a Funeral with Curtis), the music for Notting Hill was composed by Trevor Jones, performed by the LSO. It was recorded by Simon Rhodes on Sony PCM-3348 and mixed on the Penthouse Capricorn by Gareth Cousins to Genex and Pro Tools systems. Abbey Road, UK. Tel: +44 171 266 7000.

Grammy

US: Neumann has been awarded a Technical Grammy at the 41st Grammy Awards hosted at the Shrine Auditorium in Los Angeles. The award is presented to an individual and-or company for contributions of outstanding technical significance in the field of recording as recommended by the Recording Academy's Technical Committee. The first Technical Grammy was awarded in 1994; past winners include Ray Dolby and Rupert Neve.

Swedish TV

Sweden: A 5-year agreement has been signed between the leading provider of Swedish television operating systems, Open TV, and the country's digital terrestrial network operator, Senda, to provide interactive television in Sweden starting in April this year. There will be ten national services and two regional services for each of the country's five regions.

The moves marks the first application of the American OpenTV technology and software which will be made available under licence to broadcasters, receiver manufacturers, network operators, service providers and application developers. OpenTV is an end-to-end digital technology for the development of interactive services capable of being supported by digital satellite, cable and terrestrial distribution. It is presently available to 6m UK BskyB subscribers and 2m US Echostar subscribers. Net: www. senda.se www. opentv.com

1999 SSAIRA VOTING

THE MUNICH AES Convention in May will be the setting for the second SSAIRAs—the Studio Sound Audio Industry Recognition Awards. Following our call for nominations in the last couple of months there follows a list of products that have been put forward in the various categories at the time of going to press.

While the voting process is now effectively open, products can still be nominated and indeed will be should our readers choose to vote for products that are not currently listed. The only condition is that the product has to have been released onto the market since last year's European AES Convention in Amsterdam. Nominations will be updated on the Studio Sound web-site www.prostudio.com/studiosound.

While anyone can nominate a product for a category, only qualified readers of *Studio Sound* are eligible to vote and this will be verified by the requirement for readers to quote their unique reader identification number.

The unique reader identification number is the 9-digit number starting with a zero that is located in the middle of the top row of your *Studio Sound* address label. In all instances the inclusion of the unique reader identification number is essential.

Fax your vote to: +44 407 7102

Ways to vote

Readers can vote for one product in each category in four ways.

1. By filling in the form and posting it to: SSAIRAs, Studio Sound Magazine Miller Freeman Entertainment 8 Montague Close, London Bridge London SE1 9UR, UK.
2. By faxing the form to: + 44 171 407 7102
3. By emailing their unique reader identification number, the category numbers and their votes to: SSAIRAs@unmf.com
4. By filling in the interactive voting form on the Studio Sound web-site: www.prostudio.com/studiosound

Readers will only be allowed to vote once. Readers may only vote for one product in each category.

The objective is to identify equipment that genuinely warrants recognition for being special in some way.

Readers are not obliged to vote in all categories and their attention is drawn to Special Category 17 which serves as a 'catch all' for any products not covered in the other categories.

Any questions can be directed to Zenon Schoepe and Tim Goodyer at Studio Sound. Tel: +44 171 940 8513.

NOMINATIONS

1. Large scale console
Amptec Stone-D001; D&R Octagon; Innova Son Sentury ; SSL Axiom-MT

2. Medium to small scale console
Allen & Heath GS3000; Panasonic WR-DA7; Soundcraft B400; Spirit 328; Tascam TM-D1000; Yamaha DSP Factory; Yamaha 01V

3. Outboard dynamics
DBX DDP; Purple Audio MC76; TC Electronic Finalizer Express; Thermionic Culture Phoenix; TL Audio Ivory C-5021; SPL Transient Designer

4. Outboard preamp
CLM Dynamics DB200S; DBX 786; Grace Design Lunatec V2; Neotek MicMax; PreSonus M80; TC Electronic Gold Channel;

5. Outboard equaliser
BSS Opal DPR944; CLM DB500 Expounder; LA Audio DigEQ; Manley Massive Passive stereo tube EQ; Millennia Media N5EQ-2; SPL Qure

6. Outboard reverb
Eventide DSP4500; Lexicon PCM91; TC Electronic M3000;

7. Combined outboard device
Alesis Q20; Antares ATR-1; Eventide DSP4500; Focusrite Platinum Voicemaster; Lexicon PCM81; Thermionic Culture Vulture; Tube Tech MEC1A

8. Monitors
Acoustic Energy AE2 Pro; B&W Nautilus 801; Hafler TRM6; Harbeth Monitor 30 pro active; Genelec 1030; KRK V8; Miller & Kreisel MPS-2510; Miller & Kreisel MPS-5410; Spendor SA300; Studer A5

9. Microphone
AKG C4000B; Alesis GT AM62; Audio Technica AT4060; Audix C111; Brauner Valvet; CAD VX2; Neumann M147; Neumann TLM103; Rode Broadcaster; Rode NTV; Shure KSM32

10. Convertors
Lucid Technology AD9624/DA9624; Waves L2

11. Audio editor
Merging Technology Pyramix 2.0; Roland VS1680; SAV SADiE 24-96; Sek-d 24-96

12. Audio recorder
Akai DD8 Plus; Alesis M20; Alesis XT20; DAR SAM; HHB CDR850; Marantz CDR630; Marantz CDR640; Otari PD20; Otari RADAR II; Sonosax Stelladat II; Tascam DA-45HR; Tascam CDRW5000

13. Desktop duplication
Mediaform 5900; Mediaform CD2CD; Otari CDP50; TraxData TraxCopier

14. Location portable equipment
Denon DMP-R70; Filmtech L5P4; Micron 570 SDR; Sonosax Stelladat II; Terrasonde Toolbox

15. Comms
No nominations received

16. Plug-ins
Sonic Foundry Soft Encode; TC Electronic MasterX; TC Electronic Unity; Waves Renaissance EQ

17. Special category
Adgil Director (monitor controller); Akai S6000 (sampler); CB Electronics SR-3 (synchroniser); Deltron AIRPatch Recall (patchbay); Digidesign ProControl (hardware controller); Dolby DP569 (encoder); LA Audio SPX2 (source selector); Magtrax MusicBox (monitor controller); Martech MultiMax 9 (monitor controller); Miller & Kreisel LFE-4 (monitor); Sonorus StudI/O(PCI interface card); Studio Technology StudioComm 68/69 (surround controller); Zonal 999 (mag tape)

SSAIRA—Voting Starts Now

SSAIRA FAX VOTE

Your reader identification number

The reader identification number is the nine-digit number starting with a zero that is located in the middle of the top row of your studio sound address label. In all instances the inclusion of the reader identification number is essential.

1 Large scale console

2 Medium to small scale console

3. Outboard dynamics

4 Outboard preamp

5 Outboard equaliser

6 Outboard reverb

7 Combined outboard device

8 Monitors

9. Microphone

10 Convertors

11 Audio editor

12 Audio recorder

13 Desktop duplication

14 Location portable equipment

15. Comms

16 Plug-ins

17 Special category

SSAIRA FAX: +44 407 76102

March

3–7
MusikMesse Prolight & Sound
Frankfurt, Germany
Contact: Messe Frankfurt.
Tel: +49 69 7575 6130
Net: www.messefrankfurt.de

4–7
CMW 99 Canadian Music Week
Westin Harbour Castle Convention Centre, Toronto, Ontario, Canada.
Contact: Ron Michael Scott.
Tel: +1 416 695 9236.
Email: cmw@can.net
Net: www.cmw.net

6-9
Middle East Broadcast 99
Bahrain International Exhibition Centre
Contact: Overseas Exhibition Services.
Tel: +44 171 862 2043.
Fax: +44 171 862 2049.
Email: idroberts@montnet.com

19–21
Conference: Student Radio in the next Millennium
University of Sussex, Brighton, UK.
Contact: Chris Wright
Tel: +44 1273 877 358.

April

10–12
16th International AES Conference 'Spacial Sound Reproduction'
Arktikum, Rovaniemi, Finland.
Contact: Juha Backman, Nokia.
Tel: +358 10505 9140.
Email: aes16@acoustics.hut.fi
Net: www.aes.org

13–15
PLASA Light and Sound Shanghai
Intex Shanghai, 88 Loushanguan Road, Shanghai, China.
Contact: Marcus Bernie, P&O Events.
Tel: +44 171 370 8231.
Fax: +44 171 370 8143.

17–22
NAB 99
Las Vegas, Nevada, USA.
Tel: +1 202 429 4149.
Net: www.nab.org/conventions

21-22
ABTT's 21st Trade Show
Royal Horticultural Halls, London SW1.
Contact: Association of British Theatre Technicians, 47 Bermondsey Street, London SE1 3XT.
Tel: +44 171 403 3778.
Email: office@avtt.org.uk

May

8–11
106th AES Convention
MOC Centre, Munich, Germany.
Contact: Martin Woehr, Bayerischer Rundfunk Studioproduktion.
Tel: +49 89 59002434.
Email: 106th–chairman@aes.org
Net: www.aes.org

15–16
Conference: Smart Business—Smart Technologies
Midland Hotel, Chicago, USA.
Contact: SPARS.
Tel: +1 561 641 6648.
Email: spars@spars.com

17–19
Cable & Satellite Mediacast 99
Earls Court 2, London, UK.
Contact: Reed Exhibitions.
Tel: +44 181 910 7717.
Net: www.cabsat.co.uk

19–22
CEDIA UK
Novatel, Hammersmith, London, UK.
Contact: CEDIA UK.
Tel: +44 1462 627377.
Fax: +44 1462 620429.
Email: cedia_uk@compuserve.com

24–25
DVD Production Europe 99
The Conference Forum, London, UK.
Contact: CCW.
UK Freephone: +0800 917 3596
Tel: +44 1306 501 530.

25–30
Expo Light & Sound 99
Romexpo Exhibitions Centre, Bucharest, Romania.
Contact: Romexpo.
Tel: +40 1 222 43 56.
Email: romexpo@ccir.ro
Net: www.ccir.ro/romexpo

June

1–3
Showtech 99
Berlin, Germany.
Contact: OTSA.
Tel: +44 171 886 3106.
Fax: +44 171 886 3101.

6–11
Sound, Vision and Home Appliances 99
Jeddah International Exhibition Centre, Jeddah, Saudi Arabia.
Contact: Al-Harithy
Tel: +44 171 223 3431.
Fax: +44 171 228 4229.
Email: ACExpo@aol.com
Net: www.members.aol.com/ACExpos

10–15
Montreux International Television Symposium and Exhibition
Montreux, Switzerland.
Contact: WHD PR.
Tel: +44 171 799 3100.
Email: news@whdpr.com
Net: www.montreux.ch/symposia

22-25
CommunicAsia 99
Singapore Expo, Singapore.
Contact: Overseas Exhibition Services.
Tel: +44 171 862 2080.
Fax: +44 171 862 2088.
Email: singapore.oes@dail.pipex.com
Net: www.montnet

ABC AUDIT BUREAU OF CIRCULATIONS
BUSINESS PRESS
PPA
BPA
Total average international circulation: 21,648 Jul-Dec 1998 BPA audited

un Miller Freeman
A United News & Media publication

Gold Channel

DIGITALLY ENHANCED MIC PRE-AMP

The TC Electronic Gold Channel is a Digitally Enhanced Microphone pre-amplifier and a DSP signal refinement toolbox. Plug in your microphone, connect the Gold Channel's outputs to any analogue or digital recorder, and safely capture your signal in the best possible recording quality.

M2000

STUDIO EFFECTS PROCESSOR

The Engineering Group at TC Electronic was given carte blanche to create the optimal studio effects processor. Being musicians and studio engineers themselves, they have a feel for what is needed in modern high-grade processors. The library of effects includes: Reverb, Pitch Shift, Delay, Chorus, Ambience, Equalization, De-essing, Phasing, Compression, Gates, Expansion, Limiting, and Stereo Enhancement.

M3000

STUDIO REVERB PROCESSOR

Setting the new industry standard with the VSS3 technology the M3000 is the best sounding, most versatile and easiest to use professional reverb today and well into the future. Combining the ultimate control of directivity in the early reflections with a transparent and harmonically magnificent tale, the art of reverberation is brought to at new and higher level.

FireworX

MULTI EFFECTS PROCESSOR

Want to breathe some fire into your music? Get ready for FireworX! An explosive Multi Effects Processor. The FireworX' broad palette of effects includes: Vocoder - Ring Modulation - Synth Generator - Formant Filter - Resonance Filter - Multitap Delay - Reverse Delay - Reverb - Dynamics - Chorus - Flange - Phase - Pitch Shift - Fractal Noise and more ...

Finalizer EXPRESS

STUDIO MASTERING PROCESSOR

The Finalizer Express is the fast and efficient way to turn your mix into a professional master! Based upon the TC Electronic Multi-Award winning Finalizer Mastering Technology, it delivers the finishing touches of clarity, warmth and punch to your mixes, putting the world of professional mastering within your reach.

Finalizer PLUS

STUDIO MASTERING PROCESSOR

The Finalizer Plus gives you the extensive and complete range of controls you need to add the finishing touches to your mix. Compared to the Finalizer Express the Finalizer Plus offers an even wider range controls allowing you to fine-tune every aspect of the mastering process.

t.c. electronic
ULTIMATE SOUND MACHINES

TC ELECTRONIC A/S, SINDALSVEJ 34, DK-8240 RISSKOV, DENMARK · PHONE: + 45 8621 7599 · FAX:+ 45 8621 7598
E-MAIL: INFO@TCELECTRONIC.COM · HTTP://WWW.TCELECTRONIC.COM
TC ELECTRONIC GMBH · FLUGHAFENSTRAßE 52B · 22335 HAMBURG · TEL:(040) 5310 8399 · FAX:(040) 5310 8398

Budgeting for failure

IN YOUR 'ECONOMIES OF FAIL' editorial (*Studio Sound*, January 1999) you have latched on to a trend which, I may say, I saw coming nearly three years ago.

I enclose a copy of an article which was simultaneously published in the Stage, Screen and Radio journal of BECTU and the newsletter of The Association of Motion Picture Sound (AMPS). I was angry when I wrote it, and still am.

I do not think that your hearing is at fault. Rather, the problem seems to be one of physical deformation: a mysterious shortening of the upper limbs of producers and accountants, such that they can no longer reach the bottom of the pocket containing the production budget. Mind you, when there were working agreements in place between production companies and the industry trade unions, proper crewing on all types of production was assured.

Should you wish to refer to any of the points made, in print, I have no objection, but if you wished to reproduce the complete article, I should appreciate a call first, since I'm not sure that the original publication did me any favours. I needed to say what I felt.

Patrick Heigham, Technitrack, UK

Rounding on DTS

'YEAR IN REVIEW' (*Studio Sound*, January 1999) made interesting reading since most of the contributors referred to 5.1 music. A couple of them also referred to DTS and we are always glad of the mention though it is always a pity when Barry Fox takes the side of the juggernaut.

Barry has championed many Davids over the years but in this case, there seems to be some reluctance. However, notwithstanding any past problems that he may have had with obtaining the information he desired from DTS, I can assure him that there is software available and most of it is playable in Region 2 as well as Region 1. This is in addition to the 120 Laserdiscs and 110 CDs already produced. The hardware is selling in numbers that have consistently surpassed the manufacturers' expectations in virtually every country and we are very confident that 1999 will be a year that sees DTS firmly established as an alternative that offers quality product on all DVD formats.

I can assure Barry that the many investors in DTS, large and small, are not the sort of people that will 'pay whatever it takes to keep the ship afloat' and that our business is dependent on real sales to fund the company. We do believe that it is in everybody's interest to have a choice which should offer a better solution than AC-3 for all applications. I think it should be noted that without the intervention of DTS, the final proposal for DVD-Audio would be very much poorer than it is now. DTS offers an ideal alternative to allow cross-platform playback of DVD-V and DVD-A without the need to buy a second player. We believe that that is in the interests of the consumer as well as those people who still care about audio quality.

We look forward to the next 'Year in Review' confident that we will still be worthy of a mention.

Chris Hollebone, Director of European Operations, DTS (UK) Ltd

Barry Fox replies

CAN YOU PLEASE CITE me the DTS DVD Videos that are now available to buy and will play on either R1 or R2 players—and where can they be bought? Also, my understanding of the DVD Audio spec v1.0 is that it does not make DTS mandatory, as DTS had requested, and the only major change is the firm specification of MLP. Is this correct?

Chris Hollebone replies:

THE FOLLOWING Universal titles are released and are R1 and R2 compatible: *Waterworld*, *Liar, Liar*, *Dante's Peak*, and *Daylight*. Also available is *Dances with Wolves* which is R1 only. There are also a couple of music titles: *King Crimson Live* and *Mickey Hart—Planet Drum*. There are also R2 titles released in Japan with more being planned by Pioneer.

There will be more releases each month from now on and we expect additional support from other providers in the near future. Next month we have *Babe*, *The Little Rascals*, *The River Wild*, *The Shadow*, *Hell Freezes Over* (*Eagles*), *Shadoom*. In the US, these are widely available and are also available from the usual Internet sources. In Europe, distribution of these products will be decided by the content providers and you should ask them what they intend to do.

DTS is an option for both DVD-A and DVD-V which does allow some compatibility across platforms. As you are aware, to get the full benefit of DVD-A, you need to buy another player incorporating MLP. Just for your information, the week that the Universal titles released, they were sold out and have now been re-pressed. Next week sees major European hardware launches from Sony, Pioneer, Denon, Nakamichi and there is more product coming from Yamaha, Kenwood, and so on.

We have more than 80 hardware licensees from all over the world. These include Philips and all the major Japanese, Korean and European names in addition to the US companies we have had for some time.

I hope this gives you some additional information. We will keep you updated as developments happen.

Reviews, 20kHz and beyond

THANKS FOR RAISING the matter of the unfinished R&D work that is sold to us harmless clients. It is true that we pay money instead of getting paid for doing field-test work. It's all like a bad dream, isn't it?

Of course it's not, it's reality. But I have two observations:

First, the traditional pro-audio user was used to buying hardware with all hardware components installed according to specifications. Any missing resistor, op-amp, or even a wire would have been easily detected, mostly during final test. Second, computer-based systems made it possible for anybody to buy and run a digital audio editor or whatever on a PC or Mac. At least a lot of people who lack audio experience will recognise the nice software bugs imminent in mixing automation, and editors.

Thanks also for David E Blackmer's marvellous article, 'Beyond 20kHz'. It should be clear to everybody in the audio world that 'can we hear beyond 20kHz?' is the wrong question. More important questions (as we have to double disc space, clock rates) are 'what is the dimension of the difference sampling at 48kHz or 96kHz?' and 'who can benefit from this difference?'

Finally, who wants to pay the extra money for extra listening experience? I think we are still looking for satisfying answers.

Reiner Oppelland, Bauer Studios, Ludwigsburg, Germany

moving ahead

POST PRODUCTION

MUSIC RECORDING

FILM SOUNDTRACK

- 160 Digital Channels
- Worksurfaces from 16 to 96 motorised faders
- 24 bit Conversion
- 96kHz operation
- Stereo, LCRS, 5.1, 7.1

THE WORLD'S LEADING FACILITIES ARE MOVING AHEAD...

- *"We were so impressed with our first DPC-II installed in SuperDupe, we have just ordered our 8th."*
  - Neil Karsh, New York Media Group
- *"The DPC-II is no compromise but the best for both location recording and post."*
  - Steve Williams, Sound Moves
- *"With all new leading ledge technology you look for 'how fast?' and 'how much?' Nothing comes close to our DPC-II's on either price or speed."*
  - Scott Jackson, Magmasters
- *"I wish we had a DPC-II in all our dubbing theatres."*
  - Peter Brown, SD Post
- *"The DPC-II's sonic performance, stability and comprehensive, yet user friendly, automation has proven to us that we made the right choice."*
  - Rob Power, Salter Street
- *DPC-II, rapidly becoming the de-facto standard for digital production consoles.*

the installed DPC-II Digital Production Console

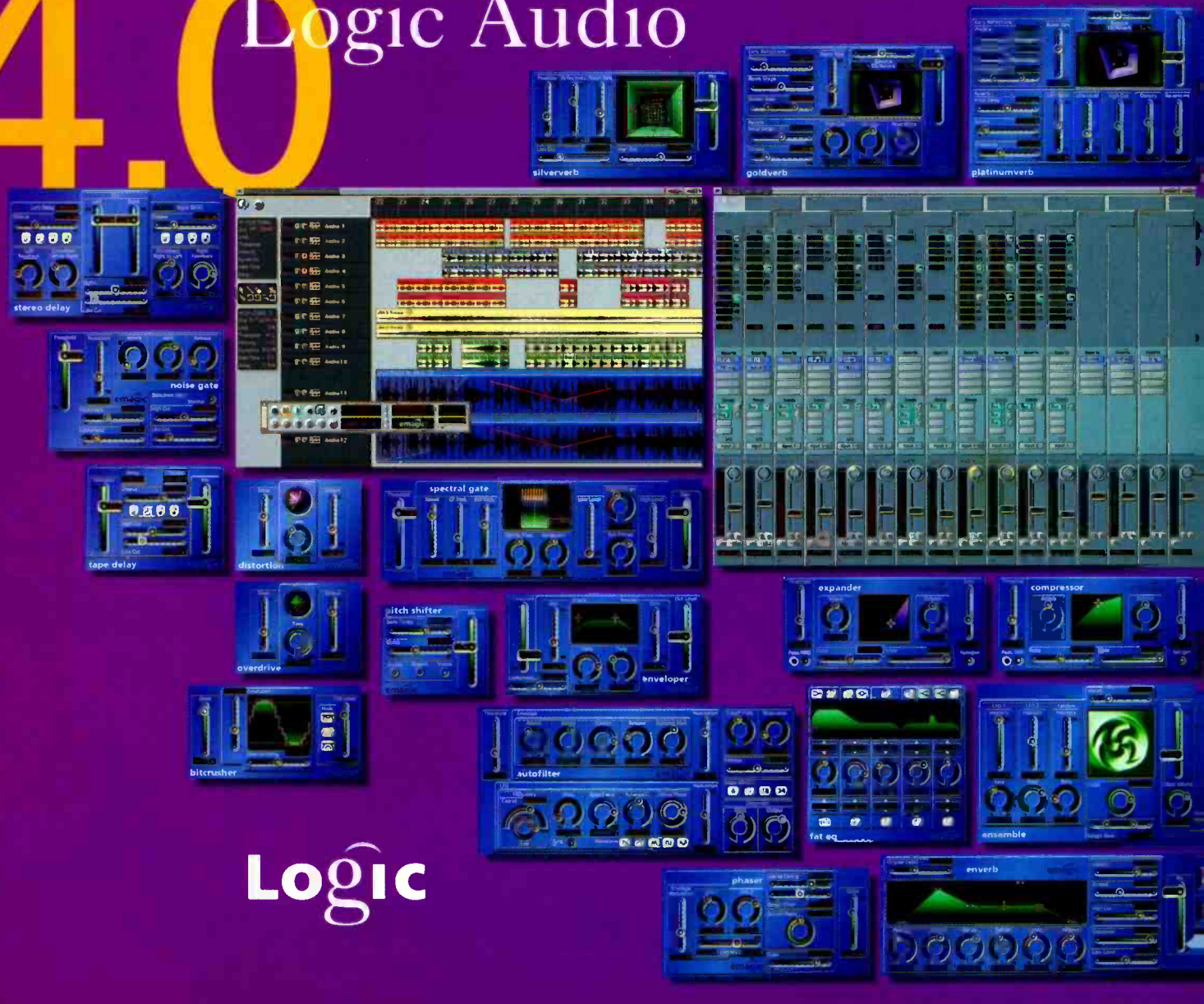
SOUNDTRACS

Soundtracs PLC, Blenheim Road, Longmead Business Park, Epsom, Surrey KT19 9XN, UK
Tel: (+44) (0)181 388 5000, Fax (+44) (0)181 388 5050, email: sales@soundtracs.co.uk, web: http://www.soundtracs.co.uk

Soundtracs (USA), 3 [illegible]outh Service Road, Melville, NY11747-3201
Telephone: (+1) 516 439- 8520, Fax (+1) 516 333 9108, email: soundtracs@korgusa.com

- 31 (thirty one!) High End Audio Plug-Ins included
- Windows: 24 Bit Audio, ASIO, EASI, DirectSound
- Windows: Polyphonic Waveplayer with DirectSound, DirectShow AVI-Player (QuickTime)
- Windows: SoundDiver Autolink, AMT, 64 MIDI Ports
- Individually zoomable tracks in Arrange Window
- Multi Track Record for MIDI (up to 16 times)
- Multiple Sequence Editing in Matrix Editor
- Environment: Macro- and Alias-Objects and much more
- Enhanced User Interface with complete localization (multiple languages) plus many more improvements

Emagic proudly presents the new Logic Audio 4.0



Logic

Emagic GmbH
Halstenbeker Weg 96
25462 Rellingen
Germany

Tel. +49. 4101 495-0
Fax +49. 4101 495-199

Emagic Inc
13348 Grass Valley Ave.
Building C, Suite 100
Grass Valley, CA 95945
USA

Tel. +530. 477 1051
Fax +530. 477 1052

Emagic Web-site
http://www.emagic.de

Emagic E-Mail
info@emagic.de

XTA DP226

Before digital moved in, managing large and complex sound systems was achieved with chinagraphs, notes, intercoms and people. **Terry Nelson** looks at XTA's bid to streamline the process

ONE OF THE undoubted advantages of digital electronics lies in the area of control. This is particularly true for systems where you want to be able to set up different variations of a configuration and come back to them at the touch of a button rather than sorting through reams of paper to find the right notes.

The touring sound industry has recently been applying techniques that have been around for some time in fixed installations, but for various reasons have not been in widespread use for mobile systems. A typical example is the ability to control subsystems within a large sound-reinforcement rig without having to rely on intercomm signals to someone at the amp racks in order to tweak the various loudspeaker feeds.

Earlier amplifier control systems, such as the Crest NexSys, set out to address this problem, but it would appear that the wish to control large rigs has been answered by the appearance of what tend to be known as 'speaker management systems'. These units combine facilities such as crossover functions, EQ, delay, and so on, and can generally be networked in order to provide an expandable control system to meet changing requirements. One of the latest recruits to this select club is the XTA DP226 Speaker Management System.

The most obvious comparison that can be made is with the Lab Gruppen DSP24 (*Studio Sound*, September 1998), but where the Swedish unit leans towards the design side with its use of dba Audio View software package, the XTA system is resolutely geared towards in-the-field operation.

Coming out of the box, the 1U-high chassis immediately impresses with its smart deep blue finish and layout. And as we shall see, its beauty is more than simply skin deep.

The unit offers two input channels and six output channels, which can be configured in five different formats: 2 x 2-way plus summed subwoofer output and summed auxiliary output; 2 x 3-way; 1 x 4-way plus 2 summed auxiliary outputs or from Input B for full-range or 2-way operation; 1 x 5-way plus summed auxiliary output; 1 x 6-way.

Before getting into the features, a quick look at the front and rear panels is in order. Moving from left to right, there is a 2-line LCD screen, six function keys (BACK, NEXT, MENU, ENTER, QUIT, BYPASS), three velocity-sensitive parameter control knobs (FREQ, Q, GAIN) above a PCM-CIA card slot, two Input sections and six Output sections. Each I-O section is equipped with a 6-segment LED meter, MUTE key with LED indicator and GAIN key. Colour coding is simple yet effective, with all keys and buttons being light grey with the exception of the readily visible red MUTE buttons.

> Access to the settings for each channel is accomplished with the press of the appropriate GAIN button. This brings up the gain setting for the channel and the other features such as Polarity, Delay, HPF & LPF, parametric sections and limiter are cycled through with the back-next keys

The rear panel features eight XLR connectors for the balanced inputs and outputs plus In-Out XLRs for RS485, a MIDI In DIN connector and 9-pin socket for RS232 connection to an external computer. The panel is completed with an IEC mains connector with spare fuse holder and rocker on-off switch.

Turning the unit on brings the current software release to the screen (now v2.0) and also a message indicating the 'wake-up time' remaining before the unit becomes operational. The configuration of the system is also indicated (2 x 3-way crossover). The wake-up time is programmable and is very useful for avoiding unpleasant surprises. The test unit defaulted to all outputs muted on power-up, but, again, this can be programmed for the opposite. The Mute indicator LEDs are also very clear.

All digital units have their particular operating structure and accessing the configuration and setup of the DP226 is via the MENU, ENTER, BACK, NEXT and QUIT keys. Pressing MENU for the first time calls up the main menu and this allows step-by-step configuration of the unit via the various submenus.

At this point, it will be helpful to have a look at the signal path and features offered by the DP226. The two input channels are followed by the LED meter which indicates from -24dB to 0dB with the five lower LEDs (four green and one orange) and digital overflow with the top red LED. The signal then passes through a mute control, a variable gain control, 8-band parametric EQ section and delay section.

The six output sections each have variable high-pass and low-pass filter sections with a selection of characteristics (Bessel, Butterworth, Linkwitz-Riley) and slopes, 5-band parametric EQ, delay section, variable gain control, limiter with LED meter and mute control. The limiter meter indicates a range of -24dB to 0dB headroom, with the orange LED indicating limiter threshold and the top red LED indicating 4dB of limiting.

Setting up the unit is logical and starts with the Input Memory to be recalled then moves on into the various setup pages for the different functions. I found this to be very comprehensive and fairly easy to use, though I do feel that the sequences of the keys is somewhat confusing at first. The submenus include the recalling and storing of memories as well as defining a new

crossover setup.

So what does the DP226 have to offer? As can be seen, it manages to combine a lot of functions into a modest chassis and virtually do away away with a rack-load of separate components. Again, starting with the input channels, each of the 8 bands of the parametric EQ section has a range of 20Hz–20kHz and may also be configured as a LF-HF shelving filter. This feature alone provides the necessary EQ to setup systems without recourse to external equalisers—you put the EQ where you need it. XTA very kindly provide a large range on the EQ sections (-30dB and +15bB) plus a very narrow bandwidth for notch applications. The delay section allows either the whole system to be aligned to a signal source (such as a very loud backline) or for use in subsystems.

The outputs have much of the same facilities, with the exception that the EQ section is a 5-band affair (still more than enough for the correction of most drivers) and that there are limiters. These either have an automatic setting for attack and release derived from the high-pass filter frequency of the output channel or these parameters may be set manually. Threshold is set manually in both modes of operation.

Access to the settings for each channel is accomplished with the press of the appropriate GAIN button. This brings up the gain setting for the channel and the other features such as Polarity, Delay, HPF & LPF, parametric sections and limiter are cycled through with the BACK-NEXT keys. The actual settings are changed with the three rotary encoders (FREQ, Q, GAIN). However, I cannot help feeling that things could be clearer by using a different labelling for the three knobs as the terms used only refer to the parametric EQ sections. Use of Gain is fairly common sense, but I would have thought that a layout on the LCD screen that just refers particular settings to the three knobs would be clearer—especially in crisis situations where you suddenly have to stop and think that changing delay times is a mixture of frequency and Q. What do you think, XTA?

This aside, all settings are precise and the fine increments for the delay sections allow speakers to be time aligned exactly in order to provide a common wavefront.

Space precludes an in-depth look at all of the individual features but it should be clear by now that the DP226 is a powerful processing package for the setup, alignment and tuning of a sound reinforcement system or studio monitors for that matter.

This review would be incomplete without reference to the Audiocore computer control software and this was updated by downloading from the XTA Web site literally just before closing this report. The software is now up to v4.08 and the main new feature is Array Control (which has been developed specially for the Rolling Stones current tour).

The software allows online and offline editing for units plus network control of up to 32 DP226 units (or other XTA equipment) and makes life much easier in terms of accessing the various parameters of the system. In particular, the ability to visualise the EQ and HPF-LPF curves while making changes is very useful.

The Array Control feature is very powerful and allows up to 24 Zones to be created to control up to 192 outputs. Various security measures such as Solo or Mute lockout or unauthorised access can be implemented and there are two main modes for setup and performance. The control of the zones is via three main screens—Faders, Up-Down and Meters—where six zone groups are each assigned four master faders (rather like VCA groups) or up-down nudge buttons. These are made sufficiently large for use with touchscreens. The meter page just shows the metering for the zones.

The XTA DP226 Speaker Management System is a full stand-alone unit and is an immediate replacement for many sound-reinforcement system control racks—it really does do it all and extremely well. Add to this the Audiocore software and you have very precise control of large and complicated systems. If you are interested in the even coverage of the audience through the use of short-throw, medium-throw and long-throw subsystems, or any other variations, this is the unit for you. Need I say more? ■

Contact

XTA Electronics,
Riverside Business Centre,
Worcester Road, Stourport-on-Severn, Worcestershire
DY13 9BZ, UK.
Tel: +44 1299 879977.
Fax: +44 1299 879969.
US: XTA Electronics,
80 Sea Lane,
Farmingdale, NY 11735.
Tel: +1 516 249 1399.
Fax: +1 516 7531020.

Akai S5000 & S6000

Misunderstood ever since their inception, samplers have continued to reinvent themselves on a regular basis. **Jim Betteridge** talks sound design and Akai's new samplers

THOUGH DESIGNED PRIMARILY for musical performance applications, the sampler has long been a favoured tool of sound designers the world over. Akai really captured the European sampler market in 1988 with their S1000, and all its professional samplers since then (S1100, S2000 and S3000 families) have been variations on the same basic model.

Though seasoned Akai fans will swear by their front-panel ergonomics there are many more newcomers who will swear at them. Lacking the schematic simplicity of a multitrack hard-disk system the sampler will always be a more challenging tool, and, indeed, the previous Akai models, like those from other manufacturers, have been a touch fiddly.

For musicians this is, perhaps, less important, but when your client is paying by the hour and you have promised to create 'a little bit of magic' before 5pm, that crouching, myopic stance does not inspire hope. I am happy to say that, with the all-new S6000, the knee pads and the Optrex can hit the trash. This is, ergonomically, a whole new world.

The S6000 is top of the range. Its 4U-high frame has a detachable front-control panel that acts as a full-function wired remote. It has 128-voice polyphony, 16 unbalanced jack outputs (all capable of being stereo pairs) plus two balanced XLR outputs (parallels of jacks 1 & 2) and two balanced XLR inputs plus three programmable user-keys. The 3U-high S5000 has a fixed front panel, eight unbalanced jack outputs (expandable to 16), no XLRs, 64-voice polyphony (expandable to 128) and no user keys. For the purposes of this report, I shall refer to the S6000, although most comments are equally relevant to the S5000.

To make the outputs unbalanced on a flagship machine like this I think is a big mistake. With all the video, SCSI, digital, time code and RF signals floating about these days, who does not live in fear of noise? Do not throw away those balancing boxes.

A long-time opponent of the mouse and the drop-down menu, the Akai design team's preference is for the clearly marked button. Other manufacturers have successfully incorporated VGA monitors and mice into their systems, but it was felt here that most studios and musicians have enough screens already and that a smaller, neater alternative was preferable. Hence, all operations centre around a 120mm x 88mm (viewable area) monochrome LCD. Down each side of the screen are eight soft keys and along the bottom are the main function keys, much as you'd find on the S3000 et al (Multi, Fx, Edit Sample, Edit Program, Record, Utilities, Save And Load). To the right is a good-size data knob, a 10-key numeric pad and a few other miscellaneous buttons. With a big screen and 16 soft keys, you are never too many keystrokes away from your target field.

Unless your budget is very tight, it has got to be worth shelling out for the S6000 with its detachable control panel. Sitting back with that baby in your lap you soon establish a double-handed Game Boy strategy that, for my money, shows the mouse-menu alternative a clean pair of heels. There is no question that you can see more information at once on a 17-inch monitor, but most of the time you do not need to see more than the LCD shows. Mesa, a program offering a Mac-PC front end for other Akai samplers, may or may not be rewritten for the new machines; it depends on user demand. It has to be said that co-opting the Mac OS or Windows to help with the housekeeping offers significant benefits in the file management department (sadly lacking on the S6000 itself), but many of these facilities can be gained by using commercially available Mac-PC programs linked to the S6000 via SCSI. This openness to third-party editors is new to the Akai family and is largely due to the fact that, unlike previous models, the S6000 uses the .WAV format as its basic building block.

The new models cannot yet read other manufacturers' sample libaries—such as those of E-mu, Ensoniq and Roland—which is a big shame, but apparently soon to be rectified. They can read the S1000, S1100 and S3000 libraries including Multis, Programs and mono and stereo samples. Unlike previous models, the new system makes little distinction between stereo and mono samples. A small graphic in the Edit Sample page tells you whether it is one or the other, but otherwise a sample is a sample. This is generally quite convenient when sampling anew, but when loading stereo samples from older models' libraries, where left and right sides of a stereo sample are seen separately, this means that you have to duplicate your actions for each side of the sample. Conversely, you are unable to address each side of a new stereo sample separately. Apparently, these two issues are to be addressed for future updates.

From the moment you turn the machine on it is apparent that the new interface is streets ahead of the old. For instance, the initial screen is a systems page showing you what hardware you've got loaded—diskettes, hard drives, how much RAM, effects boards, ADAT I-O and QWERTY keyboard. Hit >

<the LOAD key followed by the SELECT DISK soft key and all attached disks are listed. Scroll down to your target disk, press SELECT DISK and you get a list of folders (same as Volumes on previous models). Separate keys allow you to open, close or load a folder or Get Info (which includes the date and time the folder, program or sample was created—a future Sort By option, no doubt). If you open a folder you see the list of Programs followed by all the samples. Scroll down to your target sample, hit the AUDITION SAMPLE key, and you hear it straight off disk, no loading or deleting as of old. This is extremely useful for SFX work.

In general, those who know their way around the S3000 will feel at home here, although the ergonomics are vastly improved. Some particularly nice new features are to be found in the Edit Sample pages. These include the PLAY FROM and PLAY TO keys allowing you to quickly find an edit point; the Extract function that lets you quickly create a new sample from a region of a longer one (rather than having to copy and Trim) and finally a QWERTY keyboard socket —about time.

In addition to two reverb-only devices, the new effects board, the EB20, offers two multi-effects units including distortion, ring mod, rotary speaker effects, EQ, modulation (chorus, flange), pitch shifting, delay and reverb. Each Keygroup has an individual send to each of these four processors, so for many applications you could get by without external effects.

For sound design work the sampler offers huge advantages over the hard disk system. Especially when used in conjunction with a MIDI keyboard and computer-based MIDI sequencer, the level and detail of control over a sound is unmatched. With two independent sets of MIDI (In, Thru, Out) ports offering 32 channels, 128-voice polyphony, 16 outputs, up to 128 Multis loadable at a time and 256Mb RAM and significantly improved filters and EQ, you are unlikely to run short of space in any direction. You can also record 'virtual samples' straight to disk and playback as many as your disk's performance will allow. While these may be useful for non time-specific atmos tracks, under MIDI control all you can do is trigger them from their start point and let them run, so they are no replacement for a proper hard disk system. The S6000 has no EDL facility and no way of firing off samples against time code, so you really do need a MIDI sequencer of some kind. There is a MIDI file player, but this is not working in the initial software release. There is space for a hard drive internally, or a Jaz drive can be fitted to the front panel.

Though excellent in principle and design, it does seem that these new models were released before all bugs could be ironed out. The rather primitive disk handling needs some work, there are timing and polyphony problems when reaching maximum polyphony and the machine cannot currently read PC .WAV CD-ROMs. These deficiencies spoil the impact of what is otherwise a powerful and well-designed machine. But Akai claims to have them all in hand, and by the time you read this it may well be sorted out (updates free at www.akai.com). Assuming this is the case, I for one am glad to have a sampler with all the power of its kind but, at last, a truly humane human interface. ■

UK: Akai (UK) Ltd, Haslemere Heathrow Estate, Silver Jubilee Way, Parkway, Hounslow, Middlesex TW4 6NQ.
Tel: +44 181 897 6388.
Fax: +44 181 759 8268.
US: Akai-AMC, 1316 East Lancaster, Fort Worth, TX 76102.
Tel: +1 817 336 5114.
Fax: +1 817 870 1271.

modern classics

Red Range

by Focusrite

Red 1 Quad Mic Pre; four channels of Focusrite's legendary mic pre-amp circuitry.

Red 2 Dual Parametric Equaliser; powerful and responsive, with Focusrite's warmth and smoothness.

Red 3 Dual/Stereo Compressor & Limiter; the first choice of the world's leading producers and engineers.

Red 6 Mic Pre & Parametric Equaliser; the classic signal path for outstanding recordings.

Red 7 Mic Pre with Compressor & De-esser; the essential voice-over tool.

Red 8 Stereo Mic Pre Two perfectly matched channels of the ultimate mic pre-amp.

Red Range by Focusrite has become an industry reference. Six products delivering the classic Focusrite microphone preamplifier, equaliser and dynamic processing in a range of combinations for a variety of applications*.

All enclosed in the unique, machined, red anodised aluminium case.

Built to sound wonderful and last for ever.

*Studio and Remote Recording, Post Production, Rock, Opera, Theatre, etc.

Call for a brochure or ask your Focusrite dealer for a demonstration.

TEC 1995 Winner
Red 3

TEC 1996 Winner
Red 7

Focusrite
audio engineering

Focusrite Audio Engineering Ltd. Tel: +44 (0)1494 462246 Fax: +44 (0)1494 459920 E-mail sales@focusrite.com

www.focusrite.com

REVIEW

Adgil Director 9800

While surround sound is attracting considerable interest from modest facilities, it is fundamental to up-market business **Rob James** assesses a professional surround monitor management system

THE DIRECTOR is an expandable, modular system for controlling the increasingly complex monitoring requirements for surround mixing. This is a 'big league' unit and therefore not directly comparable with the more modest Studio Technologies Studio Comm 68/69 and Magtrax Music Box units (*Studio Sound* October 1998, Jan 1999). In addition to these 'plug-and-play' units, both Studio Technologies and Magtrax offer custom up-market solutions that compete more directly with the Adgil and Otari PicMix systems.

Director consists of two main building blocks—a mainframe and a remote. In fact, there are three alternative remotes available to suit differing requirements. The 9822 supports up to 12 sources plus a 'wild' source together with LCRS and stereo speaker systems. The 9824 extends the speaker system to 5.1 channels and stereo, while the 9840 allows up to 30 sources plus a wild source, and up to eight speaker channels.

The mainframe is a 3U-high rack-mount with a number of front-panel controls. At the rear are 16 card slots plus the power supply connection (IEC) and switch. Each of the first ten slots can contain either a 9802 (factory configured) or 9808 (user-configurable) input card. Each card provides eight input channels, each of which may be assigned to one bus. Slot 11 takes a 9803 Insert Send card, that also doubles as the bus amplifier. Slot 12 contains the 9804 Insert Return card, that also includes the mono summing amp. In slot 13 is the Master Output card, 9805-4M. This has four main outputs, LCRS and two auxiliary stereo outputs. A multiturn trimpot is provided for each output. Slot 14 can contain either a 9805-2S 2-channel slave output card or the 4-channel version, 9805-4S depending on the requirement for 5.1 or 7.1 monitoring. The 9804-SO solo input card is in Slot 15 and the 9806 Microprocessor Communication Controller is in Slot 16. This comes with a Y adaptor to split the connections between a 9-pin D-connector for the remote control and a 15-pin D-connector for GPIOs.

GPIOs provide for external PEC-Direct switching and tallies, red-light or cue-light switching, talkback (muting), external Dim and Solo 1 & 2. The two external Solos are provided for multi-operator consoles with split solo arrangements. Also provided are a couple of open collector outputs to switch a matrix encoder-decoder (a Dolby SEU4—SDU4) when changing between LCRS and one of the stereo outputs. All audio connections are on 25-pin D-connectors with pin-outs conforming to the Tascam convention.

The front panel has a bright, backlit, 2-line LCD that is used in conjunction with a rotary shaft encoder and ten internally illuminated keys to control and programme the unit. The top row of six consists of a CUT key, four SETUP recall keys and a STORE key. The other four, on either side of the encoder are cursor keys for navigation.

The configuration supplied for review consisted of a mainframe with a configurable 9808 input card and a factory configured 6 + 2 9802 input card, the insert send and return cards, a 9805-4M master out and a 2-channel slave for 5.1 use.

The neat desktop remote uses the same keys and knobs as the mainframe plus a MONO level pot. The keys are arranged as four rows of six. The top row is used together with the SHIFT key to select any or all of the 12 possible sources. It is simple and quick to make multiple selections for multistem monitoring. In Group mode, four sets of sources may be defined on the mainframe as Group 1, Group 2, PEC and Direct. These can then be compared with a single key press on the group master source or by using an external PEC-DIRECT key via the GPIO. Alternatively, when not in Group mode, sets of sources can be defined from the remote.

The second row is L, C, R, SL, SR and SUB output enables—the LEDs light when channels are active and flash when muted. These keys also double as SOLO selects when the SOLO mode is selected on the mainframe. I generally prefer the opposite convention of output mutes with the LEDs lit when muted as this makes it easier to see at a glance why it's all gone quiet.

In the third row are the SHIFT key, WILD key, SPKR A, B and C keys and a MONO key. The WILD key selects or deselects an assigned group of input channels from a source card independently of all other source selections. The WILD key may also be assigned as Group 2 master. SPKR A and B select multichannel monitors, depending on which output cards are fitted, C selects the alternative stereo monitors. >

OMR8 delivers MOre

With a bewildering choice of 8-track disk recorders available, choose the one that delivers MO*re*.

Just connect a standard monitor, keyboard and mouse directly to DAR's OMR8, and it becomes a fully specified workstation with on-screen, segment-based editing. Everything else is built-in.

Drawing on our post production expertise and benefiting from DAR's familiar screen interface, the OMR8 provides drag and drop, time-slip, move, trim and cross-fades in addition to functioning as a stand alone dubber or tape machine replacement.

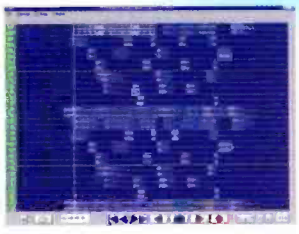
24-bit 96kHz

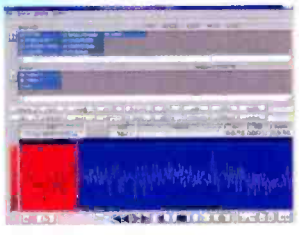
The OMR8 can be supplied with a variety of media options including MO and removable hard or Jaz™ drives.

Audio quality, as you'd expect from DAR, is flawless.

Meanwhile our unique SAM networking protocol facilitates the addition of further OMR8s, all under the control of a single unit, for virtually unlimited expansion.

To find out more call +44 (0)1372 742848 or visit www.dar.uk.com.





More than simply an 8 track recorder, the OMR8 offers built-in segment-based editing via the familiar and intuitive DAR screen display.

DIGITAL AUDIO RESEARCH

A Harman International Company

Digital Audio Research Limited, 2 Silverglade Business Park, Leatherhead Road, Chessington, Surrey, KT9 2QL, UK
Tel: +44 (0)1372 742848 Fax: +44 (0)1372 743532 Email: info@dar.uk.com http://www.dar.uk.com

< The MONO key selects a source or summed sources to L, C or R speakers or all three. The actual sources and destinations are programmed on the Director mainframe. Programming of various functions, including PEC-Direct sources, bus assignments and so on can also be programmed from the remote. A lot of the programming becomes more direct on the remote since more keys are available. For example, when you are programming the input, the corresponding input LED will be lit as well as all the sources it is assigned to and its output bus. If you want to change the bus assignation you simply press on the enable key that corresponds to that bus. This is far more intuitive than using cursor keys and quicker to do than describe.

The bottom row has the CUE key, which can be programmed to provide a momentary action for cueing or to toggle a latching output for red light switching. The INSERT key switches the speaker source before or after the insert point. The DIM key attenuates the output level by a preset amount, anything from nothing to -89.625dB or Mute in 0.375dB increments. The final keys are SPL A and B which allow two fixed monitoring levels to be set in increments of 0.375dB attenuation from maximum. The shaft encoder remains active. When the knob is moved off the selected preset level the LED extinguishes. When the knob is back at the preset level the LED re-illuminates.

The Director system is an comprehensive monitoring package. Monitoring systems are very much a matter of personal likes and dislikes, and I have plenty of prejudices borne out of years of mixing. I would have liked to see a way of locking out the volume knob to prevent inadvertent changes to the monitoring level and a decibel read-out on the remote. Many mixers use different levels during premixing to the recommended SPL for the final mix. I also still feel channels should be lit when muted not active (although they do flash when muted). In fact, I appreciate why Adgil has chosen to use this logic; the output channel LEDs also show which buses are active for the selected source(s) and speakers which would be difficult to achieve with the reverse logic.

Other than these minor gripes, I want to deliver a little praise. Unlike the units previously tested, the Director can be powered up or down without producing large thumps in the monitors. Further, it wakes up with the CUT key active. I think this should be kindergarten stuff on professional equipment, but sadly it is not always the case. The audio performance is subjectively excellent—transparent and silent.

Adgil says it has recently upgraded the 'top of the line' 9840 remote to support 80 LEDs showing exactly which inputs are selected and adding an alphanumeric SPL display. Adgil will also quote for custom controls and software so, if you wanted the output channels enable keys illuminated when muted this might be possible.

With the range of possibilities on offer, it should be possible to specify a system to cater for almost any current requirement. The remote is small and it would be fairly easy to integrate into a panel and the system has the advantage of expandability allowing a studio to start with a relatively modest system and add to it as your requirements change.

A fully expanded system with the 9840 remote offers the possibility of up to 80 inputs with two 8-channel outs plus one stereo. A subsystem is also available that can work in tandem with a Director system or function as a stand-alone format selector and-or equaliser. The Format selector is a matrix, that maps any of eight inputs to any of ten outputs with a total of three subwoofer outs. Mappings can be stored as presets with up to four on dedicated keys. Equaliser boards may be added that function as 5-band parametrics or subwoofer crossovers.

The Director feels right—which is half the battle with this type of unit—and I enjoyed using it. ■

Contact
US: Sascom.
Tel: +1 905 469 8080.
Fax: +1 905 469 1129.
Net: www.sascom.com

Alesis GT microphones

Extending its influence on audio, Alesis has brought out Groove Tubes and bought its microphones to market, **Dave Foister** goes shopping

IF THERE'S A GOOD IDEA doing the rounds, Alesis won't be far away. Given the track record it was only a matter of time before the company brought us its own microphones in another step towards the total Alesis studio, and here we have a range of four very closely related condenser microphones covering all the favourite flavours. Although they go under the name of GT Electronics (since Alesis has acquired Groove Tubes), they have Alesis engraved on the back and AM (Alesis Microphones?) as the model designation, and the whole presentation smacks of familiar Alesis style.

The other notable Alesis characteristic is a fondness for jumping in at the deep end, and these microphones follow that trend too. There is nothing entry-level about the range, but a clear aim for up-market applications reflected in the specs, the styling and the engineering. The four models divide neatly into two levels of operational sophistication, each offered in a choice of two circuit topologies. Thus the AM51 and AM52 have class-A solid-state electronics, the AM52 giving a selection of polar patterns, while the AM61 and AM62 provide the same pairing with valve electronics. It is Groove Tubes that gives the range its GT designation, as the 61 and 62 use a circuit built around a Groove Tubes GT5840M, a military spec subminiature valve 'chosen for its low distortion, superior signal-to-noise ratio and minimum sensitivity to mechanical vibration.'

It is standard practice, if you want your microphone to be taken seriously, to make it look like a Neumann, and few others look as much like a U87 from a distance (sideways on anyway) as the GTs. There are more curves, but the basic shape and the size are very similar. Inside is a large—more than 1 inch—capsule, that is single-sided in the 51 and 61 and has two diaphragms in the 52 and 62, and below the dense mesh grille are the switches set in a ring. Just what switches are fitted depends on the model.

The most basic are the 51 and 61, fixed at cardioid and with nothing more than bass cut and a 10dB pad to select. The 52 adds a 3-position polar pattern switch giving cardioid, omni and figure-of-eight, while the top-of-the-range 62 has an additional switch giving super-cardioid as a variant of the basic cardioid position. Thus the 62 has no less than four switches around its circumference, all clearly labelled and positive in operation.

Simple stand mounts are supplied with all four, attaching by means of a big screw-in collar at the base and locked with a big handle. The valve models also come with a suspension mount (available as an optional extra on the others) that clamps on to the body with a twisting cam mechanism. The mount grips the microphone where it can solely by means of friction with the rubber bands in the mount, and I must say I was not inspired with enough confidence to hang it upside down. There is a further, more elaborate mount available for all the models that incorporates a mesh screen pop filter.

The inclusion of the shock mounts for the valve microphones adds even more to the supplied kit, so that by the time the power supply and cables are added the whole thing needs a flight case four times the size of the simple aluminium carrying box that the solid-state ones come in. The power supply is very simple and basic, as all the switched functions are on the microphone itself; all it has is a power switch with associated LED, an XLR output, and a 6-pin XLR input for the supplied cable. The cable is sturdy to the extent of being a bit stiff, and its length is none too generous, but then the PSU can be sited on the floor near the microphone if necessary as there's nothing to adjust and it is built to have trucks driven over it.

Indeed the build quality of the whole range is good, with a reasonable finish and an adequately reassuring feeling of ruggedness. Inside the PCBs are well-built with some evident hand wiring and the valves cushioned comfortably in their own rubber suspension.

I must admit to having expected a certain flavour from the GT microphones, and to having been pleasantly contradicted. Alesis has never been backward in coming forward, and I would not have been surprised to find a brash, 'listen to what I can do' character in them, especially the valve versions. As it turns out, this is far from the truth, as the sleek elegance of the appearance is paralleled in the performance. The specs look good, with tight, well-extended frequency responses, and the resulting smoothness is quite a surprise. There is no shortage of high frequencies, but they are presented in proportion to the rest of the spectrum to give a very natural balanced sound. They are complemented too by the smooth bass extension that makes the whole full and warm. The difference between the valve and solid-state versions is surprisingly small, but nonetheless worthwhile, with just a fraction more warmth and presence from the tube 60s, which in fact come over as the flatter and more natural of the pairs. When close on to saxophones both types coped without strain, and inside a piano results were good, with a spaced 51/61 pairing delivering a surprisingly good stereo image. I was also confronted with a penny whistle, and this showed the good detail and the low noise floor of the 62.

These and all the other sources showed the GTs to be excellent all-rounders, not the sort whose character can get in the way of true flexibility. Given the need for a cardioid pattern and a natural sound, the four are quite interchangeable, the patterns distinguishing the x2s and the valve flavour being just noticeable on the 6xs. No cheap substitutes these, the Alesis GTs deserve to be taken seriously in the market they have been so boldly launched into. ■

Alesis Corporation,
3630 Holdrege Avenue,
Los Angeles, CA 90016 USA.
Tel: +1 310 558 4530.
Fax: +1 310 836 9192.
UK: Sound Technology,
Letchworth Point,
Letchworth,
Herts SG6 1ND.
Tel: +44 1462 480 000.
Fax: +44 1462 480 800.

the Digital Advantage

The ADVANTA Series Large-Format Digital Production System is more than a mixing console. Four years in development, ADVANTA delivers on the promise of digital – with outstanding *Sonic Quality*, frame-accurate *Dynamic Recall/Reset* of every parameter, comprehensive *Assignability* to reconfigure the entire system to meet your precise requirements, *Scalability*, and full *Connectivity* with other components that complete the all-digital studio.

ADVANTA


ADVANTA is targeted at a wide spectrum of applications – from music recording, through broadcast production, to film and TV post.

Novastar Studios, Los Angeles

OTARI

DIGITAL'S NEW STANDARD

www.otari.com

Otari Corporation, USA Tel: 800/877-0577 +1/818/594-5908 Email: sales@otari.com • Otari, Inc., Japan Tel: +81/424-81-8626 Email: salesinfo@otari.co.jp
Otari Europe GmbH Tel: +49/2159-50861 Email: euro@otari.de • Otari Singapore Pte. Ltd., Tel: +65/284-7211 Email: otarisp@singnet.com.sg
U.S. Regional Offices: New York +1/212/324-1700 • Nashville: +1/615/255-6080

HHB Circle 5A

For methodology see Studio Sound, April 1998, page 14.
See it on the Internet website:
www.prostudio.com/studiosound/apr198/r_tannoy.html

Studio Sound's 'bench test' loudspeaker reviews continue with the Circle 5A. **Keith Holland** reports

THE HHB Circle 5A is a 2-way, active loudspeaker comprising a 200mm polymer cone bass driver, a 28mm soft-dome tweeter and built-in power supply, amplifiers and active crossover electronics. The drive-units are arranged vertically and are magnetically shielded. The cabinet has external dimensions of 420mm high by 255mm wide by 300mm deep and is equipped with a small, oval port beneath the bass driver. The back panel is dominated by a large heat sink with vertical fins, alongside which are the mains socket and switch, switchable balanced (XLR) or unbalanced (phono) line-input sockets and a master volume control. Sensibly, these features are protected from possible damage by a stout metal bar. HHB specify the power amplifiers to be 120W for the woofer and 70W for the tweeter, but no maximum output figures are given. Although fairly conventional in design and layout, the Circle 5A has one striking feature; the cone of the bass driver is purple.

Fig. 1 shows the on-axis frequency response and harmonic distortion for the HHB Circle 5A. The response is seen to fail to keep within ±3dB limits, due to a peak between 500Hz and 2kHz, and a non-uniform high-frequency response, but it stays within ±5dB from 50Hz to 20kHz. The low frequency roll-off is approximately third order with the -10dB point at about 35Hz. The low frequency harmonic distortion performance is acceptable, with the second harmonic rising to -35dB (1.8%) at 60Hz but maintained well below -40dB (1%) from 140Hz upwards; the third and higher harmonics lie below -40dB throughout the bandwidth.

The horizontal off-axis performance (Fig.5) is well behaved, with slight evidence of mid-range narrowing between 500Hz and 3kHz; the high frequencies are seen to roll off smoothly with little evidence of side-lobing. The vertical off-axis performance (Fig.6) demonstrates the familiar crossover interference problem due to the physical spacing of the drivers, but is otherwise well controlled.

The time domain performance of the Circle 5A is demonstrated in the step response (Fig. 3), the power cepstrum (Fig. 4), the acoustic centre (Fig. 2) and the waterfall plot (Fig. 7). The step response shows a rapid rise and smooth, even decay which are characteristic of good crossover design and time alignment, but distinct reflections at about 150µs and 300µs, which are most probably cabinet edge diffraction effects, can be seen in the power cepstrum; these reflections are responsible for the non-uniform on-axis response evident in Fig. 1. The acoustic centre is seen to reach a maximum of just over 2m behind the loudspeaker at low frequencies; a good result, that is borne out by the waterfall plot which demonstrates a rapid initial decay at low frequencies.

Overall, the HHb Circle 5A is a good performer; the very good time-domain response is marred somewhat by a ragged on-axis frequency response. The loudspeaker could be expected to fair well under less than ideal acoustic conditions as transients are well preserved and the off-axis response is reasonably well controlled. ■

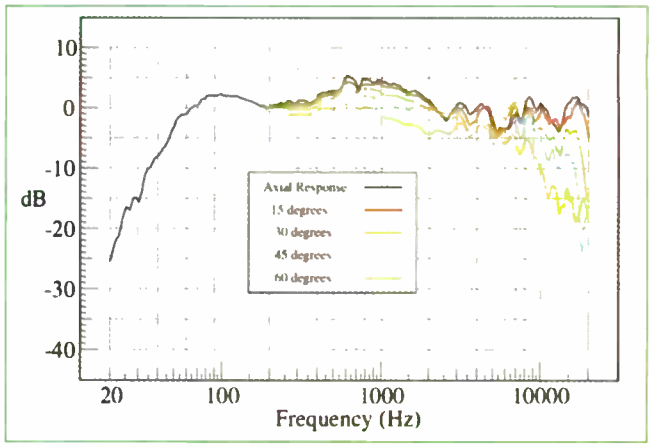


Fig.5: Horizontal directivity

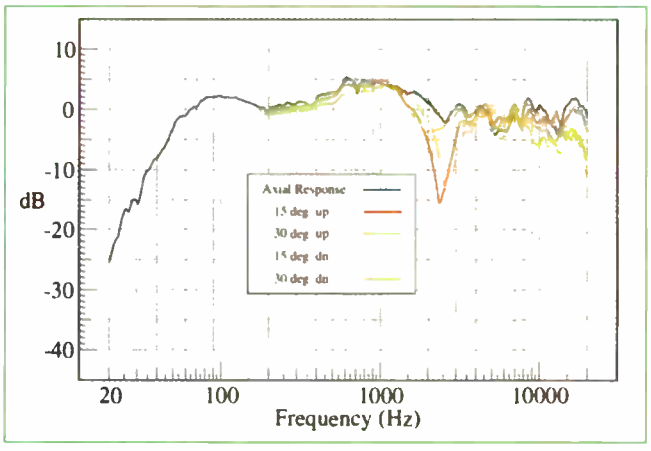


Fig.6: Vertical directivity

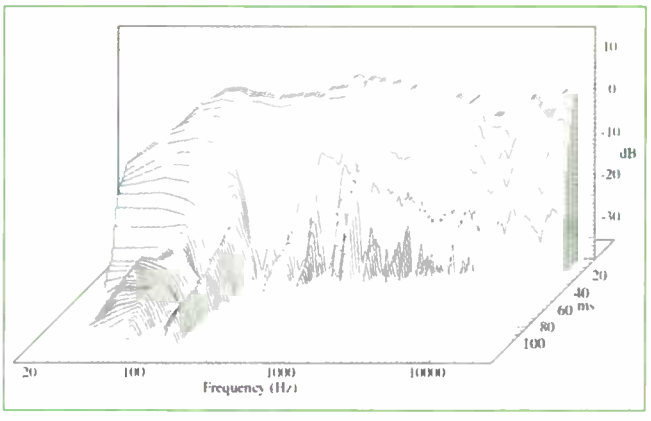


Fig.7: Waterfall chart

HHB, UK.
Tel: +44 181 962 5000.
Email: sales@hhb.co.uk.
US: HHB.
Tel: +1 310 319 1111.
Email: sales@hhbusa.com.
Canada: HHB
Tel: +1 416 867 9000.
Email: sales@hhbcanada.com

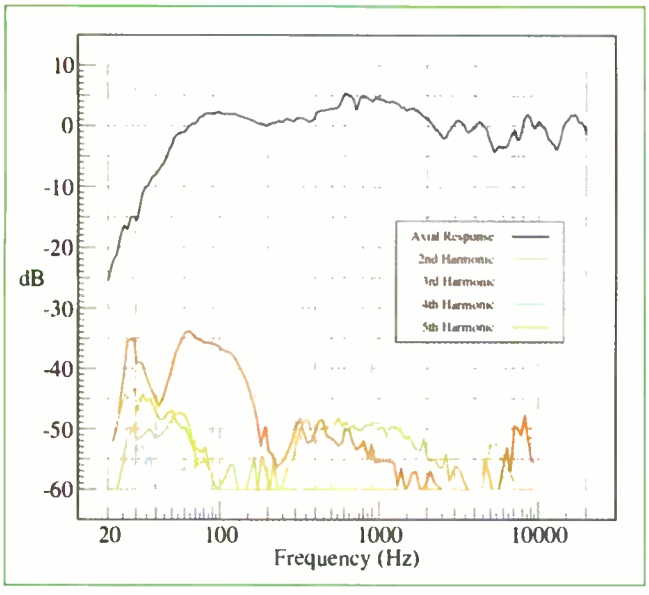


Fig. 1: On-axis response and distortion

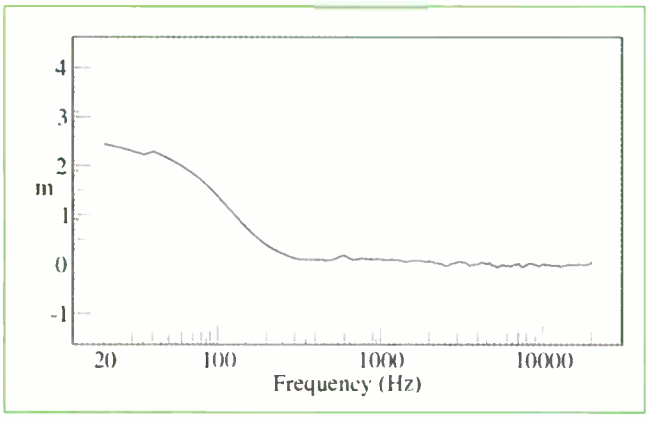


Fig 2: Acoustic centre

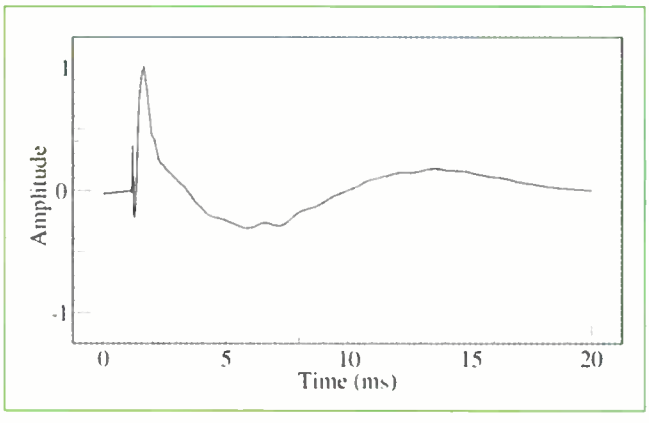


Fig.3: Step response

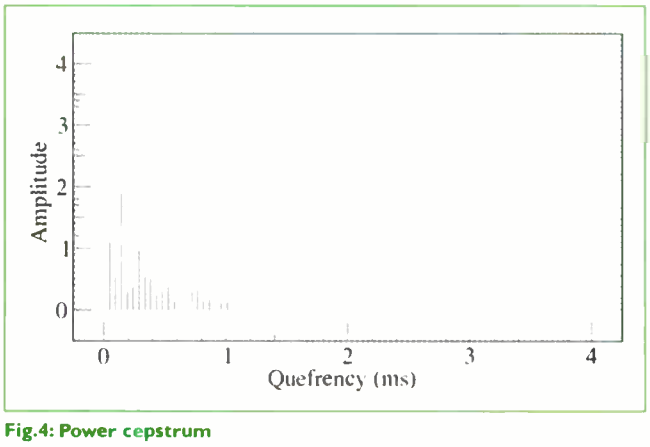


Fig.4: Power cepstrum

SAWPlus32 Logic AUDIO Minnetonka AUDIO SOFTWARE, INC. ACID VST Cool Edit PRO SONIC FOUNDRY Steinberg cakewalk

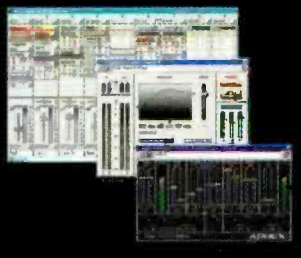
Soundscape™ mixtreme™

For Windows™ 95/98 & Windows™ NT

24 bit 16 Channel
PCI Card
(2 x TDIF as Standard)

adat™ TASCAM® TDIF-1

Optional External Convertor
Boxes from £449.00



16 Bus, Custom Digital
Mixing and EQ. Optional Real
Time DSP Effects from the
market leaders

£449.00
Inc.VAT

Telephone:+44 (0) 1222 450 120 Fax:+44 (0) 1222 450 130

Internet: www.soundscape-digital.com e-mail: sales@soundscape-digital.com

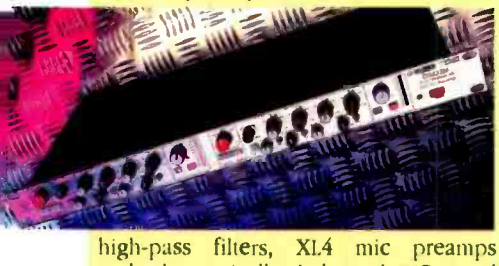
AMS Neve gets ESP for 96k

AMS Neve will show a new processing platform for its range of digital consoles at NAB. Called ESP, and introduced as the third generation of proprietary processing platform, the new processor cards use 0.6 micron silicon technology and feature 21 AMS Neve custom ASICS to turbocharge 9 DSP chips and provides the processing power required for the 3-position DFC that offers more than 500 audio paths with control surfaces typically featuring over 100 faders, plus 3 master control sections. The scalable nature of ESP means that large and compact AMS Neve consoles can benefit from this technology and advantages include 96kHz-readiness.The company says that while many digital designs are dependent solely on the core DSP processor, its own use of 21 dedicated ASICs boosts performance by remapping processor inputs and outputs. It claims that the resultant turbocharged DSP can handle 1,250 external accesses per wordclock compared, for example, to the SHARC processor's 833. Meanwhile, the Libra Post digital console will debut. Frame sizes of 24, 36 or 48 faders provide control of up to 96 fully featured channels and is 96kHz ready through its use of ESP. Features include complete format flexibility in up to 8-channel, a dedicated monitor panel provides inserts for a surround matrix-processing, while automated joysticks and the use of Encore automation system bring the automation benefits of the DFC. Machine Control provides direct control of six machines via Sony 9-pin plus two additional transports via ES Bus. 24-bit hard disk editing capabilities may also be added to the system by the addition of an AudioFile.

AMS Neve, UK. Tel: +44 1282 457011.

KT DN422M

Klark Teknik has introduced the DN422M dual-channel 4-band parametric equaliser with mic preamp. Channels boast variable



high-pass filters, XL4 mic preamps and electronically balanced I-Os and switchable inserts.

Klark Teknik, UK. Tel: +44 1562 741515.

Antares mic modeller

A studio DSP processor, the AMM-1 mic modeller is claimed to make any 'reasonably full-range microphone to sound like virtually any other.' Company engineers have created digital models of a wide variety of mics, and the combination of selecting models for the source and target mics processes the incoming signal. The process can also be used at mixdown to 'change the mic' on an already recorded track. New mic models will be available for download >

Drawmer MX60

Competitively priced, Drawmer's voice channel offers much to the recording market. **George Shilling** compares it to aftershave

IN THE HIGH-END voice-channel market, it is easy to forget that Drawmer's Vacuum Tube 1960 was an early entrant. A sign of the times, perhaps, but Drawmer's latest marks its entry to the crowded budget end of this market. The Front End One MX60 is a comprehensive mic-line channel for studio and live applications. Drawmer has drawn on its many years of dynamic processing experience to encompass everything anyone might require of such a unit into a compact and very competitively priced unit.

I was initially surprised by the sheer physical weight of this fairly shallow 1U-high box. For a cheap unit, construction is extremely robust, an internal metal brace spanning the entire width and holding most of the pots via long shafts above an enormous single circuit board. Upon this are mounted row upon row of small components. The bobbin mains transformer is heavy, but not especially large. There are separate top, bottom, front and back

panels, with double section integral rack ears.

The front panel is smartly black-painted over brushed aluminium, which makes legending clear, despite the small lettering necessitated by the sheer number of features. Knobs are all small and stiffly damped, much the same as those on the ubiquitous DS201 Dual Gate. The pointers are clear, but their tiny size makes small adjustments and recalls a little tricky. Every button has an LED except the MALE-FEMALE button on the de-esser. There are LED meters for Input, Output and Compression, and LEDS for the gate and de-esser operation, making it easy to see what is happening.

The back panel features Mic Input XLR, Line Out XLR, and balanced and unbalanced line jacks operating at +4dBu and -10dBu respectively. All line connections can be used simultaneously which is useful for level conversion. In addition there is a TRS insert jack that comes before any internal processing or metering. Voltage conversion is tricky, as one has to remove the lid, change the internal fuse and relocate links, but I would imagine this is an infrequent requirement.

The front panel is logically arranged. On the left is a high-impedance Instrument jack with a selector switch, a pad and a useful BRIGHT switch that adds some well-chosen upper-mids to liven up flat-sounding DI guitars. A +20dB button boosts quiet electric guitar signals. Next to the GAIN pot is a MIC-LINE button, a PHASE switch, PHANTOM POWER button and 100Hz HP filter. The mic amplifier is commendably clean and very quiet, if unsurprisingly a little 'smaller' sounding next to the fine vintage Neve I used for comparison.

The Dynamics, EQ and Tubesound sections can be individually selected. The Dynamics section includes a simple gate with THRESHOLD knob and two Release settings, and this works well with no clicks. The de-esser compresses only high-frequency content. The MALE-FEMALE switch shifts the frequencies affected. However, it is a little tricky to set up without losing brightness on non-sibilant parts of the vocal, and rarely needs to be set higher than 1½ (on a scale going up to 10). The compressor features auto attack and release and sounds similar to earlier transistor Drawmers, which I confess would not be my first choice on vocals. Like the de-esser, it can be vicious, and sounds 'squashy' if set with a ratio higher than 2:1.

The EQ has basic shelving HF and LF cut-boost at 4.25kHz and 100Hz respectively, and a wide-ranging fully parametric mid. With 18dB cut-boost on all bands, this is extremely powerful and works well, but sounds little more refined than the EQ you would encounter on a typical budget 8-bus console.

The Tubesound section is very enjoyable, its potential for subtlety making up for the powerful nature of the other sections. Despite the name, there are no 'tubes' in this unit: a transistor circuit simulates the subtle distortions of real valves. There are three Drive knobs—LO, MID and HI—that split the audio band at 350Hz and 2kHz. I found these often preferable to the EQ section for tone shaping, adding warmth and 'glow'. Care is necessary when working on vocals, as this can introduce some fuzziness, and turning the three Drive knobs clockwise can push the output limiter into action—you must compensate by reducing input gain or compressor output. Indeed, the gain structure requires careful setting. When the input is set at a normal level to drive the compressor, the compressor output gain must often be reduced in order not to drive the output limiter, which is always in circuit before the output gain stage.

Drawmer's new baby has a good mic preamplifier and an astonishing number of features for the price, and the manual is clear and straightforward. Paradoxically, there are almost too many knobs to twiddle in a vocal recording situation, especially for the novice at whom the MX60 is partly aimed. It is quite easy to overdo it with the dynamics and EQ sections. When mixing, however, this is a versatile tool, and great for rescue jobs. Buy one, you won't find better value, but as the old aftershave advert goes, 'Be careful how you use it'. ■

Contact

Drawmer Distribution, Charlotte St Business Centre, Wakefield WF1 1UH, UK.
Tel: +44 1924 378669.
Fax: +44 1924 290460.
US: QMI, 7 October Hill Road, Holliston, MA 01746, US.
Tel: +1 508 429 6881.
Fax: +1 508 429 7135.

Soundcraft Series 15

The thunder of small broadcast desks has been stolen by the deluge of affordable digital consoles, but analogue has much to offer as **Zenon Schoepe** discovers.

SHOWN IN PROTOTYPE at the last IBC, and with shipping starting at the beginning of this year, the Series 15 builds on a history of compact broadcast radio desks from Soundcraft that includes the successful SAC200. Most particularly similarities are apparent between the new board and the Series 10, although it is important to note that the Series 10 never had the production options that the Series 15 has, even though things like the metering options are extremely similar. Soundcraft is pitching the new desk in two variants—in production and broadcast versions. These are differentiated by the presence of groups in the former while the broadcast version is very similar to the established Series 10. While this categorisation creates a distinction you can in effect combine all the available modules in a single frame. The underlying idea is that you can buy a stripped down on-air version for the main studio output, and a production version for jingles, and any other origination work in the same facility, or use a hybrid arrangement to perform both sets of tasks.

Frames are splittable to accommodate centrally positioned playlist screens and come in 16, 24 and 32 module sizes with the only essential modules being the monitor and master. The variety of modules and options is extensive and including the metering these amount to about 35 in total. Prices start from £4,000 to £5,000 and extend up to £10,000.

All the mono inputs are dual mic inputs, the aux bus is stereo, it has fixed 3-band EQ with bypass and high-pass filter. Other features include a pan pot, simple gain trim, and fader starts, and cue lights on each channel with jumper settings allowing a wide variety of custom options and functions to be activated.

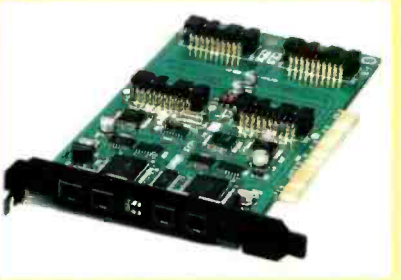
The main difference of the production version of the mono input is the inclusion of

NEW TECHNOLOGIES

< from the Antares web-site as they appear. Antares has released Auto-Tune VST LE for Mac, Auto-Tune TDM Version 2.0, and Auto-Tune MAS for MOTU Mac.
Antares, US. Tel: +1 888 332 2636.

DSP Factory AX16

Latest addition to Yamaha's DSP Factory, the AX16-AT PCI card allows transfer of 16 tracks of audio to and from the DS2415



audio card. It has two pairs of ADAT optical ports. The news coincides with the imminent launch of Mac drivers for the DS2416 card.
Yamaha, UK. Tel: +44 1908 369269.

ADK mic

Built in China but based unashamedly on what the company describes as 'German design features', ADK's A51 is a large dia phragm condenser made from aircraft-grade machined brass that comes complete with a premium flight-case and shockmount. It boasts a 1-inch, low

micron, gold sputtered capsule running to discrete FET electronics in a cardioid pattern, complete with a 85Hz roll-off and switchable 10dB pad.

ADK, US. Tel: +1 503 772 3007.

C2 launched

Claiming to offer the home recordist the same big sounds that the JoeMeek compressor has been offering professionals, the new C2 additionally has new technology of its own which have allowed the unit to

be smaller and cheaper at £199 inc. VAT UK. Features include stereo photo-optical compression, floating balanced inputs and outputs, a Dynamic Image control for maintaining stereo image integrity even under extreme compression, an 8-LED 'smooth response' input meter, 5-LED compression meter and automatically variable ratio to input gain link.

JoeMeek, UK. Tel: +44 1626 333948.

Presonus preamp

Presonus's MP20 2-channel discrete mic-instrument preamp use Class A, discrete input buffers with Jensen transformers, twin servo gain stages, and no capacitors in the signal path. Features include phantom power, phase reverse, -20dB pad >

individual routeing to the group outputs. A mono telco module is virtually identical to the mono input but runs from a single line input and single clean feed output.

There are two versions of stereo input, a standard and a telco, the latter being distinctly different to the SAC200 or the Series 10 as predictably stereo ISDN lines are now becoming more commonplace. The broadcast version has EQ, inserts, stereo aux, routeing, balance, trim control, fader starts and start-stops, with all the connections on a D-type as Soundcraft has made a conscious effort to do away with any requirement for external interface boxes. Broadcast versions can come with or without EQ and the production version gets routeing and the same EQ options.

Permutations are what this little desk is all about, and hidden beneath the hinged meter-bridge are the connection ports for all the user configurable wiring options, right down to remote starts, inserts, inputs and clean feeds. Additionally you can also reconfigure your metering options or preferences from here and this is one of the Series 15's strongest cards as it makes the desk self-contained and easy to access, and panders to the sort of station or even national peculiarities that a fixed desks can fall foul. The budgets rarely exist for customisation at the sort of level that this desk is targeting at and designing this degree of flexibility in at the inception stage has neatly avoided making this an issue.

A maximum of four stereo groups can be accommodated in the production version with stereo aux, routeing to programme, routeing to the mono output, PFL and the option of a simple bypassable limiter with variable threshold and release.

The master module is separate and therefore different to what the Series 10 offers and is available in two versions with or without a master fader. Monitoring sections include control room and studio with four external inputs, two sets of guest headphone feeds, and presenter's headphones. The logic is already built in to the desk so that, for example, the engineer's monitors will dim when you bring up the mic and internal jumpers further expand the possibilities. A small talkback mic is built-in, there are versions with large and small meters as VUs, PPMs and RTWs if required, and there are dual timers and a cue/PFL speaker.

The layout is clear and logical with excellent pot and switch access and visibility with the makings of a very simple self-op console if that is what is required. However, a key point with this desk is that you can do production on it at a reasonable cost and still have a desk that you can also use for broadcast. The inclusion of stereo telco will be significant to many potential purchasers. It is refreshing to see this degree of flexibility still being offered in a traditional analogue console. This extends beyond the incredible number of module options available at commissioning to the individual customisation of those modules once installed at its place of work. The configurability of the Series 15 will doubtlessly make it of true international appeal. ■

Contact
Soundcraft, UK.
Tel: +44 1707 665 000.
Fax: +44 1707 655 461.

AKG C 4000B microphone

Taking its cues from AKG's own C414 and C12, the new C4000B is set to turn heads. **Dave Foister's** is first

SO ASSIDUOUS IS AKG at offering quality microphones at all levels that it sometimes seems there is a danger of undermining its top pro models with the high-performing entry-level ones. Those pining for a C12VR can, perhaps, be content with a SolidTube, feeling that they have the essence of the AKG valve sound without having to break the bank. Similarly there have been a few microphones that could claim to be a poor man's 414, undercutting the old workhorse's price without sacrificing much in the way of quality. Of course the 414 is rapidly becoming the poor man's 414 as its price in the UK at least has plummeted, bringing a real industry standard within reach of much more modest studios.

But now the most modest of all may prefer to look at the new C 4000B, a big side-fire condenser inheriting characteristics from several existing models. In appearance it resembles the top half of a SolidTube, with a big cylindrical head finished in the same champagne colour and with a similar tightly woven grille. In fact its housing is completely different, as is its seemingly similar sus-pension mount, but the family resemblance is clear and, perhaps, heralds a new house style.

Internally the C 4000B builds on experience from the 414, the C12, and the C3000, the previous entry-level 414-style model. Its 1-inch capsule is a dual-diaphragm assembly, each diaphragm being manufactured from a special gold-flashed plastic foil, the gold being only on the outer surface to avoid internal shorts under conditions of high SPL. The important breakthrough is that this is an electret condenser, the first time the technique has been used in a capsule this big. Coupled with a transformerless output stage that is effectively a transistorised version of the SolidTube's valve circuit, the result is to all intents and purposes a completely new microphone.

The twin diaphragms, of course, allow the selection of various polar patterns, and the C 4000B has three on offer: cardioid, hypercardioid and omni. The presence of hypercardioid where perhaps figure-of-eight might have been expected is indicative of AKG's interest in capturing some of the live market with this model. The switch for selecting the pattern is on the front, below the grille, roughly where the red window on the SolidTube shows the glowing valve heater.

On the back are the other two standard switches, a 10dB pad and for a high-pass filter rolling off 12dB per octave below 100Hz. These are slightly awkward to get to when the microphone is in its suspension mount.

The suspension mount is the only method of stand mounting supplied with the C 4000B, and it is a particularly neat design that allows very quick installation, removal and adjustment of the microphone. The base of the C 4000B has a cylindrical protrusion carrying the output XLR, and this protrusion is clamped by a ring in the mount. A simple twist-lock clutch mechanism secures the microphone firmly in place and can be loosened very easily to remove it or to adjust the direction the microphone is facing. It is perfectly happy hanging upside down, and given the relatively light weight of the C 4000B the whole assembly seems almost over the top, no bad thing in my book. The mount even incorporates strain relief slots for gripping the attached cable. The kit is completed by a foam windshield in deep royal blue.

The apparently lightweight construction of the C 4000B is deceptive, as one would hope from its pedigree. You could be forgiven for thinking the housing was plastic by its feel and mass, but in fact it is all metal in the interests of both robustness and RF immunity. According to AKG's literature it is expected to be able to handle normal studio rough handling, as well as withstanding SPLs up to 155dB with the pad.

The appeal of a microphone like this is always going to centre on its vocal abilities, and here I was able to put it up alongside a 414B ULS and a SolidTube for comparison. At first hearing there was little to choose between the C 4000B and the 414, with the SolidTube offering a little more presence and body. Closer inspection revealed the differences, however, as the C 4000B showed itself to be a little brighter and not quite so full down below. Having said that, there were one or two voices that benefited from the slight upper mid enhancement and for these the C 4000B was the microphone of choice.

In other situations it proved to be an excellent all-rounder, with a distinct large-diaphragm character complemented by good detail and clarity. I used it on several brass and reed instruments to good effect, with no reservations about its SPL handling. At the same time its good noise performance meant that acoustic guitar was no problem either.

With its combination of smoothness and character, its versatile pattern selection, and its undeniable similarity to the sound of a 414, the C 4000B looks set to arouse a good deal of interest, and those interested are unlikely to be disappointed. ■

Contact

AKG, Austria.
Tel: +43 1 866 540.
Fax: +43 1 866 54205.
US: AKG Acoustics.
Tel: +1 510 351 3500.
Fax: +1 510 351 0500.

NEW TECHNOLOGIES

< and 80Hz filter while an IDSS process 'adds warmth by adding even order harmonic distortion.' Any channel can be assigned and panned to an additional stereo summing bus and the device has a headphones output, ¼-inch instrument inputs on the front panel, and full output metering.
Presonus, US. Tel: +1 800 750 0323.

8-channel preamp

The Precision 8 8-channel mic preamp from True Audio Systems has built-in MS decoding, two active high impedance instrument inputs, and 5-segment level indicators with dual mode peak hold and selectable peak reference. Each channel has switchable phantom power and phase reverse plus input gain variable from 15.5dB to 64dB.
True Audio Systems, US.
Tel: +1 520 299 3351.

Remote preamps

To continue the recent spate of multichannel mic preamp outboard boxes, Aphex has the 1788 8-channel remote controlled mic preamp. This uses MIDI to control up to 16 units. There are two separately trimmable outputs for each channel allowing feeds to be split while an optional digital output module permits simultaneous output of 24-bit AES-EBU, TDIF and ADAT optical for a total of five independent outputs per channel. Channels have mute, phantom power, 20dB pad, phase reverse, limiter and 75Hz cut.
Aphex, US. Tel: +1 818 767 2929.

ADSG endorsed

ADSG professional drives have been endorsed by Studio Audio and Video and

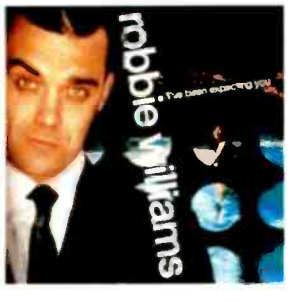
Roland. Price of the 2Gb external drive has also been slashed to £249 + VAT in the UK.
Pro Tape, UK. Tel: +44 171 323 0277.

New joysticks

Claimed to be more rugged and outperform existing inductive coil and potentiometric joysticks, the HFX range of Hall Effect magnetic joysticks from Quiller Electronics is designed to be a retrofit replacement and fits in to the same mounting holes and panel cut-outs. Benefits include the fact that the devices are virtually impervious to RFI and EMI and with only one active component for each axis they are more durable. Available with a choice of six handles, six shapes of limiter plate and four output options, the HFX series can be configured in single, dual and 3-axis configurations and with one or two buttons to control other functions. The output can be programmed with varying output voltages >

PMC
Unit 72 Hastemere Ind Est. Tewin Road
Welwyn Garden City
Hertfordshire
AL7 1BD

Tel: 01707 393002
Fax: 01707 393536
Email: sales@promonitor.co.uk



'I've been expecting you' the album: Mastered and listened to in Robbie's front room on PMC

Mindprint En-Voice & DI-Mod 24/48

A new slant on the voice-channel processor, Mindprint is set to make a mark. **Tim Goodyer** assesses its voice channel

TAKE UP THE DIGITAL interface option, and Mindprint's voice processor has it all—modern solid-state circuitry, a strategically placed valve stage and ready conversance with the digital studio. With a price tag that falls well short of exclusive, but that does not exclude such details as a hard-wired power-down bypass, you have to read on...

Mindprint hails from St Wendel in Germany and the En-Voice unit represents its pro-audio debut, along with the forthcoming Para-Q and T-comp. A single-channel unit offering mic preamp, 3-band EQ, and compression stages complemented by a less conventional valve saturation feature, the En-Voice readily fits

the established format for 'voice channel' processors. The deep red front panel is rounded out by 12-segment LED ladders for I-O level and compression, a switchable (50Hz–100Hz) high-pass filter, input and output gain controls and global effects enable switching. With the exception of an instrument input jack, no unsightly connections appear at the front, making the 'valve viewing' window aesthetically appropriate, even if it serves no functional purpose.

The rear panel is well furnished with mic XLR and 48V phantom switch, line level input XLR and balanced jack, output XLR and balanced jack, and ground lift switch. An additional pair of 'insert' jacks, two SPDIF phonos and 44.1kHz/48kHz switch replace a blanking plate if the DI-Mod 24/48 digital interface is fitted (by wielding a screwdriver and plugging in a single jumper).

Switching between mic and line inputs, and analogue and digital inputs is achieved by a pair of front-panel push-buttons. This facility adds to the usefulness of the En-Voice considerably as the analogue and digital connection operate concurrently (as do the jack and XLR outputs), and since the DI-Mod card carries two audio channels it can be used to serve a pair of En-Voices.

Level metering uses green LEDs up to 0dB, three yellow LEDs up to +6dB and a LED at +8dB. With the white legended EFFECTS button pressed, each section of the EQ and the compressor are individually switched with red LEDs indicating their selection. The high and low EQ sections are ±15dB, 6dB/8ve bell affairs—the low EQ spans 20Hz–300Hz and uses a wider Q on boost than cut, while the high EQ spans 1.6kHz–22kHz with a fixed curve. Mid EQ is parametric 100Hz–11kHz, ±15dB with Q variable between 0.15 and 3. The compressor has TUBE SAT (0–8), THRESHOLD (+2dB/-28dB) and COMPRESSION (1:1-∞) pots and SLOW and FILTER push-buttons, and a LED ladder that operates conventionally (right to left). Allied with the TUBE SAT control is a correspondingly marked LED in the output section that glows green, yellow or red dependent upon how hard the valve is being driven. The threshold and compression controls work conventionally with the SLOW button adequately substituting for comprehensive attack and release in most situations. The filter reduces the compressor's response to sub-300Hz signal content.

In use, The preamp is quiet and comfortably meets expectations at this price point (£399, £499 UK including DI-Mod 24/48). The EQ is smooth and adequately powerful with the HF section outperforming the digital specification by a couple of kilohertz, and the compressor performs as well as any I've heard with automated attack and release—and far better than better equipped units that have been badly set up. As the output gain control is only active with EFFECTS depressed, this button allows ready comparison of processed and unprocessed signals. All-in-all, it's a quick and easy unit to drive.

The quality of En-Voice's design further shows through in that the switching is all hard, physically bypassing unwanted sections—the clicks accompany their use being outweighed by improved signal path and 'failsafe' operation. The digital interface supports 44.1kHz and 48kHz (and 32kHz input) at up to 24 bits with a claimed dynamic range of 104dB, and adds considerably to the use of the unit, and should be regarded as a 'must'. I'm less convinced by the use of the valve in the compressor, however. It's certainly possible to control how hard you drive the valve right up to distortion levels, but it is not the same deal as an old valve compressor, or even more modern designs employing valves for pre-amplification, equalisation or compression. It's a noble effort but the use of a single valve is not really going to deliver the same tonal colouring as a boxful of them doing the business. None of which is to say that it is useless, more that it is a matter of discernment and personal preference.

On balance, the En-Voice presents a welcome and cost-effective addition to the choice of voice channel-recording channel units on the market and is set apart by the availability of the Di-Mod interface—although early European sales have favoured the unembellished version. Well worthy of investigation in either guise. ■

Contact

Mindprint, Leipziger Str 3, 66606 St Wendel, Germany.
Tel: +49 68 51 9050.
Fax: +49 68 51 9051000.
Email: info@mindprint.com
Web: www.mindprint.com
UK: Korg UK.
Tel: +44 1908 857100.
Fax: +44 1908 857199.

NEW TECHNOLOGIES

< with or without fault detection and also in a mode that is compatible with standard potentiometric output.
Quiller Electronics, UK.
Tel: +44 1202 436777.

New brand ribbons

US company Royer Labs has two ribbon mics including a stereo model. The R-121 is described as a modern ribbon microphone designed to meet the demands of today's studio environment and with sensitivity levels surpassing those of classic ribbons, the element's smooth frequency response and phase linearity are said to make it well suited to digital recording. The Royer-Speiden SF-12 stereo coincident ribbon microphone is described as a 'classic' ribbon design with no audible diffraction effects or cavity resonance. An SF-12 is actually two matched microphones placed one above the other, each aimed 45 degrees from centre. The frequency response is said to be excellent regardless of the angle of sound striking the ribbons and off-axis coloration is negligible. The two 2-micron ribbons are of pure aluminium (99.99%), each weighing approximately a third of a milligram.
Royer, US. Tel: +1 818 760 8472.

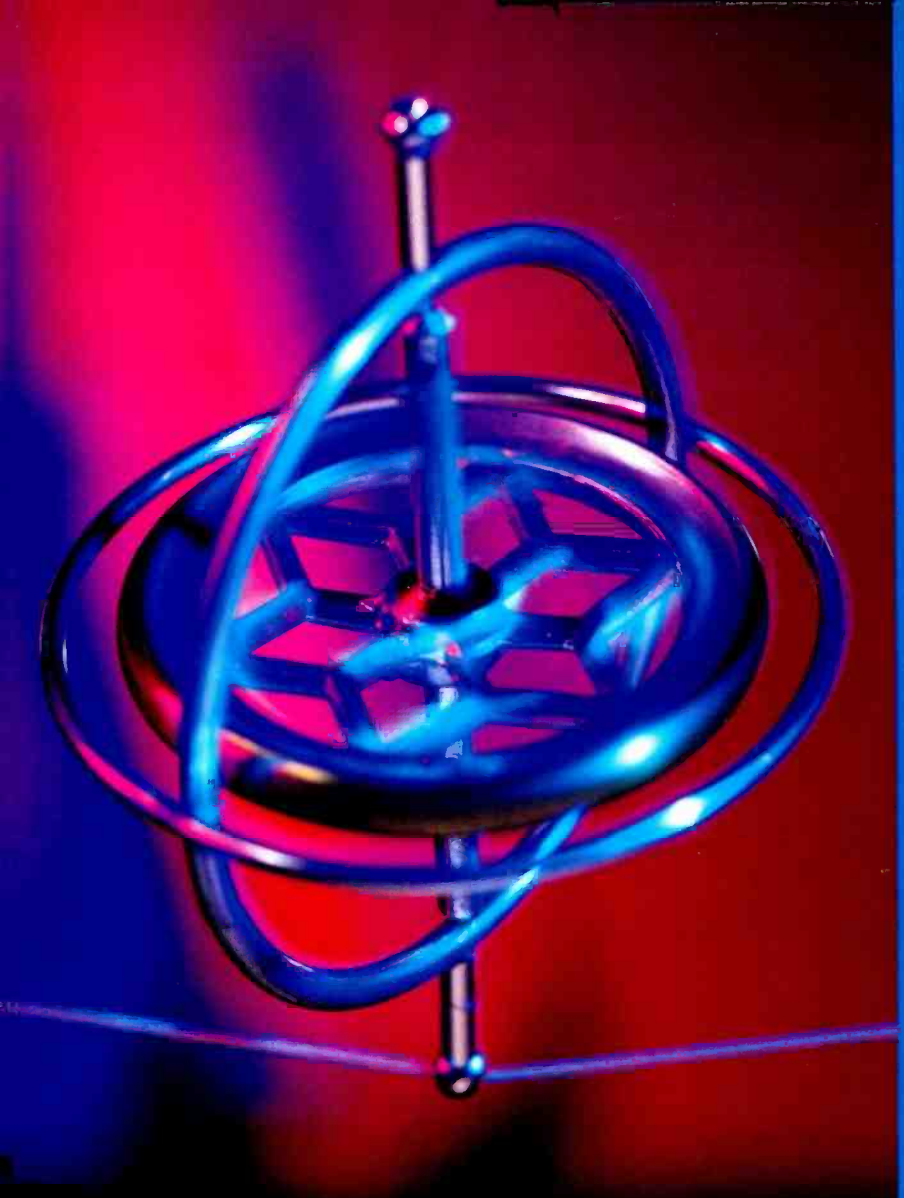
Grace on location

Grace Design has branched into location recording with the release of the portable Lunatec V2 mic preamp which is based on the solid-state transimpedance circuitry of the Models 201 and 801 preamps. The

preamp sports 11-position precision gain control switch with 5 dB steps, a 10dB output trim, MS decoding, 2-position high-pass filter, phantom power and signal peak indicators in an elegant machined aluminium package than runs from 6-12V DC.
Grace, US. Tel: +1 303 443 7454.

Studer Gold A827

Studer has announced that it is to produce a last run of 95 A827 analogue 24-track 2-inch machines as the final run of analogue multitracks it will produce. According to Studer this last batch of machines will wear the machining moulds out completely and will be referred to as Gold edition models with a gold headstack and Willi Studer signature. The A827 was introduced towards the end of the 1980s as a cheaper alternative to Studer's flagship auto-aligning A820 itself discontinued some years ago. Studer continues to manufacture the A807 ¼-inch, ½-inch, 2-track as the only other survivor in its analogue portfolio.
Studer, Switzerland. Tel:+ 41 1 840 4737.



audient

ASP131 & ASP231 Graphic Processors

achieve perfect balance...

establish

control

Audient's new ASP series Graphic Processors - the unparalleled control and performance of analogue.

Features

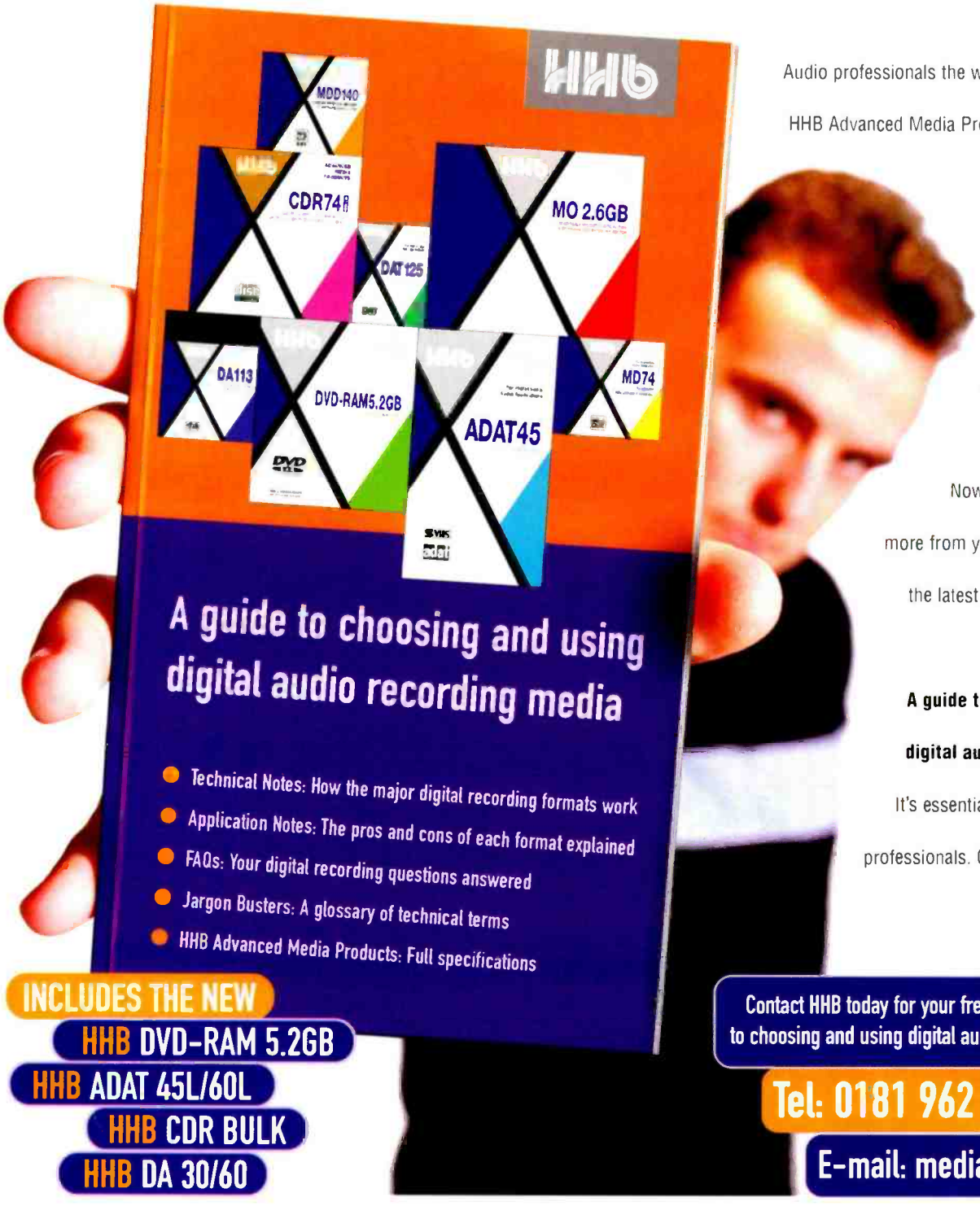
• Optimized constant-Q filters for superior sonic performance • Switchable high-Q mode affects cuts only, allowing simultaneous room-sweetening boosts and narrow feedback-fighting cuts • Back lit display of all parameters and functions for low light operation • Proprietary "tilt" control provides overall system low-to-high tuning centred at 1kHz for rapid system balance adjustments while maintaining relative filter settings • Continuously variable Hi-Pass filter on each input • Advanced high CMRR input and high current output topologies • Long-throw 45mm faders for precise adjustment • XLR and Klippon / Phoenix connectors for a variety of live as well as permanently installed applications.

EXPOTUS

Sales & Worldwide Distribution:
Expotus plc. 2nd Floor, 19-21 Clarendon Road, Watford, Hertfordshire, WD1 1JR, England.
tel: +44 (0)1923 252998 fax: +44 (0)1923 252978
email: expotus@compuserve.com

For technical information:
email: audient@compuserve.com

ASK HHB ABOUT DIGITAL RECORDING MEDIA AND WE'LL THROW THE BOOK AT YOU.



Audio professionals the world over rely daily on HHB Advanced Media Products. In every major format, HHB digital recording media sets the standards for performance, compatibility and long term archival security. Now, to help you get even more from your digital recordings, the latest HHB Advanced Media Product is a book –

A guide to choosing and using digital audio recording media.

It's essential reading for all audio professionals. Contact HHB today for your free* copy.

* While stocks last

INCLUDES THE NEW
HHB DVD-RAM 5.2GB
HHB ADAT 45L/60L
HHB CDR BULK
HHB DA 30/60

Contact HHB today for your free copy of 'A guide to choosing and using digital audio recording media'

Tel: 0181 962 5000

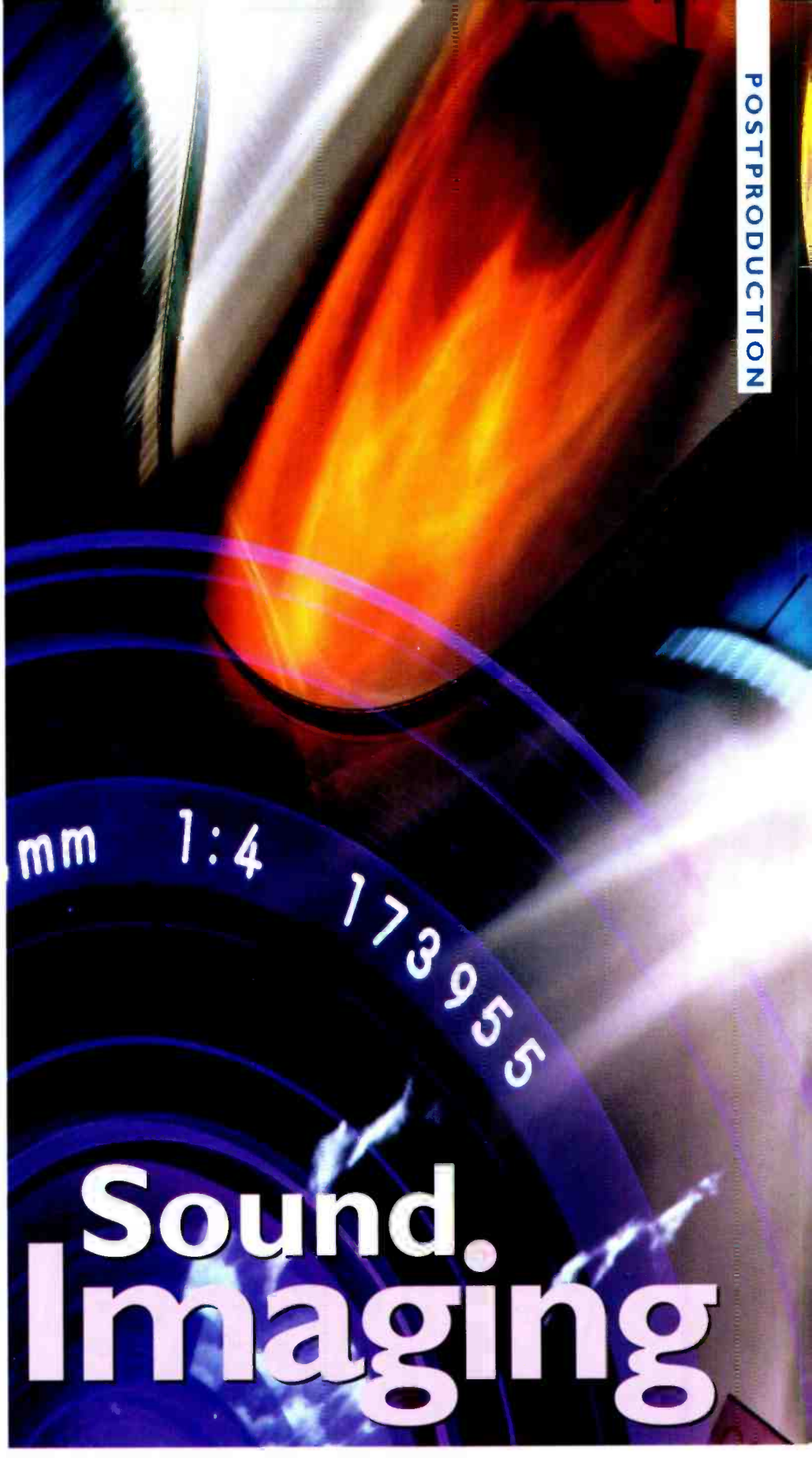
E-mail: media@hhb.co.uk

HHB Communications Ltd · 73-75 Scrubs Lane, London NW10 6QU, UK · Tel: 0181 962 5000 · Fax: 0181 962 5050 · E-Mail: sales@hhb.co.uk
HHB Communications USA · 626 Santa Monica Boulevard, Suite 110, Santa Monica, CA 90401, USA · Tel: 310 319 1111 · Fax: 310 319 1311 · E-Mail: sales@hhbusa.com
HHB Communications Canada Ltd · 260 King Street East, Toronto, Ontario M5A 4L5, Canada · Tel: 416 867 9000 · Fax: 416 867 1080 · E-Mail: sales@hhbcanada.com
Visit HHB on line at: http://www.hhb.co.uk

HHB
DISTRIBUTION

Sound. Imaging

Putting audio to picture has been a sound move for many recording facilities, but it involves learning a new generation of equipment. **Rob James** profiles video projectors for small studios



PHOTOGRAPH: THE STOCKMARKET

SOUND-FOR-PICTURE, multimedia and computer games all present opportunities for studios previously dedicated to audio-only work. All the more so since the cost of putting together both the audio and picture reproducing equipment has been decimated over recent years.

Ten years ago, I was working as a film dubbing mixer in television—at which time pictures had almost always been optically projected. Depending on the size and age of the dubbing theatre, the projectors used were either modified cinema devices with intermittent mechanisms (which gave the highest picture quality) or continuous motion types. The latter varied from prismatic devices with dubious picture quality but high-speed capabilities to amazingly complex machines with an array of moving mirrors which managed to achieve high quality pictures and speed—at a price. Subsequently, budget and space constraints led to the adoption of film 'scanners', which were essentially low-quality telecine machines, feeding television monitors. This change was very unpopular with clients and mixers alike.

The managerial justification for abandoning projection in TV dubbing theatres was two-fold. There was a simultaneous increase in the use of single camera video for projects previously shot on film, and a realisation that the end-product is for TV broadcast, thus a television is a reasonable thing on which to view work-in-progress. The latter argument, however, did not convince for several reasons. For a start, it is somewhat akin to the idea that, if the audience will hear a soundtrack through a 3-inch loudspeaker, this would be a good thing to use as a main monitor when mixing. While I trust that it is unnecessary to demolish this argument here, it is certainly more difficult to detect synchronisation problems when peering at a (relatively) tiny picture. And while it may be desirable to review a programme in 'domestic' conditions, when you are constantly shifting focus from screen to console to meters to cue-sheets, it is far easier to cope with a decent-sized image. Last, and by no means least, it is important to understand the psychology of television and other programme makers. Although it should be perfectly obvious to anyone an insert in a magazine programme or a minor documentary is not in the same league as the latest Hollywood blockbuster, every director, editor and mixer at least subconsciously associates their tiny opus with the 'big screen'. Seeing their work projected makes them feel good, and, if they feel good they are likely to come back to your facility.

The upshot of all this is that we fitted a video projector which, despite other shortcomings of the particular room, attracted and retained new clients as well as mollifying the existing ones.

Feature-film dubbing theatres have already been obliged to adopt video projection because of the changes in methods brought about by nonlinear >

< editing. Thanks to the increasing interest in data projectors for presentations, screens in pubs and clubs and home cinema, projected pictures are now within reach of relatively modest studio budgets. As with most new(ish) technologies there are a number of pros and cons, and more than a few pitfalls for the unwary.

In the sub £10,000 (UK) market projector manufacturers are using one of three alternative ways of generating a projected image from a video signal —Cathode Ray Tubes (CRTs), Liquid Crystal Displays (LCDs) and Digital Light Processing (DLP). Whatever the underlying technology, a number of characteristics are desirable. Image resolution is quoted in lines for analogue projectors and often in pixels for digital or as VGA, SVGA or XGA. The latter descriptions refer to the data display resolutions found in PCs. I would suggest the minimum requirement for this application should be 500 lines in analogue terms, a million pixels or XGA resolution (1024 x 768).

Equally important is image brightness, which is usually quoted in ANSI lumens. Few projectors in this class will produce an acceptable image in anything other than controlled lighting conditions. This should be the norm for a good working environment and in any case adds to the atmosphere and sense of occasion at the mix. To avoid the necessity of working in gloom, look for outputs upwards of 500 lumens. Another thing to watch for is the contrast range—a good guide here is to check how dark the blacks are in relation to the highlights on the kind of material you are likely to work on.

The first method uses CRTs (Cathode Ray Tubes) which are similar in many respects to a conventional television tube. Three tubes are employed for red, green and blue, each with its own lens to focus the image. The advantages of CRTs are a 'filmic' quality to the image, especially with models based on Sony tubes, reasonably long tube life (10,000 hours or more) and image resolution. The disadvantages are bulk and weight, the cost of replacement tubes and constraints on positioning. Zoom lenses are not, to my knowledge, available on CRT projectors which means image size can only be varied by changing lenses, which is not always possible, or by physically moving the whole projector. Due to the need to precisely align the separate images generated by the three tubes and the number of variable parameters for convergence and geometry, CRT projectors are complex and time consuming to adjust for optimum results. Practically, this limits you to fixed installations as moving a CRT projector, even by small amounts, will necessitate re-alignment. Once adjusted, a fixed CRT projector should require only occasional attention until the tubes wear out, although internal cleaning may be necessary on models where the lenses are not hermetically sealed to the tubes.

LCD projectors use small panels to produce the image with a light source behind the screen usually a tungsten halogen, metal halide or UHP lamp. The number of pixels on the panel or panels fixes the resolution. Each pixel is individually addressable; higher resolution (and cost) models employ three panels, one each for red, green and blue. Due to the physical construction of the panels each pixel has a 'black' border. If too low a resolution is chosen for the required screen size the individual pixels become visible resulting in the so-called 'chicken-wire' effect. Switching of individual pixels is relatively slow which can result in blurring of fast movement.

DLP models use the same types of light source as LCD except that the image is produced by light reflected from an array of tiny, electronically tilted, mirrors. These mirrors are located on the surface of a kind of integrated circuit, developed by Texas Instruments, and known as a DMD (digital mirror device). Either a single chip or three DLP chips may be employed. In a single-chip projector, colour images are produced using a rotating tricolour filter. The mirror switching is fast enough to allow colour images to be built up, as well as for >

PORTABLE ONE DUAL DOMAIN

Digital+Analog+Interface Audio Test

True Dual Domain Audio Testing at an Attractive Price Point

The Portable One Dual Domain is the complete portable test solution for analog and digital audio and the AES/EBU/SPDIF serial digital interface. As the first portable Dual Domain® audio analyzer, it includes separate and independent hardware for analog, digital and interface signal generation and measurement.

- Comprehensive analog audio analyzer
- True digital domain analyzer with -140 dB residual noise
- Independent analog & digital audio generators and analyzers
- Generate and measure interface jitter
- Digital interface analyzer
- View AES/EBU status bits
- Internal save and recall of 30 test setups
- Loudspeaker monitor for digital & analog audio signals

Audio precision

PO Box 2209
Beaverton, Oregon 97075-3070
Tel: (503) 627-0832 Fax: (503) 641-8906
US Toll Free: 1-800-231-7350
Email: sales@audioprecision.com

Our worldwide force of Audio Precision representatives will be pleased to demonstrate the many advantages of the Portable One Dual Domain

INTERNATIONAL DISTRIBUTORS: **Australia:** VICOM Australia Pty. Ltd., Tel: 3 9563 7844; **Austria:** ELSINCO GmbH, Tel: (1) 815 04 00; **Belgium:** Trans European Music NV, Tel: 2 466 5010; **Brazil:** INTERWAVE LTDA, Tel: (21) 325-5351; **Bulgaria:** ELSINCO Rep. Office Sofia, Tel: (2) 958 12 45; **Canada:** GERRAUDIO Distribution, Tel: (613) 342-6999; **China, Hong Kong:** A C E (Int'l) Co. Ltd., Tel: 2424-0387; S&V Instruments Co. Ltd., 2833 9987; **Croatia:** ELSINCO Rep. Office Zagreb, Tel: 1 615 14 50; **Czech Republic:** ELSINCO Praha spol. s r.o., Tel: (2) 49 66 85; **Denmark:** npn Elektronik aps, Tel: 86 57 15 11; **Finland:** Genelec OY, Tel: 17 813 311; **France:** ETS Mesureur, Tel: (1) 45 83 66 41; **Germany:** RTW GmbH & Co. KG, Tel: 221 709 13-0; **Greece:** KEM Electronics Ltd., Tel: 1 6748514/5; **Hungary:** ELSINCO Budapest KFT, Tel: (1) 339 0000; **Israel:** Dan-El Technologies, Ltd., Tel: 3-647 8770; **Italy:** Audio Link s.n.c., Tel: 521 648723; **Japan:** TOYO Corporation, Tel: 3 (5688) 6800; **Korea:** B&P International Co., Ltd., Tel: 2 546-1457; **Malaysia:** Test Measurement & Engineering Sdn.(Selangor), Tel: 3 734 1017; Test Measurement & Engineering Sdn. (Penang), Tel: 4 6422058; **Netherlands:** Heynen B.V., Tel: 485 55 09 09; **New Zealand:** Audio&Video Wholesalers, Tel: 9 279 7206; **Norway:** Lydconsult, Tel: 47-69-178050; **Poland:** ELSINCO Polska sp. z o.o., Tel: (22) 39 69 79; **Portugal:** Acutron Electroacustica Lda., Tel: 1 940 1785; **Singapore:** TME Systems Pte Ltd., Tel: 747-7234; **Slovakia:** ELSINCO Slovensko, s.r.o., Tel: (7) 784 155; **Slovenia:** ELSINCO d.o.o., (61) 133 62 79; **South Africa:** SOUNDFUSION MFG., Tel: 11 477-1315; **Spain:** Telco Electronics, S.A., Tel: 1 531-7101; **Sweden:** TTS Tal & Ton Studioteknik AB, Tel: 31 52 51 50; **Switzerland:** Dr. W.A. Gunther AG, Tel: 1 910 41 41; **Taiwan:** R.O.C.: Double Advance Tech., Tel: 2-596 0695; **Thailand:** Massworld Company Ltd., Tel: 2-294-4930; **United Kingdom:** Thurlby Thandar Instruments, Ltd., Tel: (1480) 412451 (11-12-97)

< the contrast to be controlled. At high magnifications the pixel structure will become visible but this is generally better than the LCD types.

LCD and DLP share a number of common pros and cons: There is no geometry or convergence adjustment to worry about and installation can be as simple as plug and play. Lamp life varies according to model from a few hundred hours to perhaps 6,000 hours. Halogen lamps, in particular, are prone to ageing. In some cases the lamps are not user-replaceable. Lamp costs are also highly variable. You are well advised to establish the true cost per thousand hours. Due to the cooling required, dust becomes an issue and filters may have maintenance intervals as low as 100 hours. If internal cleaning becomes necessary, it is best left to the manufacturer or service agent.

On the plus side, images are generally brighter than those of CRTs at the same price point. Zoom lenses are frequently fitted and long-throw lenses are available for some models. The units are generally more compact and far lighter than their CRT counterparts and can be readily moved from studio to studio.

With almost all projectors noise can be a problem due to cooling fans. There are several ways of improving this. The projector can be mounted in a soundproofed box or, if the throw (distance from projector to screen) is suitable, in a separate room. It may be possible to use the studio air conditioning to provide cooling and modify the projector so that the internal fans only switch on when the aircon fails or when the internal temperature exceeds the manufacturer's recommendations. This was the chosen solution in my old theatre.

If the projector cannot be mounted at the optimum height, keystone adjustment will be needed to correct the angle of the lens to the screen, which would otherwise result in a non-rectangular image. Most, if not all, CRT projectors have this function, but it is worth checking for on LCD and DLP types. One or two have a 'shift lens' that performs the same function. Many projectors are primarily designed for presentation work with computer-generated graphics, and as a result the colour balance may not be ideal for video and film work with skin tones and pale shades appearing washed out and unnatural.

In the age of digital TV, the ability to vary the picture aspect ratio is becoming important. As a minimum, look for cinema's 16:9 in addition to the conventional 4:3 TV ratio. Image enhancing tricks such as 'line doubling' and 'line interpolation' are starting to appear on machines in this price range, which significantly enhance the picture.

Alongside that of the projector, the importance of the screen should not be neglected. A white wall may be usable but purpose-designed screens offer better brightness and colour rendition by reflecting the light in a narrower angle. This means the usable viewing angle is more restricted, but within this the image is considerably enhanced. Woven glass screens can help to subjectively improve image quality by controlling the scatter co-efficient. There are also perforated screens available if you want to mount the front speakers behind the screen. However, this is really only practical with relatively large screens and viewing distances.

If the studio is not suitable for front projection, there are a couple of viable viewing alternatives. Rear-projection televisions are available as a complete projector-screen unit in screen sizes up to 56-inch diagonal and more in some territories. Their advantages and disadvantages are much the same as the front projectors apart from the sheer bulk. If a 42-inch to 50-inch diagonal is sufficient, plasma screens are beginning to appear, albeit at rather high prices. These offer subjective image quality on a par with the better projectors and are thin enough to hang on the wall. But, if the space is suitable, there is something about a front-projected image, which is ultimately, more satisfying than the alternatives. Once you have worked with projected pictures you are unlikely to be happy with anything else. ■

Imagine a place, you've always dreamed to go to...

RRP £169.00 (inc. VAT)

...switch on, press start, and be ready to lift off...

Virtual reality machines can take you on amazing visual trips that make you feel you're actually there. Our new VIRTUALIZER DSP1000 can take you and your audience virtually to any place you want. It creates rooms, halls and arenas that sound so real, you can almost feel the action.

Providing 32 breathtaking new FX algorithms with up to 5 editable parameters each, our revolutionary DSP1000 processor gives you the power to create unique effects and effect combinations. The VIRTUALIZER's full-blown 20-bit A/D and D/A converters with 64/128x oversampling achieve professional standards and ensure outstanding audio quality.

You can easily edit all parameters and values either from the front panel with the large jog wheel, via MIDI controllers or a future Windows™* editor. Any edits can be stored for instant recall in 100 memories. A big plus for your Project Studio.

The VIRTUALIZER DSP1000. Takes your sound to any place you can dream of.

Get more information about our entire product range and the Interactive World of BEHRINGER!
Hotline +49 (0) 21 54 / 92 06 66, Internet at http://www.behringer.de

*Windows™ is a trade mark of Microsoft

20-bit AD/DA Converters
Whenever finest details, an ultra-natural sound performance and the lowest possible noise figures are what you aim at, only professional specs will do. That is why we use ultra-high resolution 20-bit AD/DA converters at 64/128 times oversampling.

Internal Power Supply Unit
The internal power supply is a professional feature you want in your studio or live application. We leave wall warts up to our competitors.

24-bit DSP Power
With both parallel and serial processing available from two engines, we are able to offer spinetingling virtual rooms and a fantastic selection that includes all types of chorus and flanging effects, stereo delays and a powerful vocoder.

ISO9000
Manufactured under the ISO9000 management system. This European Certificate is only granted to manufactures that comply with the stringent ISO manufacturing system. Who else has it?

MIDI
Full MIDI capability allows real-time control of all parameters, program selection and memory dumps (bulk transfers to and from the unit).

Virtual Acoustic
Precise mathematical models are used to calculate our unique reverb algorithms. The accuracy of hundreds of parameters used in the physical modeling of real buildings which also includes the important determination of "Early Reflections" ensure ultra-rich, dense and natural sounding reverberation. Compare against any other reverb!

BEHRINGER Quality
High-quality components and exceptionally rugged construction are specified for all our products, so that you can rely on a long life and durability of all BEHRINGER products. Take our word.

Hotline
Any questions? Our Sound Engineers have the answers and solutions. Contact us weekdays 9.30 a.m. through 6.00 p.m. CET.
Phone: +49 (0) 21 54 / 92 06 66
Hotfax: +49 (0) 21 54 / 92 06 65
Hotmail: service@behringer.de

BEHRINGER International GmbH
Hanns-Martin-Schleyer-Straße 36-38
D - 47877 Willich-Münchheide II
Fon: +49 (0) 21 54 / 92 06 0
Fax: +49 (0) 21 54 / 92 06 30

Al Schmitt

Photo: Alain McLaughlin Studio: Capitol Records

on BASF tape

"I expect a lot from my analog tape. Warmth, good tape handling, and hearing back exactly what went on it...that's why I use BASF SM 900 *maxima*. It delivers all that and more."

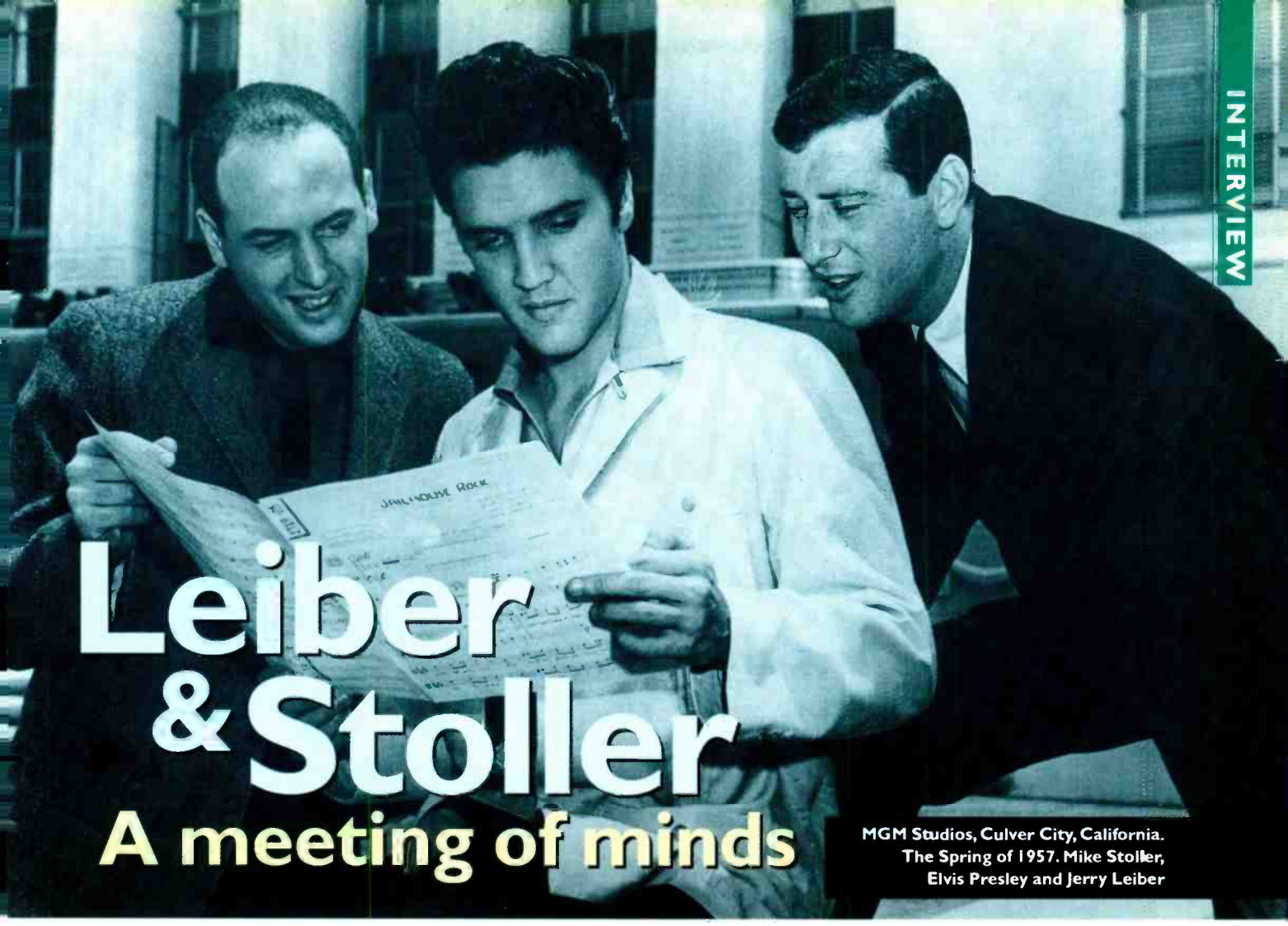
Al Schmitt's achievements include seven Grammy® awards for engineering and over 140 gold and platinum recordings for artists such as **Natalie Cole, Willie Nelson, Madonna, Steely Dan, Vanessa Williams, Toto, Dolly Parton** and **Frank Sinatra**.

SM 900 maxima is a high-output analog tape designed specifically for multi-track recording and mastering, with extra wide dynamic range, low noise and low print through.

EMTEC Magnetics

Further Information from EMTEC Magnetics U.K. Ltd.
Phone 01295/227832
or In the Internet: www.emtec-magnetics.com

BASF by EMTEC



Leiber & Stoller

A meeting of minds

MGM Studios, Culver City, California. The Spring of 1957. Mike Stoller, Elvis Presley and Jerry Leiber

The songs of Jerry Leiber and Mike Stoller helped carry American popular music through the fifties, sixties and beyond. **Richard Buskin** charts the history of countless classic hits

AMERICAN CONTEMPORARY music found itself at a crossroads in 1950. On the surface it was business as usual for the major record labels—white pop and country music remained segregated from black blues and rhythm & blues styles—yet the lines were about to be blurred by the kind of interracial cross-pollination that had already taken place in the world of Jazz. Around the nation, independent labels were building bridges across the colour divide courtesy of white entrepreneurs whose love of music outweighed their financial aspirations; among them Sam Phillips in Memphis, the Chess brothers in Chicago, and Ahmet Ertegun and Herb Abramson at New York's Atlantic Records. In Los Angeles, a pair of 17-year-olds were about to build a bridge of their own.

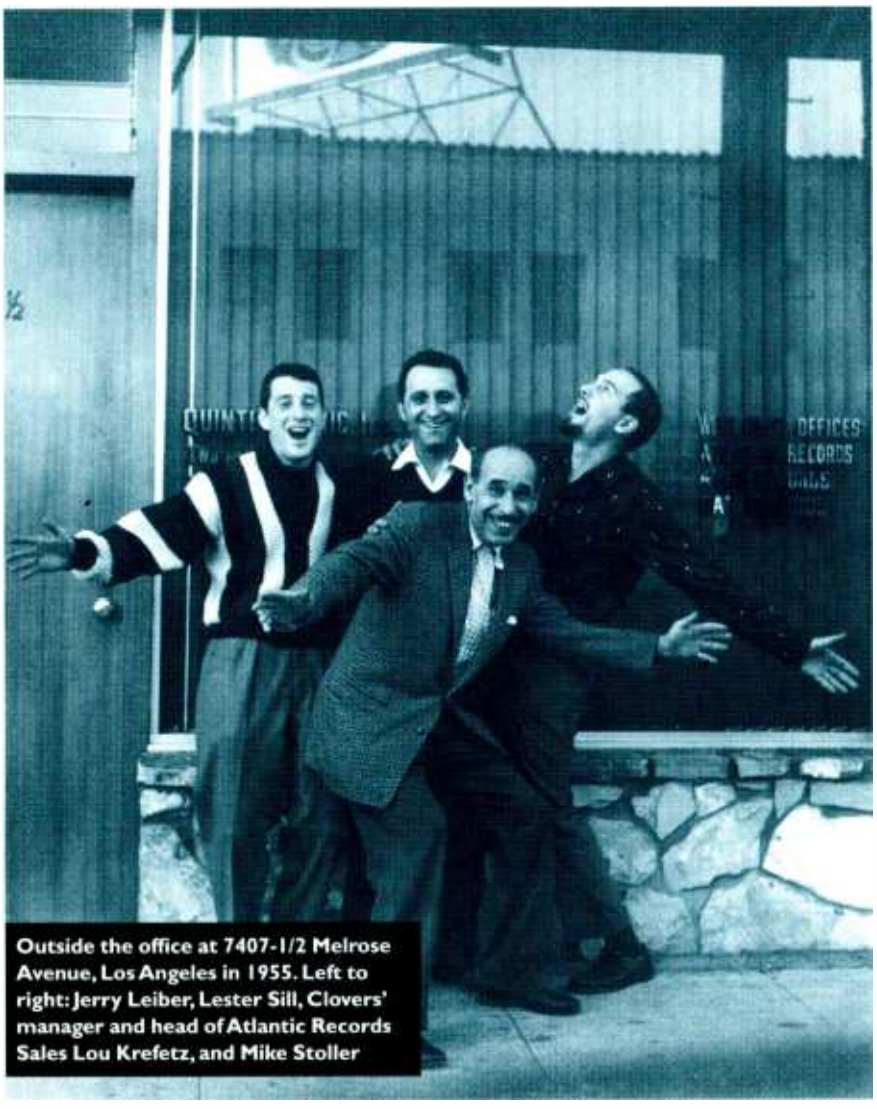
Leiber & Stoller are still collaborating on a variety of projects following the success of *Smokey Joe's Café*, a Broadway musical constructed around more than 35 of their hits

The bridge would span the buck-dance rhythm of Willie Mae Thornton's 'Hound Dog' to the Brechtian cabaret of Peggy Lee's 'Is That All There Is?': the white gospel intonations of Elvis Presley's 'Don't' to the definitive rock 'n' roll songs of his legendary pre-Army films; and the irrepressible novelty numbers of The Coasters to the infectious Latin-tinged pop ballads of Ben E King and The Drifters. In short, Jerry Leiber and Mike Stoller were preparing to write many of rock's most memorable and evocative songs. In the process, they were to establish and redefine many of its parameters.

Inductees into The Songwriters' Hall of Fame, The Record Producers' Hall of Fame and The Rock & Roll Hall of Fame, Leiber & Stoller are still collaborating on a variety of projects following the success of *Smokey Joe's Café*, a Broadway musical constructed around more than 35 of their hits. Yet it wasn't a likely partnership to begin with—two Jewish kids, one a gregarious extrovert and frustrated actor who penned blues lyrics, the other a guy of few words with a love of boogie-woogie and orthodox training as a pianist.

Leiber had first become acquainted with the blues while hanging out at his mother's grocery store in a predominantly black section of his native Baltimore, before rediscovering the music via the radio following his move to Los Angeles. Stoller had started collecting the records of Pinetop Smith, Albert Ammons and Meade Lux Lewis after hearing African American teenagers playing boogie-woogie at an interracial summer camp when he was seven. His instrumental efforts were later aided by lessons from noted pianist and composer James P Johnson before the Stoller family relocated from New York to the West Coast.

So it was that, by their mid teens, Leiber and Stoller found themselves in the same city, and, as they each came to realise, facing similar career predicaments. Neither could cut it as performers—Leiber's acting ambitions had been scaled down to selling Cokes at a small theatrical group, while Stoller had been forced to acknowledge his own limitations as a jazz musician. >



Outside the office at 7407-1/2 Melrose Avenue, Los Angeles in 1955. Left to right: Jerry Leiber, Lester Sill, Clovers' manager and head of Atlantic Records Sales Lou Krefetz, and Mike Stoller

< Leiber subsequently turned to songwriting in tandem with a drummer named Jerry Horowitz during his junior year at high school. Said drummer, however, didn't have as much time as his colleague to dedicate to their extracurricular craft, and so he gave Leiber the name and number of a pianist with whom he had played a local gig the week before. Jerry Leiber called Mike Stoller the very next day.

'Mike was a very hip, laid-back jazz musician,' Leiber now recalls. 'I said, "Are you Mike Stoller?" He said, "Yep". I said, "You play the piano, right?" He said, "Yep". I said, "You read music, don't you?" He said, "Yep". I said, "Can you write music?" He said, "Yep". I said, "Do you think you could arrange music?" He said, "Yep". I said, "Well, Jerry Horowitz told me to call you because he said you might be interested in writing songs. Would you be interested in writing songs?" He said, "Nope".'

Stoller's recollection is of going through a waltz on the phone: 'I said I really didn't want to write songs because I was sure it was something that I wouldn't like. He said, "Whaddya like?" and I said, "Bird [Charlie Parker], Prez [Lester Young], Thelonious Monk, Stravinsky and Bartok". I was more or less telling him to get lost, but he was persistent thank goodness. He said, "Well, nevertheless, I think we ought to meet to discuss it", and I really thought he was talking about something I would hate.'

> 'I was making the attempt because I was desperate to have somebody to work with,' Leiber explains. 'I just stayed on the phone with him for 20 or 25 minutes and I finally convinced him to let me come over to his house for a few minutes'

'I was making the attempt because I was desperate to have somebody to work with,' Leiber explains. 'I just stayed on the phone with him for 20 or 25 minutes and I finally convinced him to let me come over to his house for a few minutes and talk to him. He was very reluctant, but I think I could hear his mother's voice in the background >

DON'T LET THE SIZE OF YOUR WALLET AFFECT THE QUALITY OF YOUR MONITORS

HHB CIRCLE 5

Combining great British pro-audio innovation with exacting manufacturing standards, the HHB Circle range of active and passive monitors delivers detailed, accurate and powerful sound at a new price point for precision studio monitoring.

The Circle 5 mid-field monitor features a revolutionary injection moulded cone, varied in thickness to minimise resonance, resulting in amazingly low distortion.

A controlled order crossover in both the active and passive models ensures that the Circle 5's sound is never tiring, even during long mixing sessions, and the complete absence of any limiting in the active bi-amp module means that the sound remains balanced and accurate at all listening levels.

Despite standing just over 10 inches high, the diminutive new Circle 3 packs an amazing punch and, again, is available in both active and passive versions.

HHB CIRCLE 3

And with built-in 5 channel active filtering and an on-board, 100 watt amp module, the new Circle 1 powered sub-woofer fits into any stereo or surround sound system without the need for additional amplification.

Accurate monitoring is a right, not a privilege. Check out the Circle range at your local HHB dealer.

HHB CIRCLE 1

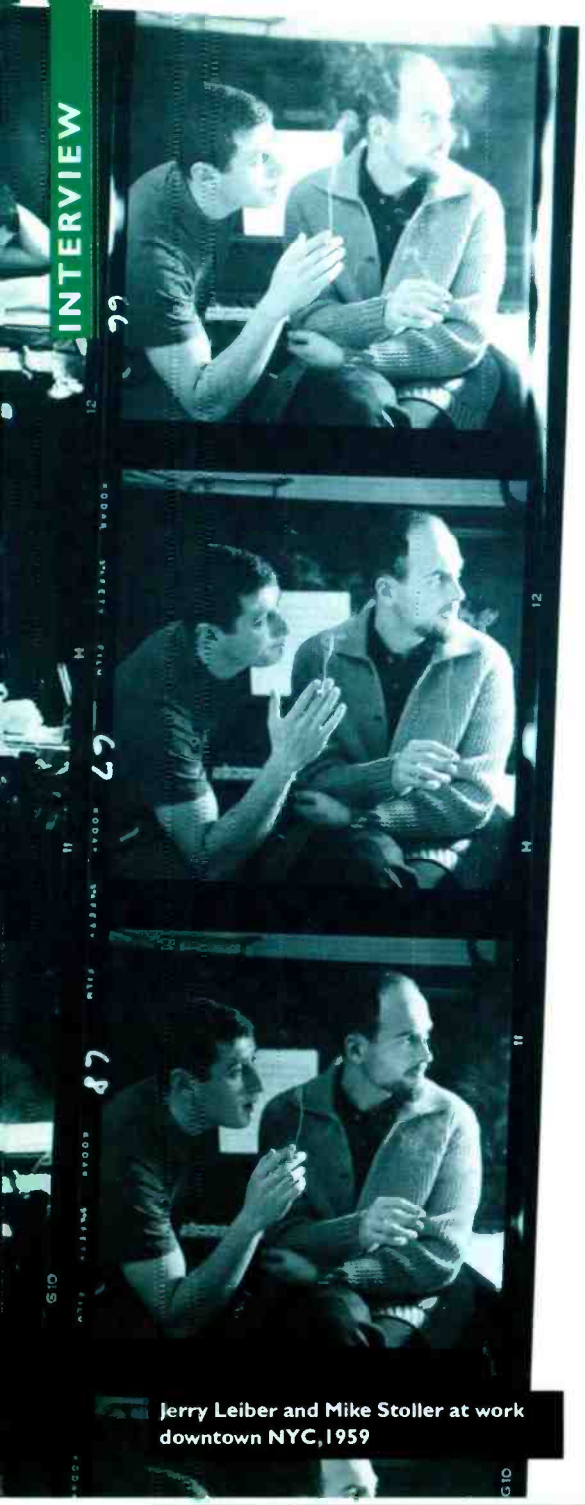
Five active Circle 5s with the new Circle 1 powered sub: The perfect 5.1 system

HHB Communications Ltd · 73-75 Scrubs Lane, London NW10 6QU, UK
Tel: 0181 962 5000 · Fax: 0181 962 5050 · E-Mail: sales@hhb.co.uk
HHB Communications USA LLC · 1410 Centinela Avenue, Los Angeles, CA 90025-2501, USA
Tel: 310 319 1111 · Fax: 310 319 1311 · E-Mail: sales@hhbusa.com
HHB Communications Canada Ltd · 260 King Street East, Toronto, Ontario M5A 4L5, Canada
Tel: 416 867 9000 · Fax: 416 867 1080 · E-Mail: sales@hhbcanada.com

HHB

British sound at its best

http://www.hhb.co.uk



Jerry Leiber and Mike Stoller at work downtown NYC, 1959

< urging him to invite me over.

'At that time he was a retiring kid, very quiet, very passive, and when I went over to see him he was talking about jazz and Dizz [Dizzy Gillespie] and Bird and all of those cats. I knew very little about be-bop and I could care less, but I knew a little bit about some boogie-woogie piano players and a couple of blues singers; star names like Lightnin' Hopkins, T-Bone Walker, Louis Jordan and Josh White. I had a spiral notebook with me and he said, "You write your songs in that book?" I said, "Yes". He said, "Do you mind if I take a look at it?" I said, "No" and I handed him the book. He was sitting on the couch, the piano was in the far corner, and as he started ambling towards the piano and leafing his way through the book he stopped at the third or fourth page and said, "Hey man, these aren't songs. I mean they're not 'blue-moon-in-June' songs. These are the blues". And he looked at me and smiled, and he said, "I love the blues".'

'It was a real surprise to find out that this young white fellow named Jerome Leiber wanted to be a songwriter almost exclusively in that idiom,' adds Stoller. 'I thought he would be writing what in those days jazz guys considered to be the worst possible put-down, which was something commercial.'

There and then Leiber and Stoller started writing together. They composed two songs on that afternoon in 1950, and thus commenced a partnership that has lasted and flourished to this day.

'Usually what happened in the beginning was a kind of spontaneous combustion,' Mike Stoller explains. 'We'd be in a little smoke-filled room in my house, and Jerry—who is a great comedian and a very funny fellow—would walk around screaming some phrases based upon whatever inspired him, and that was usually me jamming at the piano. If something sounded good we'd stop and we'd examine it and we'd work on it. While he was the words and I was the music he'd fire a line, I'd fire a word or a line back sometimes, and he would say, "Yeah, that's great, but don't go down on that note, go up on it". We'd get into big fights about whether the note went up or down or whether the word was "and" or "but", and out of all of that came some songs, and some of them I guess were pretty good.'

'At first Mike stayed completely within the realm of writing the groove,' says Leiber, 'and a lot of this was not melody writing but rhythm writing. The melody writing came later with pieces like "Kansas City", but all of the early pieces were eight or 12-bar-blues orientated, and a lot of that stuff came from the way I sang it. I would sing something in the style of a certain artist. Later on Mike became a little more critical about the lyrics; he would say, "Hey, I don't know if that is the best word", and we could have an arm wrestle over that. However, I've always felt that, even though I won that battle 99% of the time, the interaction and the disagreement and the challenge created something better.'

Mike Stoller is equally philosophical: 'As Jerry frequently says, "Leiber & Stoller is the longest running argument in history". Nevertheless, we are not only collaborators and partners but also the best of friends, and we have been for 48 years now.'

By way of their friendship with pioneer music publisher and producer Lester Sill, L&S were introduced to the heads of numerous independent labels in LA and New York. While Sill's influence helped pave the way for early projects with Jimmy Witherspoon, Charles Brown, Floyd Dixon, Amos Milburn and 'Little' Esther Phillips, it was black arrangers and producers like Maxwell Davis and Johnny Otis who enabled two inexperienced young white guys who were dealing with a black idiom and musical art form to gain the trust and respect of such seasoned artists. In the autumn of 1952, Lester Sill set up an Otis band rehearsal for a tour featuring the talents of 'Big Mama' Thornton, Little

Esther, Little Willie Littlefield, Mel Williams and a trio of oversized dames known as The Three Tons of Joy, and he invited Leiber & Stoller along as Otis was always in need of new material for the artists that he was producing.

'We went to Johnny's place, which was sort of a large converted garage, and we listened to the people perform,' recalls Leiber. 'When Big Mama got up she sang her version of 'Ball and Chain', and we thought it was dynamite. I said to Mike, "That's it, let's get out of here, let's write her a song", and when we got into the car I started singing these kind of dummy phrases and pounding on the hood of his car with my right hand which was out of the window.

> Mike Stoller is equally philosophical: 'As Jerry frequently says, "Leiber and Stoller is the longest running argument in history". Nevertheless, we are not only collaborators and partners but also the best of friends, and we have been for 48 years now.'

I was pounding this kind of buck-dance beat and I was singing, "You ain't nothing but a hound dog."'

In actual fact what Leiber started out singing was a lot rawer than that, as he was aiming for something along the lines of 'Dirty Mother for You', a song popularised by Furry Lewis among others and originally entitled 'Dirty Motherfucker'.

'I was looking for something as insinuating as that but I couldn't get it, because everything I went to was too coarse and at that time would not have been playable on the air,' he recalls. 'Mike said, "You know, 'hound dog' sounds pretty good to me". I said, "That's kinda polite", but he said, "Well, I think it's just right man. I think if you go the other way you're gonna sell that record to ten collectors, whereas if you stay with 'hound dog' it could have a much broader appeal". So, I wrote three quarters of the lyrics on the way to his house, and when we got there Mike went to the piano and set the buck-dance rhythm, and 10 or 15 minutes later I wrote down the finished song which was essentially a raw shout. We then got in his car and went back to Johnny's place.

'I walked in with the song on a piece of paper in my hand, and as Big Mama was breezing by she snatched it away in a devilishly playful way. She said, "Oh yeah, well what's this?" She was being kind of snide and she started to croon 'Hound Dog'. I thought that she was putting me on, because the way that she was doing it was completely inappropriate, but then it struck me that she didn't know what it was. She was just crooning, because she liked to croon - like the lead singer of The Coasters [Billy Guy] who would always say, "Man, give me a ballit [ballad]. I'm tired of singing these rhythm songs and these novelty songs. Give me a ballit..."—and after she made two or three passes at it I said, "Mama, it don't go like that". She looked at me and I wished that I had never said this. If looks could kill, I would have been a cinder.

'She said, "How do it go?" I said, "Well, if you let me..." She said, "You do whatever you want," and then, "Hey white boy, don't tell me how it go. I SHOW you how it go". She put one finger inside the left side of her mouth and one finger inside the right and she pulled it like kids do when they're making faces, and then she stuck her tongue out and it looked like it came out about a mile, and she waggled it so fast that it looked like it was going to take off. She did this to the band and the band fell off the stand, howling with laughter, and she said, >

< "That's the way it go. It go like THAT!".

'Johnny Otis came over and he said, "What's going on here?" and I shrugged and said, "I don't know. She must be pissed off with something". He said, "Mama", and she looked over and you could tell right away that there was immediate respect. She came over and he said, "Do you want a hit?" Reluctantly she said, "Mmm-hmm". He said, "Well, these two boys maybe can get you a hit. Now stop the nonsense and let him show you the way it go".

'Mike went over to the piano and sitting there was Lady Dee, this black dyke with a 20-inch neck and muscular 18-inch arms wearing an elegant outfit and high heels, and she was so nasty looking that he did not want to approach her. We soon found out, however, that she was a sweetheart of a person, and she made room for him and he sat down. I got up on the stand with the band and we did 'Hound Dog', and after we finished they all applauded. I sang it once, Mama heard what I did and did it better. It was metrically more or less the way I did it, but she brought a whole new world to it with her vocal quality. Her shouting, her growling, her doing it created a whole dimension of melodrama and charisma that made it so much better.

'The next day we went into Radio Recorders [in Hollywood] and when I looked out from the control room I saw that on drums we had the road drummer [Leard 'KC' Bell], and right away I knew we were in trouble. We were so precise about everything, nothing could be out of place, not even a sixteenth of a beat, but Johnny—who'd played the drums when we rehearsed the song the previous day—was producing the record and so Mike and I decided to sweat it out and see what happened. After two bars of take one I could tell it was a dead issue, because the drummer had turned the beat completely around and the cadence and the emphasis were wrong. After the whole thing was finished, since I was always the more outspoken and aggressive one, I told Johnny, "This is not going to work, man", and I explained that when we'd rehearsed it in his studio he had been playing drums to a buck-dance beat that created a certain rhythmic pulse. This underpinned the vocal as well as the guitar solo that Pete Lewis played, and Johnny said, "You think it matters that much?" I said, "Yeah, I think it matters to the point where it's the difference between a hit and an okay record. This is an okay record, but if you go out there and play drums we'll make a hit". >

Mike Stoller: 'I got up on the stand with the band and we did 'Hound Dog', and after we finished they all applauded. I sang it once, Mama heard what I did and did it better. It was metrically more or less the way I did it, but she brought a whole new world to it with her vocal quality. Her shouting, her growling, her doing it created a whole dimension of melodrama and charisma that made it so much better.'

Jerry Leiber, Carl Gardner, Mike Stoller, King Curtis and Billy Guy around 1959

Series 3000.

Versatility, performance and value in perfect harmony

From the manufacturers of the world's greatest radiomics comes SERIES 3000. A versatile range of multi-channel products that represent the ideal choice for large shows, touring artists, PA systems and broadcast. Not just renowned for quality, but also pushing the limits in providing total value for money. EM 3031 RACK MOUNT RECEIVER True diversity 32 programmable frequencies. Switching bandwidth 24MHz. Also EM 3032 available as 2 complete receivers in 1U housing, or EM 3532 computer controllable. SKM 3072 HAND HELD TRANSMITTER Super-cardioid UHF. 32 switchable frequencies. LCD shows selected frequency/channel/low battery. SK 50 BODY PACK TRANSMITTER UHF 16 channel switchable. Total reliability for the most demanding applications. EK 3052 IN-EAR MONITORS Miniature stereo receiver. Rugged, tried and tested. 16 switchable UHF frequencies. SR 3056 IN-EAR SYSTEM TRANSMITTER 16 programmable frequencies. LCD for frequency, RF output, and deviation. SR 3054 single transmitter also available. EK 3041 CAMERA RECEIVER The smallest true diversity receiver in the world. Rugged and weatherproof, plugs straight into digital ENG camcorders, or via adaptor case to any other camcorder.

SENNHEISER
defining sound

Sennheiser UK Ltd, FREEPOST, High Wycombe, Bucks HP12 3BR. Telephone 01494 551571. Fax 01494 551549. E-mail: info@sennheiser.co.uk Web: www.sennheiser.co.uk

Jerry Leiber and Mike Stoller, Ghent, Belgium 1990

PHOTOGRAPH: MARTIEN VAN BEECK

< He said, "Who's going to produce it?" I said, "Mike and I will. What's there to produce? We've got the technician here, there's nothing to do". He said, "Okay man". He was completely affable about it, he got on the drums, in one take it was all over and it was the biggest rhythm and blues hit in the history of the music business up until that time.'

Big Mama Thornton's 'Hound Dog' was released in 1953, the same year that Leiber & Stoller launched their own publishing company, sales operation and Spark Records label with an investment of just $3,500. Soon successful recordings such as 'Riot In Cell Block No.9' and 'Loop-de-Loop Mambo' by The Robins—later to become The Coasters—began to attract the attention of major labels like Capitol and Decca, and they in turn would commission L&S to write some more hit songs.

'We would present these companies with material and they would make records that didn't sound like blues,' says Stoller. 'You know, they sounded like some kind of swing music and they missed the point, so we were forced to say, "Look, we have to make our own records because we know the way they're supposed to sound." That's how we became producers, although there was no name for that, and in that respect at Spark we were like many guys who owned record companies. A lot of them, like the Chess brothers, were ostensibly in the studio making records, although maybe we did more because we also wrote a lot of the songs, and it was only quite some time after Atlantic hired us to make records for them that we started to get credit for making them.

'We would present them with material and they would make records that didn't sound like blues,' says Stoller. 'You know, they sounded like some kind of swing music and they missed the point'

'At first the response [from Jerry Wexler] was, "Well, how many times do you want your name on the label? You wrote the song and we tell everybody that you made it. We tell Waxie Maxie our distributor in Washington that you made it...", and we said, "But it's not >

C-1 compressor

C-1
stereo valve compressor
with mic pre-amps

£1299
ex vat £1526 inc

- 2 channels of soft knee valve compression
- Fully variable control of input gain, threshold, ratio, attack, release and gain make-up
- High quality on-board mic pre-amps
- Both balanced XLR and unbalanced jack connections for easy patching
- Stereo front panel instrument inputs
- Dual mono/stereo linked modes
- Backlit VU meters allow monitoring of either output level or gain reduction
- Unique non-VCA design for maximum transparency
- Military spec General Electric valve stages run from stabilised 250v DC power supply
- Frequency response 5Hz to 70kHz

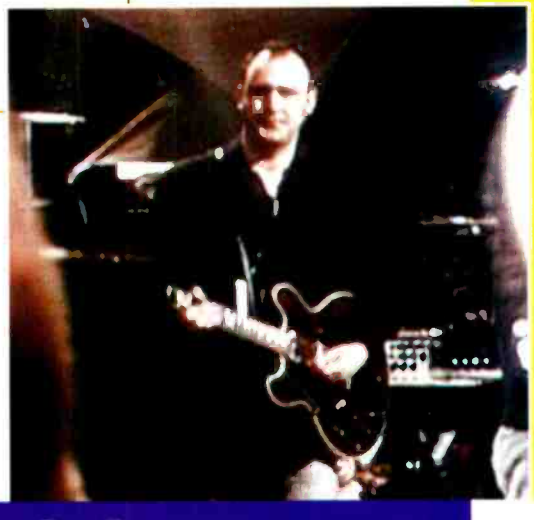
adrian utley portishead

TL Audio products have been part of some of the most important records of recent years, and none more so than the C-1 stereo valve compressor. So when Portishead - who are without doubt one of the most influential and ground breaking acts of the 90's - came to choose some high end valve outboard to use on their latest 'PNYC' album, the decision was easy:

"There seems to be a real buzz about TL Audio equipment at the moment, and I've encountered so many engineers and producers using TL Audio products that it just seemed to be the obvious choice. The C-1 and EQ-2 were used to process the string and horn sections that feature heavily on the album - and they sounded great. The units just seem to add something special to the sound, even before you start to make any adjustments!"

Adrian Utley - Portishead
(Guitarist, Writer, Co-Producer)

So if you've always wanted to own a Classic, speak to your nearest TL Audio dealer today!



MUSIC BUSINESS

France:
MUSIC BUSINESS
Tel: +33 1 43 38 15 95
Fax: +33 1 43 38 70 79

Germany:
S.E.A.
Tel: +49 5903 93 880
Fax: +49 5903 1463

TL Audio®

Worldwide distribution:
TL AUDIO LTD, LETCHWORTH SG6 1TN UK
Tel: +44 (0)1462 680888
Fax: +44 (0)1462 680999
www.tlaudio.co.uk

new valve classics

abbey road · townhouse · cts · portishead · alanis morissette · steve levine · eternal

< on the label." Atlantic finally saw the point when we made some records that we hadn't written, and, as far as I know, it was they who came up with the credit "producer" and it stuck.'

It was Ahmet and Nesuhi Ertegun, together with Jerry Wexler, who eventually persuaded L&S to give up their own company and make records for Atlantic. Jerry Leiber would coach the singers on interpretation while Mike Stoller mostly worked on the arranging and playing the piano. 'We'd rehearse the artists for like two weeks straight and then go in and cut four sides,' says Stoller. 'While I was playing piano Jerry would be in the booth, and that's the >

Ahmet and Nesuhi Ertegun, together with Jerry Wexler, eventually persuaded L&S to give up their own company and make records for Atlantic. Jerry Leiber would coach the singers on interpretation while Mike Stoller mostly worked on arranging

Jerry Leiber and Mike Stoller at work downtown NYC, 1959

inspired
TASCAM

TASCAM DA 45HR

24 bit DAT precision

the world's first available 24 bit DAT

The worlds first available 24 bit DAT recorder, offers cost effective high resolution mastering, for less than the price of most professional 16 bit DATs.

With 256 times the accuracy of 16 bit resolution, the 24 bit signal is represented by more than 16 million steps per sample, compared with just over 65,000 for 16 bit. **That means that the 24 bit recorded signal has virtually the same precision as the human ear.**

The DA 45HR gives you the potential for mastering or recording, with a clarity and dynamic range you have probably never experienced before, **recording signals in excess of 113dB to tape!**

Dual mode operation; the DA 45HR is **fully compatible with standard 16 bit DAT** and provides professional high specification performance in "standard" 16 bit mode. Also includes balanced analogue and digital AES/EBU ins and outs.

5 Marlin House, The Croxley Centre, Watford, Hertfordshire, WD1 8YA. **Brochure Hotline 01923 819630**

Check out **www.tascam.co.uk** for information on all our new products

< way we worked.'

Nevertheless, when they were commissioned to write songs for Elvis Presley's movies they enjoyed no such autonomy. Presley's manager, the conniving, self-styled Colonel Tom Parker, ensured that he was pulling all of the strings that he himself had attached to his client. This included a deal with music publishers Hill & Range that amounted to Elvis only recording songs of which he would gain a hefty slice of the publishing, as well as—on occasion—a wholly unearned co-composition credit. Still, although Leiber & Stoller were more than happy to write songs for the newly crowned King of Rock 'n' Roll, they only did so when asked and without a share of the credit. Hardly desperate for the work, they didn't feel obliged to adhere to all of the Colonel's rules.

'We owed Jean Aberbach of Hill & Range the score to what would become 'Jailhouse Rock', and we had come from California to New York supposedly to deliver it,' recalls Jerry Leiber. 'We checked into a 2-bedroom suite at the Gorham Hotel, and Mike was so excited about the jazz acts that were in town that he said, "Hey, let's take off a couple of days first and go around the clubs." So we did that, and on about the fourth or fifth day, after having received a number of phone calls asking for the score, the doorbell rang, we opened it and there was Jean Aberbach. In his thick Austrian accent he said, "Vere is my score to my movie?" This was, like, Thursday and so we said, "We'll do it this week-end". He said, "You'll do it thees veek-end? No, you'll do it thees minute!" He pulled up the couch, he pushed it in front of the door, and he stretched out on it, put his coat over himself like a blanket and he closed his eyes. Mike and I had no choice, so we went to the piano that had been rented and in about four or five hours we wrote four songs; 'Jailhouse Rock', 'Treat Me Nice', '(You're So Square) Baby, I Don't Care' and 'I Want To Be Free'". They hadn't even planned to do a musical number in the jail, so I said, "Let's do one. This is a musical, not *Scarface*".'

'The doorbell rang,' recalls Jerry Leiber, 'we opened it and there was Jean Aberbach. In his thick Austrian accent he said, "Vere is my score to my movie?" This was, like, Thursday and so we said, "We'll do it this week-end". He said, "You'll do it thees veek-end? No, you'll do it thees minute!" He pulled up the couch, he pushed it in front of the door'

L&S would subsequently also compose many of the most famous numbers for Presley's next movie, *King Creole*, yet a realisation that art was taking a back seat to commercial greed soured the relationship, and some run-ins with the Colonel and his cronies terminated it. 'Mike and I agreed that this was a dead-end street,' says Leiber. 'Of course, it was also a license to print money—I mean, every time we'd write a song it would sell two, three, four million, and where could you find that? Writers go searching for something like that all their lives, but strangely enough, while we were as ambitious as anybody else, we were bored and we didn't give a goddamn.'

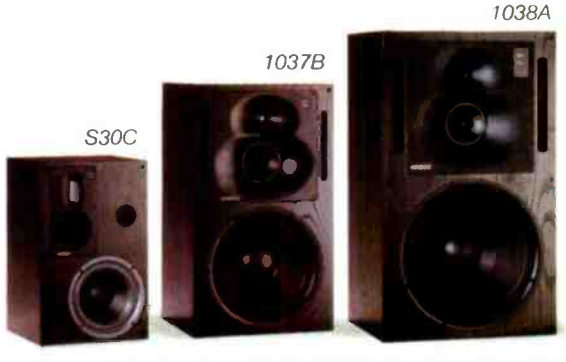
They did not need to. In 1957 the two men had both moved to New York, since when they had been composing and producing a string of hits for The Coasters that provided them with an altogether more satisfying form of musical expression. Here was Jerry Leiber the actor, the comedian, the playwright, the sketch-writer. 'It was what I did naturally without even trying,' he says. 'I could get it all in the dialogue, the >

ACTIVATE
YOUR VISIONS

Welcome to an oasis of *real* satisfaction, where your thirst for the Whole Truth and Nothing But the Truth will finally be quenched.

For Nearly 20 years we've been known for our active monitoring systems, particularly our compact, nearfield bi-amplified ones.

But outside the nearfield, where the heat really gets turned up, Genelec's S30C, 1037B and 1038A integrated tri-amp* active monitors are designed for bigger spaces - mucho grande.



*Amplifier modules may be rack-mounted in any soffitt installation.

GENELEC®
ACTIVE MONITORING

The Whole Truth And Nothing But The Truth

In the U:S: please contact: Genelec Inc. 39 Union Avenue, Sudbury, MA. 01776 Phone 508/440-7520 Fax 508/440-7521
International enquiries: Genelec, Olvitie 5,FIN-74100 Iisalmi, Finland, Phone +358-17-813311, Fax +358-17-812267 Web: http://www.genelec.com

< jokes and the attitude, with the musical dimensions supporting all of it.'

'We never planned things based upon marketing, we just wrote to amuse ourselves,' adds Mike Stoller. 'In the case of "Yakety Yak", for instance, it started out with me playing something kind of funny on the piano and Jerry shouting one line, "Take out the papers and the trash". I yelled back, "Or you don't get no spending cash", and then we wrote the song in about half an hour. It was spontaneous, it just happened, and with The Coasters that kind of material sounded great. Of course it wasn't as steeped in the blues as some of the other songs that we'd written, but at that time we were still writing numbers that were closer in form to the blues. "Love Potion No.9", although it's not exactly 12-bar blues in the traditional sense, is an amusing song, but it's not of the same genre as, say, "Yakety Yak" or "Charlie Brown".'

In 1961 Leiber & Stoller moved into the Brill Building, famous for the incredible cache of songwriters that it housed under one roof, and several of them were duly called upon when Atlantic's production schedule meant that L&S could not supply all of the needs for material. At the same time, the two of them were in the process of creating a sound that still encapsulates the optimism of an era sandwiched in between the first wave of rock 'n' roll and the onset of psychedelia. It is not that strings had never been employed on pop records before, but the material and the rhythms to which they were applied made for unique results.

'We were working on 'There Goes My Baby' and I started to play a line, and Jerry said, "That sounds like violins",' recalls Mike Stoller. 'I said, "Hey, why not? Let's try it", and so we recorded it with an R&B rhythm section, five fiddles and a cello in the studio at the same time. When Jerry Wexler and Ahmet Ertegun heard it they thought it was horrible, but we said, "There's something about it that's interesting", and when it came out it was a No.1 hit on both the pop and R&B charts. That then gave us the idea of utilising a lot more rich orchestral colours as well as Latin and Brazilian percussion instruments together with the [South American] baião rhythm, and that became a kind of good way to keep our interest up in terms of the sound, and so forth.

'As time went by, the record company then became concerned with the cost of the recording sessions, because we went from using a 5-piece band to having 20 to 30 musicians in the studio, and the idea of us going a half hour overtime panicked them. I remember them calling us on the carpet after the session that we did with Ben E. King, when we went half an hour or an hour overtime to get four songs done. Ultimately, of course, it turned out all right, because two of the songs became hits —'Spanish Harlem' and 'Stand By Me' were done at the same session.'

'We were working on "There Goes My Baby" and I started to play a line, and Jerry said, "That sounds like violins",' recalls Mike Stoller. 'I said, "Hey, why not? Let's try it", and so we recorded it with an R&B rhythm section, five fiddles and a cello...'

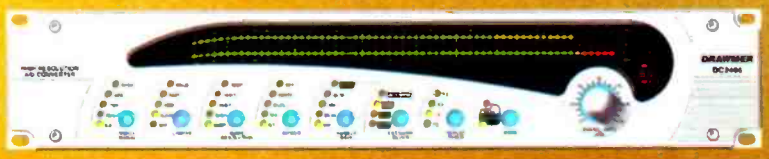
Occasionally guesting as the fifth rhythm guitar player on the big Drifters recording sessions was one Phil Spector, future production legend, but then still a virtual unknown who L&S had flown to New York on the recommendation of Lester Sill. 'We took him on as an apprentice and signed him to a writing and production deal that he later disavowed,' says Mike Stoller. 'Phil is actually a very talented fellow, but he has vaguely taken credit for several of the things that we did, such as the hit version of "Chapel of Love" by The Dixie Cups, which he actually recorded with The Ronettes, "Save the Last Dance for Me", which he possibly played on but definitely didn't produce, and "Lavender Blue" by Sammy Turner, which we produced before he was even around.'

For the record, as the result of a chance meeting between the three men while walking in New York City one day in 1963, Spector did get to play the >

I DON'T THINK WE'RE IN KANSAS ANYMORE.

DC2476 DIGITAL MASTERING PROCESSOR

DC2486 TWINSCREEN DIGITAL PROCESSOR



DC2496 HIGH RESOLUTION A/D CONVERTER

ENTER A NEW TERRITORY...
THE WORLD'S FIRST 24 BIT / 96K SAMPLE RATE DIGITAL DYNAMIC PROCESSORS.

THE NEW DRAWMER DIGITAL SERIES OFFERS HIGHER SPEC, LOWER NOISE, AND THE WIDEST DYNAMIC RANGE THIS SIDE OF THE RAINBOW.

DRAWMER
DIGITAL

DRAWMER • CHARLOTTE STREET BUSINESS CENTRE • CHARLOTTE STREET
WAKEFIELD • WEST YORKSHIRE • WF1 1UH • ENGLAND
TEL: +44 (0) 1924 378669 • FAX: +44 (0) 1924 290460
WEB: www.proaudio.co.uk/drawmer.htm • sales@drawmer.co.uk
USA • TRANSAMERICA AUDIO GROUP • TEL: 805-241-4443 • FAX: 805-241-7839
JAPAN • TEAC JAPAN • TEL: 0422-52-5081 • FAX: 0422-52-6783
GERMANY • BEYERDYNAMIC • TEL: 0049 7131 617 0 • FAX: 0049 7131 60 459

A&M Recording Studios, 1975. Left to right: Mike Stoller, Peggy Lee and Jerry Leiber

< guitar solo on his former employers' production of The Drifters' hit, 'On Broadway'. Leiber & Stoller subsequently ran their own Red Bird label for a couple of years, before taking a well-earned sabbatical from the business and then returning to form in 1969 with Peggy Lee's rendition of 'Is That All There Is?' The song signalled yet another new direction in the career of its composer-producers, while the title proved to be fairly apt considering their probable thoughts towards the end of the session.

Peggy Lee is a woman of very few takes, yet on this occasion her patience was tested as the band ran through the song 36 times before they finally hit paydirt. Still, it was worth it. 'Take 36 was the best take of anything I had ever made in my life outside of take one of Big Mama's 'Hound Dog',' asserts Jerry Leiber. 'Mike and I both knew it at that very instant, and everybody in the band was also smiling. It was perfect.'

'A kid named Sandy Lehman-Haupt was the technician, and at first I had been nervous because he'd earned a reputation for being one of Ken Kesey's Merry Pranksters [a hippie troupe that had taken a well-publicised, LSD-drenched bus trip through California in 1965]. But when I spoke with him, he sounded very bright and very able, and so I let the fears blow away. Anyway, he's playing take 36 back to us, and we're listening and we're listening and there's nothing. We don't hear a thing. Suddenly he looks at me and his face is ashen. "Oh my god", he says, "I've put it on in Erase mode". He had erased the best take of our lives. What could we say to Peggy? She was out there with her hands on her hips waiting to hear the playback, and she knew that it was the greatest take she'd ever made. Finally she put her coat on and she left, and I took the tape over to another studio and spent three and a half weeks making 48 edits between 11 different takes to get the performance. That's what was put out on the record, and, although it is good it does not compare to that one take which was wiped. That's the only time in 48 years that this happened to us, and it had to be then.'

During the 1970s L&S worked in London with Stealer's Wheel and Elkie Brooks, by which time things had moved on considerably from the way of working in the fifties and early sixties. Artist attitudes were more relaxed, sessions were booked for entire days and there was no longer any obligation to record four sides in three hours.

'That's why in the early days we did a great deal of preparation,' says Mike Stoller, 'working with The Robins and later The Coasters for weeks in order to get the harmonies and the backgrounds right. We didn't want to waste any money in the studio because it was expensive—even though by today's standards it was nothing—and I think that our records for the most part show that kind of preparation.

'These days a lot of recordings start with a click track and a bass, and guys who are on a great record may never even meet each other. That's a very different experience from something that is done simultaneously and it produces a very different result. When Jerry and I started it was "go for broke". You know, if the vocalist sang a wrong word you either left the wrong word in when the track sounded great or you stopped it and started again from scratch. You had no ability to redo the vocal without redoing the band, and, although you gained a lot from the ability to do that with the advent of multitrack, you lost something very special from the situation where everybody was going for broke... But hey, it's a brave new world, and it's changing all the time.' ■

CD-R

WE JUST CHANGED THE RULES

Thought you couldn't afford a fully loaded, professional CD recorder? Well HHB just changed the rules. The stunning new HHB CDR850 combines cool looks, a great sound and a budget-friendly price with all the features you need for serious studio use, easily accessible from the front panel via a straightforward menu system.

The most comprehensively equipped CD-R in its class, the CDR850 uses both write-once CD-R discs and CD-RW rewritables, and makes recording a one touch operation, thanks to four easy record modes, auto copying of CD, DAT, MD, DCC and DVD track starts, and a built in sample rate converter.

Things are equally impressive round the back, where you'll find XLR balanced and RCA phono analogue inputs and outputs, coaxial and optical digital I/Os, plus an additional AES/EBU digital input. And peace of mind comes as standard with a full 12 month parts and labour warranty, and the build quality you'd expect from a world leader in CD-R.

So if you thought you couldn't afford a fully loaded professional CD recorder, get down to your HHB dealer today and check out the new CDR850.

Developed specifically for professional audio use, HHB CD-R media sets the standards for performance, compatibility and archival security. Pictured left to right: HHB CDR74 Silver, HHB CDR74 Gold and HHB CDR74 Gold P (printable) discs. Also available: HHB CDR Bulk (not pictured).

HHB Communications Ltd · 73-75 Scrubs Lane, London NW10 6QU, UK
Tel: 0181 962 5000 · Fax: 0181 962 5050 · E-Mail: sales@hhb.co.uk

HHB Communications USA LLC · 1410 Centinela Avenue, Los Angeles, CA 90025-2501, USA
Tel: 310 319 1111 · Fax: 310 319 1311 · E-Mail: sales@hhbusa.com

HHB Communications Canada Ltd · 260 King Street East, Toronto, Ontario M5A 4L5, Canada
Tel: 416 867 9000 · Fax: 416 867 1080 · E-Mail: sales@hhbcanada.com

http://www.hhb.co.uk

HHB

The Phantom Menace

Having used the first *Star Wars* film to establish Dolby Stereo, Dolby is looking to *The Phantom Menace* to launch Digital Surround EX **Kevin Hilton** uncovers a thickening plot

A LONG TIME AGO in a galaxy far, far away... there was a film that made an indelible impression on movie-goers and movie-makers. Regardless of its Saturday morning serial story or the fact that other pictures—primarily *2001: A Space Odyssey*—had already taken us into space and beyond, *Star Wars* brought special effects into the mainstream and made everyone look and listen to feature films in a different way. And now... even longer ago, but still in a galaxy far, far away, a new film promises to do this all over again. *Star Wars Episode I: The Phantom Menace* is the first of the three sequels to the original trilogy that appeared during the late 1970s and early 1980s. As the advertising tag-line says: 'Every generation has a legend. Every journey has a first step. Every saga has a beginning.' While this new movie will tell the early story of Obi-wan Kenobi and Anakin Skywalker, the father of Luke who became Darth Vader, it is a continuation of the technological story that began with *Star Wars* (or *Episode IV: A New Hope*, to give it its full title) back in 1977.

George Lucas, writer and director of that first movie, marshalled all the technical tools available to him at the time —including Dolby's still relatively new Stereo Surround cinema sound system—to deliver an aural and visual assault. Under the banner of the Lucasfilm organisation, he established Industrial Light and Magic (ILM) to develop new visual effects, Skywalker Sound to push audio design and postproduction and THX to set standards for playback in the cinema and in the home.

There is the general misconception that *Star Wars* was the first Dolby Stereo encoded movie. This distinction goes to Ken Russell's *Lisztomania* (1975), with surround channels subsequently added to the system and used for the first time a year later on the remake of *A Star is Born*, starring Barbra Striesand. This movie used the technology mostly during the concert sequences, but it was *Star Wars* where it was used to its full extent: the sensation of the Imperial battle cruiser passing overhead as it pursues Princess Leia's ship is still one of the classic cinema sound moments.

The Phantom Menace can truly claim to be the first example of a new audio technology, as it features Dolby's latest cinema playback technology, Digital Surround EX. This is a 6.1-channel system that takes the discrete 5.1 construction of the company's established Digital Surround format (front left, centre, front right, rear left, rear right and a sub-bass) and adds a third, matrixed rear channel. In effect, *The Phantom Menace* features phantom sound.

Just as Dolby Stereo has its precedents in the 1935 stereo version of Abel Gance's *Napoleon Bonaparte*, Alan Blumlein's experiments with optical film stock earlier that decade, the Fantasound system Disney developed for *Fantasia* (1941) and other three-channel systems, EX is not a wholly new idea. The 1956 Rex Harrison vehicle *Around the World in 80 Days* had featured a third surround channel, and, more recently, Dolby itself had been looking at ways to develop such an additional feature into its existing technology, albeit not for such an immediate launch.

The urgency and impetus came from Gary Rydstrom, director of creative operations at Skywalker Sound and an Oscar-winning sound mixer (for *Jurassic Park*), who is up for a possible two statuettes for his work on *Saving Private Ryan*. After *The Lost World* (1997), he had become frustrated with exist- >

<ing technology; despite the two discrete rear channels of the three main digital cinema systems, he felt that they still could not effectively recreate how sound passes smoothly over and above a listener and from side to side. 'I wanted audiences to be completely encircled by surround, as well as hear sounds played directly behind them,' Rydstrom has said. 'I wanted to develop a format that would open up new possibilities and place sounds exactly where you would hear them in the real world.'

With this in mind, Skywalker Sound approached Sony SDDS, DTS and Dolby, asking whether it was possible for them to develop a digital system with three rear channels. When told that it would not, Rydstrom decided to look within the Lucasfilm organisation and began talking to THX. 'The reservations that the three digital companies had were, that to have a third surround channel in the digital domain would mean upgrades to theatre systems and additional coding,' explains Kurt Schwenk, director of THX's professional division. 'So Gary came to us and we talked about a system enhancement.'

Somewhere in the process, Dolby became aware of THX's work and, as it was already engaged in future development of such an enhancement, the two companies decided to merge their projects and try for a single patent (which is still pending). 'Everything was almost all in place when it was decided to merge the work,' says Schwenk, 'but it made sense because Dolby is a manufacturing company and they can handle the pro side of the business. THX only manufactures the cross-over that is used as a part of complete systems and this is the first time the pro side of our operation has come up with a new technology.'

Previously, THX Pro had not been closely identified with a specific manufacturer. Instead it has approved various brands for use in its theatrical installations, which it designs and then licences to operators. Around this relatively small industry there are rumblings of disquiet over THX and Dolby working together in this way, but Schwenk says a major point for his company was that EX had to be backwards compatible, having the ability to work with all three digital cinema systems (SDDS, DTS and Dolby). To this end, DTS is due to officially announce its own decoding box at the upcoming CineExpo show.

The Dolby add-on box, the SA10, contains the decoding circuits and the surround equalisation for the three rear channels. Ioan Allen, vice president of Dolby Labs, says that this device took up the majority of the development process, adding that a matrix was felt to be the best option under the circumstances. 'We were faced with the question of how to do this without reducing the bit size or optical size of the film ,' he says. 'The task was how to do it without radical changes or endangering print quality. A discrete system would have meant hardware changes and two separate types of print, which drives distributors mad, so it was decided to code the extra channel into the existing surround channels, with Dolby Surround at the front, using phase technology.'

Allen says that the decoding process is similar to Pro Logic, Dolby's domestic system, but that the encoding is 'very different.' The development work was overseen by Ray Callahan, director of cinema products, the division within Dolby that works on future projects. Despite using a specialised matrix, Callahan says that mixing engineers will not have to alter their present working practices. There have been concerns that some facilities will not be able to cope with the new format, even if they are equipped for 5.1, but Dolby states that everything should be fine if a flexible enough console is used.

'If the decision is made to go EX, then the dubbing stage will have to be set up to take it,' Callahan concedes. 'The entire back wall of the room will have to be dedicated to the surround.' He adds that mixers will have to work with three surround files but that these are just additions to the current format as the front components of Dolby Digital remain as they are. In terms of other parts of the process, he says, 'The optical transfer is identical and there will be no changes to the print, it will still be a single inventory. In theatres, installations with a SA10 will automatically switch over for EX working. Those that are not equipped will run as nor-

Control room studio 1 with SL9072-J console

mal. Cinemas may have to put in extra loudspeakers, but most these days have enough to cope, particularly if they are THX specified.'

Ioan Allen stresses that EX is not a mandatory system, and, although Lucasfilm would prefer theatres to be suitably fitted out, there is still the choice to continue as they are. Dolby has already received orders for 2,000 SA10s, which has exceeded expectations. Dolby is marketing the system in the professional arena, partly because it is well established and partly because THX did not want cinemas that had not upgraded to its standards having access to its logo by default. However, THX will exclusively market EX for the home. A launch date for the domestic version depends on the granting of licences to manufacturers and how quickly they can turn around equipment, but Kurt Schwenk estimates that it could be between a year to 18 months.

What really matters from the moviegoer's angle is the impact EX will have in the cinema. To demonstrate whether the new format truly achieves the wrap-around sound he was seeking, Gary Rydstrom has mixed the trailer for *The Phantom Menace* in EX and created an audio-only 'story', featuring jungle and ambient noises. He has also remixed the opening of *Star Wars Episode IV* (where Darth Vader's ship pursues the rebel craft), the speeder chase in the forest scene from *Return of the Jedi* and the trailer for Disney's *A Bug's Life*.

Ioan Allen stresses that Dolby does not expect all new movies to be made in EX, partly because not all dubbing theatres are equipped for it and partly because not all films would suit the technology. 'Many pictures are just a screen story,' he says, 'with ambient effects. Something like *Shakespeare in Love* would not have justified three surround channels but the new Star Wars is ideal for it because it's of a specific genre. The remixed sequence from *Return of the Jedi* is stunning; the sound moves around the quadrants and you can hear the pan around the room regardless of which seat you are in.'

Despite the demo reels, the real interest is in what *The Phantom Menace* will offer sonically. Lucasfilm is being hugely secretive and it is unlikely that much will leak out about specific scenes—apart from what has been seen in the trailer—until the time of release. Kurt Schwenk confirms that Gary Rydstrom and Ben Burtt, the sound designer on the original *Star Wars*, are still in the design stages, with mixing continuing through the end of April, ready for the US release in May. Ioan Allen surmises that EX will feature heavily, if only because Rydstrom has been thinking about what he will do with the new movie for the past 18 months. 'You can bet that Gary and Ben are creating sequences that will take advantage of the system,' he muses.

The Phantom Menace is set 40 years before *A New Hope*. Anakin Skywalker is a little boy dreaming of becoming a Jedi, while around him the Clone Wars are raging. Much has been made of the appearances of Ewan McGregor as the young Obi-wan Kenobi, Liam Neeson as Jedi Knight Qui-Gon Jinn, plus Samuel L Jackson. There are some familiars: Ian McDiarmid appears as Senator Palpatine, later to be the evil Emperor, Frank Oz's voice is back for Yoda and Kenny Baker once more squeezes inside R2-D2.

Ben Burtt has said that his design for the new movie will be a mixture of the established and the new, particularly as it is making extensive use of hard disk technology. Of *Star Wars*, he says, 'We've created a 'world of sounds' that's coherent and can endure the passage of time—it's been over 20 years and *Star Wars* still has a distinct sound to it.' As to the new film: 'It's so filled with activity, people, and places. There's always something going on in the foreground, the middle ground, the background—even off-screen. It's a wonderful environment in which to let the sound go wild, expand and completely fill all this world.'

The first *Star Wars* movie made the reputations of George Lucas and Dolby Labs. Now they're at it again. The significance is not lost on Ioan Allen: 'It's great that we're involved with *Star Wars Episode I*. We felt an enormous commercial impact being aligned with Lucasfilm, and, although EX is an evolution rather than a revolution, there is a slight feeling of *déjà vu* in all this.' ■

THE NEW WAVE IN SOUND.

This is the RMS 2020 radio microphone system. It's an advanced, 32 channel synthesised diversity system with ground-breakingly clear sound and superb reliability. Audio Media called it "quite remarkable".* Test it and you will too.

* Audio Media, January 1998

AUDIO

RADIO MICROPHONE SYSTEMS

Sound Designed

For information, please call 01494 511711 or fax 01494 539600,
e-mail us at info@AudioLtd.Com or visit us on the web at www.AudioLtd.Com

Tea With Mussolini

Joan Plowright, Maggie Smith and Tessa Pritchard

Working on a major feature film in a minimal timescale tests facility and ability to the full. Franco Zeffirelli takes tea with Mussolini, while Steve Parr and Dean Humphries take cues from Italy and **Tim Goodyer** takes notes

WITH A RUN OF BBC costume dramas under his belt, a controversial Channel 4 gay drama, *Queer as Folk*, just completed and work on several Charles Dickens adaptations under way, music mixer Steve Parr could be forgiven for breaking for tea. Accepting Franco Zeffirelli's invitation to *Tea With Mussolini*, however, found him with just a day and a half to turn a stack of digital multitracks into a 5.1-channel music mix for the Italian movie legend.

Portraying Zeffirelli's own childhood in Florence, the film charts the fortunes of a child left in the care of a Jewish-American millionairess and three eccentric English spinsters, in an Italy preparing for war. Played by a group of eccentric actresses including Judy Dench, Maggie Smith, Joan Plowright, Cher and Lily Tomlin, the family faces deportation and contacts Mussolini to assure him of their support—the dictator obligingly invites them to tea. Producers Ricardo Tozzi and Clive Parsons, meanwhile, had invited noted Italian composers Stefano Arnaldi and Alessio Vlad to come up with an accompanying orchestral score, and Roman recording studio The Forum to get it onto multitrack tape. Postproduction supervisor Alastair Hopkins provided the recommendation that brought Parr to the party and Twickenham Films' Dean Humphries was waiting to add the music to his dub.

'The Italians wanted to mix in London because we're more conversant with 5.1 than they are in Rome,' Humphries explains.

'Two Italian people arrived carrying a bunch of half-inch tapes, some track sheets in Italian and a copy of the score,' Parr recounts from his Hear No Evil operation in central London. 'They had finished recording on Sunday night, the tapes arrived here Monday lunchtime and I had until Tuesday night to mix them.

'The recording was done in the space of two or three days with a large orchestra—about 70 or 80 pieces—and there were, I think, 48 cues. I liased with the engineer in Rome and he did a very good job of getting it down in that time. He recorded onto two Sony PCM3324s with quite a few ambient mics. There were no click tracks, they just ran the tape live with the film, so there was quite a lot of calculation to be done. I had the film on U-matic, so I could work out the offsets and lock the 3324s to that, but it was nice for me because there was no click spill—just the count-ins from the conductor.'

Music mixer Steve Parr

Historically, music for film is delivered as a stereo or LCR mix and the dubbing mixer creates the rear channels with delay and reverb. Having completed some dozen mixes over the last year, Parr is adamant about the value of mixing film music in surround, claiming that it not only gives a film a better soundtrack but also makes the task of dubbing easier.

'It's the divide between the music studios and the dubbing studios,' he observes. 'Very often postproduction people don't know what music people do, and music people don't know what postproduction people do.'

'One of the problems we've had in the past is that a music mix that has been made to be good for CD release doesn't sound as good or cohesive over a cinema sound system,' confirms dubbing mixer Dean Humphries. 'Adding the centre speaker makes a mix warmer and more cohesive, and gives us a lot more flexibility.'

'But any decent studio is capable of delivering a 5.1 mix,' Parr asserts, 'and it makes so much difference to the emotional impact of a film. I find it intensely irritating when I go to see a big-budget American movie and the music is flat and one-dimensional. I think it's largely a failure of communication because there is often no one person who is >

< responsible for the sound. So it takes the music engineer to tell the dubbing engineer he wants to mix in 5.1, and it takes the mix engineer to speak to the composer to speak to the producer to get the budget set aside to go into a 5.1 studio. We've found the dubbing mixers who have taken 5.1 mixes off us really love it because they're dubbing mixers not music mixers,' he concludes.

Mixes in 5.1 are a big boon to us all,' Humphries concurs. 'Two-track music mixes just don't sound as good; 5.1 is doing us a world of service.'

Alastair Hopkins had worked on *The Debt Collector*—a Channel 4 production that had been mixed in 5.1 by Parr—before becoming involved in *Tea With Mussolini*, and its surround status was secure. The results seem to justify everyone's faith.

'It is a full-sounding score without you being particularly aware that it is a surround mix,' says Parr. 'It was only when we collapsed it into stereo that we wondered where everything had gone.'

Mussolini's cues fall into three or four types—the full orchestra, a chamber orchestra, the strings on their own, a few cues recreating the music of the forties. Although the full orchestra took up some 40 channels (plus effects) of Hear No Evil's Euphonix CS2000 console on its way to a Tascam DA-88, the main mix is based around five ambient mics that were placed left-centre-right, and an additional pair spread further left and right around the orchestra.

'That was a great way of setting up the surround mix,' Parr enthuses. 'The front three mics are placed forward of the front speakers and the other two provide the rear. This was a very orchestral score so we statically placed instruments around you and pulled them away from the wall. You're not aware, say, that there's an oboe in the far-left corner, you just know that there's an oboe in the room that had a different acoustic space than the flute. And it works very well.'

The punishing recording schedule meant that many of the takes contained mistakes. Alternative takes were used where available, but much of the mixing effort went into repairing others that had to be used. Here the use of ambient as opposed to close mics could be regarded as problematic.

'In a situation where you've got a large recorded orchestra in a room, you can't simply get rid of the second violins,' Parr argues, 'because they pop up all over the place. What you have to think about is that close mics on an orchestra are really not that close. The problems normally come from the woodwind and the brass—if you've got a loud brass passage it's always going to swamp the strings and if there are bummers in there all you can do is pull down the relevant mics as much as possible. You have to weigh up each situation as you find it.

'I spent a few hours getting the sound of the orchestra right, and the rest of it was balancing from the score and fixing any bits and pieces. The repair element was probably 25% of the time.'

Of his general approach, Parr says: 'I do a few mixes and get a feel for the music and for the sound, and when I've got something I'm happy with I save the Euphonix settings as a snapshot. That then becomes the basis for all the other mixes; although I may come back to those first mixes later on if my feel for the film has changed.

'The same principle applies when I'm recording. It takes musicians, even the best musicians, an hour to settle in—to playing with each other, getting a feel for the genre of the music, getting comfortable in the room and with the headphone balance. That's why it's better not to record critical cues at the beginning of a session and it's the same with mixing—I never start with the opening titles, I always start with the non-critical parts and then go back to them if there's time at the end. By using the snapshot process I can apply it anywhere. It would be very difficult to do that with a non-resettable desk and so the sound of the last mixes may be quite different from those at the start.'


Judy Dench

In terms of treatments, the project was straightforward; the outboard was set and left for the duration of the mix. The main acoustic space was provided by a Lexicon 224X, with supporting reverbs from a PCM80, PCM160 and 200, a Yamaha Rev7 for percussion, and SPX900s for anything else.

'The Lexicon 224X has got four outputs because it was designed with quad in mind,' Parr explains. 'Not a lot of people use them, but I use the front pair panned inward of the left and right channels, so there's a little bit going to the centre, and then I feed the B and D outputs in and centre at the back. Also I use different reverbs for different sets of speakers because when you're working in surround, you don't just have a plane at the front and a plane at the back, there are planes all around you.'

Limiting a surround mix is made easy by the internal processing of the >

Summit Audio Presents:

element78

Designed By Mr. Rupert Neve

The **Element 78** series from Summit Audio, designed by Mr. Rupert Neve, presents to the user a unique combination of "Class A," discrete and solid state, plus transformer coupled designs. Digital implementation of storage and reset capabilities enables comparison of 25 memory settings, copying of settings between units and MIDI control.

Two independent paths with transformer coupled output stages are provided in each of two channels, comprised of:

1. A high performance **microphone amplifier** with superb high and low pass filter sections.
2. A comprehensive **four band equalizer**.

Back lit rotary displays are enhanced by miniature LCD select/controls for an accurate status readout ...
... truly unique.

Summit Audio
TEL: 831 464-2448
FAX: 831 464-7659
www.summitaudio.com
email: sound@summitaudio.com


Joan Plowright with Cher

< Euphonix with which Parr is evidently very happy. 'I can gang together six compressors so that I can have all the limiting working together,' he continues. 'On a normal stereo mix you put a limiting compressor across the stereo pair; but unless you've got three stereo compressors you can link together, you can't do that on a 5.1 mix.'

Making the music fit the details of the film is an essential aspect of the music mixers task. For this the U-matic contained the locked-off film—the final edit—and the rough dialogue with ADRs left off.

'Quite often when they're putting a film together they use temp music tracks to give a feeling of pace and mood, but it's crucial that they're stripped off before we begin working because we need to hear what's going on in the actual soundtrack in terms of balance,' explains Parr. 'It's very different from mixing music alone because you have to run your mix with the sync dialogue and adjust from there. Obviously you can't have a strident French horn over a delicate piece of dialogue. There are a lot of ways you can deal with it however, you can use different pannings—a phantom centre, for instance, means there's room in the centre speaker for the dialogue without the music getting in the way. And because you can program these moves very easily you can, say, bring a flute from a phantom centre to a hard centre wherever there is a gap in the dialogue and then let it go back again.

'Some composers make it easy for you in that respect and some don't get it right and life is a bit more difficult. I'm the one at the end of the day who has to make it work because working for the benefit of the composer, the last thing we want is for the dubbing mixer to have to pull the whole music track down.'

'That's spot on,' Humphries agrees. 'A mix that can't be toyed with can't be adapted.'

While he likes to view a film at the start of a session, owing to the extremely short time scale of the project, Parr was unable to view *Tea With Mussolini* before beginning to mix the music. 'You can get a very distorted view of what's going on,' he agrees, 'especially as you tend to mix cues generically. So doing all the big orchestral stuff first means zapping about all over the place.' Instead he had to settle for an outline of the plot...

'I can tell you what it was about,' he offers, 'but it is invaluable to get a feel for the whole film if possible.' The same argument can be extended to the director when evaluating the music mix—a scenario for which Parr has developed a procedure for 'auditioning'. Running the film from start to finish and performing a live dub balancing the music and dialogue on the fly, allows the director to hear and comment on the music in the context of the completed film. 'It's very valuable because they get an overview,' he explains. 'They take notes and leave me with directions to adjust a viola on a particular cue which I can do very easily. I feel I can get a better artistic job done by working like that. We've shown it to a lot of the people who have worked here and they're all completely sold on it.'

Between accommodating the requirement for surround music mixing and advancing the cause of the music soundtrack, Parr has set himself a demanding brief—and one that is complicated by the uptake of DVD. But he is anxious to draw a distinction between the musical and cinematographic aspect of the medium.

'There are two factors,' he offers. 'One is mixing for cinema and the other is mixing music for DVD at home. When mixing for cinema you don't want to have anything too localised because you're dealing with a very large space with people sitting very close to some of the speakers. The majority of people at home will set up their non-matching speakers wherever they want in a non-ideal listening environment, so all you can do is the best job you can on the mix knowing that the listening environment is likely to be even less ideal than the average stereo listening environment.'

Perhaps forthcoming standards will help make multichannel audio work more straightforward. If not, it will take the likes of Steve Parr to help us make sense of it for ourselves and for our market. ■

PRO TOOLS

Looking for Your Dream Studio?

Yesterday's Dream

Expensive automated digital mixing console	£ 200,000 and up *(the sky's the limit)*
Also-expensive digital multitrack (1-inch/48-track/24-bit)	£100,000
A lot of expensive outboard gear	£50,000
Patchbay and associated mess of wire	£10,000 and up
Total System Cost	£360,000

Today's Dream-Come-True

Pro Tools® | 24 MIXplus for Mac OS and Windows NT (64-track/24-bit solution with automated digital mixing, total recall of all settings and tons of real-time DSP power. No patchbays — route everything electronically!)	£6599
24 channels of I/O with 24-bit A/D and D/A conversion (Three 888|24 I/O™ Audio Interfaces @ £2439 each)	£7317
Expanded, 32-facer ProControl™ (World-class integrated control surface: £7919 for Base Unit plus 3 Fader Expansion Packs @ £4289 each)	£20,786
Fully-loaded computer	£3500
Four 9-GB Digidrives™	£3956
Three (3) high quality 8-channel mic pre-amps of your choice	£7500
The world's best-sounding DigiRack™ Plug-Ins included *FREE* with Pro Tools *(a £1,000 value!)*	†
Total System Cost	£49,658

All prices are subject to change without notice.

Studio photo courtesy of DubeyTunes Studios, San Francisco.
Photo by Bill Schwob

Make It Happen.

For more information or to schedule a free demo, call 01753.653.322 ext.496 & 446. To learn more about Pro Tools software capabilities, ask for a free video. Already own Pro Tools? Call about our special Pro Tools|24 MIX exchange offers!

01753.653.322 ext. 496
www.digidesign.com

digidesign®
A division of Avid

The Musical Internet

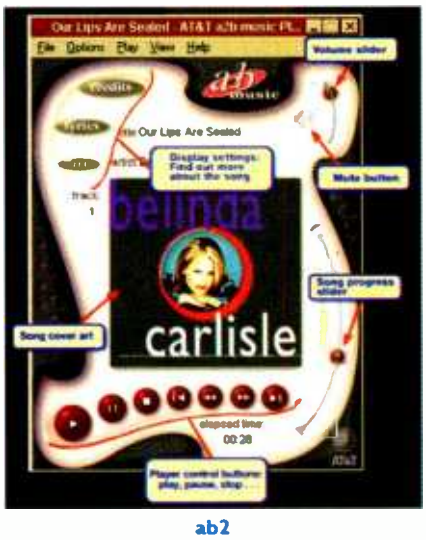
Developments in the telecoms, and Internet industries are set to have a profound effect on the ways in which music is distributed and consumed. **Simon Trask** explores a rapidly changing landscape

DO NOT UNDERESTIMATE the power of audio. Of course, that is hardly something anyone working in the pro-audio industry needs to be told. Nor anyone working in telecoms—an industry built on allowing people to talk to one another down wires. 'Don't underestimate the power of audio as a communication tool' would be more accurate—whether the communication is a 2-way conversation or a 3-minute pop song.

The Internet industry is also discovering the power of audio as a communication tool. Not only that, but the power of audio to reshape the Internet itself and the net's relationship to the telecoms and music industries. The Internet was once primarily about text, then text augmented by graphics—as always, in the service of communication. The underlying Internet Protocol (IP) was never designed to accommodate, let alone facilitate, real-time delivery of digital audio (or video) data. Yet that has not stopped people with vision—and the drive to turn their vision into a reality—from using the Internet to provide just that (a process commonly referred to as 'streaming'). RealNetworks—a company having started out in 1996 (as Progressive Networks) streaming very poor quality monophonic audio over then-common 14.4k dialup Internet connections with its proprietary RealAudio technology—now has in excess of 50 million unique registered users of its latest generation (and much improved) RealPlayer audio and video-streaming software. Last year it saw a 500% increase in use of the software, according to independent online measurements from Media Metrix. Today, RealNetworks is the undisputed heavyweight champ of streaming media technology, with a more than 85% share of the streaming media delivery market.

Similarly, in the mid-nineties a few small software companies, clearly agreeing with BT's mantra 'It's good to talk', had the audacity to create programs which used the Internet as a medium for making free international 'telephone calls'. Again, the audio quality was poor, and there were many limitations to practical use. Yet today IP Telephony (Voice over IP, VoIP) is turning into a business that is driving the adoption of IP networking for digital voice delivery in the telecoms industry, facilitating the entry of new players. Typically these are referred to as 'next-gen telcos' and are helping to exert downward pressure on call prices.

Meanwhile, file-based delivery of audio over the Internet—specifically, of music tracks—is stirring up the record industry, which sees its established practices and distribution infrastructure being challenged, and fears the impact of online music piracy on profits and the attitudes of a young generation. While companies like Cerberus, Liquid Audio and a2b Music have sprung up over the past couple or so years to provide systems for secure online music delivery and commerce that are designed to work with the existing record industry rights payments infrastructure, an alternative grass-roots ground swell of anti-industry sentiment has coalesced around MP3 perceptual audio coding compression technology. MP3 (MPEG-1 Layer III) is notorious for being the audio format of choice for online music piracy, and the record companies have played this angle to the hilt, but the fact is that there's a fast-growing legitimate MP3 scene consisting of artists who want to explore other ways of getting their music out to people, and even making money from it. MP3 itself is not illegal, it is an audio compression technology, and some independent record companies as well as other emerging online companies, such as Platinum Entertainment and GoodNoise, are building secure e-commerce systems around MP3. In fact, the technologies for secure credit-card-based online sales and download of digital content are by now well established, and Internet users are starting to become comfortable with online buying.



ab2

The technology to encode and play MP3 audio files is widely available in the form of inexpensive or free software programs for a range of computer platforms (most notably Windows). The latest playback development, however, is the portable MP3 player, in the form of Diamond's Multimedia's Rio PMP300, Saehan's MPman, and Samsung's Yepp range. These compact Walkman-styled players cost around $200 and use 16Mb flash memory cards rather than tapes or discs to store music. MP3 files loaded into a PC from the Internet or a CD-ROM can be transferred via the computer's parallel port interface to the player, freeing MP3 from the desktop.

Towards the end of last year, the RIAA took Diamond to court in an attempt to delay release of the Rio, claiming that it was in breach of the US Audio Home Recording Act for not implementing SCMS and not paying royalties per device. That action was unsuccessful, as Rio was not deemed a recording device. However, Rio and its ilk point up another problem exercising the record industry: how to control what users can or cannot do with a digital music file once it has been downloaded.

While closed systems like Liquid Audio and a2b Music take pains to restrict what users can do with a music file once they've downloaded it, there's no limitation built into MP3 files to prevent copying. Ideally, the record industry would like to implement copy control in downloadable music files, probably via some form of digital watermark encoded into the digitised audio signal.

However, the popular momentum behind MP3 would seem to be unstoppable, with an increasing number of web sites, independent labels, and even name artists (when their record companies do not force them to remove the tracks) offering MP3 tracks free or for sale via the Internet. A leading MP3 site (MP3.com) hosts over 6000 MP3-encoded tracks by upwards of 2,000 artists, with each artist (individual or >

< group) having their own web page on the site. MP3 tracks can be made available for free on the site, or for sale as part of MP3.com's DAM (Digital Automatic Music) system, which allows artists to sell CDs of their tracks in MP3 format via MP3.com's site, with a 50:50 earnings split between artist and company. In order to use MP3.com, artists have to sign a basic non-exclusive contract, that can be terminated at any time by either party: the only musical restriction (which, however, some might consider significant) is a clause forbidding use of samples in tracks on MP3.com. Liquid Audio is to incorporate MP3-encoded file downloads and playback into a future release of its Liquid Music System. The company has already introduced the technically superior MPEG2 AAC (Advanced Audio Coding) format into the latest, version 4.0 release of the system in response to rival AT&T-backed a2b Music's use of AAC (AT&T contributed to the development of AAC). AAC offers superior audio quality coupled with smaller file sizes owing to more sophisticated compression algorithms. MP3 is actually a scalable compression system, but the ratio that has been generally settled on is 12:1 (a 128kbps bit rate); all tracks at MP3.com have to be encoded at 128kbps. This gives what is officially termed 'CD quality', but in practice is more properly near-CD, as MP3's coding methods do not handle the upper frequencies ideally.

The acceptance of MP3's less-than-CD quality by a growing body of musicians and listeners at a time when the consumer electronics and record industries are looking towards high-definition audio courtesy of next-generation DVD-Audio and Super Audio CD discs mark an interesting divergence of outlooks. Underlying this divergence is a contrast in approaches to the adoption of technology: the one bottom-up, the other top-down. At the same time, the contrast between MP3 and the likes of Liquid Audio and a2B Music is one of an open, non-proprietary system on the one hand versus closed, proprietary systems on the other. Both of these contrasts can also be found in the current 'OS war' between open-source Linux and closed OSs like Windows and Mac OS.

Downloadable music is hardly going to overturn a multibillion dollar industry (most estimates see online sales rising to about 5% of total over the next few years), but even the majors now recognise that it is a reality they have to deal with, if only to ensure that they have a say in how the technology and the market develop. At the end of last year, the leading record companies and a number of major computer industry companies got together under the auspices of the RIAA (Recording Industry Association of America) to announce the Secure Digital Music Initiative. This is the recording industry's attempt to regain the initiative, so to speak, in downloadable music. In line with the SDMI's objectives, the five major record companies—BMG, EMI, Sony, Universal, and Warner Bros—have joined forces with IBM to trial secure music downloads using IBM technology allied to high-speed cable modem delivery.

The Madison Project, as the trial is known, is to take place in San Diego, California, starting in the Spring, with around 1000 cable modem subscribers recruited as participants. Initially the majors will be making some 1,000 albums as well as a selection of singles available for secure online credit card purchase via an online store created specially for the trial, rising to some 2,000-2,500 albums by the end of the trial. The cable modem technology will allow the participants to download a 60-minute album in under 10 minutes. Speaking at a press conference to publicise the trial, Larry Kenswil, Executive VP of Advanced Technology at the Universal Music Group said both the development of the industry and its future earnings will be 'directly proportional to the rollout of broadband connectivity in the US'. The original 'pirate MP3 scene' took off on college campuses where students had networks and bandwidth that made MP3 files easily downloadable (not to mention uploadable) despite their size. The standard MP3 12:1 compression ratio results in around 1Mb per minute of music, so even a 3-minute pop song is a non-trivial download for most home Internet users, who are on 28.8k dial-up modems. This is one reason why so-called 'burn and mail' CD compilation sites have sprung up on the Internet. Essentially, these sites allow visitors to make up their own compilation of licensed tracks, typically after listening to 30-second track extracts in RealAudio or, increasingly, Liquid Audio streaming format, then pay for them via secure online credit-card transaction, after which the compilation company will burn a CD and mail it to the buyer. While the >

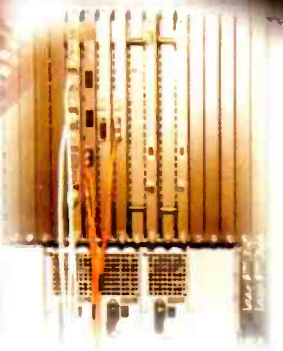
Liquid Audio

mc² series

Lawo - professional audio equipment

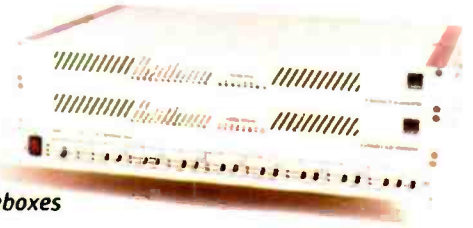
mc series

diamond



Distributed Studio Network

test equipment



stageboxes

editing systems

the sound choice

Lawo Gerätebau GmbH, Am Oberwald 8, D-76437 Rastatt, Tel. +49(0) 7222/1002-0, Fax +49(0) 7222/100224, www.lawo.de

majors have refused to license tracks to these companies, independents have generally been more responsive; genre site CDuctive has been particularly successful in attracting dance and indie rock labels. What's interesting about sites like CDuctive is that they put compilation power into the hands of buyers rather than record companies, and can provide recommendation features such as top ten downloads and suggested compilations. It's this sort of slippage of record company power that the majors don't like.

Downloadable tracks can fit easily into this compilation site format, and some sites are beginning to offer Liquid Audio downloads of selected tracks as an alternative, but the limitations of 28.8k download times are bound to put off many people. However, all this is set to change sooner rather than later with the introduction of new high-speed data access technologies into the home (and I don't mean ISDN). Two technologies are in the frame: ADSL (Asynchronous Digital Subscriber Line) and cable modems. ADSL technology is a telco offering, as it allows high-speed data access over existing copper wiring. The States, being ahead of the game as usual, is already seeing a gradual roll-out of both technologies by telcos and cable companies, offering download speeds in the megabits rather than kilobits range, meaning that a track will take seconds rather than minutes to download. This is potentially the majors' nightmare, with everyone having access to the sort of high-speed bandwidth that facilitated the original MP3 pirating scene. At the same time, it provides the basis for making secure, rights-based online music sales a viable commercial proposition.

CDuctive

Cable service is much more widely offered in the States than in the UK, making a battle between ADSL and cable modems very real there; it remains to be seen whether cable modems will have much impact in the UK. Meanwhile, BT has been trialling ADSL in North and West London since last Autumn, and is saying that it will be rolling out ADSL nationally later this year, after the trial ends in the Summer. The company originally trialled ADSL-based Video On Demand services in Ipswich back in 1995-96, and the technology is proven. The current trial includes several major UK Internet Service Providers, such as Virgin.net, and is aimed more at getting the implementation right.

ADSL offers one regular voice and one high-speed data channel down a single copper-wire line, which means that users will be able to make voice calls and access the Internet at the same time without having to invest in a second line. The trial system is providing a 2Mbps download rate and 256kbps upload rate, and BT say that these will be the rates adopted for commercial rollout. Although ADSL technology can offer up to 8Mbps/1Mbps rates, the rates that BT are adopting can operate at distances of up to three kilometres from the local exchange, which BT says will include most phone users in the UK.

Installation will require a special ADSL modem and a 10baseT Ethernet connection into the computer for the data channel. One of the most interesting features of ADSL is that its data channel is 'always on', which translates to instant access to the Internet, that is there is no dialling up; it also means no busy signal, and no getting bumped off. If you dedicate the data channel to your ISP connection, it also means constant access to the Internet—rather like having a leased line, in fact, only with a lower upload than download rate. One possibility here is that anyone could run a web server from a computer in their home. Always-on high-bandwidth

access could also lead to many more people listening to web-based radio stations and other online 'webcasters'.

While the voice channel will be priced in the regular way (timed calls), the data channel presents an interesting challenge for BT in deciding what pricing model to adopt. The company says it won't be starting to consider this until the Spring, but the implications are that some sort of subscription model will be required. In the States, a monthly flat-rate subscription appears to be the norm—BellSouth's FastAccess ADSL service, for instance, is priced at $59.95 for unlimited monthly usage, plus a $199.95 charge for the modem and related equipment and a $99.95 installation charge.

According to a BT representative, data volume-based charging (probably banded) will be one possibility under consideration. However, given that the commercial purpose of offering fast Internet access is to facilitate 'media-rich' (data-intensive) services on the Web, it won't make any sense to discourage access to these services.

Meanwhile, new UK company Edge Technologies has announced the launch of the Edge Network, an ATM-ADSL network which it describes as the first UK-wide broadband network capable of delivering access speeds of up to 6Mbps. This is a service aimed at businesses, with a 1Mbps ADSL connection working out at around £500 per month. Over the next year or so, the UK, and Europe as a whole, is set to see the emergence of many new network service providers offering voice and data services built on optical networks running Internet Protocol and providing Virtual Private Networks to businesses wanting to create 'extranets' for networking offices, teleworkers, suppliers and customers.

A company called Global TeleSystems Group is introducing what it calls the first high-capacity transport platform in Europe to use IP and DWDM on its own optical network, and claims that a capacity increase of more than 10 times that of current operational IP networks will be possible.

DWDM (Dense Wave Division Multiplexing) technology expands the carrying capacity of optical networks by up to 40 times by dividing a single optical signal into multiple channels or wavelengths: in this way, a single optical fibre can carry more than a million simultaneous calls. At the same time, new developments such as mesh-networking protocol and spatial mode transformation are promising to cut the cost of DWDM-based optical systems considerably.

These sorts of developments are dramatically scaling up the bandwidth available in the network to meet the media-rich, broadband requirements of both consumer and business-to-business markets. ■

From top: • **566** Dual Vacuum Tube Compressor • **586** Dual Vacuum Tube Preamp • **576** Vacuum Tube PreAmp/Compressor

The digital world can be a cold one. Today's recording technology is capable of some incredible statistics from demanding specifications but it can lack a certain warmth and character. Some things just sound better with Valves. We know all about this and have created the **Silver Series** of Valve driven pre-amp & dynamics processors to help you retain that all important character & warmth without sacrificing the frequency response integrity of your recordings.

The **586** Dual Channel pre-amp uses 2 x12AU7 tubes and features Semi Parametric 3 band EQ, insert loop, +48v Phantom Power, lo-cut filter, drive control for a wide range of great tube effects & a patented Peak Plus™ limiter. The **566** Dual Channel Compressor, also uses 2 x 12AU7 tubes & features hard knee & Overeasy™ compression curves, switchable full auto mode, sidechain insert, true RMS power summing & the drive control.

We have created the **576** which uniquely combines a single channel from both the pre-amp and the compressor to provide the cost- effective solution to warming up your mix. Combine all this with the optional Type IV 24 bit digital output and you really can have your cake & eat it!
Call 0181 202 1199 or email **dbx@arbitergroup.com** for a full range brochure.

Arbiter Group PLC
Wilberforce Rd. London NW9 6AX
Tel: 0181 202 1199 • Fax: 0181 202 7076
www.arbitergroup.com • email: dbx@arbitergroup.com

dbx

MAGELLAN hardware

MediaFORM's

CD-3706P

Standalone Automatic Duplicator Printer

- *700 CD-R's Online*
- *Frame Accurate Recordings*
- *Audio Verification on Input and bit for bit on copies*
- *Digital S/PDIF, IEC958 AES/EBU Via DAT & PRO CD-A Player*
- *Full Analog Audio Input*
- *One Touch Copying*
- *1, 2, 4 and 8X Load Up Speed*

Call 01256 681186 for details

we have CLICK FREE input on T.A.O. recording, YES it really works!

UK Distributor: Magellan Group plc. Concept House, Bell Road, Basingstoke, Hampshire RG24 8FB
Phone: 01256 681186 Fax: 01256 581383 ISDN: 01256 816291 Web: www.magel anplc.com

HW/V/Nadv/1

Sea and Sound

The opening of Miami's major OceanVu recording facility comes at a time when more than just the weather is warming up in South Florida. **Dan Daley** takes lessons in Latin

EVERYTHING YOU MIGHT expect of an up-and-coming Latino music producer is embodied in Victor Di Persia—jet-black hair pulled into a tight ponytail, Speedo sunglasses squinting over the hood of a Mercedes-Benz 320, hands gesticulating broadly as he speaks in an assertive, accented baritone. But he is not quite Latino. Born in Rome of an electronics businessman and a Cuban-born mother, his production career is still nascent, but as an engineer, Di Persia has impeccable credits including work with Arturo Sandoval, jazz flautist Nestor Torres and torchy Argentinian vocalist Sandro.

It is as a studio owner—recently the newest one in Miami—that Di Persia represents the pro-audio *Zeitgeist*. He firmly believes you can be a producer with a personal studio that is also commercially available, and that you can use a studio as the foundation for a production career and still make it viable as a stand-alone business.

OceanVu's current incarnation sits in a 2-storey pastel-coloured building (which is to say, anonymous, in this low-slung, pastel town) in the City of Miami. The first thing that grabs attention, though, comes as soon as you enter: a set of rails astride the steps leading up the purposeful grafitti-decorated hall from the entrance on which a custom-made trolley rides, pulled by a portable winch on the main floor, used to load in equipment. Once inside, the floor is divided into compact suites of offices and lounges orbiting the studio. The main studio is 22ft x 33ft, with a rectangular airlock serving as both a 10ft x 15ft iso booth and entrance to the control room; a 15ft x 10ft machine room (which doubles as an an iso booth) follows that one along the same wall. The facility was ultimately designed by John Arthur, whose Miami-based John Arthur Design Group has done a number of facilities in town, as well as in Atlanta and South America. The original floor plan was done by another Miami designer, Ross Alexander, with whom Di Persia had a parting of the ways just after construction began. Acoustical cloud panels hover near the rooms portals, partially deadening what is a remarkably live space designed to hold the five-piece to seven-piece bands that typically comprise Latino records yet keep the sessions intimate.

'The recording studio and the iso booth were intended to be percussive spaces, but controllable spaces,' Arthur explains, using the clouds and movable acoustical panels. The spacious 26ft x 24ft control room was also designed to be accommodating to recording. 'The control room is based on a distributed acoustics design,' says Arthur. 'You control the hot and cold spots with a balance of absorption and reflection, soft and hard surfaces. But we designed it in such a way that Victor can add diffusion later, if he feels it's necessary.

Di Persia makes a point of how he likes to record in the control room, even acoustical instruments and vocals. 'I hate the distance and isolation that the talkback button puts between you and the artist,' he explains. This determined the studio's layout to a large degree,

> Acoustical cloud panels hover near the rooms portals, partially deadening what is a remarkably live space designed to hold the 5-piece to 7-piece bands that typically comprise Latino records yet keep the sessions intimate

with large windows (one of which is a tropical fish tank) facing out above the 56-fader (96-channel) Euphonix CS3000 console and the glass doors of the two isolation booths facing directly into the control room. 'The ability to see what a musician's hand is about to do is critical in being able to do good punches, especially if a musician is working >

with an instrument that you're not familiar with,' Arthur comments. 'That happens every day in Miami. For instance, someone comes in with a berembau so I just ask, "where's the best place to put a microphone on this thing?".

'Having as much visual connection with the musicians as possible is also important in being able to gauge their emotions. That's a big part of what it takes to being a good engineer—understanding that emotion is a major part of where music comes from and doing what you can to capture that as well as a performance. And being able to do that regularly is something that come with experience.'

The 18-year-old Di Persia arrived in New York City in 1980, in the dead of winter, and the climate quickly sent him south. The weather was better, but the economic climate could not have been worse—the record industry had crashed in the wake of disco and Miami's glory years with The Bee Gees, Eric Clapton and the Eagles were over. A career as a DJ held little promise, and he began knocking on studio doors.

'I didn't have any audio skills and my English wasn't very good,' he recalls. Instead, he got a job repairing microfilm machines. A few months into the job, he passed by the offices of MCI, that were based in Miami in its pre-Sony acquisition days. Recognising the name, he applied for a job there, but couldn't pass the advanced written technical test. A year later, having enrolled in a local technical college, he re-applied and became a field repair technician working on both consoles and tape machines.

He remained there for three years, not only working but also making several contributions under a company-sponsored incentive programme that rewarded employees for technical innovations. One of Di Persia's contributions was a way to wire a Molex connector with four pins instead of six, making the other two connections with jumpers inside the desk, which saved time and money. During this time, he decided the focus of his career in sound should be as an engineer and producer. Set on a career in production, he left MCI in 1984 and again began knocking on studio doors. This time, however, the doors were opening, in large part because Miami was an MCI town and people were eager for a factory-trained tech. He secured an assistant technical engineer position at Criteria Studios, still the doyen of the Miami studio community, and which was still owned by founder Mac Emmerman. He progressed to assisting on sessions and his career choice was seemingly under way when disaster struck. He was assigned to transfer the master of a record by future Miami Vice television series star Philip Michael Thomas from a single 12-inch reel to two 10½-inch reels in preparation for making a cassette duplication master. Also aligning a nearby machine, his concentration drifted... 'I let my concentration drift and then I heard this horrible noise,' he recalls grimly, the recollection still painful in his memory.

Victor Di Persia: 'I came back to the transfer room and the tape was all over the floor, completely stretched out. The tape had exceeded the flange and gotten tangled in the machine. I figured my career was over'

'I came back to the transfer room and the tape was all over the floor, completely stretched out. The tape had exceeded the flange and gotten tangled in the machine. I figured my career was over.'

It nearly was; backing up masters was not a universal practice in the days of analogue mastering. Fortunately, an engineer in Los Angeles had made a digital copy on an early Mitsubishi X-80 2-track deck, but Di Persia's internship at Criteria was over. 'I felt like the world had ended,' he recalls. 'I had left MCI where I had benefits to do an unpaid internship at Criteria. Now I had nothing.'

But this would not be a typical American rags-to-riches tale without a happy ending. During his brief tenure at Criteria, Di Persia was befriended by singer Betty Wright, who helped him get on at International Sound Studios. 'Two days before that, I was down and out,' he recalls. 'That's what I love about the studio business—anything can happen.'

At International a classic scenario kicked in—the lead engineer on a session called in sick and Di Persia found himself in the driver's seat on a 15-piece big-band session, cutting backing tracks for singers on one of the dozens of cruise ships that call Miami home. 'I would never have volunteered for that session, but once I did it, I had a whole new level of confidence in myself,' he says. 'That was a real career turning point.'

His turning point as a producer was less epiphianic, but it did introduce him to the ins and outs of studio ownership. Latino producer Eddie Martinez was building MIDI-land in Miami and asked Di Persia to help. Once there, artists he engineered for began to solicit his artistic as well as his technical opinions. The business arrangement with Martinez didn't evolve as Di Persia had hoped, but it made him realise that he would need his own studio to pursue his production career. The good news was that, by then, he had built a significant reputation as an engineer among Miami's Latino music community. After freelancing for three years Di Persia opened the first OceanVu, in a 1,500ft² space in a commercial building in downtown Miami with a Tascam 3700 console with automation and four Alesis ADATs.

At that time pop artists such as Mariah Carey and Celine Dion were realising the potential of the Latin market and recording additional tracks in Spanish >

< to address that audience. OceanVu's business increased, both as a for-hire studio with and without Di Persia engineering, and as a base for his own Latino productions. In addition, even though studios were opening regularly throughout the Hispanic world, Latino artists were increasingly coming to Miami in search of the technical talent that was missing from in their home countries.

That, and Miami's continued growth as a Latin music centre, set the stage for the newly owned OceanVu, which is twice the size of the original. It does, however, share a few things in common with its predecessor. For starters, Di Persia still uses ADATs as his primary recording media. He is an unabashed devotee of the MDM linear digital format, and now runs four Alesis M20 units along with the four original ones from the previous studio. He likes the sound and the convenience, but also notes that his technical background helped overcome the format's early bugs. 'I can take these things apart and put them back together again blindfolded,' he says, dead seriously. His four original ADATs now have 4,500 hours use time on each unit, and they all run flawlessly, he says. 'I could always keep them running,' he says proudly. 'And I used to make bets with people that I could synch my four ADATs up in less than a second, and I used to prove it with a stopwatch.'

Another legacy is Di Persia's predilection for inexpensive outboard gear. He has a Lexicon 480L and a few other high-end pieces, but his racks are filled with Alesis Microverbs, Lexicon LP half-space units, and other less-than-pricey bits. It's part of a pragmatic parsimony that Di Persia brings to the business of studio ownership, producing an interesting mix of high and low end. 'If you're only using certain expensive pieces of equipment occasionally, it makes more sense to rent them and invest the money in the studio in other ways,' he explains. 'Besides, the Microverb is cheap and gives you a cool distortion that you can't get out of a high-end piece.'

The high end is represented by the CS3000, that he chose mainly for its automation, though he also likes the sound and the way it looks in the room. 'I like that I can automate everything, right down to the EQ,' he says. 'That's very practical for a one-room studio because you can switch between

'I could always keep them running,' Di Persia says proudly. 'And I used to make bets with people that I could synch my four ADATs up in less than a second, and I used to prove it with a stopwatch'

Now shipping

COURIER

The portable hard-disk recorder

It's easy to see why the Courier has won awards for it's design, being selected as a Millenium Product by the Design Council and winning the 'Pick Hit' award at last years' NAB show.

V1.0 now shipping Courier is the breakthrough in portable digital audio recording that journalists and sound recordists have been waiting for - V1.0 software is now in production.

Recording as a standard Courier records to and plays back from PCMCIA hard-disk or flashcard. It records standard mpeg compressed, linear .wav, or broadcast .wav files which can be edited on the machine, or in your PC with your favourite editor.

Editing is easy The Courier uses a scrub-wheel to make editing the easiest in the business - non-destructive and with an Undo facility. And, you can see the waveform on the graphical LCD.

So much power and so light-weight Courier uses standard camcorder batteries or AA cells, and comes with a power supply/charger that can be used in any country. It's light in weight 1.5kg (3lb), so it's not going to be a burden in daily use, and has professional XLR connectors..

Free software for life You also get free software upgrades, available from our website, for the lifetime of the product. So, you can upgrade your own machine to the latest versions of software which will include complex editing and transfer of audio data over telephone line and ISDN line (optional).

See what all the fuss is about, call your nearest distributor ....

Australia: Maser Technology Group Ltd, Tel: +61 2 9970 7644 +Fax: 61 2 9970 7621
Austria: Audio Sales, Tel: +43 2236 26 123 Fax: +43 2236 43 223
Belgium: Seri, Tel: +32 15 71 03 84 Fax: +32 15 71 47 78
Bulgaria: Denis Tyler (UK), Tel: +44 1494 866 262 Fax: +44 1494 864 959
Canada: Sonotechnique Tel: +514 332 6868 Fax: +514 332 5537
China & Hong Kong: Hiroshi Systems Ltd Tel: +852 2356 9268 Fax: +852 2773 0811
Croatia: Rockoko Studios, Tel: +385 1 177 421 Fax: +385 1 177 445.
ZI Lighting, Tel/Fax: +385 1 568 048
Cyprus: Chris Radiovision Ltd, Tel: +357 2 466 121 Fax: +357 2 365 177
Czech Republic: Mediatech, Tel: +42 455 631 555 Fax: +42 455 631888
Denmark: Interstage AS, Tel: +45 39 460 000 Fax: +45 39 460 040
Finland: Studiotec KY, Tel: +358 951 23530 Fax: +358 951 235 355
France: Canford Audio Sarl, Tel: +33 3 8855 1313 Fax: +33 3 88 55 13 14
SAV, Tel: +33 1 53 38 22 00 Fax: +33 1 42 40 47 80
Sonor Video Son Tel: +33 3 20 06 20 09 Fax: +33 3 20 51 92 59
Germany: Sadie GmbH, Tel: +49 711 396 9380 Fax: +49 711 396 9385
Greece: KEM Electronics OE, Tel: +30 1 674 8514 Fax: +30 1 647 6384
Hungary: Audio Sales, Tel: +361 156 9515 Fax: +361 156 9515
India: Comcon Industries, Tel: +91 11 6311 606 Fax: +91 11 6822 589
Indonesia: Horizon Broadcast Electronics, Tel: +91 11 462 9590 Fax: +91 11 462 9599
Ireland: Catur Mitra Adhikara, Tel: +62 21 548 5716 Fax: +62 21 534 6692
Broadcast Technical Services, Tel: +353 1 453 0555 Fax: +353 1 454 4188
Israel: C.T.I Ltd, Tel : +353 1 454 5400 Fax : +353 1 454 5726
Digital Systems, Tel: +972 3 516 4851 Fax: +972 3 516 5899,
Italy: I.F.T. & D. Co, Tel: +972 9 955 6356, Fax: +972 9 954 0079
Japan: Audio Equipment Srl, Tel: +39 39 212 221 Fax: +39 39 214 0011
EVI Audio Japan Ltd, Tel: +813 3325 7900 Fax: +813 3325 7788
Korea: Heavy Moon Inc, Tel: +813 5489 3281 Fax: +813 5489 3299
Analog & Digital Engineering, Tel: +82 2 338 6631 Fax: +82 2 338 6632.

Korea (Cont): DongBang Tech, Tel:+82 2 539 7954 Fax: +82 2 508 8956.
Saetong Corporation, Tel: +82 2 783 6551-5 Fax: +82 2 784 2788
Latvia: Vivateh Ltd, Tel:+371 728 4546 Fax: +371 782 1302
Netherlands: P.A.C. Sales BV, Tel : +31 40 251 0484 Fax: +31 40 257 0482.
Triple Audio, Tel: +31 30 693 5500 Fax: +31 30 693 5501
New Zealand: Telequipment Pacific Ltd, Tel: +64 4 384 1927 Fax: +64 4 385 9892
Norway: Sw.ing.Benum AS, Tel: +47 2213 9900 Fax: +47 2214 8259
Poland: ED2, Tel: +48 032 284 1400 Fax: +48 032 284 1400
Soundbits Software, Tel: +44 181 905 5087 Fax: +44 181 201 8622
Portugal: Entelco, Tel: +351 1352 4066 Fax: +351 1352 8702
Romania: Denis Tyler Ltd (UK), Tel: +44 1494 866 262 Fax: +44 1494 864 95
Russia: Tivionica Video & Audio, Tel: +7 095 365 0509 Fax: +7 095 365 020
Singapore: IPK Broadcast Systems, Tel: +65 259 9216 Fax: +65 258 7996
Slovakia: Mediatech, Tel: +42 17 542 4051 Fax: +42 17 542 2193
South Africa: 8th Avenue Sound, Tel: +27 11 792 3892 Fax: +27 11 792 3895
Spain: Auprosa Audio Professional, Tel: +34 3 351 77 62 Fax: +34 3 340 2 66
Sweden: TTS AB, Tel: +46 31 525 150 Fax: +46 31 528 008
Interstage AS, Tel: +45 39 620 026 Fax: +45 39 620 640
Switzerland: Dr W.A. Gunther, Tel: +41 1 910 4141 Fax: +41 1 910 3544
Taiwan: Linfair Engineering & Trading, Tel: +886 2 321 4454 Fax: +886 2 39 2914
Thailand: Mackarl & Company Tel: +886 2 2753 5117 Fax: +886 2 2753 3287
De & T Co. Ltd, Tel: +662 276 814148 Fax: +662 276 8149
Turkey: Shinawatra ITC Ltd, Tel: +662 299 6704 Fax: +662 299 6712
U.A.E: Nefan Ticaret Ltd, Tel: +90 212 260 4514 Fax: +90 212 260 2309
EFT Multimedia, Tel: +971 2 333 823 Fax: +971 2 333 134
Madar Audio Systems, Tel: +971 4 960 880 Fax: +971 4 690 883
Mercantile Information & Tel, Tel: +971 2 768 909 Fax: +971 2 768 807
UK & Rest of the World: Sonifex Ltd, Tel: +44 (0)1933 650 700 Fax: +44 (0)1933 650 726
USA Independent Audio, Tel: +1 207 773 2424 Fax: +1 207 773 2422

SONIFEX

61, Station Road, Irthlingborough,Northants., NN9 5QE. UK.
Tel: +44 (0)1933 650 700 Fax: +44 (0)1933 650 726
E-Mail: sales@sonifex.co.uk Internet: http://www.sonifex.co.uk

The future hit Miami with a bang, only days before OceanVu's opening with the acquisition by The Hit Factory of Miami's famed Criteria Recording Studios, lock, stock and nicotine-stained barrel.

The future hit Miami with a bang, only days before OceanVu's opening with the acquisition by The Hit Factory of Miami's famed Criteria Recording Studios, lock, stock and nicotine-stained barrel.

<sessions quickly and still retain the information from interrupted sessions. It's also a great production tool, especially for the way that Latin music is changing, mixing salsa and rock in the same song. You can switch between radically different EQs right on the downbeat and at the same time do mutes and other automation moves.'

Like other engineers, Di Persia admits he was initially intimidated by the CS3000's learning curve. However, he says, he tackled it because he loved the idea of the challenge, and has come to prefer its multiple-layer design. 'The training was very good, and once you get used to the soft knobs, you realise that this is the way the future is going, so you better get used to it now.'

The future hit Miami with a bang, only days before OceanVu's opening with the acquisition by The Hit Factory of Miami's famed Criteria Recording Studios, lock, stock and nicotine-stained barrel. The merging of the facilities, which between them cover over 65 years of American studio recording history comes amid a growing flurry of mergers and take-overs which has also seen Nashville's Emerald Recording acquiring the bankrupt Masterfonics and Seventeen Grand buying Love Shack Studios, with both acquisitors openly acknowledging that they are on the prowl for more. London's Metropolis Mastering purchased New York's Sterling Mastering last year was a transatlantic tie-up, but the Hit Factory-Criteria deal is the first multi-city US proposition. It has engendered some initial concern among Miami area studios, some which see The Hit Factory's arrival as a veritable invasion of Yankees with enough firepower to conquer regional market share. Most, though, including Di Persia, see the upside of the move as something that will raise the bar in Miami for all studios, and bring in a lot of work that otherwise would have stayed in New York or elsewhere.

'The Latin market didn't really exist on anything near this level 10 years ago,' Di Persia says. 'This sale of Criteria is going to make Miami even more of a major music centre. If your studio is good and your service level is high, then the Hit Factory's arrival is actually going to help.' ■

Contact:
OceanVu Studios, 5825 South West 8th Street, 2nd Floor, Miami, Florida 33144, US. **Tel:** +1 315 266 1961.

Your next destination

The 106th Convention of the Audio Engineering Society will be held on May 8-11 1999 at the M.O.C. Congress Center in Munich.

The AES Convention offers the most effective opportunity in Europe for an exhaustive survey of new audio technologies as well as for meeting top people, with a programme including a wide variety of presentations (papers, seminars, workshops, technical tours).

Suppliers of equipment and services from all sectors of the industry will be in Munich, along with the foremost authoritative speakers.

Plan your journey now !

AES München

106th AES CONVENTION MUNICH 1999-05-08/11

FOR FURTHER INFORMATION :
106th AES Convention
60 East 42nd Street - New York, NY 10165-2520, USA
Phone : +1-212-661.8528 - Fax : +1-212-682.0477 - Website : http://www.aes.org

Live sound is changing

Broadway is leading the way

Live sound designers are increasingly being asked for the impossible. Thankfully, the Soundcraft Broadway delivers.

Already working hard from Seoul to Scandinavia, Broadway combines an advanced implementation of digitally controlled analogue technology with a flexible, modular system design to take the largest and most complex productions in its stride, effortlessly providing exceptional sound quality and perfect repeatability, night after night.
What's more, it does it from a fast, intuitive and compact control surface that doesn't eat into valuable seating space.

BROADWAY
Soundcraft

Soundcraft is delivering the future of live sound mixing.
You'll find it all on Broadway.

www.soundcraft.com

Soundcraft +44 (0)1707 665000
Soundcraft US 1-615-360-0471

Soundcraft
A Harman International Company

CELEBRATING

Studio Sound 40

THE INTERNATIONAL PROFESSIONAL AUDIO MAGAZINE FOR RECORDING, POSTPRODUCTION AND BROADCAST

Abbey Road 1974 with EMI Neve custom console...

...Abbey Road Penthouse 1999 with AMS Neve Capricorn digital console and 5.1 monitoring

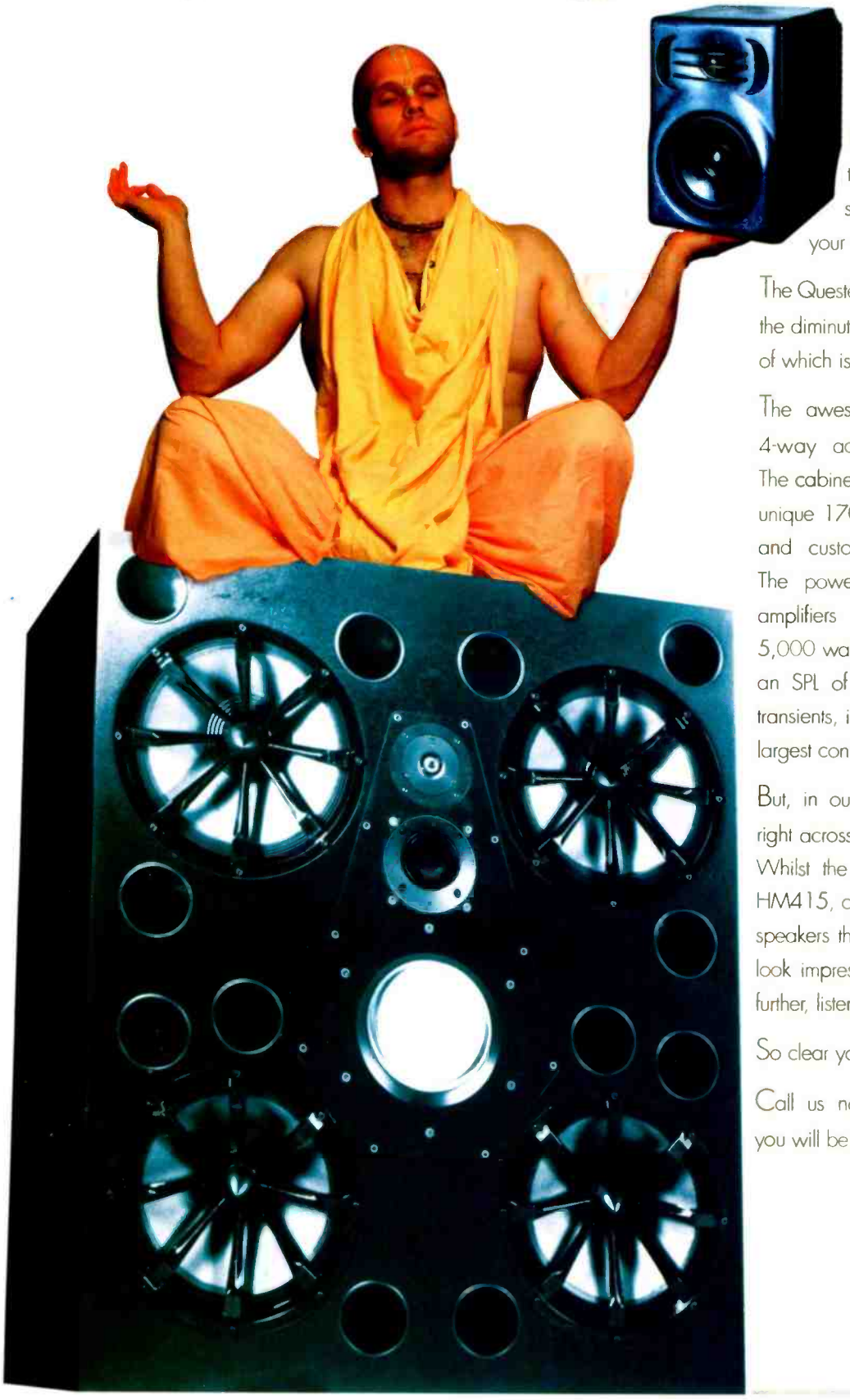
40 years of sound advice

COMMENTARY FROM EDITORS PAST AND PRESENT

TRACKING THE WORLD'S LEADING AUDIO TITLE

THE INDUSTRY'S TAKE ON STUDIO SOUND

All speakers great and small



The purest sound

If you are searching for aural enlightenment then your quest is over. There is now a source of the purest sound that will exceed your highest expectations and fit into your studio.

The Quested Range goes from the massive HM415 to the diminutive F11 with 18 speakers in between, one of which is sure to meet your requirements.

The awesome HM415 is the top of the range 4-way active system weighing 268kg (590lbs). The cabinet houses four 380mm (15") bass drivers, a unique 170mm (7") rigid PVC foam domed low mid and custom soft dome high mid and tweeter. The power is provided by 5 Quested AP700 amplifiers which are capable of producing over 5,000 watts rms. The result is a system that produces an SPL of well over 130dB, capable of stunning transients, is flat down to 25Hz and is suitable for the largest control rooms.

But, in our wisdom we offer Quested pure sound right across the range, all the way down to the F11. Whilst the F11 may seem meagre alongside the HM415, compare it with other similar sized powered speakers then you will see its 11kgs (24lbs) starts to look impressive as does its 150 watts rms, then go further, listen, and really be impressed.

So clear your mind, meditate no longer.

Call us now on +44 (0) 181 566 2488 and you will be fulfilled.

QUESTED

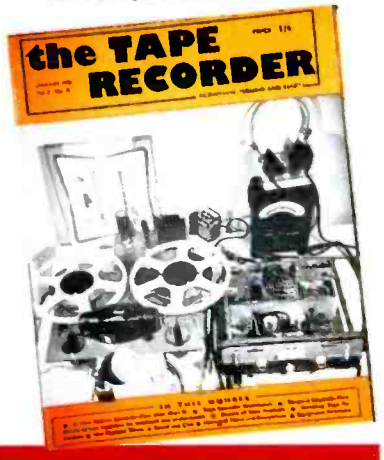
pure sound

Quested Monitoring Systems Ltd., Unit 2a, West Ealing Business Centre,
Alexandria Road, London, W13 0NJ, United Kingdom. Tel: +44(0) 181 566 2488 Fax: +44(0) 181 566 2484

A Paper Empire

STUDIO SOUND was born, not inappropriately, above a London violin emporium a few hundred yards from BBC Broadcasting House —if you need a new string, you can still get one on the ground floor of 99 Mortimer Street. A gent's barber occupied a rear basement, from whence mixed essences of hair-cream and aftershave evaporated up the staircase to the offices of Miles Henslow Publications. Mr Henslow himself, a former journalist on *The Drapers' Record*, was the founder and principal beneficiary of the monthly journal *Hi-Fi News*. A rival publisher (Douglas Brown, late of the *News Chronicle*) had the temerity to set up a monthly called *Tape Recording & Hi-Fi*, Henslow expressed his irritation at this transgression into his territory by starting *The Tape Recorder*. I joined Henslow's staff in July 1963 and threw myself into a world of manual typewriters, Cow Gum, galleys, black-and-white pictures, litho plates and the company dogs (also black and white).

One year on, Henslow sold *Hi-Fi News* and *Tape Recorder* (*The* was dropped about that time) to Link House Publications. Along with two colleagues, Christine Walker and John Crabbe, I exchanged London for the slightly cleaner air of Croydon and found an environment agreeable enough to sustain my enthusiasm for the next 21 years. The idea of converting *Tape Recorder* from a consumer hobby magazine into a journal for the sound recording industry arose from casual conversation at Leevers-Rich in south London. The essence of this discussion was that sound engineers had little choice of specialised reading short of the excellent, but highly theoretical Audio Engineering Society journal. Link's management warmed to the idea and encouraged a gradual transition to the new title in 1970 with yours truly as editor.



Front cover: The Penthouse Studio at Abbey Road features a 120-input AMS Neve Capricorn digital mixing console. Designed by Acoustic Design Group's Sam Toyoshima and John Flynn, the room is equipped for 5.1 surround sound mixing. Inset: Abbey Road's first EMI/Neve custom console was ordered in 1974 and designed with a distinctive L-shaped layout. Abbey Road is a long time user of B&W monitors. The Penthouse features B&W Nautilus 801 monitors. These are a development of the Matrix 801 monitors which are used by the majority of the world's classical music studios.

Outstanding contributors in that period were Keith Wicks (whose column 'The Sound Studio' was our first regular platform covering the activities of the studio facilities business), Hugh Ford (whose equipment reviews were outstandingly thorough) and the golden-eared Angus McKenzie. Ad manager Tony Newman had the task of persuading manufacturers that the sound recording industry could and would expand if promoted through our pages. The technical issue that dominated our thoughts in the early seventies was the attempted transition from stereo to quadraphony: the best system I ever heard was Granville Cooper's tetrahedral ambiophony which used three channels of a 4-channel system to create a 360° horizontal surround field and the fourth to feed an overhead loudspeaker to handle verticality. It worked well but was, and remains, ahead of its time. Digital audio technology had been written off as merely exchanging one set of technical problems for another. Dolby A had filtered most of the steam out of analogue tape, compact cassettes put most of it back in again, less the HF, and rudimentary solid-state power amplifiers were doing their best to simulate the distortion levels of 78rpm discs. Integrated-circuit electronics had yet to work the miracles that would lead, more quickly than I could ever have imagined, to the magnificence of the compact disc.

Studio Sound's success encouraged us to start a sister journal in 1974, initially projected as *Video*, but actually emerging as *Video & Audio Visual Review*. I left *Studio Sound* in the capable hands of Mike Thorne (poached from *Hi-Fi News*) to concentrate on editing the new organ. Leaving *Studio Sound* was, at the time, definitely a bad career move: *VAVR* flew low and slow for eight years before being integrated with another *SS* offshoot, *Broadcast Sound*, and relaunched as *Broadcast Systems Engineering*. This title took off like a rocket and, two years later in 1986, won me the editorship of its rival, *International Broadcast Engineer* (born 1964 and still going strong).

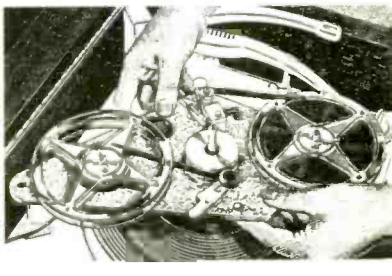
So, happy 40th birthday. It was a pleasure and a privilege to work with you.

David Kirk continues service as captain of IBE.

1959–1964

Readers are encouraged to build their own 'really portable' do-it-yourself clockwork-driven recorder. They are reminded of the accompanying role of slide projectors and continue to be updated on developments in the world of cine. Pianist Russ Conway says it's 'music at your finger tips' thanks to Grundig

while 'those in the know say Wyndsor Victor' and 'the man who knows what's inside says you get more out of Telefunken'. Meanwhile the Gramdeck turns any gramophone into a superb tape recorder... other brands to watch out for include Ferrograph, Brenell, Simon, Garrard, Fi-Cord, Tandberg, Butoba, Korting, Ampex, and Sony, Akai and Hitachi. August 1960, editor Miles Henslow writes: 'At the head of this column this month is a monogram ... it is the monogram of the Audit Bureau of Circulations, which is regarded as a symbol of integrity whenever a publisher's figures of "net sales" are quoted.' Nine Elizabethan tape recorders at selected checkpoints help Romford Borough Council with a traffic census in 1961. The magazine observes, following a reader survey, that 'stereo on tape was far more popular than we had thought.' The reviewed Shure Unidyne III model 545 mic is deemed 'a



good choice for announcing and interview work' and distortion on tape is described by writer Graham Balmain as 'not of a particularly unpleasant kind' with qualification. 'We must here make a firm distinction between good reproduction and faithful reproduction.' Readers are told how to build their own microphone in 1963, a valve mic. A ribbon mic self-build is offered later; later still 'a studio quality mixer', many more >

D&R

OCTAGON

IF YOU ARE SERIOUS ABOUT SURROUND, YOU CANNOT IGNORE THIS...

Meta Sound. Amsterdam. The Netherlands

This is the Octagon. An automated, digitally controlled console specifically designed for recording and mixing in stereo, LCRS, 5.1, SDDS - indeed all current and projected surround formats up to 8-way. Whether you work in Film or TV Post Production, or in Music recording and remixing, the Octagon offers you a truly viable surround solution.

These are just some of the Octagon's features:

- Designed for all surround formats up to 8-way.
- Two 4-band swept EQ sections, with fully parametric midranges per module.
- Auto Reset of all input module switches.
- Full recall of all input rotary controls.
- 72 mix busses, 8 way main, 48 group, 16 aux.
- Optional external Stems Summing Matrix.
- Duplicate master modules for 2-, 3- or 4-man use.
- Integrated matrix for interfacing with surround processors and instant format comparison.

For more information, please contact: D&R Electronica, Rijnkade 15B, 1382 GS Weesp, The Netherlands
Phone: +31 294 418014, Fax: +31 294 416987, E-mail: info@d-r.nl, Website: http://www.d-r.nl

Session Notes

YES, I REMEMBER Volume 1, Issue 1. I used to await eagerly the appearance of the *Tape Recorder* on the newsstands with its exciting promise of quality recording via the Gramdec or the mechanical excellence of the Truvox. First there was Grundig, then later there was Simon and Vortexion, with Revox setting standards of quality that us poor amateurs with our home-builds could only dream about.

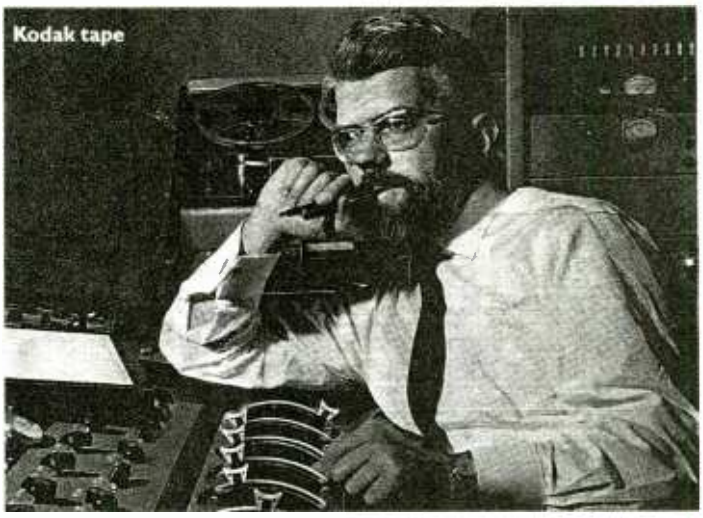
In common with a few other enthusiasts, I eventually became a professional and was able to indulge those early fantasies, only to find that professionalism didn't bring contentment; only a slightly better view of the awful imperfections in the art of sound recording and reproduction. With the benefit of hindsight, I can see that my attitude has always been a combination of both rebellious and reactionary. I refuse to accept 'new' as being always better and have a considerable penchant for searching out earlier solutions to problems that we have today and re-evaluating both the premise and the solution.

The *Tape Recorder*, and latterly *Studio Sound*, were always important publications to our earlier efforts in professional mixer manufacture (remember the Alice 8:28?) and my own contributions to *Studio Sound* started in 1973. These were mostly factual and hopefully interesting morsels of technical development mixed with opinion. By the early eighties my style had moved firmly towards the controversial and was entering realms of conjecture and experimentation. The opinions expressed were far from orthodox (all equalisers should be banned). An understanding of the physics of the velocity of sound in varying conditions of humidity, temperature and pressure is fundamental to good monitoring and mixing, and nobody knows anything about stereo (except me of course). Together with my good friend Steve Dove (now a consultant in Philadelphia), we had an occasional rant at most of the technology available at the time. It was good fun and intentionally stimulating, and in hindsight, a reflection of the restlessness that we felt in a world that we were impatient to improve.

I can clearly remember 17 years ago conducting some experiments on the importance of differential volume and time delays on stereo imaging using my son Danny (then five years old) as a guinea-pig. I played simple mono music samples to him via a pan pot and a delay line on one side and got him to point to the apparent sound source. I wondered then where all this was leading and how we would look back on such primitive experiments from the year 2000.

In the seventies we lived in a world where analogue ruled. Where digital control of analogue was possible, but difficult (we built the first digitally controlled mixer, with fully balanced analogue throughout) and when a good stereo tape machine cost about three months average wages. All things electronic were expensive.

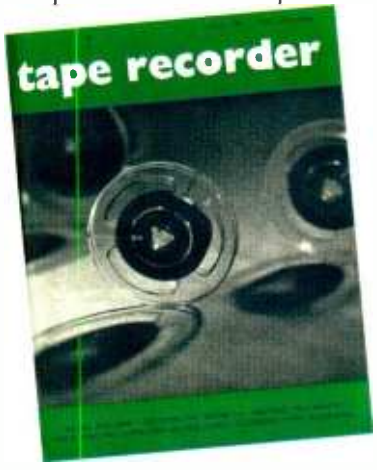
Even then, gone were the days when everything was built to last, there were the beginnings of production engineering in mixers, outboard equipment and especially recorders, but the music business was still an expensive pastime and the home studio was only for the rich and successful. Quadraphonic and Tetrahedral experiments and systems were well established thanks to superlative work at the BBC and at Crawley Court (the IBA) and the ghastly Philips compact cassette sounded bad.



'Now you can use professional tape, even if you're not in the business'

I remember clearly a 1970 demo session in my London studio with a small band of session musicians. I went into the control room and switched on the valve 12-channel 2-group mixer and the two 50W power amplifiers. I was fortunate to possess a couple of Neumann microphones so I switched them on to warm up.

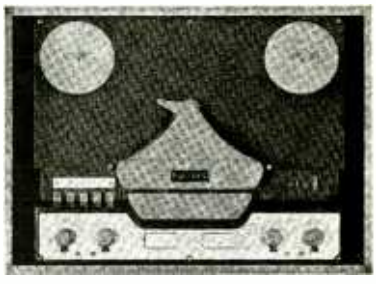
The mixer had simple channel equalisers, pan pots and auxiliary outputs but not much else; the recorders were ¼-inch 2-track machines with home-built sync switching on one of them for mono overdubbing; >



< 'ollow MF Woodw rd addresses the issue of fundamental building acoustics and news filters through of an American domestic telerecorder with a built-in time switch 'tha' w l tape your favourite TV programmes presumably the ones yo miss when out n your private plane The recorder costs £10 000' For Sale Use up all t ose odd engths o' tape splice 'them together professionally ifte reading How to Splice Tape Vying for your money in tape supply are Zonal you know good sound when you see it' Piano & Forte play back perfectly on Scotch, working at full stretch to bring you a better tape' w 'n Gevasonor MSS Mastertape the technician s c oice Emitape used by the BBC 9 times out of 10 'Agfa tape is overloadable' BASF symbol of authentic sound nd Philips g e him an E-Type you can you c n'—give Philips Tape

1965—1969

All the melancholy and romantic co he mbre will be recorded by a good microphone —AKGs D119 When you can t tell f r s recorded' or live' ten to one its on Agfa The Grampian reverberation unit is reviewed it avoids the synthetic quality of all but the very best device deems BRJ Plumtree The series of articles documenting tape maintenance and servicing procedures or specific models started back in the early volumes continues with the same characteristic enthusiasm and is joined by the Absolute Beginner s Corner explanatory



series written by David Kirk Peter Turner remarks Recording is a skill which is to be acquired Many will be content to record badly it is their privilege The Revox 736 is reviewed and while generally applauded it is criticised as a stereo machine for having only one speaker and amp The Mellotron sound effects console is examined April 1966 and the traditional orange red cover strips are replaced by green for one issue because the black and white centre image s thought to go better with t It s blue n June and then changes regularly >

evolution of a Species

S6000 Launched 1998

Akai Professional is the future of sampling. We established the standard for professional digital sampling in 1986 with the S900 and every important advance in the years since then has had our big red logo on its box, now with the launch of the radical S5000 and S6000, the cutting edge of progress has got even sharper. Our pedigree speaks for itself.

S5000 Launched 1998

S3000 Launched 1992

S1000 Launched 1988

S900 Launched 1986

S700 Launched 1986

S612 Launched 1985

AKAI professional

Akai (UK) Ltd., EMI Division, Haslemere Heathrow Estate, The Parkway, Hounslow, Middlesex TW4 6NQ Tel 0181 897 6388 Fax 0181 759 8268
http://www.akai.com/akaipro

Many years before the memorable *Baywatch* cover of 1997

< outboard

consisted of a couple of Altec compressors, graphic equaliser, spring reverb unit, 4-channel submixer and a fairly substantial jackfield. The monitor loudspeakers were Tannoy Reds and the only thing 'digital' was my finger.

The song was 'I Was Kaiser Bill's Batman'. I mixed three drum mics and the bass mic into the submixer and compressed it, then mixed that mono signal back into the main mixer with piano and guitar. I recorded it down direct to one track of a 2-track Teac copy of an Ampex machine. Then we put the voice on the second track in sync thanks to the home wiring under the head block, and at the same time added a few odd effects. The voice was processed directly through the equaliser and a compressor, the pre-compressed signal drove the reverb unit and the echo return was after the reverb. All that was a trick learned from Joe Meek.

The recording was then mixed to the second-generation half-track; there was no margin for error. Backing vocals and anything else were synced on. The final 'master' was a further processed (heavily compressed) mix of the second 2-track.

The resulting recording was vaguely reminiscent of 304 Holloway Road and I listened to it with the usual disappointments and regrets that the studio owners didn't yet want to invest in an Ampex 4-track machine.

Today, when I go into my Newton Abbot studio for the start of a session with a small band, I fire up the desk, the rack of outboard and the computer. My two sets of monitor speakers are driven by experimental power amplifiers, and some of the microphones are decidedly 'prototype'. The desk is 40-input digital job with everything. The outboard is a selection of both valve and solid-state mic amps, compressors and even a couple equalisers(!). There's a stack of MIDI gear with keyboards and lo experimental The computer has just been upgraded with a 17Gb hard drive, but the processor is still only a Pentium 2 266MHz. It is running Cubase VST while another machine runs Creamware TripleDat for CD mastering.

The song sounds a bit tricky on the first run through so I decide to revert to a little-used ADAT machine for the foundation backing track (to save storage space). I make a dummy Cubase song and lock the clock to the ADAT. Forty minutes of 8-track running-time later, and using a wall of gear, we have a backing that is good enough to work on so I dump the ADAT backing across to the computer maybe reducing (mixing) it to 5 tracks to save time. Limited only by the musicians and singers I can record, cut, paste, copy, cheat, stretch and fix anything (it says in the instruction book).

At the end of the session—or more likely several sessions—I'm left with a screenful of pretty coloured rectangles and it is mixdown time. I try not to think about the frustrations in the hours of assembling: organising the subgroups out of the computer into the desk because it sounds better that way, trying to make the plug-ins work; and then trying even harder to make them sound musical.

After an eternity of programming runs, it is sweet and acceptable and we can press the buttons on the two computers for the automation to produce a master CD—through an analogue compressor of course.

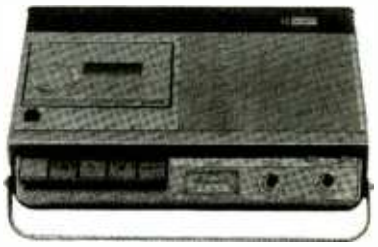
So what's changed? Everything and nothing. No-one forecast such a fantastic drop in cost of good electronics—all because of the computer. Computer technology and thinking has rearranged all our brains and we've got to learn to love them (if we don't already). given us the freedom in cording technology, together with extrem- of excellence in fidelity. All those functions I had in 1970 have been improved out of all recognition except...

There are still huge acres of the sound recording business where blind application of even the finest digital techniques is arguably counterproductive to 'quality'. These are areas that directly affect the human ear and are mainly on the creative side of recording or sound reproduction. I mean loudspeakers, equalisers, compressors, preamplifiers and microphones. These are the subjects of my work nowadays, and the more things improve, the more work there is to do; new (reactionary?) ideas jump up and the list of researches and developments rolls on, never ending. I predict that in another 30 years our technology will be just as unrecognisable to us now as the DVD would have been to Joe Meek. But it is equally evident that musos will still be the same and it will take just as long to overdub the guitar.

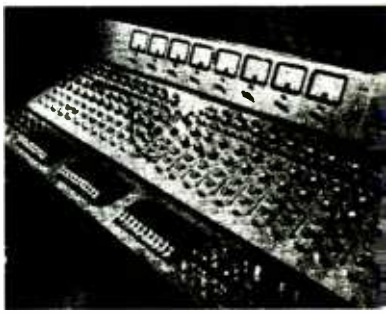
Each day really does bring new and exciting challenges; I can't wait for tomorrow.

Ted Fletcher keeps a word processor to hand for the odd moments when he is not taunting the recording industry with Joemeek outboard.

< 'or the next ve r nd 'hen re ert s back to the original orange September sees a subtle edesign 'o more contemporary look nd EMI adver t ses prerecorded musicasse es The magazine star ts to looks at recording appl cations in more depth and more frequent y The Revox



736 HS half track stereo is reviewed and deemed In terms of performance i s superior to such in exten that it makes the rest seem 'ows A reader quest onnaire reveals Philips as the brand eader with 20 25% of the market Desc bed as 'he most comp ehens ve and ogical console product on 'he 22 channe Sound Techn que desk w as produced for Sunset Sound Studios in Hollywood Exh bitors at 'he 'rst APRS exhib tion nclude Philips Leeve Rich Scotch Ampex EMI Scu Studer Audio And Design B&K Gr mp an AKG Audio Engineering Neu mann and Shure A repor on Dupont's Crolyn asks whether C 0 s 'omorrows 'ape The choice o' tape recorders

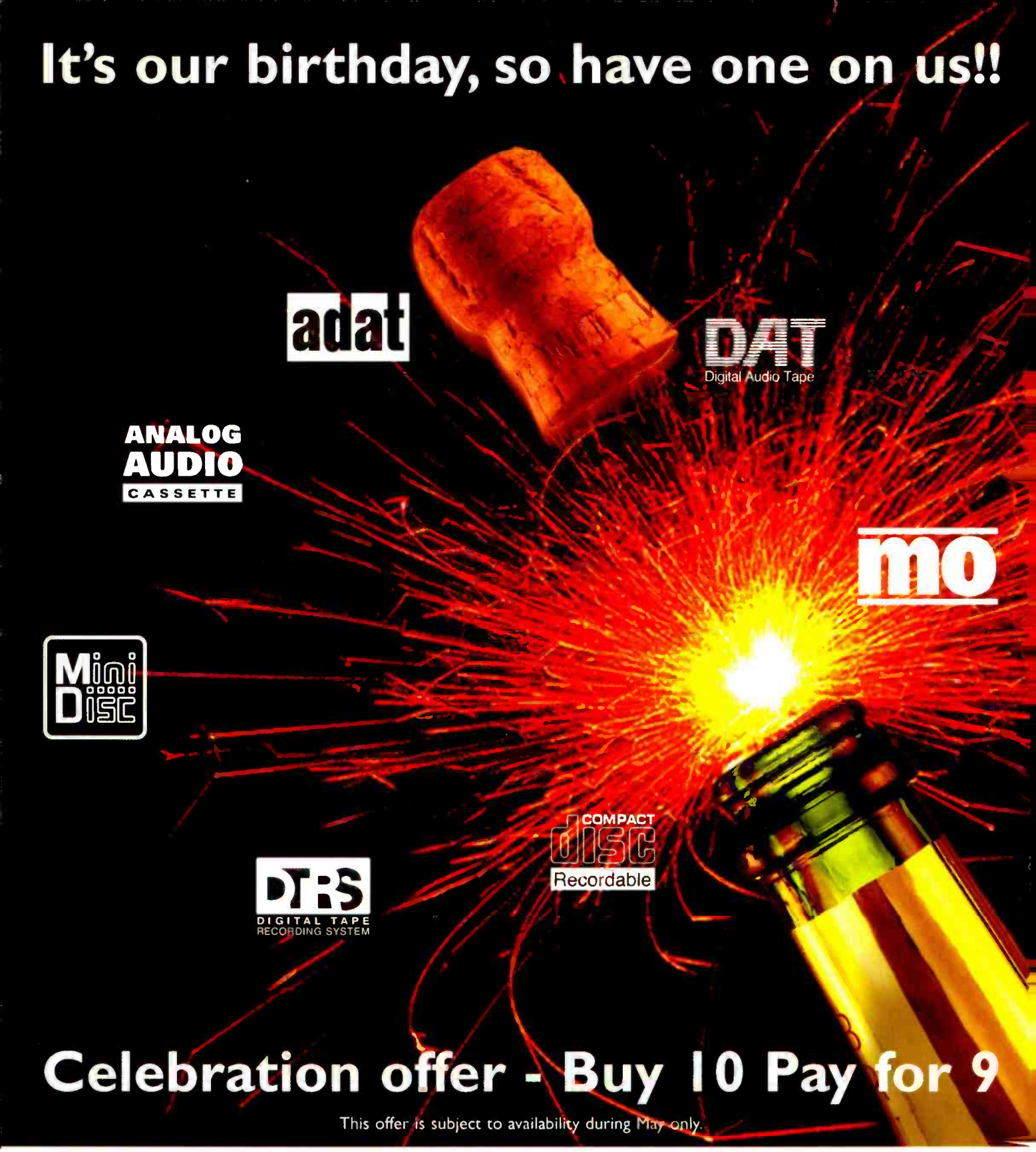


co ntinues to be wide although he machines themselves start to look mo e substantia ec nomisable and prices can be gh April 1969 ee 'he star' of series on The Sound Studio covering the theor and practice of 'echn ques The Type R r asks so you want to be a producer nd a sound enginee

1970 – 1975

In the early seventies, Newsweek magazine estimates that over $200m worth of illegally manufactured records and cassettes are sold annually PolyGram forms in 1972 with merger of Philips Phonographic Industries, Polydor Internat ona' and Phonogram. Fifty Years of Broadcasting, a double albm issued by the BBC to >

It's our birthday, so have one on us!!



Celebration offer - Buy 10 Pay for 9

This offer is subject to availability during May only.

Participating Distributors: **London** - CCK 0171 495 7005, Transco 0171 544 5400, Protape 0171 323 0277, Studio Spares 0171 485 4908, **Midlands and North** Canford Audio 0191 418 1000, SJB 0150 961 0333, SVS 0161 491 6660, Carousel 0145 383 5500 **Dublin** - CTI (1) 454 5400, **Scotland** PF AV 0141 951 1811.

The oldest new name in the business, Quantegy has been delivering Professional Media Products for forty years. We invite you to join in our celebration. When you buy 10 of any of our small format audio products from any participating distributor, you only pay for 9.

For forty years, the name for all formats

Quantegy Europa Ltd Theale Berkshire • Tel. 0118 930 2208

QUANTEGY
Professional Media

We Should Stay So Young

THE OLDEN DAYS were fun, even when you were there, and even if you can remember them now. Steam trains were in the scrapyard, but the economics of an £18 ($36) per-hour studio in London's West End (De Lane Lea Music, underneath the Midland Bank at the corner of High Holborn and Kingsway) meant that a party was an accepted part of music-making routine rather than sliding in as an off-the-books celebration. At the time, this was one of the most expensive studios. Three days after starting my first studio job as a tape op/tea-boy, I was playing bar football with Fleetwood Mac at 2am. That was in 1970. A few years ago, I was doing the same with Blur, but even averaging their daily studio rate over 24 hours you won't come close to £18. No-one can now overlook the pressures of the expensive business that top-shelf recording has become. Conveniently, Blur recorded quickly and confidently, dealing with pub sports the same way.

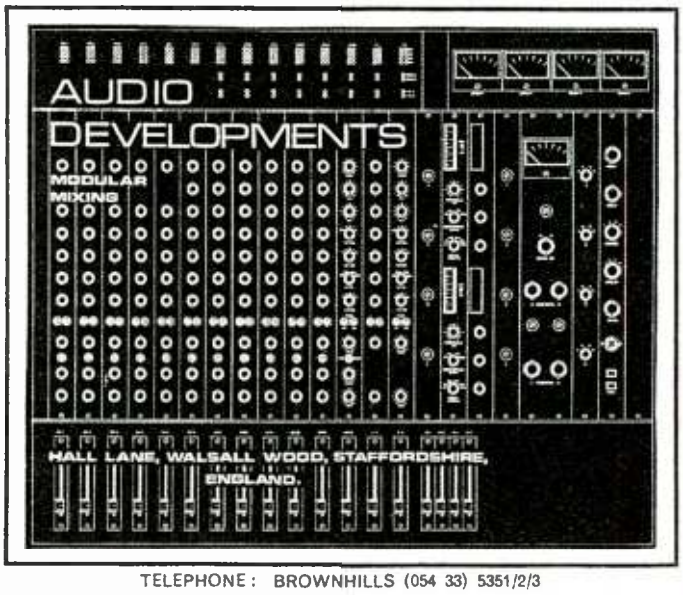
Economics were unavoidable in my first 1979 New York City productions. Since real estate was so expensive, Media Sound would charge $175 (£110) an hour for the tracking room, and rely on turning over at least two sessions per room per day. For a Brit lulled by meal breaks and nice cups of tea, the discipline of streamlining music-making to fit session time constraints was invigorating. However, as equipment finance payments began to surpass the rent, studios worldwide would lose their innocence.

Thirty years ago, innocence was endemic to recording. Thanks to the revolution of the early sixties, where artists cast off the old business chains of Tin Pan Alley and took control (at least of their working environments), studios were decidedly unintellectual and even anti-intellectual places. You were under suspicion if you thought outside the factory and made remarks. It took Martin Birch and Louie Austin three months to find out that I had a physics degree, after which I was only referred to as The Don. A magazine dealing with professional music recording was either inconceivable or, in the few pioneer cases, from our perspective out of touch with down-and-dirty daily issues. Theory was not essential in 1970; knowing which panel on the Ampex tube stereo tape machine to bang to stop its playback crackling was. Brute force delivered where abstract analysis didn't; I learned a solid lesson. Pragmatism.

For me, editing *Studio Sound* (1974 and 1976) was a no- brainer: get your mates to write their first-ever article and stage a raiding party on the American AES shows to establish yourself as the first international studio publication. *Studio Sound* now serves a business fundamentally different from that of 1976. It is a dynamic, and therefore confusing time; we are leaving a settled era of music production and dissemination for one in which provocative new technologies imply and facilitate better future communication between the artist and the audience. They have broadened our consciousness; living in the music studio cultural ghetto of 1970 is impossible. We aren't isolated from the big wide world any more.

There's a lot to write about. Good luck, and happy birthday.

Mike Thorn's career as musician and producer is now balanced by an intellectually challenging foray into the Internet.



TELEPHONE: BROWNHILLS (054 33) 5351/2/3

History is, by definition, retrospective. Commentary always trails innovation. However, although we know that those who don't understand the mistakes of history are doomed to repeat them, too much analysis will cramp the action. There's a balance of terror between analysing what we do and working creatively and instinctively.

< commemorate half a century of relaying sounds includes John Snagge calling the world from London In the studio 16 tracks replace 8 which in turn is superseded by 24 Apart from the occasional documentary or other special issue and for the reissue of archive material the long reign of the mono disc is over by the mid seventies In this quadraphonic LP disc is issued in 1972 The first video audio discs are demonstrated by Teldec at the AEG Telefunken building in Berlin in June 1970 The Philips Sony laser read TV disc appears in 1975 Pink Floyd's *Dark Side of the Moon* is recorded between June 1972 and January 1973 at Abbey Road Studios Pop stuff costs so much to produce and is a huge financial gamble In the end the middle market is the strongest area because it provides the everyday bread and butter and pays the rent lighting and heating bills says EMI producer Wilfe Ridley interviewed on the company's 75th anniversary Wings record *Venus and Mars* in New Orleans at Allen Toussaint's Sea-Saint Studio The emergence of a number of new independent studios is a key development in the early seventies prompting Studio Sound editor Richard Elen to observe The day of the studio designed by common sense and rudimentary acoustics is drawing to a close as specialist studio designers appear with answers to such questions as separation room EQ and the like Their efforts often seem to turn the problem on itself Some rooms seem so dead that you can hardly hear someone

The Thames TV Neve

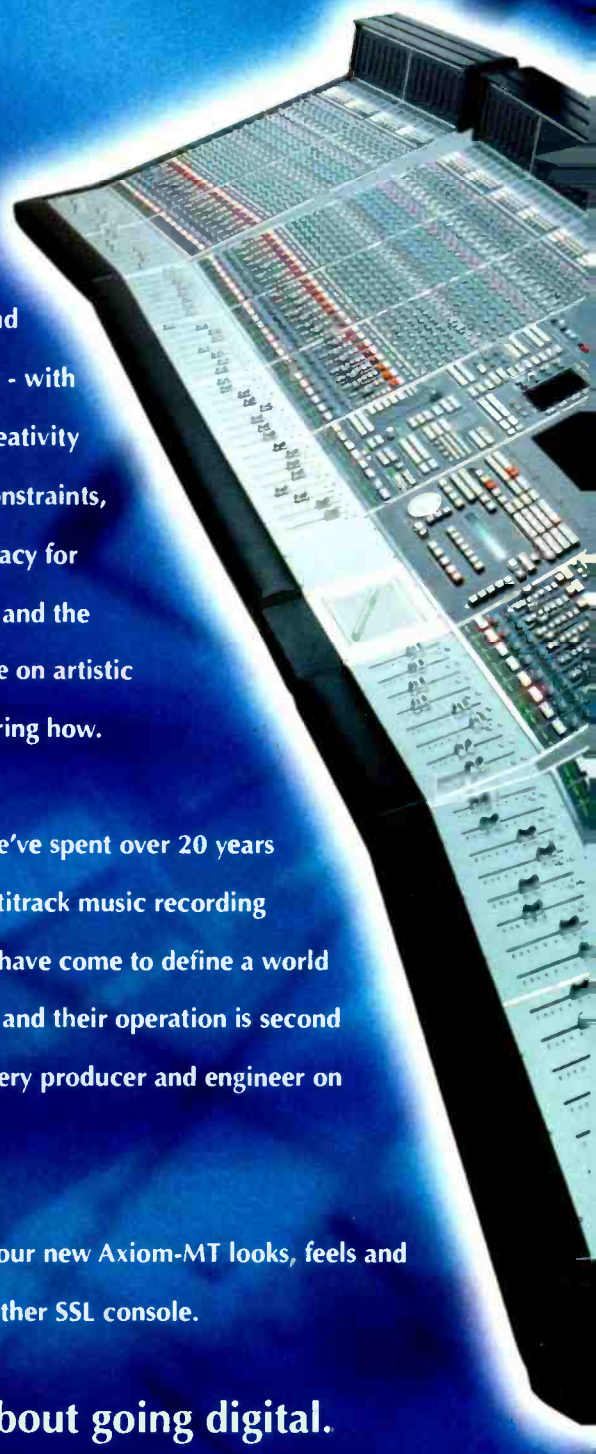
speaking just a few feet away There is a vinyl shortage in 1973 The first half of the decade closes with Queen's Bohemian Rhapsody topping the charts and the last night of the Rolling Thunder Revue at Madison Square Garden —Night of the Hurricane The next five years will see major changes within and without the recording industry

1976–1980

The second half of the seventies sees serious developments in computer mixing, Necam, synthesisers and punk rock The old established order changes in several respects. The Sex Pistols make their famed 4 letter TV >

1422 knobs.

With over 20 years experience in defining and refining the multitrack audio recording process, it's obvious that the new Axiom-MT is going to look, feel and operate just like any other SSL multitrack console.



Digital technology doesn't just mean brilliant automation and unimpeachable quality - with Axiom-MT it means creativity without operational constraints, instant effortless accuracy for remixes and overdubs, and the freedom to concentrate on artistic results without wondering how.

At Solid State Logic, we've spent over 20 years at the heart of the multitrack music recording process. Our consoles have come to define a world class recording facility and their operation is second nature to just about every producer and engineer on the face of the planet.

So it makes sense that our new Axiom-MT looks, feels and operates just like any other SSL console.

Don't worry about going digital.
It's an SSL.

New York
+1 (0)212 315 1111

Los Angeles
+1 (0)323 463 4444

Tokyo
+81 (0)3 5474 1144

137 faders. 1 screen.*

Axiom-MT.

The digital console that works the way you work.

Axiom-MT

* 64 channel console shown.

Solid State Logic

International Headquarters: Begbroke, Oxford, OX5 1RU, England

Tel: +44 (0)1865 842300 Fax: +44 (0)1865 842118 E-mail: sales@solid-state-logic.com http://www.solid-state-logic.com

Paris +33 (0)1 3460 4666

Milan +39 02 2622 4956

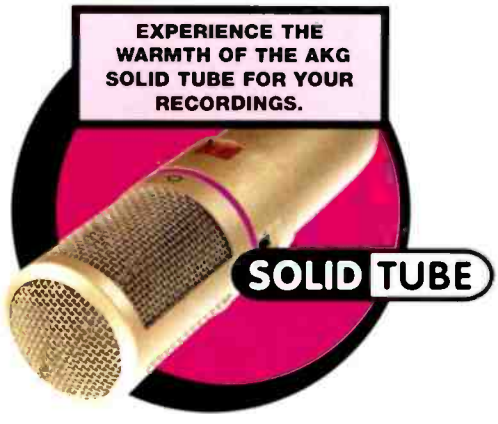
Toronto +1 (1416 431 9131

Singapore +65 (0438 2272

C 4000 B
PERFECT IN THE MIX

For recording studios, project studios, radio stations, and musicians, the C 4000B has got what it takes: versatility, outstanding price/performance, and a classic large-diaphragm condenser capsule. Also, the microphone uses advanced solid-state technology to support the typical sound of a large-diaphragm condenser microphone AND an unprecedented price/performance ratio. Thanks to its selectable cardioid, omnidirectional, and hypercardioid polar patterns, the C 4000B is the perfect choice for just about every studio and live sound application. A transformerless output stage ensures outstandingly accurate low-frequency response.

In short, the C 4000B provides rock solid performance at an unprecedented price.



LEGENDARY STUDIO QUALITY BY

ARBITER PRO AUDIO, Wilberforce Road, London NW9 6AX, United Kingdom
Tel: 181 202 1199 Fax: 181 202 7076, e-mail: maxlj@arbitergroup.com

AKG Acoustics GmbH, Lemböckgasse 21-25, P.O.B. 158, A - 1230 Vienna/AUSTRIA
Tel: (43 1) 86654-0 Fax: (43 1) 86654-516, Internet: http://www.akg-acoustics.com

AKG
H A Harman International Company

ADV 567/1/E

Courting Controversy

AFTER FORTY YEARS, I found myself coughing over a box file of dusty clippings to see when I started contributing to *Studio Sound*. It seems to have been in 1972 when I was keeping a watch on new patents for inventions that might be of interest to studio engineers. Decca was still patenting the Teldec video disc, a flimsy grooved recording that was tracked by a stylus. Leonard Kahn was patenting AM stereo. The industry was stumbling into the absurd battle between at least four incompatible surround-sound systems. Leeds council was busy banning sound levels above 96dBA. I was writing about Ambisonics and being told by Professor Peter Fellgett not to call it quadraphonics. Although superior, the system had no chance under the UK's National Research Development Corporation (now BTG) which saw no need to do as I kept suggesting and strike a deal with Dolby.

None of this early writing appeared under my own name. I had been forced to cook up a pen-name—Adrian Hope—because I was still working as a patent agent and the hidebound old boys club that then ran the profession were decidedly sniffy about the idea of a patent agent dabbling in the dirty world of journalism.

By 1980 I had packed up patenting, and Adrian Hope was put to rest. When AH was replaced overnight by Barry Fox, not a single reader or radio listener noticed. (Why Adrian Hope? Back in Oxford Uni days we ran a band that played for 'debbie' upper crust balls. We needed a name that sounded respectable, so came up with Adrian Hope and had a pile of notepaper printed. When the band folded I inherited the paper.)

Occasionally someone with a grievance likes to discover the secret of what I did at university. There is no secret. I was the world's worst botanist, unable to distinguish fungal mycelium from cotton wool in the final exams. Fortunately I had already learned electronics in the RAF. The 9-month course was worth more than three years at any university.

The idea of a regular column came up just as Philips was demonstrating the first prototypes of an optical digital audio disc that later became CD. Our idea was, and as far as I am concerned, still remains, to try and bridge the gap between professional and consumer life.

As demonstrated by Philips in 1978, CD was a 14-bit system with a smaller disc and limited playing time. I wrote many articles saying it was not good enough. 'Everyone seems happy with CD except Barry Fox', sneered one ex-BBC magazine editor at a press conference. Fortunately Sony, who upped it to 16 bits, had more sense.

I have never worked in a studio, but I know that those who do are far too busy to keep up on consumer innovation. And studio fortunes rest on what the consumer buys, not what some naive marketing manager wants people to buy. You just can't separate the professional and consumer worlds. Botanists would call it cross-pollination. The Finial turntable played LP records with a CD laser, thereby causing no wear. But the asking price was so high (tens of thousands of dollars) that nobody could afford it, and the designers had overlooked a fatal flaw. A stylus shovels dirt from the groove; a laser beam just tracks it as noise.

We have seen the failure of FMX, a CBS system to improve FM radio cover, and before it the failure of Dolby's FM system. Another CBS system, CX, was supposed to let LPs compete with CD. The biggest nonsense of all was CopyCode, the CBS system that was supposed to stop home copying. It took a US Government enquiry to persuade CBS, the IFPI, BPI and RIAA that journalists were not just inventing the problem that CopyCode was fatally flawed. I still treasure the compliment unintentionally paid me by an IFPI lawyer—'Everyone was quite happy with CopyCode until you started trampling around', she told me.

From the archive: Barry Fox on Alan Blumlein

We have tracked the scandal of analogue recording tape, mainly Ampex and Agfa, that goes sticky in storage. The culprits said nothing until we exposed the issue in *Studio Sound*. The PRS tore itself apart and wasted millions on the dopey PROMS computer system. And some people got really hot under the collar when I researched the story that *Winnie the Pooh* actor Normal Shelley had made some of the Winston Churchill recordings that are still on sale under his name.

I learned long ago the simple rule that for a quiet life in the audio business you don't rock the boat. My rule remains equally simple. Stuff the quiet life.

Barry Fox maintains his fearsome reputation through various scientific magazines and radio comment.

A family that offers award winning excellence, revolutionary sound and technical specs formerly unseen in tube microphones.
What are your highest expectations?
We want you to meet them...

BRAUNER

Dirk Erauner Röhrengerätemanufaktur, Kreuzstrasse 2, D-46499 Rees/Germany,
Phone +49 (0)2851 986088, Fax +49 (0)2851 986089, eMail dbrauner@t-online.de, www.dirk-brauner.com

Building For The Future

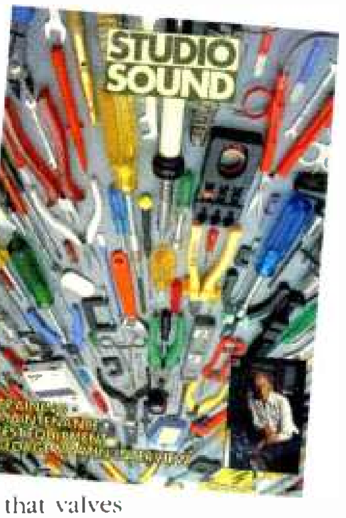
I MUST CONFESS to having forgotten about the series on building an audio mixer that I wrote for *Studio Sound* in 1991, though apparently others have not.

If I were writing the series today, however, it would be very different because of the advances in technology that have taken place since. I would begin by stating what I believe to be a fundamental difference between now and then—in those days, creative engineers, whether amateur or professional, got their satisfaction from making the equipment and today they get their kicks from using it. I think that the reason for this is that nowadays, even very basic equipment is so much better and cheaper than it was, that it is simply not worth even trying to compete. For example, you can now buy a complete, good performance, digital multirange meter for under £10.00—30 years ago, you couldn't buy a decent moving-coil movement for the same money and as for close-tolerance resistors, they were simply not available except at very high prices. I well remember filing carbon composition resistors up to value—not because we were rugged traditionalists but because there was no other way of getting what we wanted.

In another area of life, I find it both amusing and irritating when I hear someone say that music is going to the dogs 'because of all these synthesisers'. I am willing to bet that if they had been available to JS Bach, he would have used them. Great composers have always been pushing at the boundaries of technology and it is well-known that Beethoven was quite capable of breaking the strings of a piano while attempting to get more volume out of it.

I had lost the original typescripts and diagrams of my mixer series and had only a hazy memory of what they contained. What surprised me when I reread them was the amount of technical detail that I went into—I must have done this because I thought readers would be interested in how and why things worked. And I must have been right, to judge from the response at the time and this drew me to look at the readership of that time.

The amateur magazines of the time illustrate the practical nature of the readership at the time—*Practical Wireless and Radio Constructor* were full of circuit designs, complete with drawings of how to drill the metal chassis and how to wire the parts together. These magazines had been around for many years but about this time, a new breed began to appear such as *Studio Sound* and *Hi-fi News*, the titles of which did not reflect the DIY tendencies of the readership, their appeal being broader. Nevertheless, there was still a readership who expected to build what they needed from a bag of bits and both the newcomers catered for it. The only publication that continues to keep this tradition of technical discussion with the opportunity for DIY assembly is, as far as I know, *Electronics World* (previously *Wireless World*). The wonderful thing is that heated discussion about the merits or otherwise of this or that power amplifier circuit continues today. All the old fire is there, the only difference being that quite a few extra zeros have appeared after the decimal point when distortion figures are presented and I suspect that this is because the combatants have access to much better distortion analysers than we did. I wonder how many of today's readers will remember the Leak Point One amplifier. Imagine—an amplifier with a distortion of 0.1% was thought remarkable enough to announce it in the name and it was pretty good, using valves and an output transformer. There are still those around today who claim



that valves give a better sound than transistors do, often described as 'warmer'.

What about using it though? Power amplifiers are destined to be connected to loudspeakers for the purpose of reproducing sound, and, although I am not an acoustics expert, I believe it is true to say that loudspeakers and the rooms they are used in, can make a nonsense of the most impressive amplifier measured performance. Today, you would need to be something of a genius to make an amplifier that sounded so bad that you could not enjoy your favourite recordings which is the whole purpose of the exercise—isn't it?

There may be an identifiable disease called Hi-fi Syndrome which shows itself as an insatiable appetite for better and better sound reproduction without much attendant interest in the programme material and I freely confess to having suffered from a mild form. But I used to work for a man who would demonstrate the prodigious fidelity and power of his Westrex sound system by playing a recording of Bela Bartok's *Music for Strings, Percussion and Celesta*, which he disliked but, because I was forced to listen to it so often, much to his surprise, I grew to love; he even gave me his copy later and I still have it. We owe a debt of gratitude to those pioneers who have brought the sound reproduction industry to where it is today and with digital recording, I think that we really have got close enough to the original sound; so why not sit back and enjoy it.

Peter Levesley remains true to constructors' ideals as an audio consultant.

< outlook is bleak for millions of consumers for the same reason. Will Betamax or VHS win and who is going to make prerecorded tapes for the other?

1981–1985

The first launch of CD hardware and software is made in Japan in 1982 with CBS Sony, Toshiba, EMI, Hitachi and Sharp leading the field. The European launch follows in 1983 with software by PolyGram and hardware by Philips, Sony, Hitachi and Marantz. Radio Caroline, first of the UK's famed pirate stations, comes to a sorry end when the Mi Amigo ship it broadcasts from slips its moorings and sinks. Housed in a former granary, Windmill Lane, Dublin becomes Ireland's first 24-track studio. First clients include The Chieftains and Planxty. In the UK the BPI sets up its technical subcommittee to appraise current manufacturing standards in the record and prerecorded tape industry and to establish much more uniformity of quality among pressing and duplicating plants. Recording studios begin to look at other areas for revenue. Advision installs a video postproduction suite offering customer self drive operation. AMS and Audio Kinetics are among winners of Queen's Awards for Export Achievement.

The Great Digital Debate(s) continue apace. In 1983 the APRS tries to get matters onto some sort of solid basis. The Association is keen to help studios by finding out what the intentions of the record business are with regard to the use of digital recording techniques in the immediate future. The APRS is now looking

Soundcraft open-reel

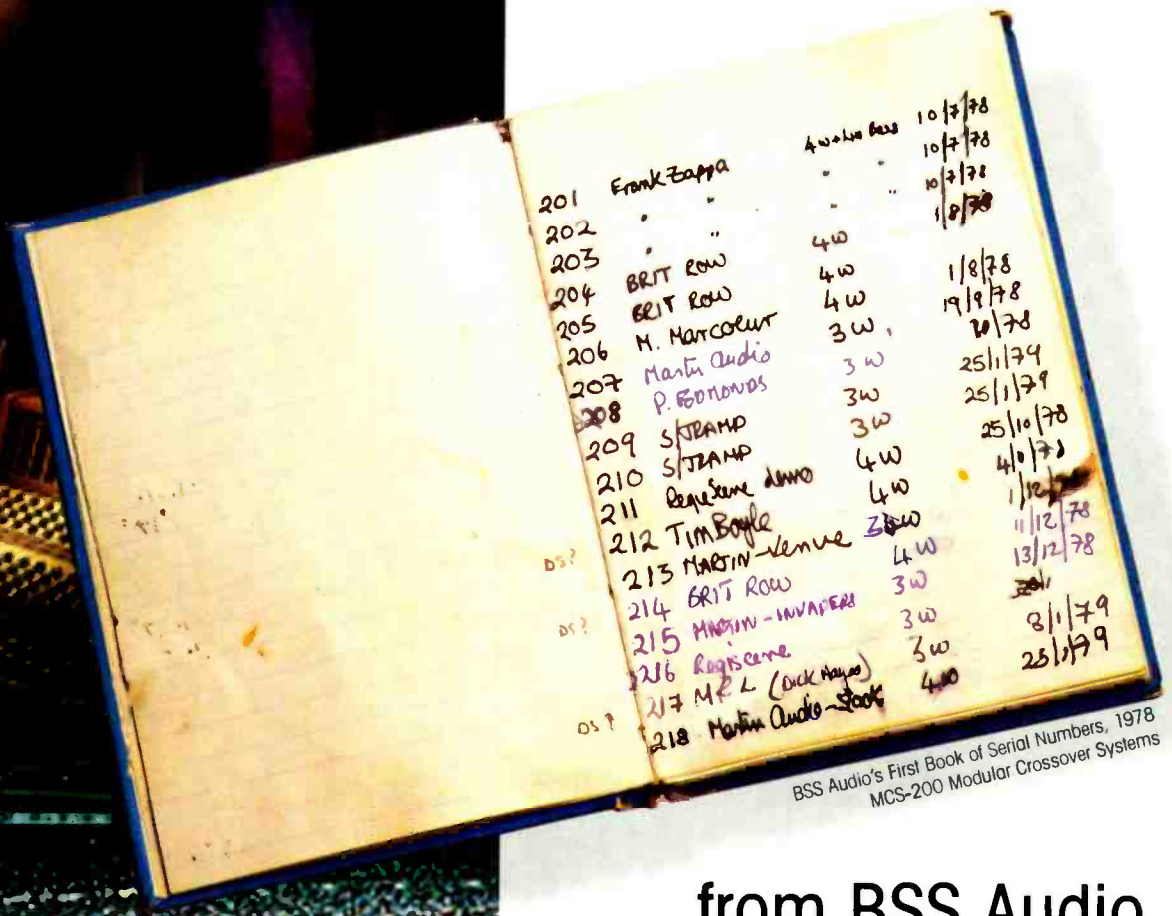
into the possibility of setting up a seminar on all aspects of digital recording. Wisseloord Studios in the Netherlands becomes the first European studio to take delivery of a Sony 3324 digital multitrack recorder on a permanent basis. CBS and Sony Corporation open a CD manufacturing plant in Terre Haute. Sony announces a prototype laser disc which can be written to as well as read and may be used for both digital >

CONGRATULATIONS

to Studio Sound

1959-1999

40 Years covering the audio scene



BSS Audio's First Book of Serial Numbers, 1978
MCS-200 Modular Crossover Systems

from BSS Audio

1978-1999

21 Years making the audio scene

BSS Audio

Linkside House, Summit Road, Potters Bar,
Hertfordshire EN6 3JB
Tel: +44 (0)1707 660667 • Fax: +44 (0)1707 660755
E-Mail: info@bss.co.uk • www.bss.co.uk

A Harman International Company

The Technology Of Change

IT ALL STARTED at the APRS Engineers Course closing party in 1976, when I was approached by a trendy looking gentlemen in a fur coat. 'You must be the chap from Switzerland,' he said as I speculated that the previous owner of the coat was a grizzly bear. 'Fancy doing some writing for *Studio Sound*?' The gentlemen was, of course, Mike Thorne, editor of *Studio Sound*.

My first article appeared in early 1977, a 'StudioFile' on Mountain Studios in Montreux. Twenty-two years and five editors later, I am glad still to be part of what is probably the most respected pro-audio magazine in the world (at least, that's what people tell me when I meet them). Quite a reputation to live up to.

I first came across *Studio Sound* in the waiting room of the Shure distributors in London, just after it ceased to be *Tape Recorder*, and have been a reader ever since. To say that things have changed would be to put it mildly, though in many ways, not as much that you might think.

Technology has always been an integral part of working with sound, there is just more of it now, and once the initial love affair cools down, people get back to the serious business of making records or whatever. But it is interesting to note an alternative application of Newton's First Law: For every action, there is an equal and opposite reaction.

Not so long ago, the number of stand-alone preamps at a trade show could be counted on one hand. Now, with the plethora of digital multieffects processors *et al*, you could virtually fill an exhibition hall with the stacks of valve (tube) and class-A discrete equipment, all designed to do less, yet to do it superbly well. Surely this means that people must still be using their ears or there would be no such market.

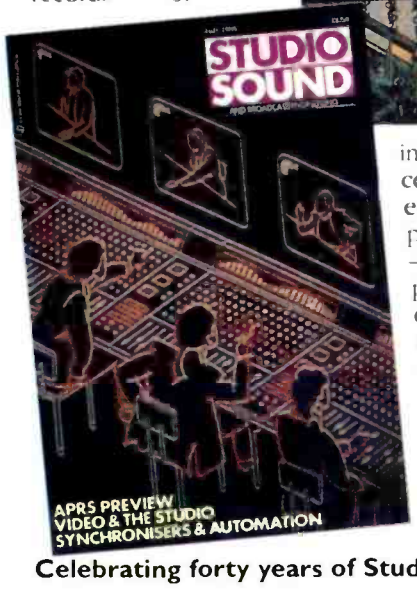
One of the most marked changes that *Studio Sound* has overseen has to be the lowering of the entry point to where common mortals can access equipment that is capable of producing professional results —and at ridiculously low prices. For the previous cost of a Studer 1-inch 8-track recorder, you can now set up a digital studio.

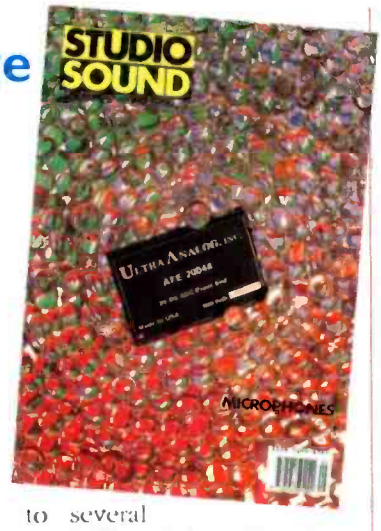
Another obvious change is the fragmentation of the industry. Perhaps surprisingly, though, these are converging because the technology involved is common to several or all. The mighty micro (processor) is naturally at the bottom of all this.

It will be nice to be writing a similar piece in another 32 years and have the luxury of knowing where technology has taken us in the meantime. Regardless of whether I'm here to talk about it or not, the evidence of the last 40 years suggests people will still regard technology as a tool not an end in itself. And the same evidence suggests you'll be reading it in this magazine.

Thanks *Studio Sound*, for 22 very interesting years.

Terry Nelson continues to manage his interests in studio consultation and equipment hire from a picturesque alpy location in Switzerland.





1986–1990

< and analogue data. The BBC starts acceptance tests on the 'world's first commercially available all-digital sound mixing desk' following five years of collaboration with Neve. The promotional video is becoming an increasingly important accompaniment to any record release, prompting Todd Rundgren to comment: 'I never could stand Top 40 radio. Now we have Top 40 video. We've come a long way around to get nowhere'. Live Aid (July 1985) at Wembley and JFK Stadium Philadelphia is the biggest charity event ever and is watched on TV worldwide by an audience of millions.

1986–1990

More initials... BASF launches Studio Master 911 'turbotape', DDA debuts the D-series desk, Dolby unveils SR (Spectral recording), the Midas XL range

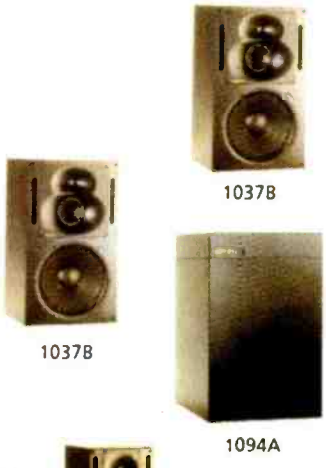
of sound reinforcement consoles arrives, while Neve go with the V-series. Meanwhile much is happening on the digital front. APRS Chairman Mike Beville comments: 'The impact of the CD has opened a new chapter in studio recording techniques' The second Digital Information Exchange takes place in London at the end of 1986.

1987 is notable for new techniques and formats. The record industry gets upset over the supposed threat of DAT recorders and lobbies for the inclusion of the CBS CopyCode chip. Neve, Mitsubishi, SSL and Sony announce their digital standards initiative, while a

'tapeless' recording forum in London features presentations from AMS, Audio & Design, Ferrograph, Soundcraft and Synclavier.

Abbey Road Studios manager Ken Townsend, in a contribution to Studio Sound's 25th Anniversary issue notes: 'The eighties is a technological mess. Standardisation has evaporated >

ACTIVATE YOUR SURROUND SOUND



READER RESPONSE No. 029

SUBWOOFERS 1094A & 1092A ARE PART OF THE COMPLETE COLLECTION OF OUR ACTIVE MONITORS

GENELEC®
OLVITIE 5
SF-74100 IISALMI, FINLAND
12 OCT 96 ONWARDS:
TEL +358-17-813311
FAX +358-17-812267

A Different Future

AS THE EDITOR of this august organ on its 25th Anniversary edition, I am very pleased to have been asked to contribute to the 40th. My first thought was to dive into the archives and locate what I wrote back in April 1984 (along with the other editors to date) to see how right or wrong I had been in my predictions. I know I wrote a piece set 25 years into the future (2009) with crystal recording media, enormous flat-screen displays, and control surfaces reminiscent of a slimmed-down HUI, but when I went to look in the appropriate box it was nowhere to be found. So much for that idea. And everyone on Earth has by now written about all that stuff anyway.

I do recall what was happening in 1984, though. I clearly remember Apple's Macintosh launch advertisement during the Superbowl, and later playing with a 128k Mac in a computer store in Cambridge, MA, until they threw me out. Arguably that machine and its descendants have had more impact on the work of creative professionals—from graphics to audio to video—than any single device. The pundits even then insisted that the company would fail...

I also remember 1984 as the year that saw the launch of the compact disc—in Europe, at least. We were treated to demonstrations of a little player on top of a table and a lot of machinery behind the drapes underneath. Commercial digital audio was probably ten years old or so at the time and it still sounded quite horrible sometimes, thanks to such problems as jitter and brick-wall analogue filters. I remember there being two main camps: those who told us that they had taken away all the problems of analogue and replaced them with 'pure, perfect sound forever', and those who told us it was cold, hard and unnatural and would never catch on. Thankfully, a small third group—believing that we had replaced a set of known problems with a set of unknown ones, so we'd better work out how to fix them—won the day.

I don't know about you, but along with Arthur C Clarke, I find '2001' a lot more portentous than 'Y2k'—my worry is that concern about Y2k will be worse than the real thing. But despite the imminence of 2000 and the new Millennium that follows it, I think we are living in a time of relatively gradual change in the recording industry. Fifteen years ago, the digital audio revolution came home to the living room. Now we are faced with not one, but two new distribution media, but they are not the revolution that took us from vinyl to CD, they are developments—the same basic technology made better. We've even had surround sound at home before, a quarter of a century ago, and with a few notable exceptions we are no better at it today than we were then.

And once again, we have not learned the lesson of the past. Arguably there would today be an open-reel digital recorder in every major studio, were it not for the battle between DASH and Pro-Digi. Now we are about to have a consumer format war between DVD-Audio and Super Audio CD, both of which require expensive, incompatible systems in the studio. Making sure that all players play both types of disc would at least ensure that the consumer is not left in the lurch, but that's not enough. We need a single studio standard too, or at least one that is large enough to encompass both systems. That's what I hate about audio standards: there are just too many to choose from. The more things change, the more they remain the same...

Richard Elen has forsaken the rain of London for the sunshine of California at the pleasure of Apogee Electronics.

Studio design at HMS, New York City, in 1991

< Analogue and digital side by side. Three products, records, cassettes and compact discs. Straight 24-track is a thing of the past. Machines locked together for 48-track, sometimes Dolby, sometimes not. Sometimes 30, sometimes 15. This tape, that tape, digital delays,' and 'A lot of fashionable producers today have their own studios. And few producer-owned studios will want to go commercial—it's a different ball game. You have to employ bookings and maintenance staff and everything.'
While Philips works on developing the digital compact cassette (DCC) and selling the idea to a not totally receptive record industry, the decade closes with DAT becoming the standard digital carrier for an ever-increasing number of master tapes. Pink Floyd perform *The Wall* in Berlin, and the Great and Good gather at Wembley Stadium to celebrate in music the release of Nelson Mandela.

1991–1995

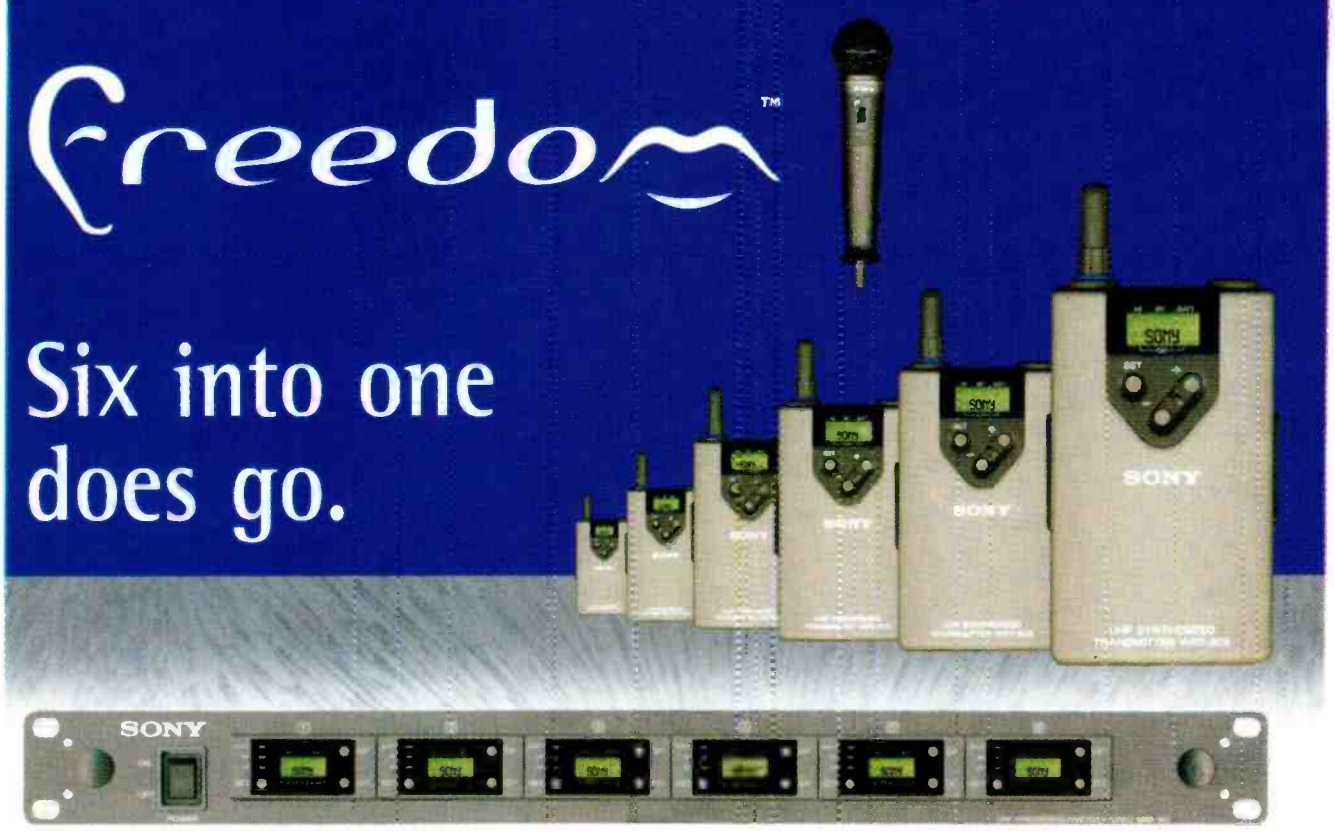
The long battle between MiniDisc and DCC continues and drifts towards stalemate. Philips' Jan Timmer: 'The window of opportunity for the compact disc was the early eighties. For digital compact cassette it will be the early nineties. For CD-R and CD-E, I envisage the window of opportunity occurring from the mid nineties.' In 1991, Abbey Road Studios celebrates its 60th anniversary. A year later, there are more glasses raised as *Sgt Pepper's Lonely Hearts Club Band* notches up 25 years in the shops. Over 12,000 visitors attend the first MIDI Music Show in London. After 30 years Studer split with FWO Bauch. Mitsubishi quits pro-audio, saying: 'The continuing downturn in business has endorsed earlier decisions to withhold development and

introduction of new products.' Townhouse Studios, London, install the 1,000th console built by Solid State Logic. 30 years after his death, Joe Meek's secret for music compression comes out with the launch of the Joemeek Stereo Compressor, built by Ted Fletcher.
Following the merger of EMI >

Total

SONY®

Freedom™



Six into one does go.

More features and more performance per pound than any other UHF Radio System on the market.

The new **Freedom** range of wireless microphones gives you the choice of upto six full diversity UHF receivers in 1 U. **Freedom** is a fully synthesised, frequency agile UHF system with additional features such as auto set up, selectable user groups and battery status indication. The system has a built in DA, allowing you to run an active aerial system giving outstanding audio and R.F. integrity even in the most demanding environments. **Freedom** allows you to choose from a range of six transmitters giving you the flexibility to match a system to any application. Why use VHF systems when UHF technology is now so affordable?

For further details & prices, and to arrange a demonstration, please contact Total Audio Solutions

Total Audio Solutions Limited,
Stockwood Business Park, Stockwood, Worcestershire B96 6SX
Telephone: 07000 45 6000 Facsimlile: 07000 45 5000

Establishing Expertise

NINETEEN-EIGHTY-FOUR was a long time ago, and it is only as I write, that I realise what a truly long time ago it was. If you're of the opinion the eighties were a musically dull period, the excuses are all here—blame it on the extraordinary changes in technology that we crawled through.

And crawl we did. In the spring of my first year as editor (1984-1991) of *Studio Sound*, we were still carrying articles about vinyl disc-cutting and improved lacquer formulations —and so we should. CD had been launched the previous year, but the availability of discs was so awful that there were serious doubts about it being the future. Digital recording was with us—multitrack for the very few and Sony F1 for the masses. We argued as to it, and the CD, sounding better or worse.

It seems odd now, but I still had to justify including creative-artistic stories even though my predecessor had started this some years before. Although we were all creative people, a publication like *Studio Sound* was not seen as the place for it. It was, however, changing as equipment costs fell to enable the more successful artists to buy their own and bring a different motivation to the market. The militant wing of the creative division, in the form of the digital synth manufacturers, openly boasted their aim was the eradication of the recording engineer, so we felt compelled to look on warily as a parallel industry grew up with different beliefs. MIDI helped it grow, made it mass market and eventually reintegrate it with the studio, but that was some years away. So with major changes in hand, the task was to inform ourselves and the readership. But where were the experts?

The topics were many —CD mastering, digital consoles—the first in 1985, audio for video post, assignability, computers and hard-disk editors. Acoustic design was turned on its head by the use of computers. The Corporates fought over digital recorders. DAT was a lucky find. An increasingly international business suffered recessions, globally. DSP began to do things we always wished for. We had to learn about software —what 'it's only software' really meant and how products could evolve, for better or worse and still look the same. We were wary of new media (HD, CD-R, MO, MD…) but when our old tapes got sticky we realised that the future did not look so bad. Home studios became a 'threat' till we understood about Motherships. We tried it, and still the industry changed, fuelled by great gear at 'low-low' prices. Sixteen bits was never enough and we'd made it to 20 in my time. We understood what made digital sound bad and a little of what made it good. At last could talk about technology from a creative standpoint. And a previously B&W magazine was now largely colour.

Highlights included Live Aid in 1985 for showing what we were capable of; Dolby's 1986 launch of SR, making analogue more effective than we could have imagined: Direct Metal Mastering of CDs in 1988 on a converted lathe, for showing what ingenuity could squeeze from old technology, and CDS, the first of the digital film sound formats in 1991, for sight of what we always thought film could be.

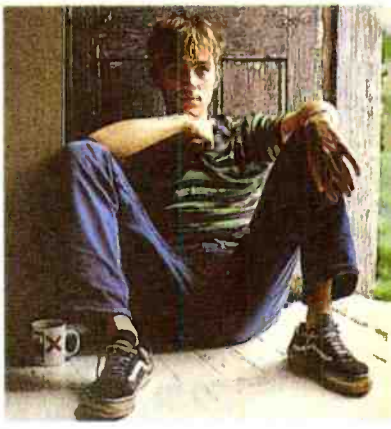
So *Studio Sound* is 40. Many happy returns. It was fun.

Keith Spencer-Allen designs, tests, maintains, advises on and writes about 'audio stuff'.

1991-1995

< and Virgin, the closures of The Manor and Townhouse Three are confirmed. At the 98th AES Show in Paris in 1995, more digital desks are unveiled including products from SSL, AMS Neve, Yamaha and Studer. Commenting on Yamaha's low-priced 01 digital desk, Karl Christmas says 'Yamaha was very aware of the ever

increasing use of digital equipment in live and recorded music and saw the need to manufacture a professional quality digital console that would suit a host of different budgets.' Ampex sells its tape division which is renamed Quantegy. 3M quits the magnetic tape business. Mid nineties big sellers are The Beatles' Anthology, Alanis



Morrisette's *Jagged Little Pill*, Blur's *Great Escape*, Oasis' *(What's The Story,) Morning Glory* and Pulp's *Different Class*.

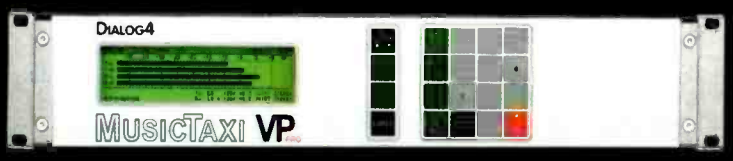
Britpop had arrived. Meanwhile, the 'final' recordings of Glenn Miller are unearthed, dusted down, remastered and released as a double CD.

1996–1999

In the run-up to the Millennium Year Minus One, it's all about techniques, formats, computers and digital workstations in various permutations. On the DVD front, various agreements >

True revolution

Choosing the right audio Codec.

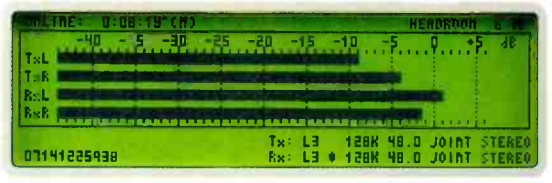


We are not American or British. We don't belong to a big industry corporation. So we have to work that little bit harder. We started 8 years ago with advanced MPEG integration into Audio Codecs and have dedicated ourselves to making them as user-friendly as possible. Our product know-how covers ISDN and satellite transmission, recording, editing and storage. Add our experience, research capabilities and production expertise and you have the legendary German Quality that keeps us one step ahead. For more information, call our UK distributor Charlie Day at THE UK OFFICE, Tel. +44 (0) 1442 870103, or contact our headquarters in Germany.

The Dialog4 MusicTAXI range is one of the most comprehensive codec packages on the market today. It contains all the standard ISO/MPEG audio coding algorithms in common use today such as Layer 2 and Layer 3, as well as CCITT G.722 for high grade voice bandwidth connections, and G.711 so it can talk to a plain old analogue telephone line, too. Connectivity features include upto three ISDN termina adapters and X.21 port, for operation up to 384kbps. Dialing is quick and easy using the 96 entry directory.

The range of network protocols included means that it can be taken to virtually any part of the world. In the studio the audio i/o can be analogue or digital (AES/EBU & S/PDIF interfaces are both provided) The aux data channel enables embedded control data to be sen alongside the audio, and the unit can be controlled remotely from a PC or the external Remote Panel if desired. Most importantly automatic sensing of the codec at the other end of the call means that it sets itself up to communicate with the most commonly used systems in use today, i.e. Telos Zephyr, CDQPRIMA, Glensound and

others without complicated manual programming. Operationally the buttons are large and straightforward to use, while the illuminated LCD display gives a clear indication of what is going on at all times No noisy internal cooling fan to worry about in quiet studio conditions. The Remote Panel can control a MusicTAXI from over 500m away via the RS422 interface. The online menu indicates online time, send-level, receive-level, adjusted headroom, Rx and Tx audio configuration SYNC flag o MusicTAXI at the other end.



Tapeless recording and transmission on the spot is the answer to the enhanced requirements of correspondents. The CTAXI is the solution and is set to become the standard for mobile recording and transmission, because it satisfies the users demand: stereo recording, editing, file-transmission to computers, realtime-transmission to all well known codces. The CTAXI is, of course, child's play to operate. You can use it as telephone, walkman, audio recorder, mobile editing station, transmission device. The size is as small as today's cutting

edge technology allows: 58 x 239 x 150 mm, the weight is 1150 g including 2 x Li-ION batteries. The charger is inbuilt and allows uninterrupted operation. PCMCIA flash cards or hard drives can be used for stereo recording. BWF format is supported.

Meet us at the NAB in Las Vegas, April 19 - 22,
Audiohall Booth L 11253

DIALOG4®

DIALOG4 GmbH, Monreposstr. 55, D-71634 Ludwigsburg, Tel.-49-7141-22660, Fax-49-7141-22667 · http://www.dialog4.com · email: info@dialog4.com.

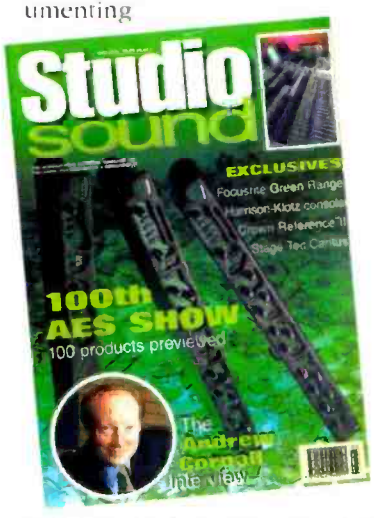
Life Begins At Forty

'DO YOU THINK there's a place for it any more?', I was asked of *Studio Sound* by a former colleague. I'd spent plenty of time thinking about it, and my accepting the position of *Studio Sound* editor really should have spoken for itself. But this was 1992, and the challenge of the project studio was ringing loud in the ears of pro-audio.

At the time it was clear to all that the audio industry that entered the next millennium would be radically different from the one that explored its way through the sixties and experimented its way through the seventies and eighties. But it was equally clear to me that there was a wealth of opportunity in the developments that were to come—and that a title like *Studio Sound* would not only have a place in their history, it would be an essential part in shaping it.

Studio Sound itself had set the blueprint for the job over the proceeding 30-odd years, documenting technological advance, questioning its inventors and users, and sharing its findings with readers all around the world. The emergence of new technologies, the prospect of new delivery media and broad-cast formats, the requirement for new technical standards, and an increasingly requirement for information, discussion and education ensured that there remained an important role for a worthy magazine.

I am not certain that he was convinced by my argument, and the magazine's 40th anniversary is an appropriate opportunity to make a couple of observations. The first lies in the steady succession of important events that have kept *Studio Sound* busy since 1992. Questions raised by the professional use of modular digital multitrack machines and DAT recorders prompted *Studio Sound* to run tests; inaugural explorations of 96kHz and 192kHz recording technology attracted exclusive invitations to attend; and breaking the story of the Beatles *Anthology* sessions brought the magazine to the attention of the rest of the world's press. Europe's CE standard, meanwhile, was an issue that needed an international title to address if it wanted to continue to do business with the States and beyond, and in a quieter moment, an exploration of London's recording heritage showed us all where we had been born.



The second observation is that now, as the second longest-serving editor of *Studio Sound*, I'm cursing the additional work that marking the magazine's 40th anniversary entails.

Of course, no magazine can remain healthy without regularly considering its place, and its place is intimately connected to its industry. So just as the drummer learned to love the drum machine, the music recording industry is coming to terms with the project studio—and will gain significant ground over it through the take-up of surround formats. Audio-for-video postproduction, while having taken great strides in sophistication, is still on a fairly steep learning curve. And the ramifications of the changes in broadcasting are still to be properly felt. Throughout all of this, of course, the history of professional audio will continue to grow.

In occupying the historical and technical high ground over the project studio, we seem ready to sustain one major misconception, however. The professional aspects of audio evolved through the enthusiasm and efforts of talented people, they were not handed down complete like some facet of Plato's Theory of Ideas. There is no intellectual 'model' we can use to determine what's professional and what's not, and we should be careful how we make our judgements. It is not about cost, heritage or aesthetics, it is about performance, facility and functionality. Ultimately, if it does the job to a suitable standard, then it is professional.

Looking back over 40 years, it is evident that *Studio Sound* contains many lessons, not the least of which it is that change is our way of life and a closed mind is a disability.

Tim Goodyer manages his insomnia by correlating his 41 years with *Studio Sound*'s 40.

Celebrating forty years of Studio Sound March 1999

1996–1999

< are reached and so-called 'strategic alliances' crop up more than once. The Harman Pro Group continues its expansion with the purchase of Digital Audio Research. The APRS gives a Lifetime Achievement Award to Adrian Kerridge and Technical Achievement Award to Ivor Drawmer.

Elton John's tribute to Princess Diana, *Candle in the Wind 1997* becomes the fastest selling

single of all time. It is also the fastest to be produced - the track is recorded, mastered and despatched within a record 48 hours by Mercury Records. Abbey Road claims to be the first commercial studio to open a dedicated multimedia division following an alliance with Apple Computer. Multichannel surround sound is much

discussed. At a seminar for postproduction personnel, De Lane Lea's David Old cautions: 'Until there is greater dynamic range available for TV, surround sound is no great advance. We need more dynamic range more than we need more speakers.' And Mastervision's Tracy Martinson comments 'To build >

DVD production europe 99

24-25 May 1999

Working on DVD in Europe?
Thinking about working on DVD in Europe?
Need to know how DVD will affect your business?

DVD Production Europe 99

is the only European DVD conference to offer a concentrated two-day presentation schedule for decision-makers and technical personnel. **DVD Production Europe 99** deals effectively with both the business and production issues surrounding European DVD. The programme is tailored exactly to meet the needs of video, music and games content owners and those working within the DVD, CD and video production chains.

What's in it for you?

A program of challenging and authoritative presentations by the leading exponents of DVD in Europe:

- DVD Basics and how to get a DVD made
- European Market analysis
- Choosing content and features for success
- Dealing with copyright and distribution
- DVD Projects explained, step by step
- Separate specialist presentation streams for: DVD-Video, DVD-Audio, DVD-ROM/games

Plus:

The Party at the world's most famous recording studio, **Abbey Road** for the presentation of the **DVDPE Craft Awards** with plenty of time for networking with delegates and speakers.
A copy of One to One's specially prepared **DVD Report III.**

DVD Production Europe 99 will be held in the City of London's prestigious *Conference Forum* centre

Presented by:

Miller Freeman

IRMA

Sponsored by:

Soho press

TOOLEX
Nobody goes further

SONIC SOLUTIONS

Solid State Logic

To Register for DVD Production Europe 99 or for more information:
Log onto our web site at: www.prostudio.com/dvd
Or contact us direct:
Phone: Sam Achagra: +44 (0)1306 501 530
Fax: +44 (0)1306 500 960
Post: CCW, Communications House, Curtis Road, Dorking, Surrey, RH4 1EJ UK

Forty Years and What Have We Done?

WELL QUITE a lot really. We have seen the birth and development of an industry that has gone from the most incredibly humble roots to one that has extended out to touch every single aspect of modern life.

So you think home recording is a modern phenomenon? Well witness instead the birth of a magazine that served the now seemingly incongruous function of informing the public on the how and why of operating, choosing and getting, the best out of a plain old open-reel tape machine. Houses the world over were being invaded by futuristic looking slabs of hi-tech machinery with names that few had ever heard of and from places that few had ever been. You see a pattern developing.

When it became apparent that a requirement existed to serve an altogether more select band of recordists, which happily coincided with a grass roots movement away from record company recording facilities to those of independents, exhibiting visionary far-sightedness the magazine was retargeted at a new breed of user. Because of this, the world was afforded the vehicle by which progress could be traced and documented.

Mind you, the writers in those earlier years of *Studio Sound* had the best of it. They were not arguing the toss on 20/24-bit or 96/192kHz, their hearts were locked into far more fundamental and palpable concepts such as increasing the meaning of 'multi' in multitrack.

They were sitting in on the genesis of pro-audio, the original steps of true pioneers, names that would become facility hold names, and the very beginnings of democratisation of technology for the masses. I would trade my time with theirs purely to have been able to experience the naivete that characterised those formative years.

Those days were different on so many different counts and the expectations of the user were light-years behind what we now take for granted. You didn't just have to be able to use the gear, you had to be able to fix it and kick start it.

Not surprisingly the magazine's stance became one of detailed analysis and test because there were dramatic differences between equipment. Development and progress were still clinging to the steep part of the technological curve and balancing themselves against the capabilities of manufacture. You had to buy carefully and low price generally had a very good explanation and implication attached to it.

These were days of giant strides and leaps, enormous conceptual revolutions and hard-won raising of the ante and expectation. Today, by comparison, we are all about dotting 'I's and crossing 't's, our progress seems rapid under the microscope with which we have grown accustomed to viewing it, but its far less dramatic with the naked eye and perhaps where it matters most, practically imperceptible in the field.

The point about the technology curve is that it is so unforgiving and treats wrong decisions so cruelly. If history teaches us anything it tells us that the people have to be ready. There are no successful instances of technology that has been forced on the end-user, such examples are filed under 'ahead of their time' and 'too smart for their own good'.

I may hanker for the naivete of old yet in my time I have witnessed other revolutions. SR.D as the first real grown-up multichannel format, the introduction of the first large-scale digital desks, the revolution of postproduction through hard-disk editors and their incorporation with complimentary digital desks, the mass adoption of the MDM, and the first real affordable digital desks and affordable hard-disk systems. These and associated developments have made more difference to more people than all the other major progressions before because the end-user industry has grown significantly. Audio now has a dignity which transcends this magazine's initial brief of music recording to the areas of film, post and the everyday mass market reach out and touch someone world of broadcast TV and radio.

When this magazine started, music recording epitomised the leading edge of creativity and technology; broadcast and film was done against the odds. Today the balance has shifted because the role of audio developed and the creative and technological initiative has shifted to post, broadcast and film because it can be argued that these areas have been under exploited.

Party to this, and it happened everywhere, is that the media spread ideas and the word. Whether you want to hear this or not, everybody has to acknowledge the role that *Studio Sound* played in changing the professional audio world as it alone disseminated the information that everybody was desperate to grasp. In that most critical of times there was no other medium. And it was as pertinent to those in Tokyo as it was to those in Edinburgh and LA. It helped shape pro audio. Accept that and live with it.

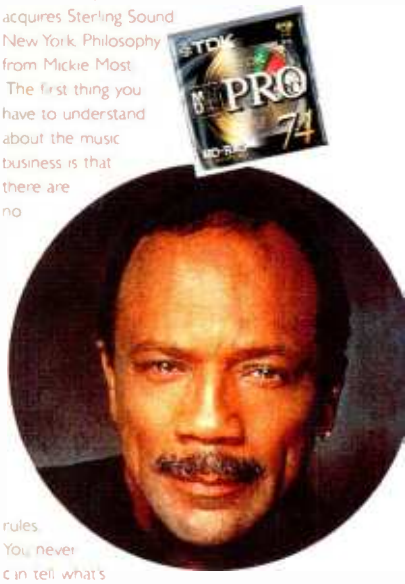
What heartens me is that all former editors have an obvious affection for the title and respect for what it has achieved and continues to achieve. Yet the achievement is one of a line of quite remarkable people who have taken charge of what has become the means of recording and monitoring the development of an industry.

When you buy a house, you never really own it. You are simply a custodian until someone else takes charge of it because the house was there before you came along and will still be there when you're gone. So it is with *Studio Sound*, we are only ever caretakers for what is the singularly most important title in this industry, the magazine has a heart of its own.

Zenon Schoepe, is presently Studio Sound's executive editor

1966–1999

any kind of major facility today without acknowledging S I would be short sighted Nineties names include Sp ce Girls The Verve The Prodigy Radiohead New Labour Comebacks o' the decade inc ude Blondie and v ntage valve recording equipment Sol d St ate Logic founder Colin Sanders d es in a helicopter crash Metropolis London acquires Sterling Sound New York Philosophy from Mickie Most The first thing you have to understand about the music business is that there are no



rules You never c in tell what's coming next December 1998 marks the cen tenary o' the invention o' m i net c recording S' dio S und's feature tracing the h story and fortunes of 's Danish nventor Valdemar Pou en conc ude We may have almo t forgo ten Poulsen oday a k the man in the

street who Poulsen is ind you ca be s ure o get a blan oo b ' h s nventior was a br an breakthrough and de erves recogn on Without h pioneering efforts where would the modern recording industry be?

The pro-audio industry joins *Studio Sound* in a celebration of the last 40 years' events and achievements

The long and winding Abbey Road

It's 68 years this year since we opened our doors for recording with Sir Edward Elgar conducting his own *Pomp and Circumstance*. The good news is we're still in business and still evolving. We've always used the best gear for the job (originally made by EMI of course) and worked with some of the best people in the business. I suppose one of the keys to our success has been our diversity, recording artists from the Manics to Menuhin, also our large postproduction department and most recently the formation of Abbey Road Interactive who get involved with all the new media stuff such as Web-site design, enhanced CDs, and DVD.

We're always a bit torn between serving the needs of our professional clients and the distraction of the thousands of tourists that appear at the front of the building to visit the 'shrine' and leave their marks on the wall. Of course every year there seems to be an anniversary of something to do with the lads from Liverpool and this year is no exception being 30 years since the release of the *Abbey Road* album.

These days it's not just the technical side of things that have to be right but also the complete service. You're only as good as the weakest link in the chain, so when we recruit we're looking for that rare all round mix of technical, musical and personal skills. So, we look forward to the next Millennium with anticipation of surround (again), high-resolution recording and DVD-Audio. After that, who knows? But we'll be there.

Chris Buchanan, Abbey Road.

Historical precendents

***Studio Sound*'s first year:** In 1959, AKG launches the world's first supra-aural, open-back, lightweight headphones (K50); designs and manufactures for Telefunken the ELA M250 and ELA M251; and reads the new UK magazine *The Tape Recorder*...

The 1st Decade: The rapid spreading of TV kills many movie theatres. AKG responds by discontinuing optical equipment and concentrating exclusively on designing and manufacturing audio transducers. AKG establishes a British subsidiary, AKG London. The C26 and C30 capacitor microphones are developed further into the C60 with Nuvistor miniature tube (the name is derived from 'nueva vista' a new vision); the C12A Nuvistor condenser microphone is developed as a predecessor to today's C414. AKG delivers the world's first 2-way cardioid microphone, the D202. The 'CMS' modular capacitor microphone system becomes famous all over the world. After initial problems have been solved, it strengthens AKG's monopoly with the BBC. AKG is a faithful subscriber to *Studio Sound*...

The 2nd Decade: *Studio Sound* reviews AKG's BX20, the world's first truly portable studio reverberator. A special stamp issued by the British Post Office commemorating the 50th anniversary of the BBC shows historical microphones along with models from the AKG catalogue. The first AKG dummy head microphone is used for binaural recording. The first AKG endorsement contracts are concluded with Frank Zappa, Jon Hiseman, Roger Whittaker, and other artists. AKG steps into the lion's den by founding a subsidiary in Japan. World firsts include the AKG TDU7000 modular digital time delay unit.

The 3rd Decade: *Studio Sound* reviews the AKG Tube. Black market prices for C12 microphones skyrocket. Responding to the market situation, AKG makes the first rerun of a large-diaphragm tube microphone. A Golden Microphone (AKG C535) is presented to Frank Sinatra. AKG Acquires Boston-based Ursa Major, which is transformed into the Digital Products Division of AKG Acoustics. The first fruit is the ADR68K. The DSP 610M Delta Processor for the 'Delta Stereophony' sound systems is launched by AKG along with the MicroMic Series miniature clip-on microphones. AKG's DSE7000 Digital Sound Editor is a surprisingly simple solution to the problem of quickly editing short radio news items and jingles.

The 4th Decade: *Studio Sound* reviews the AKG WMS900 Wireless Microphone System. AKG acquires the UK-based Edge Technology Group with its subsidiaries BSS Audio, Turbosound, and Precision Devices. AKG takes to the stars —the Audimir space project uses AKG products for room simulation in outer space. Harman International Industries Inc becomes the new majority owner of AKG GesmbH. AKG founder Dr Rudolf Goerike dies. *Studio Sound* congratulates on the 50th anniversary of AKG

1999: Happy Birthday to you, *Studio Sound*!

Christina Burkhardt, AKG.

Growing together

AMS and Neve began life as separate companies in 1977 and 1962 respectively. Each company had its own areas of expertise. Neve began by building a reputation for the excellence of its analogue designs. The first Neve-designed console made use of valves and was built for Recorded Sound in London's Bond Street.

This was followed in 1964 by transistor consoles, the first of which went to Philips Recording Studios in London. In 1978, while Neve was forming its DSP design team to look into digital console development, AMS launched the DMX 15-80 digital delay line. AMS was the first of a new breed of digital-only audio enterprise. Over the following two years it changed the sound of records forever with the addition of a 16-bit microprocessor-controlled pitch-changer, a full-bandwidth reverb and a full bandwidth loop editor-sampler.

1984 was a landmark year for both companies: Neve delivered the first digital console—the Neve DSP—to Tape One in London, while AMS introduced the world's first commercially viable hard-disk editor, AudioFile. Their success led to the acquisition of Neve in 1986 by Siemens Austria. The industrial giant went on to buy AMS in 1990 and subsequently merged the operations. AMS Neve was later returned to private hands in 1996 when AMS founder Mark Crabtree acquired the company from Siemens. Today AMS Neve is widely regarded as the leader in digital mixing technology. Its flagship DFC (Digital Film Console) is the world's largest digital mixing console, capable of providing over 500 audio paths.

Colin Pringle, AMS Neve

Extending the family

Congratulations for being a part of the history of studio coverage in your 40th anniversary. Although I cannot look back 40 years (because I was not even a sperm 40 years ago), I feel very much related to the audio industry of the time because everybody was working with tube equipment of extraordinary high quality. Companies spent their effort on developing gear with the best possible performance and robustness, rather than making it ever cheaper in order to compete in overcrowded markets as is too often the case today.

I fear that we are in danger of losing part of our engineering culture as well as our musical culture when we move on like this. So few companies, so few idealists hang on to their ideals without compromise, creatively combining the valuable results of the achievements of the past with today's possibilities without loss in quality. Today, when the cost of tape and production time are the main issues in a commercial studio's survival, the ability to deliver a high quality production environment has becomes a niche market for a few high-end studios. On the other hand, there is the mass market with its cheap and fast production facilities mainly based around cost-effective digital production environments. There is no doubt that these environments—with their previously unimagined possibilities to control audio material—also offer new musical opportunities. But again, who will take time to explore these possibilities and who can afford to do it?

Here's hoping that the next 40 years will see audio culture rise to new heights.

Dirk Brauner, Brauner Microphones

The information station

When I started reading *Studio Sound* it was 1973. I remember being mainly interested in *Studio Sound* because of all the schematics and technical information on electronic parts they were printing in those days. The only alternative I had in those days was *Wireless World*. I remember that *Studio Sound* slowly moved away from the technical side of products towards the user's side of equipment, which was a pity to me initially. But up to today *Studio Sound* always has been the main source of information for us at D&R. Today I am glad we are getting more copies than in the early days when I regularly missed some issues because of the popularity of the magazine in the company.

I hope that *Studio Sound* will continue to give us manufacturers all the information we need from the market and from our competitors of course. I know I will not be present for the whole next 40 years but I hope that *Studio Sound* will continue to be the leading international magazine to present our products our company and I hope it will continue to be a well respected platform for new ideas.

Congratulations for providing us with 40 years of serious information.

Duco de Rijk, D&R Electronics

Setting standards

Genelec may not have been around as long as *Studio Sound*, though we, too, celebrated a key anniversary very recently—our 20th. Since Genelec came into being, way back in 1978, we have focused on the design and manufacture of active monitors at a time when the dominant format was passive.

However, the dedication, devotion and commitment Genelec has put into its belief in active monitoring through the years has paid off because, this format has become the pro-audio gold standard. We are very proud to have contributed to that as we see the acceptance of active monitoring as the most important development in monitoring in the last 40 years. It did not happen overnight,

it seemed at times a slow process. We were very much helped along the way when *Studio Sound* asked Genelec founder Ilpo Martikainen to write an article on the active versus passive debate that was then raging, (*Studio Sound*, April 1983). The feature generated a lot of feedback and constructive comments that lead to further advances in the active concept.

So what is next? Interestingly we believe there is a great deal of work to be done educating users about the interaction of the loudspeaker and the control room. As we all know, but tend to overlook, the performance of a loudspeaker is hugely affected by its environment. When we visit clients and measure the systems in their rooms, as part of our after-sales service, we find, far too often, that their monitors are not giving optimal performance because of the environment they are in. Our clients are always amazed how by making small changes to the room, we can make huge improvements to performance of their monitors.

We look forward to more coverage from *Studio Sound* on this subject in the years to come.

Lars-Olof Janflod, Genelec

The oldest new company in the business

This year Quantegy celebrates its 40th anniversary in the magnetic media manufacturing industry. Through the many changes we have seen, there has been one constant factor—our enthusiasm and commitment to the industry.

Quantegy is the major supplier in the audio business with a claim that more hit records are mastered on their product than all other analogue tapes combined. The company is a significant force in the video industry manufacturing high-quality products for use by professionals in these industries. The Instrumentation recording business for aerospace development and space exploration also relies on our products.

Even at this time when more established analogue formats are being challenged by smaller digital formats, we are well aware that there is still significant investment by the recording studios in 2-inch and half-inch analogue formats. For this reason we are still willing to commit R&D money into supporting this requirement with the recent introduction of GP9—a high output analogue tape designed to give virtual shed-free durability and vastly improved archival stability.

During our 40 years in the business our state-of-the-art factory in Opelika, Alabama has evolved but retained one consistent factor—many of the employees have over 20 years experience in the manufacturing of recording media and all are dedicated to output of the highest quality of product.

We probably have the widest range of products across our chosen industries than any other manufacturer, and pride ourselves on excellent after sales service provided by on site engineers. We were here for the first 40, and will be here for the next 40 years.

Peter Goldsmith, Quantegy

A dance step?

Small, big, small... Not a reference to the vagaries in peoples' tastes in studio monitors, but an aside on the changes of manufacturing companies within the Audio Business over the last 40 years. From many small beginnings in the 1960s and 1970s some of the most famous analogue companies evolved. Companies whose founders were often as interesting, entertaining and memorable as the products that bore their names. The Klondyke gave way to the corporate high-life of the late seventies and eighties. Old hippies cashed in their chips to follow the country good-life or became consultants to the civil servants who were now running their companies. The mid to late nineties saw some new and interesting products and companies, often created by disenchanted eighties staff.

One hopes for a period which will be as creative as the last 40 years and where the cost of a product is not more important than what it sounds like. Where people listen to things and not just measure them. Finally there is a rumour that *Studio Sound* is thinking about giving free space to advertisers who have still got all their copies from the last 40 years. Has anybody got the April 1961 article entitled: 'Will 4 tracks make a difference?'

Steve Revill,
Quested Monitoring Systems

Forty years together

There'll not be many companies who can claim to share *Studio Sound*'s 40-year history, but Solid State Logic comes close, as we're celebrating our 30th birthday this year—so Happy Birthday to both of us! In 1969, the company began by making control systems for pipe organs; the first audio console, the SL4000B, appeared in 1977. An early photograph shows an SL4000 on booth 56-57 of the APRS Show in 1979, at the Connaught Rooms in London.

1981 was a noteworthy year for SSL. The SL4000E was awarded the prestigious UK Design Council Award, having revolutionised studio management with Total Recall. Later that same year, SSL received its first Queen's Award for Export Achievement. At the end of a decade of analogue expansion, which saw the SL4000 series become the world's most widely used multitrack console, SSL entered the digital era in 1989 with ScreenSound, which pioneered nonlinear audio for video.

The success of the 'ultimate analogue console'—the SL9000j, introduced in 1994—showed that analogue technology still had a lot of life in it, while SSL's expanding digital product range provided additional pioneering choices.

Studio Sound has always been one of Solid State Logic's first choices for advertising, and in 1998 a fruitful collaboration between SSL and the *Studio Sound* advertising department resulted in the highly successful 'Cat in the Bag' launch at AES 98 in Amsterdam of the company's latest digital product, the MT digital multitrack console. Here's to the next 40 years!

John L Andrews,
Solid State Logic

Past 25 years

Over these past 25 years much has changed in an Industry which not so long ago could not agree on how to wire an XLR. Since 1973, Soundtracs has been actively designing and manufacturing audio mixing consoles in one form or another. The function of a console being very much dictated by the equipment with which it is to be interfaced and the technology available to be encompassed, we at Soundtracs simply strive to anticipate these extraneous developments.

The earliest and most significant of these was for us in the early-eighties with the advent of multitrack recorders and then the broad acceptance of MIDI, both of which increased demands for line level inputs and hence the introduction of 'in-line' configurations. By the mid eighties we pioneered MIDI-based digital routeing and muting with the natural progression to SMPTE-based fader automation utilising the, then, cost-effective PC. As the nineties witnessed high-speed audio processing becoming more readily accessible we added assignable 'onboard' signal processing, then in 1996 we introduced the first fully digital SHARC-based console.

Few, if any, of these developments would have occurred without the liaison of others not directly involved in the mixing console business, neither would the now accepted format standards have been universally adopted without the appraisal and support of trade journals, most specifically *Studio Sound*. So as we reflect on the past 25 years we would take this opportunity to thank all the talented individuals who have enabled Soundtracs to remain innovative, independent and most importantly, in audio.

John Carrol, Soundtracs ■

PRODUCT & BROCHURE SHOWCASE

FAXBACK +44 171 401 8036

Microphone University

Do you want to learn more about microphones?

Visit the Microphone University on the Internet at:
www.dpamicrophones.com

The Microphone University features:
- General Microphone Techniques
- Application Guide
- Technical Corner

The Microphone University is offered to you by DPA Microphones - Manufacturer of the famous Series 4000 Microphones.

DPA MICROPHONES
Hejrevang 11
3450 Allerød, Denmark
Tel: +45 4814 2828
Fax: +45 4814 2700

1

Prism Sound

produces the DSA-1 hand-held AES/EBU analyzer, the Dscope FFT analyzer and high-quality A/D and D/A converters.

The DSA-1 is the only hand-held tool that measures carrier parameters and data content. With programmable go/no-go limits and Watchdog or Channel Check modes it solves interface problems fast.

For more information on Prism Sound range of products, call:

Tel: +44 (0) 1223 424988
Fax: +44 (0) 1223 425023
William James House, Cowley Road, Cambridge CB4 4WX

2

THE source

Now featuring 14,000 + audio and video related products!

FREE

CANFORD

Tel: +44 (0) 191 418 1000
E-mail: ss@canford.co.uk
www.canford.co.uk

3

audio-technica®

PROFESSIONAL AUDIO PRODUCTS

Technica House,
Royal London Industrial Estate,
Old Lane, Leeds,
West Yorkshire LS11 8AG

Tel: +44 (0)113 277 1441
Fax: +44 (0)113 270 4836
E-mail: sales@audio-technica.co.uk

4

Analogue Perfection

For information on John Oram's stunning range of Consoles and Rack equipment, return details or visit our Web site.

http://www.oram.co.uk
E-mail: sales@oram.co.uk

ORAM

ORAM PROFESSIONAL AUDIO
Tel: +44 (0)1474 815300
Fax: +44 (0)1474 815400

5

Do you use Cable...?

Oxygen Free

... do you want better quality?

... more choices?

... better pricing?

Call today for your FREE catalogue!

Tel: +44 (0)1444 258258
e-mail: sales@beyerdynamic.co.uk

beyerdynamic

6

The tools of the trade!

Palmer

Adam Hall Ltd
3 The Cordwainers, Temple Farm Industrial Estate
Southend on Sea, Essex SS2 5RU
Tel: 01702 613922 Fax: 01702 617168 e-mail: mailuk@adamhall.com

7

Professional Audio Metering

DK-AUDIO

DK-AUDIO • Marielundvej 37D
DK-2730 Herlev • Denmark
Phone: +45 44 53 02 55
Fax: +45 44 53 03 67
e-mail: dk-audio@dk-audio.dk
Internet: www.dk-audio.dk

8

PRO AUDIO BUYER

RAPER WAYMAN Professional Audio

For your PRO-AUDIO BUYER Call 0181 800 8288

9

For an immediate response either FAXBACK directly or mail to Studio Sound, 4th Floor, 8 Montague Close, London SE1 9UR. Fax: +44 171 407 7102

Circle

the number you require further information about

1 2 3 4 5 6 7 8 9

MARCH 99

YOUR INFORMATION

NAME .....
ADDRESS .....
.....
.....
POSTCODE .....
TEL .....
FAX .....

Studio sound classified

To place an advertisement contact: Studio Sound (Classified),
Miller Freeman Entertainment Ltd.,
8 Montague Close, London SE1 9UR, UK
Tel: +44(0)171 940 8518 Fax: +44(0)171 407 7102
All box numbers reply to the above address

RATES: Recruitment £38 per single column centimetre. All other sections £33 (minimum 2cm x 1) Box number £10 extra per insertion. Published monthly.

situations vacant

UK SALES MANAGER (SOUTH) – SPIRIT

Soundcraft

Spirit is the UK market leader in creative low cost mixing with an unrivalled record for innovation and technology development. Part of the Soundcraft Group, Spirit is now looking for a committed, self motivated sales manager who is keen to develop their career as part of one of the foremost audio companies in the world.

A background in audio is essential and a keen interest in music related activities is desirable. The successful candidate should also be able to demonstrate a good understanding of the MI mixer market and possess the drive and enthusiasm to manage and develop the Spirit dealer network in the South of England. The potential for promotion into a more senior role in sales management in the Soundcraft Group is an additional attraction of this new position.

If you are looking for a challenging role where you can fulfil your career ambitions and combine your enthusiasm for audio with a natural flair for sales, then please write immediately, enclosing your CV to:

Helen Thomas,
Soundcraft, Cranborne House, Cranborne Road, Potters Bar,
Herts EN6 3JN
01707 668257
Helen.Thomas@Harmanpro.com

HUMAN RESOURCES

National Sales Manager, UK

We are looking for a young, powerful and enthusiastic person to manage the BEHRINGER dealership channel in the UK.
Interested candidates should have excellent communication and organisational skills, alongside experience in our business area as well as a good knowledge of studio equipment. A good working knowledge of Microsoft Office and administrative procedures is required, knowledge of administrative software (Exact) would be a plus.

The National Sales Manager is responsible for turnover, profit and loss in the UK and must be capable of working individually as well being an important link in the team. The main task is operating as the Behringer presence in the local market, the dealer channel must be controlled and the successful applicant can expect to be "on the road" about 80% of their time.

Interested applicants should send their CVs including their salary requirements to:

BEHRINGER International GmbH
Human Resources
Hanns-Martin-Schleyer-Str. 36-38
D-47877 Willich-Münchheide II • Germany

BEHRINGER

Film Application Engineers

We wish to recruit two engineers to join our busy Film Sound department, one based in London and one based in Wiltshire. Their mission is to provide technical assistance at every stage of a film's soundtrack in order to maintain the high standards associated with our services and trademarks.

Responsibilities include aligning and maintaining specialised studio recording and monitoring equipment, checkouts for special screenings, quality control of optical transfer and laboratory facilities and attending the final film mix to assist in producing the soundtrack master.

Successful candidates will be engineers (probably graduates) willing to travel, with a good practical knowledge of analogue and digital electronics, coupled with the communication skills necessary to deal with a wide variety of international clients. In return we offer a competitive salary, excellent working conditions and the opportunity of working for the acknowledged world leaders in film sound.

For further details and an application form please write to:

Bruce Nottage
Dolby Laboratories Inc
Wootton Bassett
Wiltshire SN4 8QJ
jobs@dolby.co.uk

Dolby

SOUND ENGINEER

One of Barcelona's major studios doing post-production work, requires a Sound Engineer. Our candidate should have at least three years of experience in the world of advertising as a Sound Engineer. A knowledge of the Spanish language preferred.

PLEASE CALL +34-934188822 AND ASK FOR QUIM OR IGOR

FOR ALL YOUR RECORDING NEEDS
AMPEX-BASF-MAXELL-3M-SONY-KAO
AUTHORISED NATIONAL DISTRIBUTOR
Spools, boxes, blades, splicing and leader tape
Custom wound cassettes C1 120, labels, library cases, Inlay cards.
Bulk audio C-Os, cases, pancake, Broadcast cartridges.

SVS
SOUND & VIDEO SERVICES
Shentonfield Road, Sharston Industrial Estate,
Manchester M22 4RW. Tel: 0161 491 6660
FOR QUALITY PRICE AND SERVICE

HEAD TECHNOLOGY

NEW TAPE HEADS
Supplied for most makes,
Tape Head Re-Lapping/Re-Profiling.
Same day turn round.
HEAD TECHNOLOGY
11 Brittania Way, Stanwell, Stalnes,
Middx TW19 7HJ.
TEL: 01784 256046

STOCK LABELS FOR COMPACT DISK VHS VIDEO & AUDIO CASSETTE

- On A4 sheets for computer printing by laser printer.
- As continuous roll with holes for dot-matrix printers.
- Supplied blank white with next day delivery from stock.
- 48 hour delivery on a wide range of coloured labels.
- Custom printed labels supplied to client specification.
- Telephone for overnight delivery of ***FREE*** samples.

Superfast Labels Ltd
Unit 15, Church Road Business Centre
Sittingbourne, Kent ME10 3RS England
☎ (01795) 428425 Fax (01795) 422365
World Wide Web - http://www.superfast.co.uk/label/

classified

products and services

mastering and duplication

CD Mastering £50ph
CDR Duplication £3 each
Copy Masters and Editing
Real Time Cassette Copying
Free Glassmaster: 1000 CDs c.£650

CD-audio & CD-ROM
Printed labels & inlays
Every copy individually checked
Excellent quality & presentation
Best prices, ultra fast turnaround

RPM
Repeat Performance Mastering

6 Grand Union Centre
West Row
London W10 5AS

Tel. 0181 960 7222
Fax. 0181 968 1378
www.repeat-performance.co.uk

equipment for sale

Pre-Owned RADARs

Due to the phenomenal success of RADAR II, we have a number of RADAR Mk. 1 trade-ins available. All 24-track systems, with remote control and Exabyte back-up – from £8,000 (excl VAT). Call Garry Robson for full details.

Tel: 0171 624 6000 Stirling

STUDIO, RECORDING & PA EQUIPMENT
+ all musical instruments & technology
STUDIO CLEARANCES UNDERTAKEN
MUSIC EXCHANGE
56 Notting Hill Gate, London W11 ☎ 0171 229 4805
OPEN 7 DAYS LARGE SELECTION ON SALE

equipment for sale

WANTED

'OLD NEVE CONSOLES'
any condition... we will purchase worldwide

AES PRO AUDIO
A UNITED KINGDOM BASED COMPANY

THE 'VINTAGE' NEVE SPECIALIST!!

Telephone: 01932 872672 Fax: 01932 874364 Telephone International: 44 1932 872672
Fax: International: 44 1932 874364 www.aesproaudio.com

funky junk Ltd.

505-507 LIVERPOOL ROAD,
LONDON N7 8NS
Tel: 44 (0) 171 609 5479
Fax: 44 (0) 171 609 5483
e-mail: sales@funky-junk.co.uk

Mark Thompson
Helen Rider
Steve Lane
Clive Richards

THE MILLENIUM BUG ATE MY GIRLFRIEND

A cautionary tale from the old country . . .

"I had toyed with the idea of going digital for a decade, more or less, so when the world stopped still for the Festival of Impeachment, it seemed a good way to fill the endless tedium of life, the universe and everything. AND SO . . . **out** when my faithful, outdated and obsolete analogue recording equipment, and **in** came a truck-load of cardboard boxes; computers, converters, hardware, software, overwear, underwear, cables, tables and vegetables (or at least a fruity Apple or two). Beam me up Spock, if it didn't look like the Starship Enterprise about to enter warp drive.

So I turned on, tuned in and . . . crashed. After a day or two on the sotware helpline, I got through to a very helpful voicemail message guiding me to a website of adverts and a starting point of a learning curve that has been moving in a gradual downwards direction ever since. So now I'm three months in. Clinton's still there, and I'm still here; desperately fiddling with digits, powering-up, backing-up and cracking up. I've learned more than I ever wanted to know about computers, and forgotten most of what I ever knew about music (and certainly about soul . . .) BUT I do have two full minutes recorded (if I cut, paste and loop that should fill my first CD). AND I have a room full of digital equipment worth fully 10% of what it cost three months ago. SO, – If you want to be a REAL COOL DUDE, follow me into the digital domain. If you want to be an analogue square, then call those sad, sad limeys at Funky Junk and they'll take care of you. They even offer SERVICE and ADVICE, – **that's** how old fashioned and out of date they are! Mr. D. Git. Hipsville USA.

equipment for sale

US: Here, there and everywhere

Rewriting the geography of business is at the cost of the most enduring aspects of musical development writes **Dan Daley**

BACK IN 1991, I did a sort of reverse Beverly Hillbillies, loading up the truck with brie and brandy and taking up a residence in Nashville. Okay, so I maintained a residence in Manhattan (I couldn't carry that much brie) but Nashville appeared to be the next major centre of music recording in the US. It was not just that country music was hot again —Nashville's studio base, along with its nonpareil community of musicians and other music entities, was shaping up into what could have been a powerful force for not just recording music but changing it, as well.

In addition to being close to the news, I felt a palpable excitement, one that had not seemed so real in this industry in a long, long time. And the studios gave Nashville a sense of permanence that eluded such previous pretenders to the title as Minneapolis and Seattle. Nashville did indeed have its moment, and to its credit it did change music to a degree (though the city itself was also changed in the process). But in this fluid, global culture, everything is momentary, and now that entertainment is inextricably enmeshed with corporate culture, it is as vulnerable to the changes of big business as the technology of music has become sensitive to changes in the computer industry.

As a result there was the sense that the focus would shift elsewhere, that the peripatetic centre of the American recording industry would move on to another physical place as it had before, accompanied by the usual retinue of paparazzi, disorderly conduct arrests and *discos du moment*. At first, I thought it would be Atlanta, where several new studios had recently opened with more on the way. Having Elton John living there was a plus in several ways, I thought, not only musically but as an eccentric whose plumage would destabilise the crust that had grown around the music business there. Alas, as happens to us all in middle age, Sir Reginald's headgear and music have grown conservative.

My head was spun next by Miami. Here the certainty of that pastel-coloured city's pre-eminence as the global centre of Latino music was shuddered by the acquisition, last January, of Criteria Studios by New York's Hit Factory, a centre-stage event supported by the rapid-fire opening of several new studios such as OceanVu and Elysian Fields. Would Miami now get Whitney and Mariah as well as Gloria and Julio.

But I could not shake the notion that North Carolina might just pull off a come-from-behind move and make a play for the big time. The Carolinas area has been a musical hotbed for a few years now, with acts like Hootie & The Blowfish and

> As a result there was the sense that the focus would shift, that the centre of American recording would move on to another place

others, and it was beginning to get some serious studio construction that could provide an infrastructure.

It was in the middle of this geographical head twirling that I realised that, 'where' no longer matters. The days of music having a physical residence are likely over. From New York's Brill Building to the Beach Boys' harmonious homilies to Southern California to Jerry Jeff Walker's inscrutable Luchenbach, Texas, to the two sides of the down-home Deep South coin presented by John Denver

Europe: Digital dupes

Digital television is rekindling copyright concerns as well as proving that hi-tech operations do not necessarily use high-tech operators writes **Barry Fox**

SINCE THE DAYS of the Beatles, Apple and Magic Alex' LP spoiler system (a high-pitched tone on an LP that was supposed to beat with a tape recorder's bias signal) the audio industry has been dreaming of a system to put a stop to home copying. The best it has produced to date is SCMS—the Serial Copy Management System that stops a digital recorder making a digital copy of a digital copy.

But Philips' new 765 CD recorder confirms that SCMS was always a broken reed. If someone wants to make multiple digital copies of a CD, they simply make a series of first-generation copies from a single original. The 765 makes this easy because it is a dual-well deck with double-speed dubbing. And when SCMS blocks digital copying, if the user wants to copy a CD-RW compilation disc onto CD-R for playback on an ordinary CD player, the 765 switches to hardwired analogue dubbing with negligible loss of quality. A home audio recorder with tighter copy control than SCMS would be unsaleable —no-one buys a CD-R deck to record birdsong or dictation.

Video recorders are different. Their primary purpose is to time-shift TV broadcasts, or play pre-recorded tapes. Consumers accept that the movie studios use Macrovision on their prerecorded tapes to stop people copying them.

Few people yet realise how the coming of digital TV has changed the rules of the

> Few people yet realise how the coming of digital TV has changed the rules of the game. We are moving into a new age when VCRs will no longer be able to do the job for which their owners bought them

game. We are moving into a new age when VCRs will no longer be able to do the job for which their owners bought them. The Macrovision system relies on spurious pulses inserted near the picture sync pulses when a prerecorded tape is made. A television set ignores the extra pulses, but they fool the AGC in a VCR into making too-weak a recording. The same system will not work with digital video, so the digital TV receiver (or DVD player) has a built-in encoder. This adds anti-copy pulses to the analogue output. The TV displays the pictures normally, but a VCR makes an unplayable copy. The encoder is switched on by trigger signals that the broadcasters transmit along with programmes that are not to be taped. The broadcasters pay a royalty to Macrovision for transmitting triggers.

Macrovision says 'the majority' of digital TV receivers now being sold in North America, South America, Europe and Asia, incorporate encoders. Over 15 million homes around the world are now equipped with dormant circuitry that can be remotely switched to stop home taping.

Hollywood studios are already insisting on analogue copy protection on all pay-per-view movies broadcast on Sky's digital satellite Box Office. The UK is pioneering digital terrestrial TV, and so far there is no PPV and no use of copy protection—but the encoder chips are in the receivers. Who knows what happens tomorrow, next year or the next?

DIGITAL TERRESTRIAL reception is looking good. Existing aerials and set-top boxes are pulling in clear pictures. Sometimes a simple booster amp will tip the threshold from snowy analogue into error-free digital decoding. A CD-ROM database predicts reception at locations across the country. The BBC's Publicity Department has been giving out these 'Digital CD-ROMs'.

(representing the bucolic Norman Rockwell aspect) and Lynrd Skynrd (representing the Charles Bukowski side of the South), a sense of place has been an integral component of American popular music, just as Manchester and Liverpool once vied with London. In the age of the Internet, that need is diminishing as music truly comes from here, there and everywhere. Technical developments have enabled anyone to test their creativity in basement and bedroom, while the virtual nature of business makes a central location record companies and computer giants alike immaterial as they interface with the corporeal world as disembodied voices at the other end of a toll-free number. (Usually after a long, long wait listening to bad music, probably made in a home studio, somewhere.) The real headquarters of music now will be where the bean-counters at Seagram and Sony decide it should be.

Like other aspects of progress, this de-emphasis of place is neither implicitly good nor bad—it just is—but we should allow ourselves a moment to mourn its passing. The sense of place in music, though fleeting as a Hollywood marriage, gave us the hooks from which to hang a lot of good music, and it told us where to build our studios. It gave us a Mecca at which to point and a goal at which to shoot.

If anyone needs me, I'll be somewhere. Just email me.

When I finally got round to trying mine, I found that there were no instructions on how to use it. Being reasonably computer-literate, I searched the disc for an .EXE file, to 'install'. I looked for HTML pages for Internet-style access with a Web Browser. I looked for plain ordinary text files. There were none. The BBC 'thought' the PC would need to be loaded with Quark Illustrator or Adobe PhotoShop.

The disc, a write-once CD-R, was full of data but had 'No ISO Primary Volume Descriptor'. Presumably whoever did the work for the BBC's Publicity Department had burned the disc without fixing it for standard CD-ROM access. I tried another of the same discs, given to me at a different time. It, too, was full but useless. I've crashed my PC several times when trying to check the contents with Windows Explorer—and you know how much time that wastes, because Windows insists on running Scandisk before it will start again. And Scandisk will often only run if the PC is first run in Safe mode.

Each year the BBC gets £2bn in public funds, from the license fees which all TV viewers must pay. A hefty chunk of this money is being spent on taking Britain into the digital age, with digital TV, DAB and an Internet service. Head man John Birt likes to employ consultants who tell him how to do it right. Perhaps the consultants could now tell Birt to try a BBC Digital CD-ROM on his PC and see what happens.

DTV: fortune or failure

With enthusiasm for digital television floundering in the UK, what are the prospects for DVD asks **Kevin Hilton**

MAYBE IT'S JUST ME but doesn't DVD seem at once both high tech, of this moment, and just that little bit out of date? Perhaps it is because, as people are fond of saying about me, I'm a cynic. But as our spiritual leader, Ambrose Bierce, said, 'a cynic is simply a blackguard whose faulty vision sees things as they are, not as they ought to be.'

There is a very good case for saying that DVD is the ultimate in cut-and-paste technology: the CD family has made us familiar with the small silver disc from which we could enjoy digital audio and even images (for all the people who did not blink while CDi was around), while LaserDisc offered all the added value bits that the serious home movie-collector craves (extra scenes, a commentary by the director explaining why a particular sequence was shot from a pigeon's point of view).

Sure, it is digital, with all the accompanying promises of better quality that digits bring with them. But there is the feeling that we have all been here before, a sense that has not been eased by the fact that manufacturers and technology magazines had been talking about DVD long before it appeared on the market. Of course, the strength of DVD is not that it is a new format, but that it can do more than its similar forebears. Its problem is how it is marketed; more specifically, there is a degree of education attached to emerging technologies that it appears was not associated with what went before.

Europe is nowhere near the 20% of the sell-through market, the 'one million homes with DVD players' situation in America. It is also lagging in terms of professional authoring and replication

This applies to consumers and professionals alike. Each new development offers something for both groups as technology is developed that can be used as much in the home as in broadcast centres. Which is why there are nearly as many seminars about DVD as there are jokes about Bill Clinton, cigars and deposits made at the dress shop. During January, the BKSTS Moving Image Society staged what was claimed to be the first conference to look at the subject from the film and television industry angle. In his introduction to 'DVD—Assets for the Future', Ben Keen, executive editor of *Screen Digest*, called the versatile disc the 'ultimate convergence device—the packaged format for the future.'

Which it is. But how far DVD will take all markets to a converged future depends on its acceptance and rate of take-up. The format's status as a universal standard should aid this, although Hollywood movie titles are coded at 525 lines, as opposed to 625 for everywhere else. In the US, DVD has been hailed as the fastest selling packaged consumer medium ever, with all the major studios firmly behind it. Regardless of this, film and video reviewers have correctly pointed out that such initial success depends on the titles that are released: recent blockbusters are all very well but, as the VHS market found after its first rush of success began to fade, what the seriously acquisitive tube freaks need are classics, oldies, cult and special interest releases.

Europe is nowhere near the 20% of the sell-through market, the 'one million homes with DVD players' situation in America. It is also lagging in terms of professional authoring and replication. France, Germany (both big LD markets in earlier days) and the UK are the DVD leaders in Europe, but, in the case of Britain, Keen observed that the take-up of disc was being stifled by the growth of digital television, the reverse of the situation in the US.

This analysis sounds plausible, but it has been undermined by the findings of a Mintel survey that shows widespread apathy towards digital TV in the UK and general confusion over multimedia technology. If one group of consumers consider that new multichannel services have little to offer, what are they, and the market in general, going to make of DVD?

In the professional sphere, facilities are being drawn towards it, some because they believe in the format, others because they feel they have to be. One owner said to me last year that it could be 'the answer to people's dreams', while another observed, 'Nobody knows how they're going to make money out of it.'

Broadcasters view DVD more as a tool than a potential revenue maker, with much discussion of the format as an archiving device. However, as doubts linger about its suitability, there is the view that it would serve best as a preview medium, leaving the archive itself on tape.

Such issues are still to be resolved, particularly as DVD-Recordable is a way off yet, although this year sees the final ratification of DVD-Audio. And lots of seminars. Prepare for Summit 2 in Dublin from 29th March to 1st April and DVD Production Europe 99 from 24th to 25th May in London. Let's hope that they do not live up to the definition of another cynic, humourist Fred Allen, that conferences are gatherings of important people who singly can do nothing but together decide that nothing can be done.

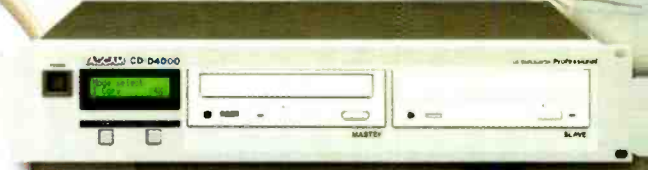
inspired
TASCAM

Direct to disc... again and again...

affordable, professional CD recording & dubbing

"We saw the CD-RW5000 at the SBES show and ordered seven. We decided it would meet our requirement for a professional digital recording format that would interface with our system. It's very straight forward to use in a broadcast production environment."
Mark Thom, Engineering Manager, Classic FM on the CD-RW5000s purchased for Classic FM's new digital broadcast studios.

CD-RW5000
Fully professional cost effective CD-R / CD-RW recorder
Write and re-write to all currently available media;
CD-R, CD-RW, CD-R-DA, CD-RW-DA
Balanced XLR and unbalanced phono analogue I/Os
AES/EBU digital input; SPDIF coaxial and optical digital I/Os
On-board sample rate convertor; 32kHz or 48kHz to 44.1kHz
Sync Start
15-pin Parallel Control Port
Auto and Manual Track Increment



CD-D4000
Dual deck CD Duplicator for cost effective CD-R / CD-ROM dubbing
Simple intuitive menu based user interface, with all operational functions via two buttons on front panel
Duplication of all CD-R and CD-ROM disc formats
Duplication of Audio and Data CDs at 1x, 2x and 4x speeds
Discs can be checked pre and post duplication
CD-Audio replay via headphone sockets on both Master and Slave

10 TDK 'Studio' blank included with every CD-RW5000 until March 31st 1999

5 Marlin House, The Croxley Centre, Watford, Hertfordshire, WD1 8YA. **Brochure Hotline 01923 819630**

Check out **www.tascam.co.uk** for information on all our new products

Feedback and feedforward

This month's study of the operational amplifier exposes **John Watkinson** contrasting the feedback and feedforward techniques used to optimise them

FEEDBACK AND FEEDFORWARD have been around for a long time, but they are still not widely understood in audio circles. One of the great myths is that you have to choose which one to use, whereas in reality the best results are obtained by combining them.

In an ideal world neither would be necessary, if we could get ideal components we would be able to make, for example, ideal distortionless amplifiers with fixed, frequency independent gain. Unfortunately these ideal parts elude us. Some components like resistors and capacitors can be extremely linear, whereas others such as transformers and amplifying devices including valves, bipolar and field effect transistors are not linear. Their transfer function is not straight and so the result is harmonic distortion.

Feedback and feedforward are both techniques, which have been developed to reduce the effect of deficiencies in real components. These can include linear and non-linear distortion and non-ideal frequency response. In a Class A valve amplifier, the main sources of distortion will be the output tubes and the transformer. In a Class B transistor amplifier the main problem will be crossover distortion.

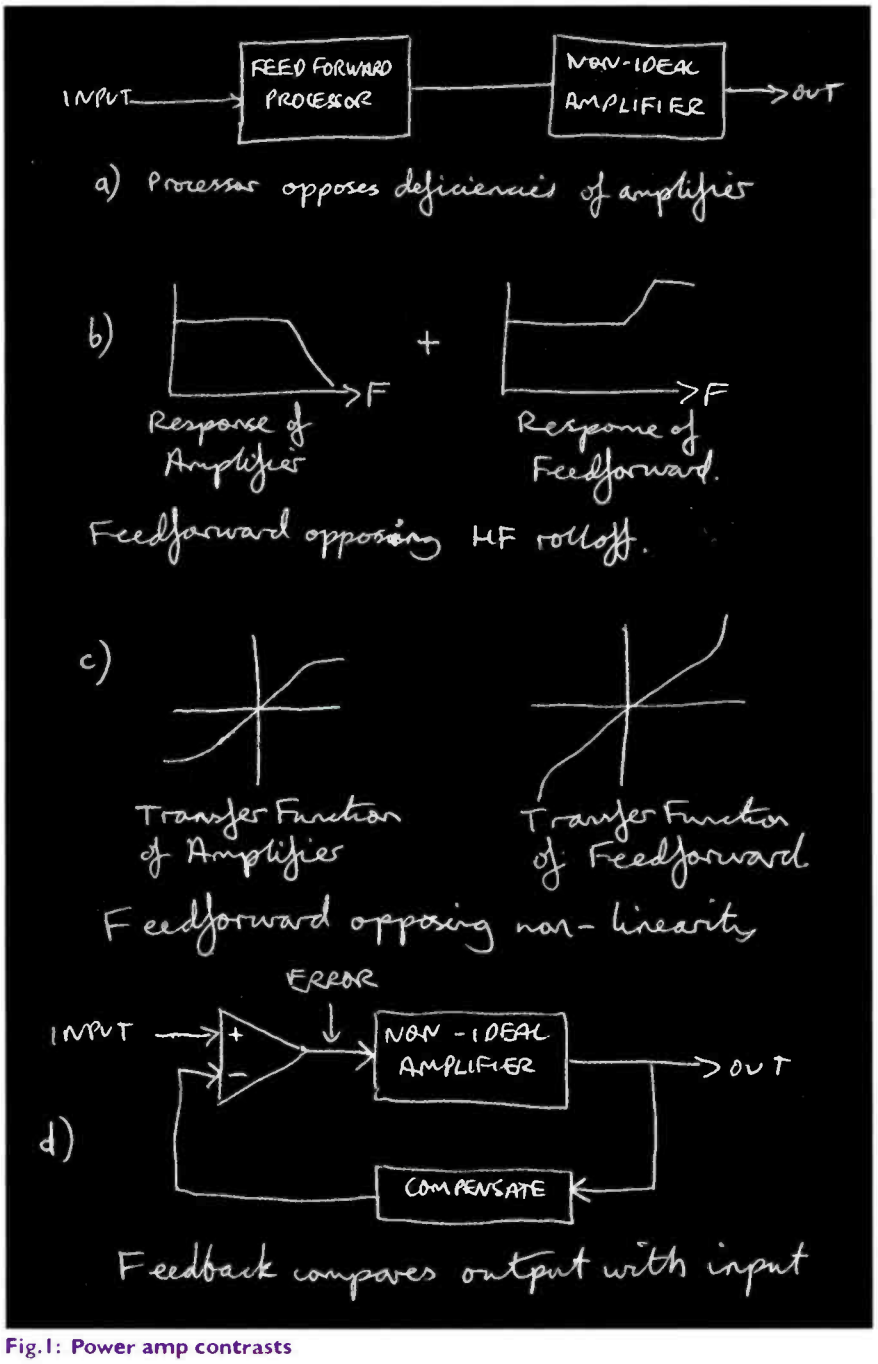


Fig.1: Power amp contrasts

Fig.1 contrasts them in the simple application of a power amplifier. Feedforward shown at Fig.1a is a system where a model of the deficiencies of the amplifier proper is used to create a feedforward processor, having the same deficiencies, but in the opposite sense. The effect of the two devices in series is that when the model is accurate the deficiencies cancel out. In theory if the model is precise, the cancellation is perfect and the result is ideal.

Fig.1b shows that if the deficiency is in frequency response, the feedforward processor may contain an opposite response: in effect an equaliser. Fig.1c shows that if the transfer function is distorted, the feedforward processor may have an opposing transfer function. This technique can be used with loudspeakers as well as amplifiers.

Feedforward only works well if the deficiencies to be corrected are stable and repeatable so that the correct degree of opposition is always applied. Where the deficiencies are not stable, for example if they change with temperature or supply voltage, a simple feedforward process will not produce such accurate results.

Fig.1d shows feedback. Here the output is measured and compared with the input. If the output is not simply a larger version of the input, the comparison will reveal the error. The error is used to drive the amplifier proper in such a way that the error is reduced. From a simplistic standpoint, the actual mechanism responsible for the error is not important. If the output voltage is not high enough, it does not matter why; it just needs to be increased.

Clearly there is almost always going to be an error in a feedback system, because without an error there is no drive to the load. The degree of improvement achieved with feedback is a function of the open-loop gain available. The more gain that can be used, the smaller the residual error will be. The natural conclusion is that the ideal gain is infinite, as in the operational amplifier.

When the loop gain is high, the output is determined primarily by the feedback and so it is not so important if the transfer characteristics change. In other words feedback has an advantage over feedforward in the case where the deficiency in the forward path varies. >

Advertisers Index

Akal 94
AKG 100
Alice 79
Amptec 42
AMS ..... IFC
Arbiter/DBX 80
Audio Follow 74
Audio Ltd 68
Audio Precision 43
Behringer 45
Brauner 44, 102
BSS 104
Cadac 27
Cakewalk 21
Cedar ..... OBC
Creamware 78
DAR 25
Dialog 4 110
Digidesign 73
DK Audio 129
DPA Mics 67
Drawmer 61
Emagic 16/17
Emtec 46
Euphonix 4/5
Expotus/Audient 39
FAR 129
Fletcher Electroacoustics 50
Focusrite 23
Gearbox 44
Genelec 59, 106
Graham Patten 82
Harris Allied 72
HHB 10, 49,63
Innovason 76
Junger Audio 51
KlarkTeknik 26, 56
Klotz 70
Lawo 77
Louis Studio 52
Lydkraft 86
Mackie 131
Magellan 80
Manley 58
MediaForm 74
Microboards 35
Microtech Gefell 60
Munro 83
Orbital Media 128
Otari 29
PMC 37
Presonus 127
Quantegy 96
Quested 90
Richmond Film 129
Roister 129
Sadie 64
Sennheiser 53
Sonic Solutions 87
Sonifex 85
Soundcraft 88
Soundscape 32
Soundtracs 15
Spendor 31
SSL ..... ?, 98, 99
Summit Audio 71
Tascam 57, 124
TC Electronic 13
TL Audio 55
Total Audio Solutions 108
UK Office 84
Westlake Audio 112
Wisseloord 66
XTA 34

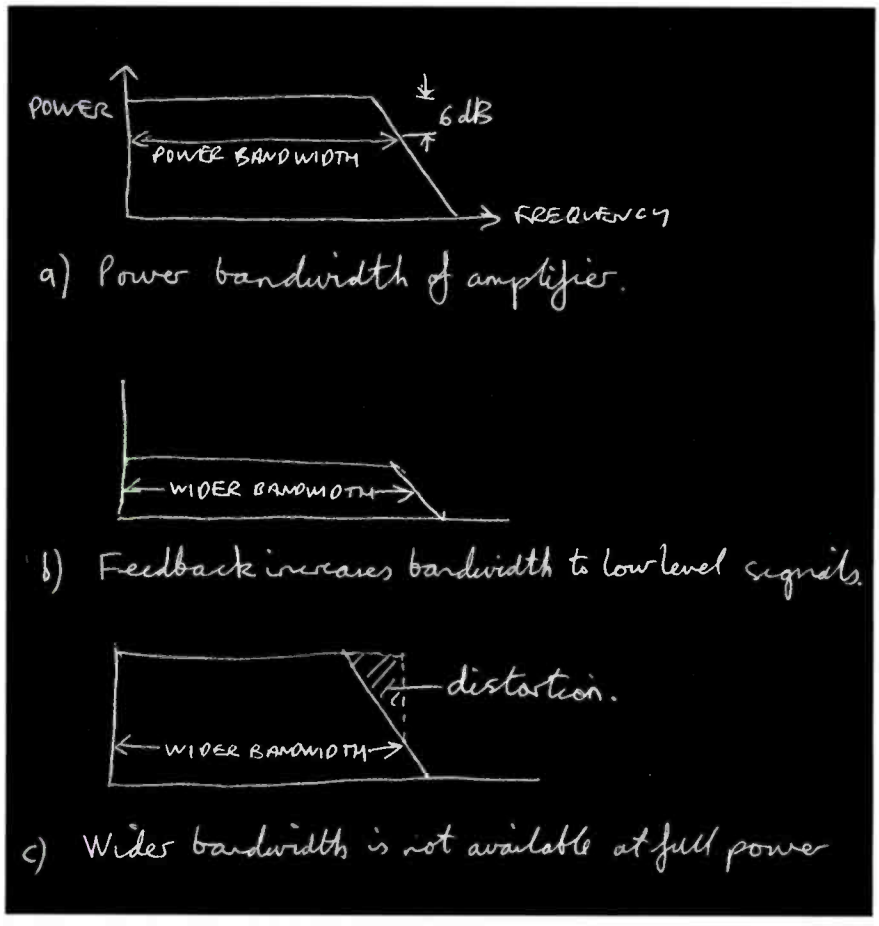


Fig.2: Feedback only increases bandwidth at low signal levels. It cannot increase full power bandwidth

< Unfortunately this ideal feedback system with infinite gain can not be implemented in practice because real gain stages have a sub-optimal phase response. Negative feedback will fail in the presence of phase shifts within the loop, because these can result in positive feedback if the loop gain is above unity when 180° of shift has occurred. The amplifier has become unstable and turns into an oscillator. Now feedforward has the advantage because a feedforward system can never become unstable.

The way to deal with frequency dependent phase shifts in the forward amplifier path is to introduce opposing phase shifts in the feedback path so that the phase response around the loop remains constant enough for stability. This is called compensating the loop. The more accurately the feedback path models the inverse of the phase characteristics of the forward path, the more gain that can be used. As we have seen this accurate model can only exist if the forward characteristics are constant.

In this sense, feedback and feedforward are similar in that they both depend upon being able to model the problem in order to compensate for it. The main difference is that feedforward models the problem in order to oppose it whereas feedback models the problem in order to allow high loop gain while retaining stability.

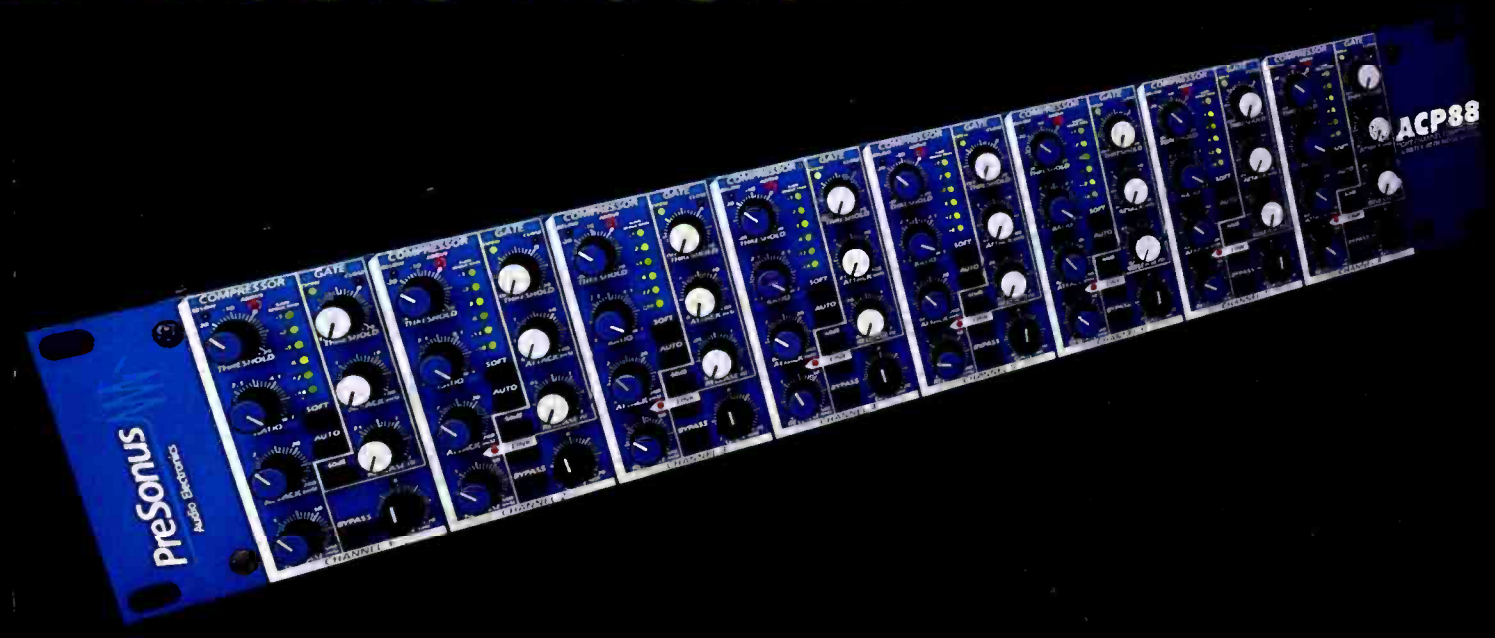
It may seem obvious, but the benefits of negative feedback are only obtained when the feedback determines what happens. This is defined as the error being negligibly small. In fact this is a general truth that applies to all uses of negative feedback including autopilots, servos and not just audio amplifiers. If the system ever gets into a state where the error is large, then the feedback has lost control and the system is said to be working 'open loop'.

One of the greatest myths about the use of negative feedback is that it increases the bandwidth of a system. Fig.2a shows the full power frequency response of a real amplifier.

Fig.2b shows the same system after the application of some ideal negative feedback, which, of course, reduces the gain. Note that, although bandwidth has been increased, this has been done by reducing the power output over the whole band down to the highest level, which was possible at the band edge without feedback. Thus, although the small signal bandwidth has increased, the power bandwidth has not increased at all.

Negative feedback only increases bandwidth at the expense of output power. If we have the naive view that feedback just increases bandwidth, we might simply add a gain stage to counteract the gain loss due to the feedback. The result is in Fig.2c: in the shaded area the system goes 'open loop' and the output is heavily distorted. This is the origin of the hi-fi pseudoscience >

Classic Rack...



e x t r e m e a u d i o

ACP88

In just two rack spaces, the ACP88 has eight of the most musical compressors and transparent gates you will ever hear.

- *Total Dynamics Control.*
- *Compressor parameters include: attack, release, ratio, threshold, hard/soft knee, auto/manual attack/release curves*
- *Gate parameters include: attack, release, threshold, and two position gate range (-60db-20db)*
- *Full metering: Compression Gain Reduction, threshold above/below and gate open/close LED's on every channel*
- *2 to 8 Channel Linking Capability*
- *Side chain and gate key send/return on every channel*
- *Balanced/Unbalanced TRS Inputs and Outputs*
- *Clean up vocals and drums*
- *Fatten acoustic instruments*
- *Crystal clear compression*
- *Made in the USA*

PreSonus
[audio electronics]

< that negative feedback is a bad thing. The truth is that the full-power frequency response of a feedback system can never be better than the open loop response. It does not matter how accurately the error signal has been derived, or how much gain has been applied to it if the power source delivered through a saturated transistor simply cannot slew the load fast enough.

Before World War I, the designers of steam-powered gun turrets had discovered the phenomenon of the slew rate limit. It took another 50-odd years for audio amplifier designers to reinvent the same wheel under a new title of Transient InterModulation distortion (TIM).

What feedback can do, when properly applied, is to reduce distortion. However, distortion is the process of creating harmonics. If the open-loop response of a system is not good enough, the system cannot respond fast enough to cancel the distortion products. In order to apply negative feedback well, we need lots of loop gain and a wide bandwidth to avoid phase shifts.

A pure feedback system can only reduce the error by increasing the gain. If the gain, that can be used, is limited by stability requirements, the error can only be reduced so far. However, Fig.3 shows that using feedforward inside the feedback loop may reduce the error further. The feedforward processor combined with the forward path is more accurate than the forward path alone, so the error will be smaller. The available feedback can then make the error smaller still. Thus the best results will be obtained when feedback and feedforward are combined.

A moment's consideration of Fig.3 will reveal that if the feedforward processor is ideal, the error will be zero. The worse the accuracy of the feedforward, the larger the error. This can be used to advantage in adaptive systems. In an adaptive system, the error in the feedback system is monitored as the parameters in the feedforward processor are varied. Any variation, that results in a smaller error, will be adopted, whereas any variation, that increases the error, will be rejected. In this way the feedforward system can 'learn' the characteristics of the forward path and can track them to compensate for changes.

For a simple analogy, consider a rally car. The driver uses feedback to stay on the road. He compares the position of the car on the road with what it ought to be and cancels the error by operating the controls. The navigator uses feedforward. He has recorded every detail of the course during practice and constantly tells the driver how fast each bend can be taken. With the driver and navigator working together, the car goes faster than with the driver alone. ■

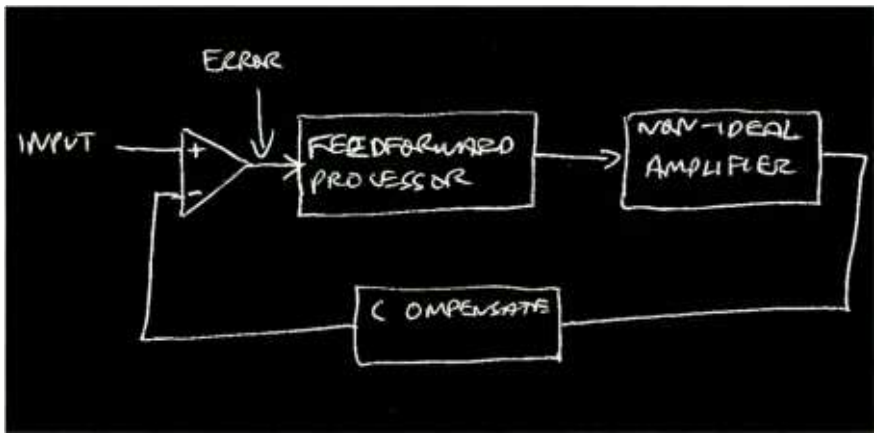


Fig. 3: Feedforward can minimise the error in feedback loop, improving performance

High frequency confusion ahead

If you had been claimed by developments following the initial frenzy of high sample rate systems, prepare to be challenged again writes **Ben Duncan**

AMONG OTHER apparently solid benefits, it has been regularly reported that new media such as DVD offer an HF response to 96kHz and beyond. But no-one seems to have thought through the situations when such a capability will be of benefit, and if so, whether it will be useable.

Since the beginning, audio textbooks have taught that human hearing ceases to perceive sound above between about 14kHz and 20kHz. This is easy for audio engineers (more than anyone else) to test. But take heed—the limit may depend as much on the signal used, and crucially on which speaker system, as well as the level. Equally, tests by Drew Daniels[1] have demonstrated the wide variability of the aural canal sensitivities among 100 audio colleagues, with some ears having 'gains' of more than 10dB above 18kHz. Yet, the adjective 'ultrasonic' unambiguously indicates sounds 'higher in frequency than the audible'. As with the onset of infrasonic sound, it may be better to see the 'edge' of audible sound not as where sensitivity stops dead, but where the nature of perception of the vibrational energy changes rapidly.

That humans are sensitive to stuff above the 16kHz–20kHz area at which most listeners' conscious perception stops (with steady test signals), has been individually established in disparate studies by respected authorities. For example, they have been carried out by Philip Newell, Rupert Neve and by Japanese researchers who used ECG equipment to demonstrate that music with its ultrasonic content intact, gave rise to brain patterns that were the same ones seen exclusively when people were very happy or ecstatic[2]. The keynote is that for this to happen, it was not necessary for the listener to have conscious awareness of the ultrasonic content. As a measure of the commercial reality, at least to oriental ears, Japanese speaker makers have been making 'super tweeter' drivers for many years, some with responses that start above 20kHz.

In the West, meanwhile, the rare presence of frequencies above 20kHz on a recording is recognised by both professional and domestic listeners. Other than offering pleasure, the ultrasonic parts are frequently described as adding to music's air, texture, edges, timbre, and 'palpably live' sense of presence.

The ability of audio engineers to learn about frequencies above 20kHz has been held back by an 80-year-old industry feedback loop. In the beginnings, 5kHz was the limit. Each 1kHz above that has had to be hard-won over years, at an affordable cost, right through the record-replay chain—particularly from mics, tape heads, record cutters, cartridges and speakers. Also, in an analogue system, extra bandwidth above 20kHz lets in extra noise; while in most of mainstream audio, the simplest possible engineering and hence maximised profitability inevitably precede any sensitivity to such ethereal subtlety as raising the hairs on the back of a billion necks.

The outcome is that much audio equipment—while made for an analogue path, and is potentially capable of extending far beyond the 16kHz–20kHz wall imposed by 1980 digital standards, is organised to progressively remove—in varying degrees—all life above 20kHz. In the best audiophile and complementary monitoring setups, the bandwidth for handling 48kHz or 96kHz already exists between the D–A convertor and the speaker end. Even down to the low inductance speaker cables and ultrasonic drivers. But in the remainder of the audio recording path, getting signal extending out to 96kHz from the booth, and ultimately to the DVD mastering suite (when appropriate) will take some equipment revisions or changes.

For a start, most of the mature audio industry's power amplifiers and speakers will be damaged or shut down if full level ultrasonic signals are applied to them. Since redesign for ultrasonic handling may not be solvable on existing designs, some form of optionally flagged, level-envelope-limitation will need specifying—'Response above 20kHz to be sloped off at -6dB/octave, and compressed to keep rms levels to a maximum of -12dBr'. Meanwhile, the prognosis for much analogue audio is frankly, 'not at all DVD-ready'.

Although there are some skeletons in the cupboard, at least low noise, clean analogue electronics with a bandwidth comfortably above 200kHz is established technology. A more crucial step—capturing higher frequency stuff at the front of the chain, has been taken by David Blackmer, whose Earthworks mics are some of the first to have a flat response to 40kHz[3]. A start has been made. ■

1 Daniels, A See Black Box, HFN&RR, Mar 1998
2 Duncan, B. Chapters 1 & 8, *High performance Audio Power Amplifiers*, Newnes, 1996, ISBN 0-7506-2629-1
3 Blackmer, D. '20kHz and beyond', *Studio Sound*, January 1999

INTRODUCING THE MACKIE D8•B. DIGITAL MIXING DEFINED.

The most powerful, intuitive, creative digital console ever offered at any price. Twenty-four-bit definition. The superb sound quality and intuitive interface that Mackie's famous for. Expandable with cards and software plug-ins. The Digital 8•Bus. Well worth the wait.

MACKIE®

Woodinville, WA, USA
Phone 800/898-3211
www.mackie.com