SEX PISTOLS
The new live album

MONITORS
Close-field market roundup

LIVING IT UP IN HYDE PARK
JBLs stacked to the sky

EXCLUSIVES
Oram BEQ Series 24 console
Avalon 2055 parametric EQ
QSound stereo expander
Earthworks Omnis

The John Pellowe Interview
The new WMS 300 from AKG is a 16 channel switchable and highly flexible UHF radio microphone system that delivers spectacular price benefits.

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WMS 300 FEATURES

- **SR 300 RECEIVER**: Switchable to 16 UHF frequencies for multichannel capability • Half 19" rack width
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Editorial  Tim Goodyer attempts to break the language barrier

Soundings  Latest news includes the refit of London's Britrow, the destruction of Venice's Gran Teatro La Fenice, and Singapore's Pro Audio & Light show

International Columns  Europe, USA, Far East—world news and comment from Barry Fox, Dan Daley and Patrick Cullen

World Events  Your best guide to the world of exhibitions is exclusive to Studio Sound. Check your diary against our comprehensive calendar

FEATURES

One studios/Facility  Deep in the industrial heartland of Northern Italy lies a studio with a twist

Sex Pistols live/Recording  The album was advertised before it was recorded, so it had to be good

The Wind in the Willows/Post  A dramatic rework of a classic challenges Sound Designer André Jacquemin

Hyde Park/Live sound  The technicalities of showcasing the world's biggest surviving dinosaurs

Studio monitors/Recording-mixing  A comprehensive vox pop survey of studio monitors and an intelligent insight into this volatile and controversial market

COMMENT

John Watkinson  The enduring tension between philosophy and technology

Broadcast  If you'd been inclined to regard the arrival of ISDN as a Western issue, Far Eastern facilities would have you think again

Rocket Science  The potential of Internet broadcasting is hiding in the shadow of the problems that must be solved before it can take off

Open Mic  The ill-fated 'Muso studio' design debate steps up another gear as veteran consultant Philip Newell joins the fray

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PELLOWE INTERVIEW  John Pellowe discusses the trials and tribulations of producing The Three Tenors live at Wembley exclusively with Studio Sound

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Techno Babel

I’m sorry it’s been a little confrontational,’ said Scritti Politti’s Green, rising to leave a conversation we enjoyed together some years ago.

‘No, no,’ I insisted. ‘You had the answers, it was just a matter of getting you to articulate them.’

- quite a task with someone who had earlier revealed that whenever he read himself in print, he sounded pretentious.

I can appreciate Green’s situation: he’s intellectualising about popular music to an audience for whom music is just a soundtrack to its youth. In this context, the music has no intellectual merit and to suggest that ‘you can only ever talk around music, you never actually refer to music—in the same way, music itself doesn’t have a semantic level’ is asking for trouble. His problem is that he couldn’t accurately talk about music, nor could he use music to talk about itself. The problem is one of communication. And the problem of communication dogs him still. And me. And you.

I’m not talking about a few disputed definitions, I’m talking about our ability to communicate in an industry where technological advances bring with them corresponding conceptual advances—from analogue to digital, linear to nonlinear, monomedia to multimedia, record shops to on-demand distribution... If we’re to deal with these things, we need to understand them, and be able to communicate our ideas and our problems to others. Perhaps it’s because it’s simple in principle that we so readily overlook its importance.

Some would argue that the key to improved communication is in the technology itself—and with a project such as the new British Library building running years late and millions over budget, it’s no great surprise that the value of the printed word is being questioned in favour of some vaguely-defined computer or Internet-based ‘soft’ alternative. Such suggestions fail to recognise that computers are still generations away from being as convenient and universal as good, old-fashioned paper, let alone developing uncompromised advantages. I suspect we’re waiting for SF author Neal Stephenson’s vision of nanotechnological ‘smart paper’ to fundamentally change the status quo.

But to improve on the centuries-old technology of paper is to improve the medium on which the message is delivered. What we really need to do is to improve our ability to deal with the medium that carries the message.

ONE OF THE most absurd campaigns to attract my attention recently is that of a EU group led by Greek singer-cum-MEP Nana Mouskouri, whose intention it is to bring a diversity of languages to the Internet.

Offended by the almost unconditional acceptance of English as the standard Internet ‘tongue’, Ms Mouskouri argues that to present everything in a variety of languages would increase its appeal and rid the network of its discrimination against non-English speakers. Not that I’m advocating discrimination or in favour of robbing any society of its culture, but doesn’t this run contrary to the aims of unification declared by the EU? That—in the context of an already confused and confusing network—it is clearly impractical is not my point. That of easy and accurate communication is.

Now, software that were capable of performing ready translations of material on the Internet would be a different proposition altogether. But I can’t help feeling that it would introduce a universe of errors all of its own. Which is where we can in.

Even if we can agree a common language and common terminology, the fact remains that as soon as I start talking you start misunderstanding. The communication channel isn’t 100% efficient—it carries errors. And Green is right about music, the strength of feeling that can be contained in a melody cannot be accurately translated into words regardless of the intellectual level of the translation.

So how do we go about dealing with the world of sound that is common to you and me? Chris Carter’s X Files continue to assure us that the truth is out there’, while the Zen doctrine would place the truth ‘in there’ and warn that ‘Language has limitations whereas truth has none. To try to apprehend the truth through language is to stray further and further away from it.’
PALA 96 challenges Hong Kong's supremacy

This Year's PALA show took place in Singapore last month. As last year's event afforded great opportunities to manufacturers and distributors to vie for both position and alliance, Pro Audio and Light Asia 96 saw a similar flurry of political activity in lieu of the product-launch frenzy more familiar to Western show attendees. There is no doubt that PALA and the earlier Broadcast Asia events offered the region's first opportunities to see first-hand the latest developments of Western technology and product development. Japan apart, these two shows evidently serve the Asia-Pacific region admirably.

The latterly established position of Singapore as pretender to Hong Kong's 'Gateway to the East' stature was maintained through steady reports of key sales and alliances struck through the medium of the show. Among those prestige 'first showings' to Eastern customers was AMS Neve's Libra console which was reported as attracting significant regional interest. From a Western perspective, PALA saw precious few westerners taking the opportunity to the scrutinise the Eastern market but those who took the time and trouble to attend were in a position to reap the benefits—both strategic and financial. The Asia-Pacific region can certainly be relied upon to offer substantial rewards to the West—given that Westerners are prepared to deal with the East on its own (constantly developing) terms. Certainly the need for assistance and education are great, and offer the West unequalled access to a genuinely affluent and developing market. Next year sees PALA leaving Singapore for the Thai capitol of Bangkok, where it will take place on 3rd–5th July at the International Trade & Exhibition Centre.

**TIM GOODYER**

**Performances of** 19th and early 20th Century master pianists preserved on piano rolls were recently brought into the digital age during a recording session at a 19th Century chapel in New Jersey. Over $0.5m worth of hardware was used for the session, including the world's only surviving 10-foot, concert-style Steinway reproducing piano; three Nagra Digital Recorders equipped with the latest 96kHz software; the newest Schoeps 4-channel surround microphone technology; and the dCS 96kHz-A and D-A converters.

According to Jerry Bruck of Posthorn Recording and engineer on the project: 'We collected some of the finest piano rolls and digitally recorded them. We went all out to get the best possible reproduction that we could.' The rolls will be used for a series of 13 worldwide radio programmes to be broadcast over the BBC, EBU and NHK. The material, spread over 27, one-hour tapers, will also be used for a series of CDs. Legendary performances of Grainger, Horowitz, Rubinstein, Paderewski, Busoni, Cortot, and Prokofiev as well as rare rolls of composers such as Stravinsky, Greig and Ravel performing their own works, are highlights of the recordings.

Bruck says of the session: 'Three Nagra-Ds were employed. The first Nagra was used to pick up the material we were recording in 4-channel surround sound, 24-bit accuracy, and that will ultimately be used for broadcasts and CDs. Anticipating the DVD, we used 96kHz converters and attached them to a pair of Nagra-Ds. They were tied together with time code, and we were able to record 24-bit 96kHz sampling rate in quad sound. We also used the newest Schoeps 4-channel surround mic technology.'

'_ldon't know how we could have done anything more sophisticated than that. The recordings are amazing.'

**NICK SMITH**

**UK:** Following the launch of the prototype studio EncycloMedia software at the 100th AES in Copenhagen, the developers have announced a special edition CD-ROM to be released in October. The Special Edition will feature 200 professional studios from around the world and is a preview of the full directory to be published later this year. Studios include London's Townhouse (above), Belgium's Galaxy and Germany's Chateau du Pape. EncycloMedia are available on Tel: +441814551008, or on the Web: [http://www.encyclomedia.co.uk](http://www.encyclomedia.co.uk)

**NICK SMITH**

**Mastering Over ISDN** has come a step closer to being the norm in mastering circles with Gloria Estefan's album, *Destiny*. Using Ednet's ZeroC system, the finished recording was approved for mastering at Bob Ludwig's Gateway Mastering facility in Portland, Maine by the artist and her producer who were attending the Academy Awards in Los Angeles at the time.

The recording had taken place at Crescent Moon studios in Miami and were sent from Hollywood's ZeroC-equipped Capitol studios via the Ednet ZeroC system to Portland in order for a few last-minute adjustments to be made. ZeroC facilitates uncompressed AES-EBU 16-bit, 44.1kHz audio transmission over primary-rate ISDN line eliminating the delay necessary to send approval copies of the master between the mastering facility and the artist. In this case, conventional mastering procedures would have delayed the release of *Destiny* (on Epic) by several weeks. Other US facilities and producers currently using ZeroC include Phil Ramone, Walter Afanasieff and Sony Music New York.

**TIM GOODYER**

**ITALY:** Venice's famous Gran Teatro La Fenice was ravaged by fire earlier this year leaving it incapable of hosting the production of Don Giovanni scheduled to take place less than two months later. Trading stone for canvas, and enduring a days of torrential rain, the city's authorities worked with audio and lighting companies to provide an alternative venue for the show. They succeeded and a 3000m², 1,150-seat complex, complete with dressing and store rooms as well as full-flight sound and light facilities now resides in the Tronchetto quarter of the city. Sadly, the 200-year old Teatro is expected to remain unrestored until next century.

**TIM GOODYER**
THOMAS DOLEY'S New York-based Headspace operation is to provide music and audio-effects technology for the WebTV Network. RMF (Rich Music Format) technology is a platform-independent standard created to provide intelligent musical interactions in multimedia entertainment and will be licensed to WebTV as the first of a family of Internet partners. Available to both authors and content developers, RMF allows streaming of high-quality MIDI music integrated with digital audio.

'We realised that when a viewer switches from a TV channel to the Internet, they'll enter a mostly silent environment,' said Steve Periman, President and CEO of WebTV. 'By bringing in Headspace, we can offer a sonic environment as rich and dynamic as television. Furthermore, Headspace's RMF technology will let each viewer have a unique musical and sonic experience, even if they know nothing about music or sound. Headspace understands that WebTV is a truly interactive medium, and that high-quality music and audio need to be employed within that context.' Headspace can be found on the Web at: www.headspace.com

TIM GOODoyer

º Poland's largest radio station, Radio dia Clebie, has added a further two Orban DSE7000 FX DAWs to its complement of five DSE7000s. Boosting around 5m listeners, the station uses the DSE7000s in the editing of new items and subsequent direct broadcast via Enco DAD Pro. Radio dia Clebie, Poland. Tel: +48 22 645 9363. Orban, US, Tel: +1 510 351 3950.
º The Australian Broadcasting Corporation has installed an 80-input Harrison Series 12 console for post and broadcast applications. A further Series 12 has been ordered by Australian post facility Soundfirm whose recent projects include Babe and Rumble in the Bronx.
º Harrison by GLW, US. Tel: +1 815 370 9001.
º A London's Aquarium studio, home of Producer Steve Lipson, has purchased a matched pair of Neumann M149 valve mics, where they will see particular use on drum kits and cymbals.
º Georg Neumann, Germany. Tel: +49 30 41 77 2422.
º Sennheiser, UK. Tel: +44 1494 551551.
º New York's latest postgroup facility, Nautilus srl in Milan, which opened for business last month, has ordered an AMS Neve Logic 3 with 28-output AudioFile for its Blue Studio. Nautilus is expecting the new console to handle postproduction, live video post and CD mastering work.
º Nautilus, Italy. Tel: +39 469 2029. AMS Neve, UK. Tel: +44 1293 470711.
º George Duke's LA studio has seen the installation of a 96-fader Euphonix CS2000D console. The desk keeps the company of Pro Tools, Otari RADAR, Mitsubishi X-650 and Genelec, Westlake and Meyer monitoring. Doubling the desk's graphics, processing and sound as a result of this choice, Duke has already used it on projects involving Natalie Cole and Al Jarreau. More Euphonix action centres on the opening of Burbank's Front Page Recorders tracking and mastering facility which has taken a 96-fader CS2000M with D50 and 56 channels of processing.
º A further recent Otari RADAR installation has taken to Kenny Loggins' home studio in Santa Barbara while the second Status console purchase has been secured by Hollywood's Todd AO West post house, currently working on Courage Under Fire.
º Front Page Recording, US. Tel: +1 818 556 5050.
º Euphonix, US. Tel: +1 415 855 0400.
º Otari, US. Tel: +1 415 341 5900.
º French Teletolpa postpro has taken two 24-track Fairlight MX3 systems.

Serving the joint state-funded Arte-France-German station, Teletota regularly handles dual-language productions and is currently working for Disneyland Paris. More Parafish TV action uses France 3's Marseille facility installing Quested H210 monitors as a result of in-house test which saw all the engineers favouring the British monitors.
º Teletota, France. Tel: +33 1 764 0535.
º Fairlight, UK. Tel: +44 171 267 3323.
º Quested Monitoring, UK. Tel: +44 181 566 8131.
º Taiwan's Family Broadcasting Company has chosen a Dalet system for its radio broadcast operation. Part of the reason for the choice lies in Dalet's networking and part in its compatibility with Windows which Family are running in its Chinese language version.
º Dalet Digital Media Systems Asia, Singapore. Tel: +65 252 5227.
º Reuters Television has increased its order of beyerdynamic MCE 86 guns, MCEA lavellier and M58 reporters mics. The commitment to beyer has further demonstrated through the use of DT1000 headphones. Reuters are quoted as regarding all the beyer kit as "essential in a continually demanding environment".
º beyerdynamic, Germany. Tel: +49 7131 6770.
º beyerdynamic, UK. Tel: +44 1444 252258.
º Denmark's newest PA rental company has built seven B&K 4011s, four 4021s, two 4007s and two 4006s. ETP commands 95% of the Danish dance market is now pursuing the European festival season. Danish Pro Audio, Denmark. Tel: +49 481 22 30503.
º Australasian and European branches of the SAE have seen the arrival of various Focusrite Green range units. The SAE claims to be the largest audio and multimedia school in the world and is regarded by Focusrite as an ideal showcase for the new signal processors.
º SAE, UK. Tel: +44 171 606 2653.
º Focusrite Audio Engineering, UK. Tel: +44 1628 819456.
º Radio Kiev's main control room: the victim of a fire in February this year, will be up and running in October with a Stage Tec Nexus system featuring 200 distributed inputs and 360 outputs. Also in Germany, Musikhochschule Weimar has opted for a 6-channel, 32-track Cantus console with digital automation for recording music from large orchestral and chamber works to pop and jazz.
º Stage Tec, Germany. Tel: +49 911 972 2525.

August 96

Studio Sound

NICK SMITH
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Galileo was right!

The problem with being a guru is that you're asked a lot of questions. People think that a guru knows everything; effectively you are not allowed not to know.

Increasingly I find myself answering questions philosophically. If the answer is not to hand, then give the questioner the tools to find his own answer. Like any philosopher, the only thing I really know is how much I don't know and how unhappy I am about it. The logical inverse of ignorance being bliss if you will.

Philosophy has good and bad points. The good points are numerous and include: permanent curiosity and wonder, healthy scepticism and a belief in logic. It is also important to be a Cynic in the strict sense. As thinking is free and no-one can stop it the Cynics found happiness in the freedom of their folly. Unfortunately the term has been debased over the years. Today it's a term used by people who can't read the writing on the wall to denigrate those who can. One of the worst consequences of being a philosopher is that one creates a good environment in which fools can display their folly. Traditionally philosophers have been badly treated by those who see power as more important than wisdom.

Philosophy began in Greece as a way of explaining man's surroundings with something a little more logical than superstition; eventually it would become science. Prior to that, everything that happened was attributed to the actions of a plethora of gods. Imagine explaining that the master tape of The Three Tenors concert in Wembley has a dropout because the god of magnetic tape is displeased. Clearly the same evolutionary process that gave mankind the ability to build tape recorders derived an understanding of nature which no longer needs superstition to explain what goes on.

In audio we make, or should make, good use of the division between subjective and objective measurement, yet this division is a clear descendent of Plato's division of reality into the sensory world and the world of the idea. When I assert that it is possible to convey audio in the digital domain without loss of information, that is an idea, and a valid one by the way, but when I try to explain what a D/A converter sounds like, we're back to sensory territory and my views apply then only to me. Despite the clarity of Plato's division, it is astonishing how many people confuse ideas with feelings. These are the people who put green ink on their CDs after soaking them in liquid nitrogen. Not the sort of thing Diogenes would have done if the Compact Discs had been around in his time. Interestingly enough Plato's Academy was closed by the church at the beginning of the Dark Ages and it was not until the Renaissance that philosophy re-emerged as science. As Groucho Marx might have put it, 'I'm not belonging to a religion that put digital audio back hundreds of years'.

Naturally, if your power base requires your subjects to believe in a specific god then philosophy could be your enemy. The more dogmatic the faith you guard, the less forgiving you will be. Anaxagoras was banished from Athens for saying the sun was not a god but a hot stone. Socrates was forced to take poison because his impeccable logic made too many people look completely stupid. Galileo got a hard time from the Catholic Church for observing that the earth revolves round the sun. You might think all that was a long time ago, but in practice nothing changes. It's only a few years since Ivor Catt was pilloried by the electronics establishment for designing a simple experiment, the results of which could not be predicted by the, then accepted, laws of electromagnetism.

It's only a few years since Ivor Catt was pilloried by the electronics establishment for designing a simple experiment, the results of which could not be predicted by the, then accepted, laws of electromagnetism. Hegelian philosophy which I subscribe to. Of course if it is two religions that hold different beliefs, then one or both will call the other an infidel or a heretic and the solution is to burn somebody or to have a war.

The curiosity of the philosopher leads to a permanent search for the reasons behind things. Consequently when Sony stated what the bit rate of DSD was I immediately asked how they had arrived at that bit rate. If DSD is designed on scientific principles, then the bit rate would be arrived at after careful research and they would be able to answer my question immediately. Unfortunately the explanation is a long time coming. It's not easy being an iconoclast.
"I don't have a clue how it works. But it keeps me working."

"I know exactly how it works, and it keeps me working."

Jon Bon Jovi

Midas and Klark Teknik

Rocky Holman
Stuck in the middle with you

American Studios are living proof that a healthy middle class is something the recording industry needs for a bright future, writes DAN DALEY

I should begin by saying that for the past several months, this column’s theme and title has reached for some sort of cute pun on a classic song title. This came about from one column in which I did exactly that, based on a momentary inspiration (or last-minute, late-night grope for a grabber headline). At any rate, I thought no more of it than that one time. The editorial powers that be, however, thought it was the perfect compliment to a recently refurbished graphic layout to Studio Sound, so they encouraged the use of song titles as headlines for each issue. And as an abstract concept, it seemed like a decent enough idea.

Until, that is, you realised had to cobble together some sort of relationship between a column and a song title each month at deadline, at which point ‘reaching’ takes on new meanings. I mean, the irony of it was not lost on me: writing a column about the means of making music and cracking our brains trying to find a classic song title that might fit that month’s topic. Well, to make a potentially long paragraph a little shorter, I met up with editorial honcho Nick Smith in a Kensington bar earlier this summer, and within the space of a several pints of Guinness put to rest the whole song title concept as a good idea that had mutated into a horse that we had beaten sufficiently to death.

So what happens next when I flip open the laptop at 33,000 feet to write? The topic—the resurgence of the middle class to the US recording studio scene—causes Stealer’s Wheel’s old chestnut Stuck in the Middle with You to pop unerringly into my mind and it will not let go. So I figure I’ll give the concept one more free ride (no pun intended there, 1970’s fans) before completely honouring the Kensington Agreement to bury it once and for all. But ‘stuck’ is rather the way the middle of this business used to be. From the late 1960s and through the next two decades the one-room and two-room owner-managed recording studio stood like a kind of ‘Lev in Be Veor’ of audio, a fixture on the domestic music scene that seemed would go on forever because that’s what several generations of musicians, engineers and producers had grown up with. It formed the gravitational core of the nuclear musical family of the 1960s, 1970s and early 1980s, much like Ozzie & Harriet did for our visions of what home life was supposed to be like. Dad worked; Mom made the house; your younger brother was a goofy but basically good kid; you went to school and learned something or other; Dad came home from work and called either you or the dog Skipper. You grew up, formed a band, went to a recording studio, where the owner booked your time, stated your rate, assigned you an engineer and off you went. Nice little package. Well, turned out Dad got laid off at the plant and had little to say to Skipper, man or beast, between draws on a Lucky Strike and pulls on a bottomless Bud bottle; Mom became confused and withdrawn and kept dusting the same spot over and over; little brother got a tattoo, a pierced lip and a police record. And the personal recording revolution—the project studio, the home studio—rendered the nuclear recording family homeless. That scenario is in the midst of slowly but decidedly reversing itself this side of the piddle. Things will never return to the bucolic, well-ordered arrangement of yesteryear. But the notion is returning that there is a substantial need and market for the small to middle-sized recording studio that sees itself as a service-oriented business rather than a toy box to be opened and closed at the whim of the personal muse. That broad middle class of studios that seemed so endangered a few years ago is, if not actually resurrecting, then reinventing itself, a facility at a time.

BOB LAWSON’S Blue Jay Recording in the Boston suburb of Carlisle remains true to that historical studio paradigm: a single room, owner-manager operation that aims at music exclusively. Lawson will concede that his approach had become something of an anachronism when many studios were following the business trends of the times, opening their own independent labels and seeking alliances with fashion-forward producers, engineers and fast-food outlets, looking to compete with project studios. But his 16-year-old studio is thriving, he says, perhaps for that very reason, selling to a niche that others have abdicated.

‘We've become unique in this town because this is a studio that you come into and simply use to make music; the ownership and management isn't going to become involved in your career other than providing a great place to make your record,’ Lawson says. ‘There's something to be said for a professional approach to providing a quality recording studio space and not being the producer on the record. When you're getting involved in other aspects of your clients' careers, the service that you provide as a studio can suffer.' And while he's not ruling out consideration of other options, including starting a label, he's not averse to the appellation 'middle class.' Neither should anyone else in his circumstances be. Lawson puts it elegantly and succinctly when he says that perhaps the industry here is ready, once again, for a level of service that isn't based on some creative relationship between studio and client other than the studio providing a facility, that a relationship predicated on a pure quid pro quo, money-for-time basis is just what the doctor—or producer or engineer or musician—ordered. In a very real sense, when the personal studio is factored in, the studio industry as a whole in the US is still going through a sort of mid-1980s mentality, an ego-based phase of development that's lagging a bit. It's possible that the grim economic times that regular studios have gone through in the past decade have scared off a lot of those who might have skipped the personal studio stage or moved out of it faster from entering the shopkeeper level of the business. But, for one reason or another, it now appears that an evolutionary turn of events is bringing some of them into just that state, and is also providing a greener horizon for those who stuck it out. And, as any economist or politician of a capitalist mind-set will tell you, a healthy middle class is something any industry needs for a bright future.
The 90s restoration

As digital processing systems become more powerful and sophisticated, their use in the 'restoration' of old recordings grows, writes BARRY FOX

Old jazz recordings are ideal for reissue. Whereas classical orchestral performances had to be broken into 3-minute segments, which sound clumsy when strung together on a CD, jazz improvisers timed their performances to suit the playing time of a shellac disc. There was no opportunity for a soloist to drive on for a dozen choruses, playing scales at breakneck speed.

Even though music copyright can now last for 70 years after the death of the composer in Europe, mechanical copyright on a recording expires after 50 years. This means that no royalties are payable on studio performances recorded prior to 1946. Those were pre-tape days and there will usually be no disc masters available in good condition. Short-cut merchants copy old LPs, which were themselves cut from tapes made from 78s, so the sound is usually very poor. Consequently, the trick is for the record company to find a collector with good quality originals or for a collector to get involved in reissuing.

The quest for an original pressing is well worthwhile because often the studio recording captured much higher fidelity than the playback equipment of the day could reproduce. Modern equipment can retrieve all the recorded quality, but is blemished by the steady background hiss and bursts of crackle caused by the constituents of shellac and the random clicks and pops caused by damage to the grooves.

Also, all old recordings were made in mono, usually in dead studios. So they sound 'different' to modern ears, accustomed to hearing stereo with ambience. To process or not to process, that is the question? And how much processing to do?

British record company Avid recently started a high-profile publicity campaign for its new reissues. 'At last recordings from the 1920s, 1930s and 1940s can be listened to as they were originally intended,' says Avid, provocatively quoting David Milton of Sony Music as describing previous techniques as 'frauds... detrimental to the original source mono'. Meanwhile Robert Parker—an Australian broadcaster who has for more than ten years been releasing old jazz on CD, originally through the BBC's own record label, now through New Note—accuses Avid's CDs of having 'lost fine instrumental detail' with vocals taking on a 'goldfish bowl' sound.

All the engineers working on re-issues agree on the need to remove loud transient clicks. Most use CEDAR, the system developed from research done for Britain's National Sound Archive. There is agreement too on the need to check and correct pitch, where the disc was cut at off-78rpm speed. This is quantily ironic. Europeans routinely distort pitch by running 24fps movies at 25fps; and US radio stations tweak the speed of pop records, especially ballads, by a few percent to make the songs sound brighter and the artists sound younger.

RERELEASE ENGINEERS certainly cannot agree on how much hiss and crackle to remove, whether to add artificial echo, or how best to create an illusion of stereo. Robert Parker leaves some hiss and crackle in the music, arguing that a computer cannot distinguish it from musical harmonics and transients. Parker does, however, add artificial reverberation. He says it makes an old studio recording sound more like a club performance. David Bennett, who engineers Avid's reissues, removes more hiss but adds no echo. He uses a stereo synthesis system developed by Richard Broadie, a musician and audio engineer from the US. Richard Broadie is opposed to adding echo, too.

Parker synthesises stereo by comb-filtering. The mono sound channel is split into two halves and each half passed through a filter which sucks notches from the sound. The notches of one channel are at frequencies which match the untouched frequencies in the other channel. So all the original musical energy remains, but it is divided between the left and right channels. This mimics the effect on live sound heard in a concert hall, where sound reflects off the walls, cancelling at some frequencies and adding at others.

When comb-filtered sound is reproduced from two loudspeakers, there is an illusion of stereo spread, with high and low-pitched instruments, like tuba and clarinet, appearing at slightly different positions. If the playback amplifier is switched to mono, the combs should make to reconstitute the original.

Richard Broadie refuses to say how his stereo system works, other than to talk about using algorithms developed over many years of research. But his US patents (numbers 5,056,149 and 5,394,472) give a very full description: the mono signal from the original disc is split into four channels. One is led through a digital circuit which delays the sound by a few tens of milliseconds. Another channel is fed through a similar delay circuit, but it is also inverted in phase, so that musical peaks and troughs are reversed. The third and fourth channels are left undelayed, but passed through different adjustable volume controls. The four channels are finally combined into two, to give a stereo pair. The left channel is made by adding one delayed and one undelayed signal. The right channel is made by adding the other undelayed signal to the signal which is both delayed and inverted.

The guiding principle, says Broadie, is that the delayed signals are always stronger than the undelayed signals. He claims that this fools the human ear into hearing stereo. People who do not like the effect can simply switch their amplifiers to play in 'mono'. This combines the left and right channels, and because all the added effects are in opposite phase, they cancel out.

Not so, says Parker, arguing that the result is a phase effect which makes voices sound as if they are singing from the inside of a bowl.

I am staying out of the debate. In most cases I am more interested in the music than what modern technology can do to it. Record buyers will have their own preferences, too. As both sides in the dispute are working with much the same public domain material, the obviously sensible step would be for the two record companies to agree a common menu of sample tracks and each issue their own processed version. Record buyers could then use their own ears to decide which approach they prefer and buy accordingly.

But while they are at it, could the record companies please also issue a third CD, with no processing at all except the removal of damage clicks and pops. The human ear and brain do a remarkably good job of filtering out steady-state noise, and extracting image direction clues from the phase relationships that are captured from a simple mono mic.

Who knows, record buyers might then prefer the unsullied sound of the original. Then the record companies can save themselves a lot of time and money on electronic processing.
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ISDN may be a familiar concept to us now, but it has yet to penetrate the Far East as a day-to-day technology writes PATRICK CULLEN

Just imagine sitting in an edit suite in Singapore, a TV voice-over session is about to begin, the VTR machines are on standby and the crew are all fired up and ready to go. But the voice-over booth is empty with no performers. No, they haven't missed the flight, nor are they stuck in traffic. They are standing by in a studio suite—10,000 km away in London, scripts and autographs all set up and ready to go.

The dubbing session ends, tape checks okay, and for everyone it's a simple taxi ride home. The magic of ISDN.

Over the past few years more and more broadcasters and postproduction houses have been using switched digital telecommunications to get their audio from one place to another. Switched digital services have largely replaced satellite communications as a more economical method of point-to-point transmission of high-quality audio. For about the cost of a phone call you can send broadcast quality and CD-quality audio to anywhere in the world equipped with ISDN.

ISDN (Integrated Services Digital Network) is a telecommunication network being introduced on a worldwide basis by PTTs and is seen as the eventual replacement for the PSTN (Public Service Telephone Network). Completely digital it offers high-speed communication between users (subscribers) on a dial-up or switched basis. ISDN offers the ability to have dial-up wideband programme circuits, with no equalisation required from remote studies and outside-broadcast locations.

Broadcasters and studios in a country blessed with an ISDN infrastructure have the availability of CD-quality, wideband audio with full duplex (or 2-way working) for STL's and OB's. An ISDN network which is also connected internationally brings opportunities for the programme maker to use venues and locations on a worldwide basis.

ISDN, we must remember, is nothing more than a data transmission path. To use this channel for sending audio you must turn your analogue audio into a digital bitstream. A device that encodes and decodes audio into data is called a codec (short for coder-decoder). A codec is inserted between conventional audio equipment and the terminal equipment for the switched digital network.

There are many different protocols for encoding digital audio. For example, the stereo audio on a CD uses linear 16-bit PCM encoding with a 44.1kHz sample rate, which produces data at a rate of about 1,400kHz/s. This is much more than can be carried by a switched digital network. By using a specialised bit-rate reduction (or 'data compression') algorithm, however, this data can be converted by the codec into a lower bit rate, allowing it to be transmitted over available switched digital channels while retaining fidelity.

The apt-X100 is designed to compress a linear PCM signal with no apparent loss of quality. Implemented on a single DSP chip this compression algorithm is suitable for the real-time transmission and storage of high quality audio in mono, stereo, or multichannel configuration. A proprietary algorithm, researched and developed into a low complexity full duplex package apt-X100 operates at sampling frequencies up to 48kHz, with a fixed compression of 4:1.

The apt-X100 predictive approach to compression is recognised throughout the world as a safe and robust process. It is renowned for its extremely short processing delay, immunity to the vagaries of telecommunications networks and most important its ability to maintain audio quality throughout a number of passes of compression.

A new stable companion is apt-Q which extends the boundaries of data compression even further. Only recently introduced in a joint venture with telecommunications giant, AT&T, this more aggressive psychoacoustic algorithm is being developed on two practical levels aimed at the ISDN user. 15kHz stereo can be delivered on a data channel as low as 56 kbit/s at 1:1 compression or 20kHz stereo on 128 kbit/s with 12:1.

IN ASIA ISDN is still in its infancy. National telecommunications suppliers throughout Asia have embarked on ambitious plans for ISDN coverage. In Malaysia for instance, Telekom Malaysia are hoping to have 8,000 lines installed by the end of the year, with a reduction in ISDN tariffs one way of prompting demand. In Singapore ISDN coverage is complete and a number of recording studios including Sichtung and Speakeasy Digital, are getting booked on this new way of working.

ISDN in South-East Asia has traditionally been marketed towards large corporations, including banks, who use it for back-up to existing leased line facilities and for Local Area Networks (LAN's). Now, with a growing broadcasting and postproduction market in South-East Asia demand is starting to come from broadcasters and post and recording studios. In Kuala Lumpur Synchromsound is one studio that has ISDN facilities available for its clients, recognising the advantages that such a system brings in terms of cost and speed.

Telecoms suppliers in South-East Asia have also kept ISDN costs and tariffs as low as possible in an effort to encourage take up. In Kuala Lumpur ISDN installation is RM 250, with a monthly rental-charge of RM 140 per BRI (Basic Rate Interface) line. Call charges are approximately 1½ times that of existing analogue phone charges.

Telecoms suppliers in South-East Asia have also kept ISDN costs and tariffs as low as possible in an effort to encourage take up. In Bangkok the installation charge is 3,700 baht, with a monthly fee of 100 baht. Compare this to the cost of installation is 1,400 sterling.

As the European and American experience has proved ISDN can work for broadcasters and recording and post houses. It offers advantages in terms of cost, efficiency, and ease of use. It is a new method of working that opens up possibilities at all levels of production, whether it be the broadcasting of a symphony orchestra or a voice over for a commercial. Used sensibly it can be used to transmit audio around the globe, or around the corner. 
Okay, bragging is too strong a word. But we are very proud when one of the most important rule-breaking producers in recording history has become a Mackie 8-Bus fan.

After all, Eddie Kramer’s role in the making of popular music has changed its sound forever. His recipe? “Make a record unlike anything that’s ever been heard.” So, while other engineers in London were churning out England’s formula Pop of the Day, Eddie Kramer was across the console from a strangely-dressed young man from Seattle named Jimi Hendrix. Together, they broke practically every sonic and musical rule in sight. The result was an aural legacy of such originality that it still sounds amazing — even revolutionary — a quarter century later.

Eddie hasn’t gotten any more conservative over the years. So it’s not surprising that a man with Kramer’s receptiveness to change would add a 32×8 to his creative arsenal. A mixing console that costs hundreds of thousands less than those he’s worked on for most of his awe-inspiring career.

Eddie would say he likes for its “…sweet E0 — dynamic range, and cleanliness.”

And Eddie Kramer recommends Mackie consoles to his associates, too1. In these cynical times when pop stars accept millions to endorse products they admit later to having never tried, we at Mackie Designs think that’s the only kind of endorsement worth having.

If you’re in the market for a serious but affordable mixer, we hope you’ll take a close look at the only 8-bus console Eddie Kramer says is worth having.

1. Including Hendrix, Led Zeppelin, Kiss, Buddy Guy, and more recently, his work with other Mackie fan owners: Sting, David Abravanel, Luther Campbell, Stanley Clarke, Tony Williams, Steve Vai, and Carlos Santana.

2. He hates the notion of the 8-Bus 4-Bus button.

3. According to Eddie, Eric Shakman (Spin Doctor), Little Red Wagon Mobile Recording Studio, Bootsy Collins and Jaja McCartney have purchased 8-Bus consoles at his urging.

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Sample Eddie’s latest work on “In the Storm” a brilliant orchestral homage to Hendrix with an unflinching array of some of the best players in the world. Leave it to Eddie to break more rules. (Net surfers should check out the RCA/Victor Web Page @ http://rcavictor.com.) For a great read, pick up the Jimi Hendrix Sessions book by John McDermott with Billy Cox and Eddie Kramer (Little Brown), and on video, A Bucket of Bricks: The Jimi Hendrix Story (available from Mike Bookshop, 510-453-3207).
The 'father of British EQ', John Oram, has returned to console design, but now he is putting his own name to the work.

**DAVE FOISTER** lends a critical ear to a classical design intended to come in at less than a 'classic' price.

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**THE COLOURFUL FIGURE** of John Oram has been ever more visible in the industry over recent years. Keen to remind the world of his involvement in the creation of some of the classic British consoles of the 1970s, and proud to pass on the description of him as 'the father of British EQ', he has applied his undeniable expertise to the design and manufacture of a small range of outboard units, the flagship of which is his successful High Definition EQ (Studio Sound, March '95). A scaled-down version of the EQ features in the Microphone Work Station (Studio Sound, August '95) alongside high quality microphone preamps, and this, too, has received much acclaim, particularly in the States, where retro British EQ designs remain hugely popular.

It was inevitable that in time the wheel would turn full circle and Oram would be designing consoles under his own name. This has now come about, with two basic configurations available and already doing well, again particularly in the US. The smaller of the two is an 8-bus console designed to pitch in above the Mackie market, while the high-console ground is held by the 24-bus system known as the BEQ Series 24.

The Series 24 is, unashamedly, a retro design in terms of its appearance, and also in a way in terms of its all-analogue circuitry and choice of features. This does not mean that it is content to simply reproduce a 'standard' package in a pretty colour with some mystical Oram fairy dust sprinkled on it; instead a hard look has been taken at what such a console really needs and how best to lay it out.

The result dictates, in conjunction with the blatant appeal to lovers of vintage desks, the console's striking appearance. Oram's pale-blue finish is already his trademark, and the console takes this a stage further by adding a matt finish over the several layers of blue paint and the silk screening to create a glare-free surface which is claimed to be stain-proof. The deliberate avoidance of fashionable colours combines with an unusually wide module size to produce a control surface which in every way flies in the face of modern trends by being big, spacious and characterful. The standard knobs are black plastic with red or white pointer lines, but metal knobs in brass or aluminium in two different sizes are available as options, echoing the big hand-turned knobs on the Oram outboard units. This is indicative of the customising options on the Series 24, which also include special paint finishes, integral racking for outboard equipment, and a willingness to discuss any special requests in terms of facilities and design. This is not a take-it-or-leave-it console where what you see is what you get: whether it suits you or not.

Having said that, what you do get as standard offers unusual flexibility that should meet most people's needs even if they haven't thought of them yet. The basic structure is in-line, with 24 buses, direct outputs on all channels, and a choice of frame sizes holding 24, 32 or 40 channels—other sizes are available to special order up to 120 channels. The main channel-path begins with the same microphone preamplifier that forms the front end of the Microphone Work Station. This is a particularly high-quality preamp, good enough to be used as a better outboard alternative to many console-installed preamps, and its inclusion as standard in the Series 24's signal path sets the tone for the quality to which the desk aspires. The separate line input can
usually (but not uniquely) be used along with the microphone input if required, feeding both signals into the main channel-path with their mix set by the input-gain controls. No pad is fitted to either input, but as the microphone input can handle line levels up to +22dBm this is hardly a problem. Phase reverse applies to both sources, and phantom power is individually switchable. The channel's peak light also appears here, and is placed immediately after the trim controls, an unusual arrangement normally avoided because of the chance of heavy EQ boosting the signal into distortion.

An unexpected luxury is a swept high-pass filter control going as high as 200Hz, and this is complemented by a switched low-pass filter rolling off above 9kHz.

The main EQ is, of course, much more comprehensive, offering four bands with a very musical and useful pair of tone controls. The main EQ is, of course, much more comprehensive, offering four bands with a very musical and useful pair of tone controls.

The quicker ones will have worked out that without this sharing between paths the channel has eight sends altogether, two of which are stereo and pannable independently of the channel pan. All are individually switchable between pre and post fader, and further flexibility is provided by a splitting of the auxes across the desk, which may be unique. Being an in-line design, the Series 24 has equal numbers of channels either side of its central master section, and the central auxiliary matrix can treat the two halves separately or combined as required. This means that all the Aux 1s from the left-hand half of the desk can feed one destination while the Aux 1s from the right-hand side go somewhere else, or the two halves' Aux 1s can be summed to form the same send. This choice of split or combined operation is individually set for each aux, and both routes can be used at the same time. The upshot is that the apparent 10 auxes could theoretically be feeding up to 30 destinations simultaneously. Using the system to these lengths would require a lot of forward planning and it is hard to see a real application for the full setup, but it is not unlikely, for instance, that drums would all be on one side of the desk and strings on the other, in which case the drum channels' aux 1 controls could be treated as completely separate from those on the string channels and be sent to a quite different reverber. It is easy to see several uses like this, making the idea much more useful than it might appear at first sight.

Almost the lowermost section on the channel strip is the main EQ, which again is lifted straight out of the Microphone Work Station. John Oram's reputation stands on his EQ designs, and so firmly does he believe that he constiutes his sound that he calls his special approach EQ Magic-. Even the 2-band circuit normally used with the small fader carries this tag, and the sound it produces despite its simplicity justifies its being regarded as something of a cut above the average. This is not just a rudimentary borrowed circuit stuck on for the sake of being able to say that both paths have EQ, but a very musical and useful pair of tone controls.

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master mute facility where pre-selected channels can be muted from the central section; it also means that each channel has a connector on it for mute automation. The gate itself follows the placement of the large fader, dropping into the tape-monitor path if the faders are flipped. Faders are Alps as standard with P&Gs as an option, and both faders have LED meters alongside them showing signal levels post fader; I’m more used to pre-fader-level indication, but, perhaps, both have their uses. Solo is nondestructive stereo in place.

It can be seen from this that the apparently simple conventional appearance of the Series 24 conceals a surprising degree of flexibility. Each channel effectively has three inputs on mixdown, and although one of these is nominally for microphones and there are only two paths, there are occasions when the mic input, with its huge headroom, could be used to double up BVs into the same channel, for instance. Certainly the EQ provision and the aux flip-split arrangement allows a 24-channel desk to give a more comprehensive 48-input mixing capability than most. The console has already seen live use, with its various sections providing simultaneous multitrack recording, FOH mix and mono feed for live radio transmission.

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THE CENTRAL SECTION contains the aux matrixing controls, three stereo tape returns and ten mono aux returns, each with a pan pot and the same 2-band EQ as on the small faders. Separate left-right bus masters are joined by a dedicated mono output fader, and all three have mute and solo. Monitoring and talkback controls are right under the hand, so much so that the position of the momentary talk button worries me a little. Talk destinations have to be chosen one at a time and cannot be grouped, but are joined by a dedicated reverse talkback system. The low-distortion oscillator, complete with pink-noise output, shares the talkback routing controls. Control-room speaker muting is provided, but no dim function, although the one could be converted to the other if required.

A final surprise is the presence of an output for a subwoofer, derived from a built-in crossover and with its own level control. The crossover frequency is factory set at 150Hz with smallish main monitors in mind, but can be altered to suit the chosen system. The meter bridge carries a vu meter for each bus, directly above the relevant channel, plus two for the stereo output and a final mono meter. Its presence, and the fact that the channel strip is angled in the middle, make the desk's size quite substantial, and the back panel is therefore more than big enough for separate connectors for everything. Despite the appeal of multis, Oram decided individual XLRs and jacks were more in line with the target market for the Series 24.
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Another reassuring safeguard is the fact that every desk comes with a spare pair of channel modules—the upper and lower halves—and a prepaid FedEx box for sending the old ones back to Oram in for replacement under a guarantee which lasts two years.

The clear philosophy behind the Series 24 is to provide an upgrade path for those studios who have outgrown, or become dissatisfied with, their budget consoles but can’t afford the leap to the top-end models. The console provides a good selection of features in a well-laid-out format, but above all offers a quality of signal path comparable with the best. You might expect to find this much functionality on a desk at this price, but not with this much attention to detail and pride in its audio specs and performance. Oram has plans in the pipeline for an automated, recallable console at a very interesting target price; he expects to sell it primarily on its sound, with the automation as an extra, rather than the other way round as is usually the case. He remains a firm believer that the sonic performance of any piece of equipment is its most important factor, an idea often forgotten these days, and the Series 24 amply demonstrates his success in proving what can be done.

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Tascam MD-801R

With MiniDisc-based recorders making significant inroads into both the broadcast and hard-disk-based recorder-editor markets, Tascam’s MD801-R makes a timely entrance. GEORGE SHILLING puts it through its paces.

DESPITE MANY ATTEMPTS made by manufacturers to lure us away from the compact cassette format, it remains in many homes and strapped to many people’s belts. The first serious attempt at a digital replacement for the cassette was DAT, which failed as a consumer format but is now a staple of professional studios. Similarly, MiniDisc seems to be failing as a domestic format only to find a niche with professional broadcasters—mainly as a jingle cart replacement, due to its fast random-access and convenience. Lately, the format has also cropped up in ‘digital personal multitrackers’.

With the MD-801R, Tascam has developed the format’s broadcast flexibility still further, through a useful stereo-mono recorder-editor with extensive cueing and editing facilities. All this is possible thanks to Tascam’s exceptionally fast transport, which claims five times the track search and four times the track start and access speed of normal MiniDisc players. This system goes some way towards bringing the advantages of hard-disk recording to broadcasters.

This system goes some way towards bringing the advantages of hard-disk recording to broadcasters.

The MD-801R's appearance owes much to the current DA301I DAT Machine; it’s an imposing, black, 3U-high rackmount unit, smartly and clearly laid out, with the kind of user-friendliness that you would expect of a domestic CD player. A central jog-shuttle wheel is used for data editing and selection, as well as for audio spooling. Transport buttons are large, but I found their shallow click somehow unsatisfying.

Operation is slick and straightforward: just slip a disc (ouch!) into the slot and a motor gently sucks it into the machine’s interior. For audio connections the rear panel is fully equipped and clearly labelled with analogue ins and outs on XLRs and phono; digital is on SPDIF phono sockets and AES-EBU XLRs at a fixed 44.1kHz sampling frequency. Connections are also available for serial and parallel remote operation (great for multiple-unit use, but I missed the convenience of an infrared) and a PS/2 PC keyboard socket. Transferring your PC keyboard to the connection on back of the MD-801R and you have a comprehensive remote-control facility and pad for entering track titles that then appear on the alphanumeric display (which also displays operating system messages). Although the display shows only 10 characters, you can actually give tracks titles of up to 99 characters, which will gently scroll across at a touch of the right button—there’s space enough here for copious mix notes. Also, the PC keyboard gives you facilities unavailable from the machine’s front panel, such as programming playback sequences, and doing frame-accurate time searches. It will also generally perform the function of remote control. I found it very useful for directly playing tracks: you simply bang in the numbers and press ENTER.

TURNING ON the MD-801R prompts a friendly ‘Welcome to Tascam’ in the display, followed by a ‘No Disc’ announcement. Slot a disc in and the machine checks TOC (Table of Contents) and UTC (User TOC) to find out exactly what is on the disc. If its a new one, logically enough: you get ‘New Disc!’; then ‘No Title’; before the display settles on ‘Blank Disc’ on the alphanumeric display, and zeros in the track number and time read-outs. Time is displayed in minutes, seconds and frames, of which there are, unusually, 86 per second. A frame is the smallest increment available for jogging and editing, which means you can be accurate to a little over a millisecond. To compare this to razor-editing tape at 30ips this would mean that you would be accurate to within just under a millimetre —more than adequate for spoken-word material and fine for most musical applications.

Other notable features include glitch-free 192kHz sampling of ±9.9‰; a selection of broadcast-friendly features some of which are useful for other applications—a switch for mono recording (which also doubles available record time); Repeat Play (single track, whole disc or specified segment); flexible counter-display (showing remaining time while the main display shows track time, for example; an End of Message function which flashes a warning towards the end of a track or disc; Auto-
ready which makes the deck park in Ready at the beginning of the next track in Continuous or Repeat Play modes, and the Auto Cue which rolls the machine Ready (paused) at the first frame of audio (not the track start cue point).

Like any DAT machine or CD player, you can locate tracks with NEXT and PREVIOUS buttons. But unlike other machines there are no fast forward or rewind buttons — this is not a problem as the shuttle wheel does all that is necessary. Snatches of audio are emitted during this operation so you know where you are, even in the fastest shuttle (which is as fast as Damon Hill before his engine blew up in Monaco).

There are two separate menu systems accessible by pressing MENU and EDIT. MENU covers all the options not covered by dedicated buttons on the front panel, such as varispeed, copy prohibit and serial remote setup. EDIT, logically enough, covers all editing possibilities. The menu structures are very straightforward: once in edit or menu the jog wheel takes you through the different selections, you choose one by nudging the shuttle ring, and parameters are changed with the jog wheel and set with the shuttle ring. I found this method excellent, and very easy to learn, as each item has a clear description on the display as it comes up.

Jog mode is wonderful: the deck continuously cycles a short piece of audio up to the current point, variable (on a menu setting) from 12 to 32 frames (at 86 frames per second). When you have it at the right place you can store it as an edit-point or locate-point. And the edits are completely seamless, thanks to the unit's in-built buffer system which holds about 10 seconds of audio, giving the machine plenty of time to skip around the disk for sections of audio. I was soon making edits quicker than I might on a 7/8-inch machine.

All edits are lost if you eject the disc or switch the power off before writing a new TOC by pressing TOC WRITE. This takes just a few seconds. Plenty of prompts are given to remind you to write a new TOC if you want to keep any edits or changes. Even after a TOC write operation it is possible to recover erased tracks or edit sections with a Restore function. The manual warns that if power is lost during a TOC write then you might find that the disc is unplayable.

Another format limitation is that if you erase a section you don't necessarily get back all that time as blank space. In my limited experience though, you don't lose very much. Remain times displayed are as fast as you erase with the current TOC, but don't necessarily warn not to record all the way to the end of a disc.

The manual is comprehensive, but has the look and feel of a rough draft. There are a few examples of poor translation but the machine is essentially intuitive, and operation is quickly learnt empirically, with occasional reference to the manual when necessary.

I quickly got used to the machine's (and the format's) foibles and found it great for editing. It doesn't give you all the possibilities of crossfades and such like that you find on a full hard-disk system, but it is certainly easier to do splices than on a conventional open-reel tape machine. All the buttons you need most are on the front panel, and those within menus are quickly and easily accessed without lots of hidden menu levels. There is also a useful headphone output on the front.

I would love to have one of these for projects in my home studio, and for quickly making edits in a studio recording situation, perhaps before going to the expense of getting in a Pro Tools system. Many, I'm sure, will find uses for this machine for A-V and postproduction, as well as radio station jingles, radio-programme edits, and theatre sound FX.

My only reservations might be the longevity of MiniDisc as a format standard (who would want to end up with the digital equivalent of a collection of unplayable 8-track cartridges?), and that, although it is becoming widely accepted in broadcast circles, some users may be put off by the data-compressed audio. This is not the place for that discussion, however.

I certainly found the MD-801R enjoyable to use, and I would say that Tascam have achieved their design aims.
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With all the advantages of a random access recording medium and 'future compatible' recording resolution of up to 24-bits, the new Genex GX8000 8 track MO recorder is truly the digital multitrack of the future.

And with a list of features that includes familiar tape-like operation, simultaneous recording on all 8 tracks, a jog/shuttle wheel, punch in/out and overlay recording, you'll find that the GX8000 slots in easily where your old 16-bit tape-based recorder used to be. Unlike most tape recorders however, the GX8000 can also be conveniently controlled from the included Windows based software, and can download files quicker than real time for editing on DAWs.

Post production users will be particularly interested to note that the GX8000 can slave to, or provide, a master SMPTE/EBU clock, and that full machine control is supported via the Sony 9-pin protocol. There are also inputs and outputs for LTC, word and video clocks. Recording resolution is switchable between 8, 16, 20 and 24-bits, equipping your facility for all current digital formats, and those that are just around the corner.

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Avalon AD2055

When pro-audio companies start to use a hi-fi vocabulary to describe their equipment, it’s usually time to tune out.

Dave Foister discovers the exception to the rule—the American Avalon company and their AD2055 EQ

Avalon is not yet a familiar name in the UK—at least, not when written on a piece of audio equipment. The US company is beginning to get noticed through, initially through interest in its compressor, which is now being followed up with an equaliser, the AD2055.

Audiophile aspirations are becoming more openly expressed in the pro-audio world, a far cry from the days when it was automatically assumed that professional equipment was superior to the consumer’s playback system. The Avalon’s chief selling-point is the sheer audio quality of its circuit designs, described in the literature in the same kind of terms as those used by the more esoteric hi-fi manufacturers. A glance through the top-panel grille confirms that this is an all-discrete design, with packed motherboards bristling with piggy-back modules, each encrusted with transistors. The smaller boards are mostly identical and are clearly a standard amplifier building block on which the whole design depends. This component density is in stark contrast to much modern equipment, which often contains a few lonely chips in a sea of green PCB. The entire equaliser operates in pure Class-A, which explains the number of heat sinks visible inside and the large one on the rear. This is not a piece of kit to put in a rack immediately below your DAT machine—I’ve seen cooler valve equipment. Its also quite heavy, despite having an external power supply delivering 40V down a heavy-duty cable.

DC coupling is used throughout, including the output-line drivers, and specially selected components include Avalon-badged capacitors and sealed silver-plated relays for switching. The result of all this attention to detail is a claimed frequency response from 1Hz-600kHz (sic) within -3dB, an unweighted 20kHz-bandwidth noise figure of -92dB with the EQ in and a headroom of +30dBu. The match between the bypassed response and that with the EQ in, but flat is quoted as within 0.2dB from 10Hz-62kHz.

The styling is classically American (where else could it come from?) with a plain silver-aluminium, front-panel complemented by machined aluminium knobs. All is reassuringly solid and chunky, and the control labels are printed in a subtle but clear charcoal grey with a fineness that looks like engraving. All the switches are illuminated, and twin power indicators suggest that the two channels have independently regulated supplies.

The 2055 is a twin-channel, 4-band parametric EQ, although strictly only the mid bands are truly parametric. Bass and treble ends have switch-selectable frequencies and can be switched between peak and shelf operation, and the range on offer makes them uncommonly versatile. The LF turnover point can go as low as 25Hz and the HF as high as 25kHz, and although the slope characteristics are not specified they are gentle enough to make the effects of these extreme settings very audible and useful. At the same time the HF setting can come down to 1.5kHz and the LF up to 450Hz, making them both capable of mid-range duties. The range of gain adjustment is also large, with ±20dB for the highs and ±4dB for the lows.

The two mid-range bands both have a 7-octave range, achieved in both cases with a X10 switch, and, consequently, have a huge overlap. Between them they cover 35Hz-20kHz, stretching the definition of mid somewhat, but the x10 function keeps them manageable. Up to 16dB of boost and cut is provided on each, together with an infinitely variable bandwidth control givingGs from 0.3 to 3—not the tightest notch you’ll find, but narrow enough for most things, bar tuning out unwanted tones. Matching between channels on all bands seems very precise, allowing reliable stereo use even though this is strictly a 2-channel device with no stereo-friendly features at all.

It’s not often I come across a piece of equipment that makes me as dissatisfied with what I’ve already got as the AD2055 did. However good the figures, EQ stands or falls on its ability to bring the best out of any musical signal, to work with it with precise control, and to do it without introducing any unpleasant by-products of its own, and not many equalisers can truly claim to satisfy all these requirements. The AD2055 is, as can be seen, highly controllable, offering several ways of skinning most cats. The quality of its signal path puts many top-flight pieces of equipment to shame, passing everything transparently and contributing nothing of its own—except the EQ itself, as smooth and musical as any I’ve heard. Whatever I tried to do with it, from vocal EQ to correcting double-bass bug problems to overall mix sweetening, it seemed that exactly what I wanted was just a few knobs turns away and sounding better even than I had imagined. This is without doubt a very fine equaliser indeed, with the little bit of magic that comes, it seems, when designers really apply themselves to producing quality at all costs with the best engineering. A special mastering version is due shortly, which I await with eagerness.
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BSS Audio
Earthworks TC30K AND TC40K

As a welcome counterpoint to the procession of cardioid condensers that forms the staple of new studio microphones, DAVE FOISTER rigs a pair of American omnis with some serious performance figures. Do they measure up?

I'VE HEARD some bold claims in my time, but few bolder than Earthworks' declaration that one of its models is 'the most accurate recording microphone available'. Earthworks is a small, relatively new American company set up by David Blackmer, founder of dbx, and its catalogue to date consists entirely of a range of omnidirectional microphones. The similarities between models outnumber the differences; all share a distinctive styling strongly reminiscent of Brüel & Kjær's measurement microphones, and all have impressive specifications, varying mainly in the extent of the frequency response outside the traditional audio range.

Another important common factor is the very small capsule, about half a centimetre across. It is the narrowness of the tube holding the capsule that dictates the shape, so that the practical reasons for the probe-like appearance are the same as in the B&K reference microphones; nevertheless, the effect of the subliminal link with the standard by which all others are measured cannot have been lost on the designers.

Image is clearly important to Earthworks. The microphone boxes are carved from solid pieces of wood, with slots routed out and fitted with felt pads to support the microphone—even the box maker gets a credit. Clips for stand mounting are supplied, but without the thread adaptors for European use, a cheapskate omission too common to many American manufacturers.

Earthworks began with the OM1, which only works into electronically balanced inputs, but features the winning spec that is the Earthworks trademark—a time-coherent response way beyond 20kHz. The TC30K makes this 30kHz bandwidth available to those with transformer inputs, and the TC40K extends the time-coherent response to 40kHz, with the same lower limit of 9Hz and lower self-noise. Self-noise is a parameter Earthworks is self-conscious about, as on paper it is higher than much of the competition; at the same time, the microphones' sensitivity is relatively high, which goes a long way towards compensating for it. Certainly, I didn't find it to be a problem, and the TC40K is, indeed, marginally quieter, or at least has less top in its noise. All also claim to be able to handle 151dB SPL without pads.

Earthworks has produced a demo CD featuring the OM1: they really shouldn't have, as it sounds like someone's garage recording. It could serve as a demonstration of how not to record a jazz quartet: how to choose the wrong room; the wrong mic placement; the wrong mix; and the comparisons with industry-standard microphones sometimes have the opposite effect to what Earthworks intended. I'm glad I listened to the microphones before the CD, because I realised immediately that the demo doesn't do them justice.

The use of omnis is a neglected art, and I'm as guilty as the next man, being a Blumlein enthusiast. Many omnis aren't truly omnis, and the clarity of image and stereo spread of a well-placed 90° pair of figure-of-eight takes some beating to my ears. Having said that, the flat response and lack of off-axis coloration of a good omni is well known, and its applications both close up and in a spaced pair configuration are familiar enough. To be fair, the area of rejection of even the most accurate cardioid is pretty small, and very often its advantages over a similarly specified omni microphone are minimal at best.

EARTHWORKS STAKES its reputation not on the specs of its microphones, but on their sound. The specs are extraordinary, and the sound more than vindicates them. The most immediately striking aspect is a kick in the teeth to those who believe that low frequencies can only be captured by large diaphragms, as the depth of bass in these microphones is phenomenal. Not disproportionate or tweaked in any way, just accurate and full to an extent that would strain many people's credulity in a capsule so small. This is not at the expense of the top end, which comes over as flat and clean in the same way, as indeed it should given the quoted response of the microphones. Earthworks sets much store by time coherence, a quality often lacking in a traditional cardioid design, and reckon that getting this right affects the slam of a kick drum at least as much as the tip of a triangle. Certainly, there is an openness about the sound which makes it hard to argue with Earthworks' claims to accuracy.

My experience with the TC30K and TC40K left me highly impressed. Omnitheatists will find these microphones right up there with the best of them, and those less used to omni working should try them anyway to see what they've been missing. There's a smoothness and a realism about a good omni that is rarely achieved by anything else, and the Earthworks models have this in abundance.

The final surprise is the price: the TC40K is well under $1,000, and the TC30K little more than half that, despite the esoteric image that often borders on the pretentious. As both microphones stand comparison with models costing five times as much, or more, they are a serious bargain.
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QSound QX/TDM

One of the latest additions to the growing number of software packages for the TDM platform comes from QSound and brings its 3-D sound imaging to a new generation of studios. DAVE FOISTER enters the third dimension.

THERE ARE MANY areas of specialisation within audio, but few can be as narrowly defined as that which QSound Labs has decided to make its life’s work. Two-speaker surround sound, or stereo expansion beyond the loudspeakers, is a very small field, and, curiously, one of the two systems that could be seen as competition for QSound—Desper’s Spatializer—is also from a company that does little else. QSound was one of the earliest commercial systems for projecting sound into the room from a conventional stereo playback system, and the accumulated expertise is now available for use on various computer platforms.

The platform to use at the moment, of course, is TDM. QSound already has a TDM version of its QSYS software, which places mono sources into a 3-D soundfield, and now in response to user requests there is QX/TDM, a Pro-Tools compatible version of its stereo-expander system. It is based on QSound’s first commercial software plug-in, QXpander for Sound Designer, and its function is significantly different from the 3-D panning of single sources that first brought QSound to prominence.

The idea of the QXpander system is to take an existing stereo source and extend the image beyond the speakers into the room. All QSound’s processes are single-ended, needing no decoding by the listener, and supposed to work on any reasonably well set up stereo system. At the same time, it is made quite clear that the closer the setup is to an ideal geometry, the better the result will be, and significantly the diagrams demonstrating the ideal placement show a multimedia computer complete with small local speakers. The multimedia market has been a shot in the arm for this kind of technology, as it consists of an audience effectively strapped into an ideal listening position, and demanding maximum impact from the audio on their software.

The most straightforward way to use QX/TDM is to process a final stereo mix, plugged into a Pro Tools master-fader’s insert. Aux sends or separate bus can be used in the usual way, giving the possibility of making one or more elements in the mix jump out from an otherwise conventional stereo image.

Once the process is installed, setting it up could hardly be simpler. It has three main controls—all large sliders—and a few buttons, the most important of which are the on/off switch and the buttons for saving and loading setups for future use.

The main slider simply determines how much stereo expansion the process will add. In many cases this is the only adjustment necessary, and raising its value swings more and more of the image out into the room and beyond the limits of the loudspeakers. As might be imagined, there is a risk that large amounts of this treatment will emphasise the edges at the expense of the central image, which can become less clearly defined, so a control marked Centre Drop allows the common mono information to bypass the process and emerge unscathed when set at 0dB.

There is further concern that excessive treatment of low frequencies might sometimes cause problems, particularly where mono compatibility is concerned, and an adjustable high-pass filter effectively acts as a crossover, passing frequencies above it to QX while leaving those below it dry.

I CONFESS to approaching this plug-in with trepidation, not generally regarding such processes as more than special effects for occasional use. In the event I was pleasantly surprised and impressed with the way it was able to make almost any source larger than life without noticeably negative side-effects. There was a strong impression of clearly localised sound outside the monitors, and just as important, an increased sense of front-back depth, with even fairly central sounds appearing distinctly forward of the speakers. Mixes that were already wet tended to get wetter, and these in particular needed adjustment of the Centre Drop parameter in order not to lose vocal presence, but otherwise things stayed remarkably solid and focused, with little change to the balance within the mix.

I was expecting extreme settings to produce nasty phasy effects of the kind that make you feel your eardrums are being sucked out of your head, but nothing of the kind ever manifested itself. Even classical orchestral material remaining convincingly stable and clearly laid out. Frequent mono checks confirmed that little was being compromised or that score, the only exceptions being those items that needed a bit more care in the first place.

I came to this software expecting to find a gimmick for the computer games market, and instead found a surprisingly musical tool that could be used with impunity to add a little fairy dust to almost anything. Using it routinely would not even be that demanding of processing power as it only needs half a TDM DSP allocation per use, with simultaneous multiple uses with different settings possible as well. The most recent development is an upgrade to PCI compatibility, making it available to yet more users, who are strongly recommended to give it a try.

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- Solo In Place Mode in addition to PFL and AFL
- Parametric Mid Frequency Equaliser
- Remote Mute Switch Access
- 4 Stereo Inputs on each console
FOR MANY YEARS now, I have been waiting for someone to produce an audio analyser that runs on my computer with the minimum of fuss and the maximum possible usefulness to a sound engineer and acoustician. SMAART goes a long way towards fulfilling this wish. Complex audio signals are not easy to analyse and it has taken the massive increase in processing power versus cost along with the advent of high-quality onboard sound-sampling hardware to make it possible without the need for dedicated (and therefore expensive) additional hardware. SMAART comes on a single disk, ready to load into a Windows, complete with manual.

Installation is so fast and easy that I was initially suspicious that anything so simple couldn't be up to much—but I was wrong. Having completed the setting-up procedures I sat, manual on lap, and clicked on the Real-Time Module icon. The resulting window looked reassuringly familiar and user-friendly, even to a computerphobe like me.

To understand what this module does require a little theory—the signals digitised by each input channel of the computer sound-card are processed using an FFT algorithm and then displayed as two colour traces on the screen. To do this requires a sampling rate and a windowing function which are determined by the compatible rates available with the sound, and SMAART will support 5.12kHz and 11.05kHz and 44.1kHz but not 48kHz. The FFT size is selectable up to 4096 or 256, this is enough to give a frequency resolution of up to 1.3Hz with a range of 100Hz or 10.7Hz with a 22kHz bandwidth.

The typically Windows-style toolbar allows the selection of four frequency ranges plus a zoom feature that allows the available FFT to provide the most detailed information as required. Other toolbar functions allow display modes to start, stop, and compare traces.

In Normal mode the display consists of the two input signals which can be the left and right channels from a system or more analytically, the input and output of a system, either electronic or electroacoustic. A transfer function if generated by the cross-spectral convolution of the two channels to derive a single trace that, in effect, is the frequency response of the system under test. Depending on the nature of the signal used for the test, the accuracy of the transfer function is dependent on the reduction of spectral leakage and truncation errors, plus the ability to average many samples of the dual signals within a reasonable period, to maintain a quasi-real-time feel to the whole shooting match. Mathematics apart, this section works well, by virtue of its friendly interface.

There are practical problems with signal levels and calibration, any serious professional is going to wonder about the variety of reference levels, absence of weighting curves and standards such as STI, RASTI and FALCONS, but frankly this system is more fun to use than any of the real-time analogue, hardware-specific systems I have been using for 20 years and it does not have to prove its ability against the TEF and MLSSA analysers; they already set standards around the world which cannot be bettered by a package designed specifically for use in PCs with domestic standards of hardware.

APART FROM the level-matching problems of dealing with both microphone and line levels there is no real difficulty in producing meaningful results from a typical set of audio sources. The dynamic range of the system is as good as a 16-bit convertor can produce and the self-induced noise was at least 100dB below the claimed maximum level of the analyser metering indicators. A direct input from a CD player is capable of overloading the sound card, so some kind of preamp for microphones and a gain control are essential accessories. Calibration could also be a tricky issue when measuring absolute sound levels, but there are many ways to produce a reference tone for this purpose.

A coherence function calculates the number of complex data points which are ‘similar’ in the transfer function and this gives an indication of the presence of nonlinear-system problems or delayed acoustic energy entering the measurement, this is a useful guide rather than an analytical tool, and it is there, primarily, to tell you something is wrong at a particular frequency. In order for the two inputs to be phase coincident there is a time-delay correction function that selects a different window to work in and actually computes the relative delay between the two channels, assuming they are both receiving the same signal. SMAART does this by doing a reverse FFT back to the time domain and provided the FFT is set big enough the resulting impulse response clearly shows the initial time gap between the sound origin and the arrival at the microphone. A cursor then indicates the time offset to programme into the transfer-function generator. I have tried, all this works well, and the screen dialogue boxes, and intuitive feel of the thing makes it painless to use.

It must be said, again, that the data acquisition can be corrupted quite easily in a system like this, and the absence of phase and complex-form data-display makes it difficult to know what is actually causing a particular transfer-function effect. The analyser part of the system offers some useful processing of the derived impulse response that is saved as a standard .WAV file by the Real Time module.

Decay slopes for reverb times and windowed time-domain slices for quasi-anechoic spectra are easy to produce, but the windows are not quite so friendly in this mode and it does help to know what you are doing.

Overall, I have to say, I liked this system very much, and I feel it has a great future with sound engineers working in the field. It is of more limited benefit to serious acoustic consultants who wish to carry out complex analytical operations. It does require a powerful computer. The manual urges this, and with good reason.

One final note: do not use the spectral time-analysener module without dark glasses or, especially, after a night on the town, it may affect you for life.

CONTACT
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New Technologies

DAVE FOISTERS trawls the world's technical-news networks for hot news of recording, postproduction and broadcast equipment, and discovers that there is no shortage of activity even during the 'quiet' holiday season.

Deltron DI Box
Deltron, perhaps best known as a manufacturer of connectors, has branched out with the introduction of a DI box. Surprisingly, this is not a simple passive DI, but an active box with enough features to make it stand out from the crowd.

The large black box is plain on most surfaces, with one carrying the connectors and another the controls. Connectors comprise a jack input with loop-through and a balanced XLR input and, of course, its balanced XLR output. The control face includes an unusually flexible switched gain control, giving enough degrees of attenuation to cope with most input signals. Alongside it are three LEDs showing power, low battery and overload, with switches for power source and ground lift.

The power switch suggests it flexibility, having positions for both internal batteries (2 x PP3) and phantom power. The problem with designing an active DI, particularly with LED indicators, is to run from phantom power the current needed, and after extended fine tuning Deltron has brought the current requirement down from an early 24mA to 8mA, well within BS specs, trebling the battery life in the process. The result is a fine-sounding, clean DI box, with enough drive capability to require the use of a console pads even before it becomes internally overloaded, and whose ability to handle such a wide range of input levels makes it a pretty useful tool to have around.

Deltron: UK. Tel: +44 181 965 5000.

Weiss EQ1
Swiss digital specialist Daniel Weiss Engineering has introduced a rackmount digital parametric equaliser, the EQ1. There are seven bands, each covering the whole frequency range, and each with selectable shelving, cut or peaking mode. The 2U-high box carries a knob for each parameter alongside a display screen showing the set curve and parameter values, and the knobs are touch sensitive so that the screen will show the value of the parameter being adjusted. Snapshots can be saved for A-B comparison. Remote control is possible via MIDI, RS422, RS232, and the design is expandable either by hardware module changes or software coefficient sets. This will allow new features to be added such as double sample-rate processing, analogue EQ emulation and linear phase EQ.

Daniel Weiss Engineering, Switzerland. Tel: +41 940 20 06.

Millennia HV-3C
Millennia Media has added to its acclaimed range of microphone preamplifiers with the HV-3C, which has an integrated Apogee 20-bit A-D convertor with its analogue front end redesigned by Millennia. The two preamps are the established HV-3 high-voltage units with buffered line inputs, and can be used independently of the convertors or routed via insert points before or after reaching them. The convertor section incorporates Apogee’s UV-22 20-bit to 16-bit encoding system, and can, optionally, record its full 20 bits on two combined tracks of ADAT or DA-88. The multitude of connections include digital inputs for applying UV-22 to an existing 20-bit signal, as well as a range of analogue inputs including 130V B&K microphone inputs. Additional features include a built-in oscillator, a soft-laser switch, and Apogee’s 0768 Ultra Low Jitter Clock.

Weiss's EQ1

Tascam DA-38
Tascam has produced a second DTRS Hi-8-based, 8-track, digital recorder to join the established DA-88. The DA-38 comes in at a lower price, with additional features for music recording. Prominent among the new functions is an internal digital patchbay that allows any input to be routed to any track, and any track to any output, as well as enabling bounces both within a single machine and across several. The optional MMC-38 interface provides MIDI Machine Control and synchronisation, and the machine is fully compatible with existing DA-88 systems including their remote controllers.

Teac. UK. Tel: +44 1923 819630.

Nagra-D software upgrade
Hot on the heels of the introduction of the 96kHz recording capability comes new software for the Nagra-D, which incudes not only the high-sampling option but also mirror copying and Take Number Erasure. Mirror copy allows an exact duplicate of a Nagra-D tape to be made via the RS422 ports of two machines, complete with all directory

Designed with flexibility in mind—Daniel Weiss's EQ1

August 96

Studio Sound 35

www.americanradiohistory.com
New, sleek and cheap: the JL Cooper 101

Subminiature transducers in hearing-protection equipment comes Precision Nagra. Information and auxiliary data. The process is fully automated as the master machine sets all the parameters of the slave, and the resulting copy has all the skip and search features of the original. The Take Erasure function removes the problems of false starts during a session, and the new software also contains time-code assembly, tape-format number incrementation, write-protect contains time-code assemble, tape-format during function features the machine sets the result of copy has sleek a to be Studio Sound US. Cooper absolute recording a company normally known removes of original. The Tel: +1 615 726 5191.

Precision Audiotronics Pearls From a company normally known for personal hearing-protection equipment comes a new line of in-ear monitor. Precision Audiotronics' Pearls claim to be the first in-ear monitors to use subminiature transducers to reduce the profile of the monitors in the ears without sacrificing hearing protection or sound quality. The monitors are designed for recording artists and audio engineers as well as the familiar stage applications, and use transducers similar to those used in canal-style hearing aids giving a quoted frequency response of 20Hz-16kHz ±4dB. Another spin-off from hearing-aid technology is the process for producing the vinyl ear-mould shells, giving optimum sealing and auxiliary data of external noise exclusion. A proprietary response smoothing system produces a curve that closely matches the natural frequency response of the open ear, a common technique in headphone design.

Precision Audiotronics, US. Tel: +1 800 711 7317.

DOD equalisers DOD has introduced two graphic equaliser models, both 2U and 2-channel, but trading numbers of bands for a slider throw. The SR231Q has two channels of 31-band EQ with 12dB of boost or cut on short-throw sliders, while the SR830Q uses long-throw controls on two channels of ½-octave, 15-band EQ. Both feature separate, electronically switched, low-cut filters and LED bar-graph metering, with balanced/ unbalanced ins and outs on TRS jacks—XLRs are optional. DOD points to a particularly clean performance, with signal-to-noise better than 90dB, a frequency response within 0.5dB from 20Hz to 20kHz, and typical harmonic distortion of 0.004% (0.003% for the 15-band version). DOD, US. Tel: +1 801 566 8800.

Pearl DS 60 Swedish microphone manufacturer Pearl has a new stereo model, the DS 60. It contains two of Pearl's rectangular, dual-membrane, capsules fixed at an angle of 90 degrees, giving four cardioid outputs via a 9-pin connector. These can be mixed and matrixed either on the console or using Pearl's dedicated matrix amplifier, which gives infinitely variable and independent control over the polar patterns of the two capsules. This makes it ideal for both X-Y stereo and MS work, and the amplifier also includes independent 3-position, high-pass filters.

Pearl, Sweden. Tel: +46 42 588 10.

Prism DSA-1 software upgrade Prism Sound’s DSA-1 hand-held AES-EBU interface analyser now has enhanced software available. Version 2 now provides a signal generator, delivering a wide range of waveforms including special signals for bit error and jitter testing. Prism says this is the only system capable of discriminating between jitter induced by long, or excessively capacitive, cables, and jitter originating from a poor quality AES source. Also new is a passive Watchdog mode, in which the unit monitors chosen aspects of the AES signal over a period of time, and a Channel Test

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NEWS FROM TUBE-TECH

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Sounds like you've got to have a demo.
In the world's recording capitals, a studio's location can make the difference between success and failure. But Caroline Moss discovers that in certain parts of the world, it is the facility and the attitude behind it that count rather than tourism figures.

Lombardy, in the north of Italy, is a region characterised by its lakes and mountains, where for hundreds of years the domes and spires of golden cities have languished in the sunshine. Sadly Dalmine, located just off the A4 autostrade 30km east of Milan and home to dB One Studios, is not one of those cities. Instead, the studio is set in the suburbs of a sprawling industrial conurbation, being built into a modern house which looks as if it should be home to a local factory manager and his family. Regardless of this aesthetic handicap, the studio has attracted work from across Europe as well as being linked to several record labels active in Italy's booming dance music scene.

dB One has been in its current location for five years, during which time its fortunes have contrasted starkly with its situation. At the beginning of its life it was a purely commercial concern but as time has passed it has found itself being used increasing for in-house productions—the ratio currently stands at a healthy 50-50 split in Studio A with the smaller Studio B being used solely for in-house dance productions. The partnership behind the studio and the labels is that of brothers Bruno and Angel Santoni; Bruno is a musician, producer and arranger in addition to being the studio's manager while Angel has been responsible for the development of the studio's record labels. The brothers used to play in the same band when they were younger. 'He has returned to his first love,' says Bruno fondly, referring to his brother's recent move back into the music industry.

The Premises

Housed dB One may be a regular suburban Italian house, but the similarity stops at its exterior. All the interior walls were demolished when the studio was being built, and new walls were built to float on rubber isolation between the studios. The studios were designed by Audio Video System, an acoustic design company affiliated to Milan's professional audio distributor Audio Equipment.

Studio A has a versatile 40m³ recording area. The control room boasts a 68-channel Soundcraft 3200 console with a 24-track Saturn analogue multitrack and a 32-track Mitsubishi digital tape machine. The monitors are the largest Genelec models—1035s—and the control room is also equipped with a Pro Tools hard disk editor, Alesis ADAT and a MIDI suite.

There is a large range of outboard equipment including units from dbx, Eventide, Aphex, bel, AMS, Lexicon, Roland, Apogee filters, Studer DC90 valve preamp, vintage EMT 251 reverberation system and eight channels of Focusrite equalisation ('the most important EQ system in the world,' according to Bruno Santoni). There is also a huge array of collectible equipment including a Vox AC30 and keyboards from the likes of Hammond, Steinway and Moog to name just a few. Santoni is adamant that, in a country with no studio rental industry to speak of, it is important to provide clients with a good selection of effects, keyboards, microphones and anything else your clients may require. 'We keep a mix of new and old outboard equipment so we can provide two different genres of sound and cater for dance and rock music alike,' he says. 'It's difficult to produce an old sound with new machines and vice versa.'

Studio B, used purely for dB One's own productions, has a new 40-channel Soundcraft DC2020 console which was installed in May together with more Genelec monitoring—1037 monitors with sub woofers, two 1036s and a 1034. In the same spending spree a new effects rack was also ordered and equipped with new Behringer, Lexicon and other effect units. As this studio is mainly used for dance production and commercials, the equipment is kept to a minimum.

Although dB One is located in an industrial conurbation, the sights and sounds of Italy are not far away.
productions, a huge recording area is not required, so most of the studio is occupied by an extensive MIDI suite. However, there is still plenty of room to record vocals and instruments if required.

BRUNO SANTORI describes his main activities as managing the studios and making pop music for the Italian market. He works with his own, unsigned discoveries and also produces for many of the major labels. One of his major clients is Dublin-based sound engineer John Grims who has worked with the likes of U2, Elvis Costello and Howard Jones, and who now undertakes projects in Italy, bringing them to db One. Another major international client is Jahn Teigen, one of Scandinavia’s biggest stars, who has recorded two of his albums at the studio.

Word of mouth Italian style.

The studio’s labels include the Desastre imprint, which specialises in trance, progressive and dream, EXS which is more techno-orientated and Still Frame, which is described as an experimental dance label. Next year Santori is to resurrect two more labels, General Beat and Melody Maker, which specialise in underground house.

Next year Santori is to resurrect two more labels, General Beat and Melody Maker, which specialise in underground house.

The studio was responsible for what the Santoris refer to as ‘the first dream song in the world to be released,’ Roland Brant’s ‘Nuclear Sun’ Recorded three years ago, this track has just been remixed and rereleased and at the time of writing was holding the No.7 spot in the Italian charts. It has also charted in France and Germany. This testifies to another of Angelo’s fortes— to secure Europe-wide licensing deals for this label’s product.

When pressed, Bruno Santori doesn’t seem altogether sure why international clients should have chosen to come and record at his studio. In all likelihood the explanation is most probably due to the passing of the word on the street, with reputations being forged by artists, producer and record labels. There can be no doubt that this strangely-located studio has made its name through its successful productions, professionalism and good relationships within the Italian music industry.

We don’t like big towns, so this location is perfect for us, being just a half-hour drive from Milan and the major record labels,” says Santor. Producers, engineers and musicians can be supplied from a large pool of contacts, accommodations deals are in place with several nearby hotels, the local restaurant serves amazing food and, if it really matters to you, those little domed towns dreaming in the sunshine aren’t that far away after all.

August 96
Three's Company

'It would be more than a full-time job to design and install a sound system to suit each stadium, then fine tune it through equalisation and the placement of the loudspeakers to create a working system.'
The overwhelming international success of The Three Tenors live tour has done much to bring opera into the hearts and minds of the everyday man on the street. SUE SILLITOE talks to John Pellowe the man behind the classical live sound

ASK DECCA SOUND ENGINEER

John Pellowe which of the three tenors he likes most and he's at a loss to know who to choose. For although his primary loyalty is to Luciano Pavarotti—the tenor he has worked with for over 20 years—he has grown equally fond of José Carreras and Placido Domingo having worked extensively with them during the hugely successful The Three Tenors concerts that have become landmark events in the classical world.

The runaway success of the Three Tenors began in 1990 when Pavarotti, Carreras and Domingo were brought together with Conductor Zubin Mehta for the World Cup in Italy. While opera purists closed their eyes in horror at such an overtly commercial venture, the public at large couldn't get enough of them and packed arenas all over the world whenever the tenors designed to put in an appearance.

And at every single event, somewhere in the background was John Pellowe, working hard behind the scenes to ensure that the concerts lived up to public expectation. For a man who describes himself as 'a high school failure' and who left school with virtually no qualifications, Pellowe has come a long way.

Since the mid-1970s he has been a Decca engineering stalwart, notching up countless recordings for the classical label as well as handling many of the arena concerts undertaken by Pavarotti—both as a solo artist and as part of The Three Tenors. "At school the only thing I was interested in was drama—particularly lighting and sound engineering," Pellowe comments. "I think this fascination with the theatricality of live events is what has spurred me on. I have a strong interest in the whole show business product—not just with the sound, but with the overall effect of the concert. I want the set to look good, the stage to look good—everything. I'm well known for interfering in areas that have nothing to do with me and I probably drive people completely nuts as a result!"

Although Pellowe always knew he wanted a career in the music business, it took him two years after leaving school—and countless rejection letters—before he landed a job with Decca as a tea boy in the location department. He worked his way up through the ranks until he achieved the status of engineer and among those who gave him help and encouragement were Kenneth Wilkinson, who retired in 1980, and James Lock, who introduced him to opera and was responsible for putting him behind the mixer. "I started with simple things such as chamber music and then moved on to opera and full orchestras," he recalls. "Sometimes recording a symphony orchestra can be easier than recording just voice and piano because you can almost hide behind the various instruments. With a small ensemble everything is so exposed that if something isn't milked properly or the perspectives are not perfect you soon know about it."

Although in the pop world many engineers aspire to be producers, in the classical field Pellowe sees the two roles as compatible yet quite distinct. He explains: 'At Decca, the producer is responsible for the artistic side of the product while the engineer is responsible for the technical side. Although the engineer has a great deal of autonomy, there is still a huge amount of interaction between us and I'd never do anything a producer didn't like because we work as a team.'

Pellowe believes this teamwork is what makes Decca so special. 'I know people from all around the industry who are quite envious of the relationship we share with our producers.'

Pellowe has a long list of credits to his name, but it is his relationship with opera don't really give him the opportunity to do that because they tend to be one-off events, they are not always perfect artistically and in any case we don't generally record them. Pellowe's concert commitments certainly keep him busy and leave less time than he would like for other more straightforward recording projects. 'I'm doing about 20 concerts a year for Pavarotti. Sometimes we record them for a TV broadcast but the standard concerts are not recorded because we have no license to do that and have no commercial appeal as all the repertoire has been released before in full operas and as compilations of Neapolitan songs.'

With any arena concert, Pellowe says he would be lost without the help of a proper sound designer as each venue is so acoustically complex. Every arena and open space we work in has a completely different acoustic and creates different acoustical problems," he says. 'It would be more than a full-time job to design and install a sound system to suit each stadium, then fine tune it through equalisation and the placement of the loudspeakers to create a working...

It ain't over 'til the fat ladies sing: Domingo, Carreras and Pavarotti exercise their lungs at Wembley, London on 6th July 1996

August 96

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www.americanradiohistory.com
The calm before the storm: John Pellowe in reflective mood on the eve of The Three Tenors recent London concert

has a lot of difficulty getting a decent classical string sound using this type of mic.' Pellowe believes years of experience is the key to ensuring arena concerts sound good. He cites the fact that both he and James Lock have spent so long recording orchestras in quality venues using omnidirectional microphones such as Neumann 50s as part of the famous Decca Tree that the sound is permanently stored in their memories. This means they can experiment with alternatives in a live situation and still accurately judge the overall effect of what they are creating.

'We can contrive it and I don't mind admitting that the sound we produce in big arenas is fairly contrived because it relies quite heavily on artificial reverberation and heavy equalisation,' says Pellowe. For arena concerts Pellowe prefers to use Schoeps cardiod and subcardiod mikes because he trusts them, and has never had one fail at a crucial moment. 'If you're working very fast to set up and produce a concert without sufficient time to do all the pre-concert checks that you might like to do, then you have to know that your mikes are trustworthy. With Schoeps I can make certain assumptions that I couldn't make with any other type of mic.'

In order to make the arena concerts sound as good as possible, Pellowe relies on close miking which is in contrast to the way classical music is normally miked. He explains: 'Classical music is traditionally recorded from a distance. Violins and stringed instruments don't sound right when you get a microphone close up, particularly if you are in a situation where you are mixing rock and roll, and orchestral music as we did recently in Modena when we recorded a charity concert featuring Pavarotti; Elton John; Eric Clapton; Lisa Minelli; Zucchero; the Kelly Family; Joan Osborne and Sheryl Crow.

'With a concert like that, where you have very loud drum kits on stage, you have to rely on little bug mikes on each of the instruments because that's the only way to get the orchestra across. I'm the first to admit these sound quite ghastly if you listen to them in their natural form, but I use a lot of equalisation.'

'With careful EQ I've found that you can remove the artefact in the strings instrument pickup that makes it sound close. I'm really quite brutal with the EQ. Depending on the instrument, it requires rolling a lot of high end and a lot of mid frequencies—from 1kHz up to 4kHz—on quite a wide cue so that you take away the presence before feeding it to reverb. Quite often I'll have quite a short reverb, but one that is quite deep and the combination of the two seems to work.'

For equalisation, Pellowe is yet another engineer who has fallen in love with Focusrite. For The Three Tenors he uses the dual stereo EQ from the Focusrite Red range, combining it with a TLA 100 valve compressor which is useful in removing sibilance and adding warmth. 'I like the Focusrite Red EQ because it gives us that bit extra. The tenors tend to get fairly close to their microphones, which they have to do in order to hear themselves in their monitors, so I use the Focusrite to take out the presence and fine tune the sound so that it seems as though they are quite some distance from their mikes.'

Normally Pellowe and his team only have one day to set up a concert—a 4am load-in with the concert scheduled for 8pm is not unusual. 'It's tight,' he admits. 'We are usually putting up four clusters of loudspeakers and setting a stage which is often hampered by the fact that you've got a lighting rig sitting on the stage two hours before the soundcheck.'

'We always insist on a soundcheck a couple of hours before a show. The orchestra comes along and quite often we have a stand-in tenor so that the artist can test his voice. The soundcheck is vital because it gives us a feel for what the arena is doing. It also gives our System Design Engineer — Alexander Yuill-Thomton II (who has done almost every one of the 150 Pavarotti concerts to date)—a chance to hear what's actually happening.'

For sound reinforcement, Pellowe and Thornton prefer to use Meyer loudspeakers in various combinations.

'We are very careful to stay within the same family of loudspeakers, but as Meyers brings out new models we try them, and if they work for us we introduce them slowly. We tend to be a bit conservative because our shows have to be put together so fast that it doesn't give an awful lot of time for trials and experimentation.'

Pellowe does, however, like to experiment with the positioning of microphones and quite deliberately doesn't do the same thing twice unless the results were really fantastic. 'Obviously when I'm recording I will document where everything went so that if I have to go back and do the same session three weeks later I can match the sound. But with the shows, I move things around all the time and try different positions because I think engineering sound is a constantly changing process.'

Although most of the arena shows Pellowe handles are not recorded, there are notable exceptions—such as The Three Tenors concert in Los Angeles in 1994 which was recorded for a number of different formats and has subsequently sold over eight million units. When a show is destined for posterity, Pellowe has to be aware of quite a few potential pitfalls. He explains: 'In a regular concert you can be close to feedback and no-one knows about it because we always set our systems up in such a way that if it's going to go into feedback it does so very gently. There's a build up in the bass end so that the timpani notes and bass drum will start to roll on a bit longer than you expect. When that happens we know we are getting close to the edge but the public doesn't notice—and if they do they perceive it as reverberation.'

'If you are recording a show with the system set up like that you could end up with artefacts on tape that you really don't want so you have to be a bit more careful. When you're recording there is a temptation not to drive a system quite so hard.'

Pellowe says it is vital that the recording engineer trusts whoever is mixing the front-of-house sound, especially as the recording engineer is usually stuck in a mobile well away from the front of house. For the 1994 Three Tenors Concert, it was James Lock on the front-of-house mixer while Pellowe worked on the live-broadcast mix.
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He says: "I do quite a lot of live broadcasts while at the same time laying sound down to multitrack. One of the rules I have with these shows is that each mic has to go directly to multitrack—no mic to one track. It will go through a split at the front-of-house console and then feed into the mobile where it will go into a preamp on the mixer and then straight to tape before any faders, equalisers, pan pots or any kind of dynamics effects are added. This way, it doesn't matter if someone has a fader in the wrong position because I'll have an absolutely flat tape, and provided it is correctly set in terms of level I can start again with that multitrack tape when I get into the remix room.'

With The Three Tenors recordings, Pellowe says 48 tracks of digital is just about enough. Sometimes he has the audience microphones onto a separate machine—usually a Tascam or Sony PCM800. He says: "I do this because the audience mikes are a long way from the stage and I can very easily put a time-code offset into the audience microphones to time align them with the stage. If you can time align the audience crowd reaction with the stage you hear a lot less sound system contamination and you end up with a much purer sound.'

For reverberation, Pellowe likes to use Lexicon 480s because they are reliable and give a very natural sound. He says: "The medium hall setting is very good for classical music and I'm quite happy to use it when I'm recording in the open air.'

For front-of-house mixers, Pellowe tends to stick with Ramsa—again because they are reliable and easy to set up—and because they can be obtained anywhere in the world. He has tried other brands, but comes back to the tried and tested because it's what he knows. As for the new breed of digital mixers, he says: "I have reservations about using digital mixers on live shows because when they crash, they crash. The tape machines are fine—we used the Sony PCM3348 all the time. But I don't feel comfortable with digital mixer technology yet' At any concert—whether it is being recorded or not—Pellowe feels that the buck stops with him. There are so many facets to engineering the really big shows and I'm ultimately responsible for the final result, even though I don't do everything myself. On a big show I can have as many as 25 people working with me, but I still take the rap if anything goes wrong so I make sure we run through a preconcert checklist covering everything you can think of, just to be sure.'

This attention to detail is why Pavarotti trusts Pellowe and is happy to have him as part of team. And the trust and affection is reciprocated. "I support Luciano for as long as he sings,' he asserts, and "for as long as he wants me to. This is a deep personal commitment. There are other things in life that may or may not change, but as far as Luciano is concerned, that's how I feel.'"
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S sometimes inspiration comes to us and, in the case of writers and broadcasters, we may create a wonderful sentence or phrase, one that sums up the event we are covering in one neat, eloquent and memorable package. This happened to the football commentator Kenneth Wolstenholme in 1966 at the end of that World Cup final between Germany and England. The trouble is that the phrase has now become over-used to the point of agony, so much so that I can’t bring myself to reproduce it so you’ll know what I’m talking about (I can, it’s now the headline – Ed).

In fact, the phrase has become somewhat meaningless because of its over-use. I find the same happens when talking to people about broadcasting business: in the past year or so a lot of manufacturers have been saying that Asia is a burgeoning market for them. On hearing this journalists write it down, go off and publish this observation, very often without fully exploring why business is so good in Asian broadcasting at the moment.

Now this is probably down to the fact that the territories we’re talking about are a long way away, or it could just be sloppy thinking. Either way round, there must be a lot happening there because just about everyone I know connected with the industry keeps flying out there (and by there I mean Singapore, Korea, Malaysia, Thailand and Hong Kong, with the growing importance of China looming in the background).

All this activity may suggest that broadcasting in Asia is still in its early stages and so lags behind Europe, the US and Japan but this would be an arrogant and incorrect conclusion. Like Europe, the broadcasting market in Asia can be divided between the programme makers and publishers (particularly the national, state and commercial organisations); independent producers; and the postproduction houses.

The first grouping is normally seen as rather circumspect bodies, who recognise the importance of keeping up with the new trends, but have to weigh up what they want against the budgets they have been set by the suits. This, of course, is no different whether the chief engineer concerned is sitting in an office in London, Houston or Kuala Lumpur. Alan Campbell, the Sales Manager with responsibility for Asia at DAW-maker DAR, observes: ‘Things aren’t really that different to how they are here—the main broadcasters are like their Western counterparts. They don’t spend like it’s going out of fashion, but they do try to keep up with the trends.’

One such trend is satellite, partly because delivery and transmission formats are of great importance in such a large and spread-out region, which includes countries, like China, that are large and spread-out to start with.

CHINESE TELEVISION has seen phenomenal growth over the last 15 years and to continue this progress the various services must now start reaching the remote rural areas of the country, particularly as digital services and Pay TV are becoming realities. As this is a huge and hilly country, satellite will play a major part in delivery, as will single master antenna TV (SMATV) and MMDS (wireless cable).

One of the newest satellite broadcasters is the Kuala-Lumpur-based Measat Broadcast Services, that has recently completed Phase One of its studio installation. This project has involved seven digital consoles for production and postproduction purposes, including a 48-channel AMS Neve Capricorn for live broadcast, four Logic 3Is with Audiofile Spectras (two for dubbing and two for ADI) and two Logic 2Is, which will operate in the live-sound production department.

A sign of how seriously this region is being taken can be gauged by the number of non-Asian concerns that are setting up here. The Asia Broadcast Centre, Singapore’s newest provider of satellite uplink facilities, is a joint venture between Australia’s Varra Films and Group W Network Services of Connecticut, US and is currently operating with a mixture of tape and disk technology, including Odecks cart machines, Sony Digital Betacam and Tektronix’s Profile DDR-3. Among clients who have already signed up with the Centre are The Discovery Channel, Liberty Sports and Sony Entertainment Television.

Such uplink centres aren’t short of customers as 40 satellites are currently in orbit above Asia, with 12 more to be launched during this year. Operators include Intelsat, PanAmSat, Measat and Thaicom, while among the services offered are CNN and Rupert Murdoch’s Star TV.

While this may sound like usual Western imperialism, pushing into a market to show the locals how it’s done (so they would like to think), there are a number of broadcasters and facility houses that are looking to return the compliment.

All this activity may suggest that broadcasting in Asia is still in its early stages but this would be an arrogant and incorrect conclusion.

The desire to work on a global platform can be seen in Thailand, where Bangkok’s Media of Medias Group (MOM) is looking to offer facilities to overseas companies, as well as servicing the country’s five terrestrial TV channels. MOM has raised $19 million towards the local market by 40 hours to 100 hours a week and is also supplying programmes to Channel 18, a cable service in Los Angeles.

Like any region, Asia has had its unstable eras, but even countries that have troubled pasts are proving to be healthy markets for broadcast equipment. While countries like South Korea have had their problems, the administrations have worked towards stability, something that more Western countries have yet to achieve. As Alan Campbell at DAR says, it is perhaps easier to trade here than it is with certain Eastern European countries.

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It’s 20 years since the shock of punk, and the most notorious practitioners of the form, The Sex Pistols, have reformed for a tour and a live album.

**KEVIN HILTON** takes a look to see how they shape up

**THEY COULDN’T QUITE** conjure up the same hype and media attention as 20 years ago—£175,000 from three record companies in six months, scandalising an entire nation by saying ‘f**k’ on Bill Grundy’s tea-time TV show and mocking the Queen—but the reformed Sex Pistols were sure going to try.

At a carefully chaotic press conference, broadcast over the internet, John Lydon, the former Johnny Rotten, sneered that they were only doing it for the money. When they came to play their first UK gig on the reunion tour, the fans, and a bemused recording crew, were confronted by posters advertising the upcoming new single and album of the show, without a single note played or a reel of tape unwrapped.

They wouldn’t have had it any other way. Their recorded oeuvre is not massive—one complete album (the defiantly classic *Never Mind The Bollocks*), the soundtrack to *The Great Rock & Roll Swindle*, a couple of cobbled import efforts, and a few additional singles, many of them collector’s items—but it was felt that there was enough to tour with.

Virgin Records, the company that eventually made some money out of the snarling, gobbling foursome, decided to record new product, but without the hassle of going into the studio and producing something new. As Lydon observes on the record, they’re fat and 40, but the fans are glad that they’re back, no matter how bad the advance reviews were.

The reformed Pistols comprise Lydon on vocals and tart comments, Steve Jones on guitar, Paul Cook on drums, and original bass player Glen Matlock, the man who actually said the f-word on the *Today* programme and was later booted out of the band in favour of the doomed Sid Vicious, who couldn’t play, but at least looked the part. Armed with the songs from their first album, the Pistols kicked off their world tour at a beer festival in Finland. Nobody, except the most seemed to take much notice, but this didn’t daunt Lydon: ‘We’re the Pistols, nobody likes us and we don’t care,’ he warbles in between songs.

The gigs continued with more outdoor shows in Munich, Germany, and Finsbury Park, London (fittingly the area where Lydon was brought up), followed by an indoor show at the Paris Zenith. These last three concerts were recorded as the basis for a live album. The aptly titled *Filthy Lucre Live* was released during July to almost universal acclaim, and is a record of the Finsbury Park concert only, the intention is to release an alternative version at a later date featuring recordings from the Zenith show. *Filthy Lucre Live* shares an almost exact track listing (plus a cover version) with the new reissued *Never Mind The Bollocks*. Like its 1976 equivalent, the new album was produced by Chris Thomas (who, unfortunately, proved unavailable for comment), who has recreated the raw, spare, aggressive sound that span in the face of the recording buying public 20 years ago. The single, *Pretty Vacant*, preceded it, coming into the record shops only a few weeks after the London show.

**BOTH THE FINSBURY PARK** and Munich concerts were recorded on digital Sony multitrack to accommodate the length of the performances, which ran to 2½ hours. This running time was achieved despite their relatively small back-catalogue and comprised the whole of *Never Mind The Bollocks*, plus a suitably punked up version of the Boyce-Hart Brill Building semi-classic ‘I’m Not Your Stepping Stone’, a hit first time around for another management created band, The Monkees. The German gig was recorded in the Dirks Mobile, but Thomas and the band decided not to use the tapes, mainly due to the show being washed out by bad weather. Explaining the reasoning behind the

The fans, and a bemused recording crew, were confronted by posters advertising the album of the show, without a single note played or a reel of tape unwrapped.
More Cash
More Chaos

NEVER MIND THE BOLLOCKS

(HERE'S THE SEX PISTOLS) has become a punk classic. Leaving aside the clouding issues of the money, the swearing, the choreographed outrage and what happened to the band afterwards, the album is a tight, raw example of a different type of rock and roll, all tied up by Chris Thomas' straightforward production. The album was recorded at Wessex Studios, where the band had been putting down demos, with Bill Price engineering.

Thomas was contacted by the Pistols' Machiavellian manager, Malcolm McLaren, and invited to produce the album proper, which he agreed to do, not so much for the socio-cultural significance, but because he felt he could make a good rock and roll record with them.

'I thought they were fantastic,' he told John Tobler and Stuart Grundy, 'especially on 'Anarchy in the UK', there was the most incredible atmosphere in the studio.' One thing that has dogged the record is the persistent rumour that the Pistols did not play everything on it. In particular, legend has it that it was Chris Spedding, a leading session player of the time, and not Steve Jones who produced the barbed-wire guitar sound that is so identified with the band.

Thomas has said of this, 'Despite all the rumours, Chris Spedding didn't play anything on their records.' Spedding himself recently said that he was involved with the Pistols by supplying equipment for their rehearsals and by giving early encouragement, but confirms that he didn't play on Never Mind The Bollocks. Thomas added that the only substitution came with Sid Vicious, whose bass work was largely played by Steve Jones.** The discussion rumbles on, but engineer Pete Lewis hopes that Filthy Lucre Live will dispel any doubts. 'If you listen to this and then to Never Mind The Bollocks, you can tell that it's the same guitar player,' he says.

The album itself is more than just a live rehash of the studio original; it delivers the energy hinted at, even though it is 20 years on, and has the additional pleasure of Lydon-Rotten and the boys thrashing through the old Monkees' song '(I'm Not Your) Stepping Stone'. Tongue in cheek? Coming out the other side...

didn't stop the show being recorded in the digital domain. 'It's just the convenience of digital,' explains Lewis. 'It would have been great to have recorded it all on analogue, but it's just too risky, what with continual reel changes and so on. And if anything had gone wrong, then we wouldn't have known what happened, but with digital, it either works or it doesn't.'

The two Sony 3324s were loaded into a Transit van and driven on site, located next to a SSL equipped BBC radio outside broadcast truck, which was re-arming the concert live to air on BBC Radio 1FM. 'We recorded in 24-track,' says Lewis, 'running a mastering machine and a safety, starting the second engineer five minutes after the main to get a good overlap. This meant that we had 90% of the show for sure, which is a good sanity margin.' Stage feeds came into the BBC truck, where Studio Manager Ted de Bono prepared the radio broadcast mix on the SSL, with the desk's mic gain faders providing the level output to the 3324s next door.

'Originally we had booked another mobile to do the gig,' says Lewis. 'We didn't know that the BBC was going to be there as well, they approached us and it turned out to be a good idea to do both at the same time. The recordings were made flat, straight off the mic gain, because sometimes you can get caught up in the technology of things. As long as it sounds good at the time, that's all right.'

As the Pistols are only a three-piece band—plus vocals (we couldn't forget La Rotten)—there were only 19 feeds coming from the stage, which were fleshed out with three stereo pairs to capture audience reaction.

'We put two mics on the stage to hear the audience,' says Lewis, 'and two more at the mixing position to hear what the engineers were hearing. This gets the ambience and the sound of the rig, so it's a live gig that's about you and 25,000 friends.' The tapes were taken to The Townhouse studio complex in West London, ironically a member of the EMI Group, particularly as the Pistols' paean to the venerable record company sits smugly on the album.

Thomas and Lewis decided to give themselves plenty of choice in their lay-back formats, mixing on 48-track and transferring from there to DAT and 1/2-inch tape, with a backup and comparison version made on an...
two spare tracks of the master multitrack.
The master mix was in turn laid onto DAT and 1/2-inch tape. "The 1/2-inch sounds very rock & roll," explains Lewis, "but we’ve got both there and sometimes one wins, sometimes the other. We also mixed to two tracks on the 48-track as a backup and a comparison." As the transfer to DAT was made, the mixes were loaded into a Studio Audio SADiE Portable, which was used for tracking and editing out any pauses between numbers, plus making CDs for the crew and band so that everyone could hear how the project was progressing.

"Everything that Chris [Thomas] does is compiled and mastered in the studio control room," explains Lewis. "Sometimes this means that everyone gets so close to something, knowing how it sounds, so it’s good to be able to take a CD home and listen to it in a different environment." The SADiE Portable was fitted with a 4GB removable drive, which gave Lewis enough capacity for tracking the album, even though the release CD contains 15 tracks and runs to 53 minutes 38 seconds. "We never really ran out of space on the 4G drive," he says, "on previous projects I’ve had up to 9G. With the SADiE you don’t lose anything; it doesn’t go wrong and the audio quality is nothing but excellent."

When it came to the final transfer for mastering, which was also done at Townhouse, the completed mixes were laid onto 1630.

As rumours have persisted that the Pistols didn’t play on Never Mind The Bollocks, it is, perhaps, natural to think that Filthy Lucre Live would have undergone some cosmetic touches in the mixing suit

Mixing was carried out in Studio 4 at The Townhouse, using the room’s SSL 4000 console fitted with E Series EQ and a G Series computer. There were a total of 72 inputs, using only 34 faders. Ever since such one-time classic live albums as Thin Lizzy’s Live and Dangerous were revealed to be not as live as they would like you to think, artists and producers have either admitted to tinkering with things in the studio or have gone out of their way to emphasise the totally live, unadulterated nature of the recording. As rumours have persisted that the Pistols didn’t play on Never Mind The Bollocks (rumours that have been consistently refuted), it is, perhaps, natural to think that Filthy Lucre Live would have undergone some cosmetic touches in the mixing suit, but Pete Lewis is adamant that there were no overdubs or repairs. E/B
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RECORDING

Fat, forty and back: what would their children think?

John Lydon's vocals and the guitar solos. They're only a three-piece band—realistically how many mistakes are they going to make?

Although the recording was made flat, Lewis says that the minimum interference policy also carried over to EQ on the mix, something that was down to Chris Thomas' style of production. 'Chris has the most amazing set of ears,' comments Lewis, 'and he can make things sound like how he wants them to. In this case it sounds like a live gig. As far as EQ went, we put a little bit of top on the vocals, rolling off the bass as well, largely because John sings very close into the mic. We brought in a lot of valve equipment to warm things up, but we only used a Pultec EQ on the bass drum because the quality of the 48-track is perfect.'

Perhaps this minimalist approach came about through the undoubted confidence of the reformed Sex Pistols once they got back on stage, and particularly the strutting Lydon, who remarks at one point, 'Well, we're not that fucking bad after all, are we?'

The album has the extra pleasure of Johnny Rotten rehashing the old Monkees song '(I'm not your) Stepping stone'. Tongue in cheek?

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Terry Jones' latest film production is his interpretation of one of the world's most cherished children's novels, *The Wind in the Willows*. It was also a gruelling and time-consuming feast of postproduction, as Sound Designer André Jacquemin explains to NICK SMITH

**LOCATED IN THE HEART** of London down a high-walled, sinister, narrow brick alley, behind Tottenham Court Road's famous Astoria music venue, is Sound Designer André Jacquemin's small but incredibly well-appointed postproduction facility. Outside, the echoing footsteps, the conspiratorial whispering of street urchins and the low rumble of machinery make Falconberg Court more fitting for creating the soundtracks to film versions of Charles Dickens' *Bleak House*, *Oliver Twist* or *Hard Times*. But, in fact, this is the home of the sound design of *The Wind in the Willows*, Terry Jones's latest film venture.

If the environment seems a long way away from Kenneth Graham's picaresque pastoral novel—written only a few miles to the west in the Regency splendour of Phillimore Gardens, Holland Park—the film itself and its soundtrack could not have got any closer to capturing the myth and the magic that has made *The Wind in the Willows* one of the world's evergreens.

André Jacquemin himself looks and behaves as though he's spent 20-odd years of his life buried somewhere in a Monty Python film: funny that, because that's exactly where he's been, graduating later into Python spin-offs, with postproduction credits that bring tears of laughter to the eyes: *Monty Python's Life of Brian*, *Monty Python and the Holy Grail*, *Monty Python's the Meaning of Life*, *A Fish Called Wanda*, *Personal Services*, *The Time Bandits*, Brazil, and so on. In many cases he's not only fulfilled the role of postproduction sound designer, but also composed, produced and engineered (in various permutations) the songs and the incidental music. Indeed, the whole of this article started off with a Pythonesque sense of the absurd as sitting at his 24-channel DDA interface console with my dictation machine refusing to work and having to use shorthand, we recorded the interview on his professional equipment. Of course, I was later to find out that there was something wrong with my cassette, so during an embarrassing phone call from the Studio Sound office explaining that there was no dialogue on the tape to transcribe, he cheerfully suggested doing the whole thing again the following day. He's like that. I just hoped that the roll of film in my Canon T80 would fare better.

Children of every age will love *The Wind in the Willows*; juvenile characterisation, brilliant casting, witty costume, delightful visual illusions, and a magical soundtrack with its stunning effects and mellifluous incidental music—it's hard to drag your eyes and ears away from it. But the time came when work had to be done, so we sat back, lit cigarettes, switched on the ill-fated cassette recorder and entered the world of *The Wind in the Willows*, the movie.

**THE MOVIE** dates back to November 1994 when Terry Jones contacted Jacquemin with a handful of lyrics he wanted demo-ed up as songs. The lyrics appeared to be related to *The Wind in the Willows* but at the time Jacquemin was not prepared to jump to any conclusions as to what they were actually for, as the multidisciplinarian Terry Jones...
Left: Toad (Terry Jones), Mole (Steve Coogan) and Rat (Eric Idle) discussing Toad's wayward financial affairs in the superb surroundings of Toad Hall

Bear Story BBC documentary

"We went off and did two or three demos for him which he liked a great deal. The next thing we heard was that Terry was getting some feedback from Disney in America about the demos, and that was when we realised that it was going to be a new Terry Jones film production. It was surprising that something that came from what we thought was a semi-favour to Terry was to be a feature film."

In the meantime, Jones had drawn a storyboarded script: literally thousands of tiny drawings which, each a work of art in its own right, brought the screenplay to life and provided everyone on the project with a map of where they were going.

Jones asked Jacquemin to be in charge of the overall sound design for the film because in the past he has experienced difficulty in controlling all aspects—a way in which he prefers to work. Because of the scope of The Wind in the Willows this was clearly impossible so he needed somebody he could trust, and Jacquemin was the man right from the start: "I was, in fact, anything to do with postproduction. I'd do two or three days on the music, and then the next few days I'd be working on sound. It got to the point where towards the end there was not enough time to get all the orchestration and incidental music done, which would result in us having to slice of it out. This allowed me more time to concentrate on the postproduction side of things."

Even then it was one of the most punishing schedules imaginable with Jacquemin barely able to take three days holiday in a seven-month period. This was partly due to the approvals structure of the sound for the film, and partly due to the fact that once everybody had approved the demos they then had to be prepared for playback, which would inevitably involve serious cutting and pasting. This in turn was due to the fact that when Jacquemin started the demos he had no storyboard to work to. A good example of this apparent chaos delivering up a polished product is the 'Weasel Song', which is a densely choreographed scene with a large number of elements in it. Jacquemin remembers making edits to the song structure itself, even after filming.

"It wasn't like writing a normal song, where you have eight bars of this, and four bars of that, and, perhaps, a bridge before a chorus. We had to make the song fit the picture, so you often get four bars of verse into one bar of bridge, and then it is a chorus which would have to be elongated in order to get all the weasels in. This type of reconstruction happened repeatedly, until everybody was happy that it both looked and sounded good."

The dialogue, however, was a different matter completely. Jacquemin says: "I'd work on my premixes and then pop them back down to hard disk again and analyse all the eight tracks. Then after that we would move onto the dubbing process at Twickenham Studios with Robert O'Donnahue, who's a wealth of experience. If it wasn't for his experience in mixing it for us it would have taken a lot longer, because I was actually doing all the tracklaying at Redwood and then we'd have to mix all the premixes down at Twickenham into Dolby Stereo again."

The EQUIPMENT SETUP at Jacquemin's studio is, depending on your point of view, either one of the most fabulously intricate impossible drawings by Escher or the Heath Robinson poster you used to have on your wall at college.

The Emulators, and my hard disk on the Apple Mac, are linked to Cubase which runs on my Atari, Jacquemin explains. "The Atari is a 6802, and Mac, is linked to Atari using MIDI, with back to back to Apple. So it's a unique way to work, despite people telling me it never would. It's real Hollywood way of working because it will call my effects up onto the Apple, load those into the sampler, do my sound manipulations. Once it's happy with that, I can dump it down to hard disk which runs on the Apple as well."

So, yes, it is quite unusual in the way it's constructed. And of course we used time-coded DATs for all the dialogue, the floor sound, and so on. Thank God for time code:"

One of the greatest achievements of The Wind in the Willows soundtrack is the special effects for the set pieces in the story. The film's power to suspend your disbelief relies heavily on you entering the world of the river bank or the Wild Wood. This is achieved as much through the sound as it is through the visuals. But it is deceiving, as some of the most simple sound effects were the hardest to achieve, and vice versa. There was a sticky moment when Eric Idle (who plays Rat) and Steve Coogan (who plays Mole) come to Badger's house.
POSTPRODUCTION

Mole is confronted by the Thatcherite spiv weasels (lead by Antony Sher) in the Wild Wood: note the weasels' New Romantic costume

... House in the Wild Wood in order to seek Badger's paternalistic wisdom. Badger is, of course, deep in winter hibernation, and his friends experience considerable difficulty rousing him. The effects for the knocking on the door sequence had to be spot on. 'I looked absolutely everywhere for a decent knock, and tried lot's and lots of doors, and couldn't get one that worked really well,' Jacquemin recalls. 'So I had to construct the sound using 19 door effects to make up one door knock. It took 91/2 hours to do that one sequence, but it was important as the comedy relied on the door knock sounding just right.'

This was further complicated by the fact that the shot panned from outside Badger's home to an interior shot, so there needed to be the illusion of the sound moving through the shot—in effect the audio has to track what the visuals are doing.

In contrast to the door-knocking sequence, there is a visually dynamic scene where Tad's mirror car runs out of control and crashes. Ironically, this sequence was a lot easier to do the sound for, because the amount of movement meant that to a certain extent the excitement was as much reliant on the chopping and changing of the visuals. Even so, the many last cuts meant that the sound had to be layered carefully, with the complication that Jacquemin didn't have one single car he could rely on to produce all the desired effects. Again, the effect on the film is a compound made up from various car sounds: a brake from one, an engine from another, and idling from another. So although the scene looks complicated, the most difficult part was how to place the effects in relation to the visuals simply in terms of panning left and right.

Very important when there is a front shot of a car ploughing through the woods, avoiding trees.

'You have to get the panning right because these are very last cuts. It was probably the most complicated thing to make that sequence work. You have to really make up all those effects using multiple sounds. You just couldn't take one and make it work. Most films are fairly complex in that way—you have to clear a bit.'

Interestingly, the ambient effects of The Wind in the Willows presented Jacquemin with both a political and technical challenge. 'Terry's always been very nervous about atmospheres. I think this stems from the Holy Grail days when his main worry was that the dialogue was being obscured by the birds. He was really very worried about going through all that again so we had to cheat in the sense that we had a fairly sparse bird effect. Even so, you can't just run an ambient effect through without treatment because once you've chopped the dialogues off, you're going to get little holes. So you have an ambient effect around the dialogue so just to make it sound quite smooth. Given that Terry's main worry was that he didn't like the birds, it was contradictory to what we were trying to achieve because you can't have the atmosphere going and chop the dialogue without hearing the dialogue chopping. Invariably I had to be quite selective where the birds happened so as not to interfere with the dialogue. Even when we were dubbing, Terry would go back over sequences and want certain things added in or taken away.'

Even though the soundtrack for the film is finished, Jacquemin is still a long way away from finishing his back on the project, as he still has the M&E's (music and effects)
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Mole, Toad, Rat and Badger (Nicol Williamson) in deep discussion shortly after the 'door-knocking' scene

31 tracks to prepare for the non-English language versions. This involves stripping down the original and taking further production decisions, such as whether or not to translate the songs, after the effects for different markets and so on. Then there's the possibility of producing a soundtrack album—something which Jacquemin is pretty good at, if the gold discs on his walls are any measure.

'Ve are talking to various record companies at the moment about a soundtrack album with about seven songs from the film. Unfortunately they're not very long—not pop-single length—so we probably have to elongate if we're going to do an album. Even so, that material won't make an entire album, so we'll probably have to do a soundtrack album with incidental music, perhaps with Terry doing some narration. The film runs to about 88 minutes, so if I can condense that down to about 70 minutes and then see what holes are left, we can start to think about the narrative.

'The good thing about creating soundtrack albums is that your imagination can run riot. And you can recreate everything fairly cheaply. When you think about it, visually, you may have a car going over a cliff and it might cost a lot of money to shoot, whereas on an audio sound track it is a lot cheaper to do.'

IT'S NOT OFTEN that a sound designer feels really happy with a soundtrack—more often than not due to lack of time—but Jacquemin is satisfied with the end result.

'I'm very pleased with it. I don't think you can ever really tell with films but I believe this one's actually a good one. When I was involved in A Fish Called Wanda I knew that would be very successful. The Wind in the Willows is an unusual film and I don't think there's anything quite like it because its animation when that is exactly what you'd expect when you're dealing with storybook characters. But you can never tell—some for the best films in the world have been doomed to failure.' The Wind in the Willows opens around the world later this year with its world premiere in London, UK, on October 18th. But should you be so lucky as to be a transatlantic movie aficionado the film you hear at the New York opening will not sound the same as the one in London. Typically, the land that bought you Die Hard, Terminator and Taxi Driver finds The Wind in the Willows too violent to be screened in its market-test format. After all, there are some pretty gruesome light scenes between make-believe rats and make-believe weasels. But it wasn't so much the visual effects as the sound.

André Jacquemin finds this particularly amusing: 'I was surprised that the American market thought it was too violent. We changed all the gun shot sounds: we made them a lot softer and we used blunderbusses instead of real hard-core gun shots. The English version? There will be a different version for England where things will be slightly harder on the effects.' Perhaps it's a comment on the difference between UK and the US audiences that while the Americans thrive on the excesses of visual effects, the British are more sensitive to the subtle prompts of audio.

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The British Masters of Music event in Hyde Park has set new records for attendance and exposure. **ANDY WOOD** goes behind the scenes to discuss the concept, the coordination, the kit, and the concert.

**TEN YEARS AFTER** the late Freddie Mercury and Queen headlined the last rock concert in central London's Hyde Park, over 150,000 fans gathered to witness Masters of Music, not only the largest concert ever staged in the capital, but also one of the largest and most star-studded events ever seen in the UK.

Whereas the 1985 Live Aid production broke all records—with a huge television audience to complement simultaneous concerts in both London and Philadelphia—Wembley Stadium's 100,000 capacity crowd has been surpassed by a host of events over the last 25 years. Bob Dylan's appearance at Blackbushe Aerodrome in July 1978 currently claims the largest UK crowd with over 170,000 in attendance at a single stage event. Perhaps, then, it is rather fitting that Dylan was back again as part of the flagship for event producer Harvey Goldsmith's National Music Festival celebrations on June 29th. In fact the event began on the shape of a rock reunion when Goldsmith, responsible for both Blackbushe and Live Aid events, announced Eric Clapton (Dylan's 1978 support act) as the headline act.

To add icing to the cake, the bill also included the first live performance of Pete Townshend's rock-opera *Quadrophenia*.

A special version of the original Who double album, the performance featured Roger Daltrey, John Entwhistle, Townshend and a host of celebrity 'guests' including Gary Glitter, who gave Roger Daltrey a major headache by accidentally whacking him in the eye with a mike-stand 24 hours before the show. Pink Floyd's Dave Gilmour, also in attendance, created another rock connection, in that Masters of Music also marked the 28th anniversary of the day of the first free concert in Hyde Park. Headlining that day were...Pink Floyd.

Held in aid of the Prince's Trust Charity and sponsored by MasterCard, a show of this size indubitably causes its own production difficulties, and while Hyde Park itself is a familiar site for large events, with both the VE Day celebrations and Pavarotti in the Park being staged in recent years, the very nature of a rock concert with its requirement of large-scale, sound reinforcement and staging, brings its own brand of logistics.

**PLANNING FOR THE SHOW** itself began earlier this year, with Set Designer Jonathan Park (better known for his work with Pink Floyd and the Rolling Stones) being approached by Goldsmith to create staging designs. One of the main difficulties was that at that point, artists had not been confirmed. Indeed none of the originally mooted performers of Neil Young, or Rod Stewart and The Faces, actually made it to the cut. Park was left therefore with the unenviable task of designing a stage which would not only create an image for the whole event, but also complement the artists, whoever they were to be.

His answer was to incorporate a variation of the twin circles of sponsor MasterCard's logo into deconstructed circular trucking each side of a 200ft wide stage. These were bisected by huge 120ft-high masses adorned with aircraft warning lights which, if anything, gave the stage an overall look of a huge, twin-aerialled ghetto-blaster.

"The biggest coup was, of course, having the world-premiere stage performance of *Quadrophenia* and ordinarily that important highlight would have had a major influence on my stage design had I known about it..."

'I did some little doodles of my ideas for the concert and everybody seemed to like them, so I took on the design of this very large event that had no performers' - Jonathan Park, Set Designer.

in the early stages," explains Park. "You can't design a set specifically for live acts, but we aimed to give each artist their own identity and have a good-looking stage with three-dimensional attributes which would help the television cameras'.

By the time *Quadrophenia* was confirmed, Park's design was already in place. But in a stroke genius the design was simply augmented with a set of scrims to create the famous nod roundel, and a little trunk 'tail' added to the left-hand circle to create a 'Q'. What was originally a generic stage design then, instantaneously, became a custom design for the *Quadrophenia* performance in minutes.

The finished stage, supplied and built by Edwin Shirley Saging (ESS) and topped by a 60ft-high Tower System roof as used at the V Festival celebrations last year, not only served as a backdrop for the various performers, but also as host to the large JBL-loaded Clair Bros S4 sound system that was flown in two 60-box stacks from the masts within each truss circle.

'I couldn't do anything with the roof, but via the means of these big circles..."
and the spikes, at least an architectural feeling could be created. Also, rather than have a normal monolithic tower block of PA at either side, I decided to hang it off the towers so that it had a lighter feel so that the audience would look right past it,' comments Park.

The overall sound system was provided by US sound experts Clair Brothers to a design by Sound Consultant Chris Hey of Spencer-Hey Associates, creating not only one of the largest systems ever seen in the UK, but also one of Clair's largest ever projects. The sound specifications are awe inspiring.

In total, 266 18L-loaded 54 speaker cabinets were used, with 140 on the Front-of-House stage wings, 108 around the site on 9 delay towers of 12 boxes each, and 16 PA cabinets for the stage infills. Total system power was quoted in excess of 1,000,000 Watts, valued at over £3m and weighing over 100,000 kilos.

In total, seven Edwin Shirley trucks were required to transport the rig which then used 58 one-ton and two-ton Lodestar motors on site.

The Clair S4 system is split into two types of cabinet, the 54F long-throw and 54F medium/short-throw. Incorporating 18L 18-inch bass, 10-inch mids and 2-inch compression drivers in a 4-way configuration, 30 boxes of each design were used in each FOH stack. All system amplification was provided by a combination of Clair Carver 2.0 and Crest 10004-9001 models. For the main FOH system, a total of 16 racks of amps featuring eight monoblock and four stereo of the Clair customised 2.0s were utilised, while the Crest were used on the PA infill duties with 10004s on the mid-high and the 9001s on the bass end.

To complete the system, the 9 delay towers were positioned around 100m apart throughout the site and were set and controlled using the IC electronic 1380 delay unit. The overall effect created was a superbly time-aligned and crisp sounding reproduction throughout the site right down to the other side of Hyde Park corner, where even customers queuing outside the Hard Rock Cafe could hear the event.

Incidentally, the logistics of putting a system of this size together are not only limited to setting up the speakers—despite Clair having large stacks of S4 in Europe with Audio Rent in Switzerland, further boxes were also sent from Japan, with additional boxes manufactured and sent over to the UK in a sea container from the US.

While the staging and sound specifications were being slowly put together, Chris Hey was working on other problems involved with getting five major acts on and off stage with all their ancillary equipment, as with Production Manager Mick Double liaising directly with both Eric Clapton and the Quadrophenia personnel. Hey was required to take the pressure off on-site.

The overall answer was to use a basic festival arrangement for the sound and staging, with the front of the stage used for performance and the rear (split off by drapes) featuring a hydraulic lift which brought backline etc up to stage level ready for use. Obviously, with five sets of backline, monitor and FOH desks in use, the affair could have become a nightmare, however, by using a festival-style A-B stage box system configuration interlaced with BSS splitters devised by Hey, the acts could effectively 'leapfrog' from one system to another.
The JBL stacks were flown from masts within the truss circles
added for various acts with Dylan and Alanis Morissette utilising extra S4s mounted on 18-inch box bins, with
Dylan using a further bank of Clair 115s, and Quadraphonia a set of Clair R4s to
replace the various samples, sound effects and video soundtrack to the stage.
This huge amount of monitoring is doubly unusual, especially when you consider the
growth of in-ear monitoring systems (IEM) in recent years, and the gradual awareness
of the damage of high SPLs on stage. As it was, only Alanis Morissette, Roger Daltrey and
Gary Glitter opted for the Carwood in-ear system, with Quadraphonia's pair of
IEMs being provided by Hand Held Audio alongside a selection of radio microphones.
Four Samson UHF Synth headset mikes were delivered for Townshend and the guest
actors, while four ECL-Beta 58 radio systems were also used together with a WCM16
headset ECLI114 for Stephen Fry.
'The decision had been made that each major act would do its regular show;
although Quadraphonia isn't what you'd call a regular show. They are doing what
can only be described as an extravaganza,' explains Production Manager Nicky Young,
who has worked for Clapton for over 11 years and has been responsible for The Who on
various occasions since the 1970 Isle of Wight Festival. He also fitted between
production rehearsals for Quadraphonia at Bray, and Clapton at Hayes, dispersed with
a visit to Italy with Clapton a week before, Masters certainly had his work cut out.
However by spreading the workload, he was able to concentrate on the two main
acts, who both used self-contained crews. 'With Clapton we normally use Concert
Sound personnel, however many of the regular crew is out with Mark Knopfler, so
we are using a completely new crew of five
Concert Sound engineers in conjunction with Clair Bros,' Double reveals. 'The rest
of the Clair crew are based at Bray, while all the site stage-crew looked after by Steve Jones and a 30-strong team from
Stage Miracles who ensure that everything
takes off and on stage, on time.'
This ability for the artists to control
much more of the production than a
standard one-day event made for a highly
entertaining event for the crowd, but
created more problems for the production
personnel who had to deal with a variety
of 'extras' ranging from Quadraphonia's
huge graphic 'postcards', and 19-strong
cast, through to Clapton's last-minute
decision to introduce a gospel choir for
one song. A major headache however, was
given to Sceneco who provided two, huge
Sony Jumbotrons JT 35s on stage, and a
further two of the new JT 17s out in the
field, to relay the stage shots to the audience.

WITH THE STAGE DESIGNS
in place, and the JT35s parked left and right
flown off the roof, the Quadraphonia
production then announced the requirement
for a large central 'cinemascopic-type
screen in the centre of the stage to show
vintage live footage, prepared graphics and
film clips, an arrangement that was
unacceptable for Clapton, due on some
30 minutes later.
'There just wasn't room for more screens,
so we dreamed up the idea of actually EG'

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ON THE DAY, the only thing rather predictable that let the whole production down was the British weather, with the climate dictating a cool, grey, cloudy day that threatened to rain in buckets. While this was a boon for the Meteorites lighting personnel who were able to show off their expertise in the early evening gloom, it did nothing to add to what could have been a highly charged summer evenings entertainment. Where Alanis Morisette whipped up the crowd with what have become a series of anthems, Bob Dylan, singularly failed to drive the songs home, while the highly impressive Quadrophenia arguably needs more polish, that it undoubtedly will get on its current 28-date tour of the US.

With a surprising 9.30pm curfew (which was slightly overrun) it was left to Eric Clapton to get the benefit of the failing light, and a partisan crown, to finish with a set featuring all the standards. Prior to the show it had been pointed out that Clapton himself could have sold out the 150,000-ticket event, personally, for six consecutive nights, an alarming idea no doubt for all the production crews.

I first worked with Eric on monitors in the 1970s and when he played Blackshale he probably had more people there—but this is the biggest one-off rock show I've ever done and certainly the biggest ever seen in London,' a pressured Mike Crump says before the show. Perhaps it will stay that way, but somehow you get the impression that Harvey Goldsmith may want to go bigger.

After all, there was that very high rumour about the Beatles.

With each band using its own consoles and control equipment the channels required to run the PA ran to in excess of 600.

"I’ve moving the main screens together in a similar system to that we used on the Genesis We Can't Dance tour, where three screens tracked together and moved apart," comments Screenco's David Crump.

The finished system saw the two 5m x 5m screens running together on a track run under the ESS roof to create a 9 x 10 central screen just for Quadrophenia, while staying stage left and right for all the other acts. 'We couldn’t have done it if it wasn’t for the fact that the ESS roof can take such enormous weights and those two screens weigh almost five tons each and have to move in an accurate, controlled fashion, completely in vision during the show,' he explains.

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Audio caught in the net

There is much talk of the promise of audio-on-demand and internet broadcasting; but little of the problems involved in making them work. The limitations of compression algorithms are just the beginning writes CHRIS EDWARDS.

Radio stations are falling over themselves to get onto the Internet. And it is not just with pages stuffed full of pictures: many of them have decided to start broadcasting across the network as well as the airwaves. But it is not time to ditch the radio transmitter, just yet. Those Web pages may be able to dol out real-time audio but there is no guarantee that people can actually hear it.

There are several reasons why the Internet is not really suitable for real-time audio, not least of which is the available bandwidth. Most users will use a modem to get access to the Internet and this will generally have a peak speed of 28.8kbit/s. Some will now work at 33.6kbit/s but this is still short of a basic ISDN link. You can now hook up to the Internet using ISDN almost as cheaply as using a modem, but the 64kbit/s that you get from one ISDN link is still a long way from the 1.5Mbit/s needed to get even CD-quality audio. That is assuming that you can get a full 64kbit/s from that link. As with ISDN, the answer is simple: compression. There are speech compression algorithms that work happily at 16kbit/s and below which provides a good degree of headroom for the overhead of the Internet protocol. However, music is another matter. Currently, most of the audio plug-ins for Web browsers such as Netscape are designed for speech, not for music. They will handle music but you will often encounter what the software writers term ‘artefacts’. These are basically unpleasant forms of digital distortion and it is very difficult to predict exactly how the material will be distorted by a particular compression technique.

AT THE MOMENT, the general advice is to compress the source heavily for the simple reason that speech compression revolves around the idea that human speech fits a relatively narrow band of frequencies. Typically, bass frequencies are not that important and the high-frequency roll off is around 4kHz. Getting the signal into that range will help although it will sound as though the band is playing in a tin can.

Audio quality is not the only problem. Internet service providers currently have no way of guaranteeing that they can continually pump 28.8kbit/s down your telephone line. If you have used the Web, you will have noticed the intermittent bursts of activity that punctuate the much longer thumb-twiddling waits for something to happen. This problem does not instantly solve itself when a Web site starts broadcasting. Instead, it gets a lot more noticeable. Generally, long waits are caused by congestion in the network. Service providers generally do not tell you this but they assume that when users connect to their service, each of those 28.8kbit/s links is not expected to the full all at the same time. They assume that there will be bursts of inactivity while people read Web pages and make decisions. This gives some leeway in the amount of bandwidth that they buy from the telecommunications companies. Typically, a service provider’s link into the Internet will be somewhat slower than the aggregate data-rate of all of the modems that it supports on the customer’s side. Some can have hundreds of modems and then use something like a 128kbit/s link into the Internet. When they get busy, there is plenty of waiting at the other end.

OFTEN, THE LACK of bandwidth on the Internet side is hidden by what are known as proxy servers. These store frequently used Web pages so that, for many accesses, a request can be serviced locally without troubling the Internet. Unfortunately, for live radio, proxy servers are not an answer. The request has to go all the way to the site and back again through what can be a very narrow, congested pipe. Where proxy servers can be a help is with stored audio such as that found on promotional Web sites for artists. Assuming the artist is popular and a demo has just been released, there is a good chance of finding that the file is sitting on the provider’s proxy server. This kind of audio-on-demand is arguably the best use for Internet audio as it makes good use of the medium and is something that a radio broadcast cannot do. Over time, access speeds to the Internet will improve and service providers will get better at guaranteeing performance. But there is another problem. With each increase in average speed, some software writer out there will want a piece of the action and will come up with yet another compression technique that perhaps sounds a little better. That means that users will have to load even more plug-ins onto their computers to hear the material and studio engineers will have to work out how best to massage the source to best effect for yet another piece of compression software.

Users will have to load even more plug-ins onto their computers to hear the material and studio engineers will have to work out how best to massage the source to best effect for yet another piece of compression software.

The higher-quality end of the market may well be satisfied with the various forms of MPEG audio but the experience so far with the Internet suggests that there will be many more choices on offer. The silver lining is that also-ran Internet software tends to disappear quickly, leaving only the programs that have built up a presence within a few months. The trick is spotting which ones will succeed and which will end up just littering listeners’ hard disks.
These ports take the heat out of our new speakers so you can put it into your performance.
The world of monitoring is plagued with talk of subjectivity and black magic. Documents the market and canvases the manufacturers’ respective views on their own loudspeakers.

**MONITORS ARE THE LINK** in the audio chain upon which all other variables are judged. Yet it’s true to say that the majority of audio professionals who stand to benefit most significantly from their use—engineers and producers—do not get to audition enough different models in the course of their work. Instead, they tend to stay with tried and trusted systems that are familiar and comfortable. This resistance to experimentation is aggravated by the knowledge that professing to have a monitoring preference is among the most personally revealing admissions that an engineer can make about gear—it can speak volumes about an individual and explains so much to a cynic. People like what they like and either keep quiet about it, or wear it on their sleeve in the hope that it will lend off any prospective couriers. The crux of it is that nobody really wants to change away from monitors on which they have proved they can deliver good music.

However, investigating new systems ought to be a regular pastime as there are certainly enough manufacturers promising to revolutionise our lives. What’s alarming is that they all clearly mean it even though common sense suggests that they can’t all be right. This passion characterises the whole business of monitoring, but it’s essential among the manufacturers given that their painfully crafted products are not employed creatively by the user, but can be dismissed by him in less time than it takes to wire them up. It’s a nerve-wracking experience, particularly when user’s ears can be dulled by age-old prejudice, peer pressure, fashion; job-on-the-line; and just a smattering of ‘black magic’, which is why it’s difficult to tackle the subject without offending somebody, somewhere along the way.

We can start at the horse’s mouth and ask the manufacturers some direct questions to see how they interpret them. What they consider to be the LIMITATIONS that they overcome when designing monitors? What do they consider to be SPECIAL, or even unique, about their products? And which monitor in their range qualifies as a BEST for whatever reason? How they answer is almost as interesting as what they answer, and where else can you find the word ‘compromise’ bandied around quite so freely as this?

**ATC**

**ALAN AINSLIE**

**SALES AND MARKETING MANAGER**

**LIMITATIONS:** ‘It still comes down to matters of linearity and coloration. The room interaction thing is pretty much solved philosophically if people are prepared to look at wide dispersion monitors. Linearity is fundamentally tied up with driver design and still seems to be a limiting factor in short-term, harmonic-distortion generation. On a more extended time-span, linearity has to take into account thermal compression and it’s an area where we’re making great progress in, but there’s still room for more. There should be a pretty linear path of driver development to reduce time-domain distortion and energy storage problems, but if you take an overall view of it there are new drivers popping up from time to time that are quite deliberately going against the good engineering trends.’

**SPECIAL:** ‘ATC will always endeavour to engineer things better using known and proven technology. Machining all the metalwork parts on our magnet assemblies ourselves means we can work to much closer tolerances. That can improve driver performance quite remarkably because we have extreme control over the flux in the gap. We can improve electromechanical damping of the driver, and use the magnet assembly as a heat sink more efficiently, and solve many of the problems of thermal compression.’

**BEST:** ‘The SCM100 is the least compromised and best value-for-money, overall, package because you have active amplification, the dome midrange applied properly, minimum compromise at the bass end, all for under £5,000. It plays loud, has low distortion and is true to the ATC ethic. The SCM300, with its amplification, active crossover, and limiters, is a big system that performs amazingly well and is only £17,000 which is embarrassingly good value for money.’

**Silver:** ‘True reference monitors’

‘The SCM20, 6-inch, 2-way is technically a 3-way with a mechanical crossover between a 3-inch midrange dome and a bass flare, and that driver has been re-engineered. That has to be the lowest distortion system in total terms on the market, and it will be called the SCM20S1—for super linear. Initially, it will be passive, but an active version will be released at the AES in the States.’

**BAG END**

**JAMES WISCHMEYER**

**PRINCIPAL ENGINEER**

**LIMITATIONS:** ‘With a near-field, and to some extent mid-field, the room interaction is minimised. We try to have low distortion, a wide frequency range and flat response, and we go the extra step to be time aligned. There’s a lot of talk about driver placement and alignment, but it should be clearly noted that there is a specification to be Time Aligned. With time response many people are talking around each other and not talking about the same thing.’

**SPECIAL:** ‘Time alignment. We have a flat response down to 8Hz and meet the time-aligned specification. We use no low-pass filter in our low-frequency system which is a fundamental problem of all other systems. Other loudspeakers work from resonance up, we work from resonance down. Other bass speakers want a big box and-or heavy cones to achieve a low resonance, but that rolls off quite dramatically with a deterioration of the phase response so the upper bass is deteriorated as well.’

**BEST:** ‘Studio A is our top-of-the-line system, but you can add our subwoofer system to it.’

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Dynaaudioacoustics: ‘Low distortion’
existing monitors to improve the bottom three octaves.

B & W
KEN WELLER
PRODUCT MANAGER

LIMITATIONS: The battle of accuracy versus consistency. There are many products being used in studios because the engineer or producer is familiar with the sound of them, and not necessarily because they are particularly good or accurate. Many of the obvious aspects of loudspeaker design have been forgotten. The effects of diffraction are enormous yet you'll still see data things like screws protruding out of face plates. There's also a fairly limited understanding of cabinets, and manufacturers either stick with a fairly conventional wooden box with some sort of bracing, or go for resin-rock-loaded concrete with old car tyres, and often don't have the facilities to be able to measure it and see what is actually going on. Unless you've got the measurement facilities it's very easy to make the wrong assumptions.' SPECIAL: 'The kevlar cone. Apart from its stiffness-to-weight ratio it's asymmetrical, and you don't get standing waves across the cone.' BEST: 'The 805 does everything right without introducing the problems you get with extra bass. You have the matrix cabinet, the kevlar cone, the tweeter on the top. For a producer who wants to hear what is going on the 805 is the best thing to use. If you want bass then the 801 is the one to use.'

COASTAL ACOUSTICS (BOXER)
MATT DORSON
MANAGING DIRECTOR

LIMITATIONS: The major limitation is doing a direct-driving radiator that's capable of producing high enough power. We achieve high power by using a soft dome that was the largest in the world until relatively recently, allowing a 4-inch coil to drive the most critical part of the frequency range which is the mid. With a 4-inch coil you can put as much power in as you can into high-power bass drivers and we use a 900W amplifier to drive the mid. We continue that philosophy into the tweeter by using a 38mm direct-radiating dome which is larger than would be ideal from the directivity point of view, but it's a compromise we chose so we could go with a 3-way system, get the power handling and get a reasonable response up to 18kHz–20kHz.' SPECIAL: 'We use Columax centre-pole magnets which is grain oriented Alnico. As centre-pole magnets we're getting very high power, very high total flux, high flux density, and also extremely low leakage. We do that on the mid and high. On both domes, because of the weight and size of the structure holding the magnets, it would be impossible to remove them in a wall so we've devised a method where domes can be changed without taking out the magnets.

'There's also the care and attention we put into hand winding, finishing and doping, to get the response we've been developing for the last ten years. 'Where ever we sell a system in the world we turn up, and measure the room and speakers, and set them up.' BEST: 'There's no quality difference between our models—they all use the same mid and high—the difference is in the bass part of the cabinet. If you're running a studio, and want a system that will allow you to get in as diverse a range of clients as possible, then you have to use a monitor that sounds and works well with any type of music.'
The sheer force of pure sound is intensely powerful. It is majestic and exquisite. When precisely engineered to perfection, it mesmerizes.

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DYNAAUDIO ACOUSTICS

ANDY MUNRO

JUNIOR PRODUCT DIRECTOR

LIMITATIONS: 'Quality versus power.

Everything you do to increase the volume output of a speaker basically decreases its sound quality. It comes down to making very robust drive units that can handle very high power levels. All our drive units are tested at 1000W impulse which verifies that their linear behaviour is wide enough in dynamic range terms to come up with the levels people want. We don't set out to make the loudest speakers in the world, and I'm not in the business of competing with the seriously big blood-and-thunder monitors. If people want to listen at 130dB and do themselves permanent damage then that's their business.'

SPECIAL: 'Low distortion primarily, on an order of magnitude. On the M3s and M4s the distortion at typically used reference levels is down in the 0.1% region.

'To produce low distortion you've got to have very good dynamic properties and quality control. Our quality control is second to none.'

BEST: 'The one that epitomises what we think in terms of how to make a monitor right on perfect is the M4, but as a very real alternative the passive M3 shows what we can do with a passive system, and I think it's the best value for money. It's also universally popular, and is used by Sony Classical in Tokyo, and Iron Maiden in Essex. There aren't many monitors that can claim to satisfy both types of customer.'

EVENT

FAR

PIERRE THOMAS

DIRECTOR

LIMITATIONS: 'All drivers have their own sound colour, it is the job of the designer to marry that colouration to a cabinet design that will give the most accurate and neutral monitor possible. However the designer must, to a certain extent, compromise the design to enable the loudspeaker to function in rooms that are not necessarily perfect.'

SPECIAL: 'We are currently working on the use of less severe roll-off filters in the crossover design, and methods of controlling box vibrations in the cabinet construction.'

BEST: 'In terms of compact size and perfect low-frequency control, together with the high power handling obtained by the double woofer design make the DBW 80 the perfect mid-field monitor. While the dual-kevlar driver in the CR 20 is filtered as a 3-way system, even though it only has two drivers. This coupled with the high-quality kevlar tweeter, gives outstanding performance and sensitivity.'

FOCAL PROLINE AUDIO

JEAN PIERRE CARLES

PRESIDENT

LIMITATIONS: 'Size—getting the best results from a small box, and the most bass you can get.'

SPECIAL: 'We have many registered patents, particularly with the drivers because we’ve been developing double voice-coils on flat ribbons. We’ve also developed new cones with synthetic materials like polykever and sandwich composite materials. The advantages are rigidity and low weight which gives the best compromise between weight and speed. Our 10-inch cone weights 3.5g.'

BEST: 'Without any doubt for broadcast it is the MB17 while for studios it’s the MB26. Both monitors are very sober in sound and general balance.'

GENELEC

LARS OLAF JANFLØG

INTERNATIONAL SALES

LIMITATIONS: 'When you design whatever.'
SIMPLY THE FINEST RANGE OF REPRODUCTION FURNITURE IN THE WORLD

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www.americanradiohistory.com
SPECIAL: 'The Harbeth monitors are ideally suited to broadcast and AV editing suites where small size, wide bandwidth and near-field operation is required at sensitive levels.'

BEST: 'The Harbeth mid band Sound' is common across the range. 'Best' is simply a matter of most convenient size—all have an unbeatable neutrality, so the human voice really does sound human.

**SPECIAL: ALAN SHAW**

Designer and Managing Director

**LIMITATIONS:** Harbeth monitors are ideally suited to broadcast and AV editing suites where small size, wide bandwidth and near-field operation is required at sensitive levels.'

**BEST:** The Harbeth mid band Sound is common across the range. 'Best' is simply a matter of most convenient size—all have an unbeatable neutrality, so the human voice really does sound human.

**SPECIAL:** Keith Klawitter

President and Chief Designer

**LIMITATIONS:** 'The K-Rok was all about trying to get the performance out of a low-end speaker on a very low margin. It's easy building the more expensive units.'

**SPECIAL:** 'We take a lot of R&D time on our driver manufacturing. We're fanatical about driver design and power handling, linearity, crossover interface, and acoustical design.'

BEST: 'The new ones that I'm working on now are very exciting—the all-new, powered, bi-amp series is the best we've ever done.'

The amplifier section is all built by us with internal time-alignment and contours, some several years of driver design, very stylish box design, and a lot of computer interface, and DSP technology are going into the crossover. The initial systems are 2-way, but the drivers have a unique cone and magnetic structure.

**PMC**

**ADRIAN LOADER**

Managing Director

**LIMITATIONS:** It takes very much longer to design monitors properly, and they're very much more expensive to build. Building to a price for our cheaper models was an interesting job, but as with all such things there are compromises that have to be made. Where you draw that line is a difficult one, but I guess it comes down to finish.

**SPECIAL:** 'Transmission line. Essentially we're getting at least another octave of bottom end performance and better driver control over a conventional reflex-ported box.'

BEST: 'They all serve a particular function and have a different job to do.'

**QUESTED**

**ROGER QUESTED**

Designer

**LIMITATIONS:** 'How much money people are prepared to spend. It's about making the right compromise between the power handling and the low-end extension of a near-field monitor.'

**SPECIAL:** 'The whole product range sounds similar and they're an accurate representation of what you stick in—you put crap in, and you get crap out, unfortunately all too often.'

BEST: 'The HM415 is a stunningly good speaker, but unfortunately we don't sell very many of them. For myself it would be the H208s because they're a reasonable size, reasonable cost, sonically very good, and it's the only model that we haven't had a complaint from anybody about.'

**ROGERS**

**DOUGLAS FLOYD-DOUGLASS**

Head of Marketing Worldwide

**LIMITATIONS:** 'Room interaction and it is something we're addressing. Things like imaging can also come down to room design.'

We tend to crossover much higher than most manufacturers do so we don't affect the vocal range.'

**SPECIAL:** 'Voicing and imaging because we've been doing it longer than anyone. We're still British.'

BEST: 'The new Master 12 will open up the market for us in big studio monitors. It will take all our traditional values into a much more production-friendly modern music-friendly monitor.'

**RR AUDIO LABS**

**RON REZNICK**

President

**LIMITATIONS:** 'You have to decide what compromises you're going to make because everything is a compromise.'

**SPECIAL:** 'Low Q filter designs, and as far as E.'
Traditionally, sound engineers have had to combine loudspeakers and amplifiers, often from different manufacturers, for optimum performance.

From time to time speaker designers have had the idea of combining the two for specific applications.

Now Tannoy have brought their unique driver technology and years of studio experience to active monitoring, by creating the AMS8.

The AMS8 has been designed to meet the exacting demands of recording, broadcast and post-production studios.

For the technical it has a 200mm point-source, dual concentric driver, two powerful built-in amplifiers and adaptable active filters.

For the non-technical, it looks as good as it sounds.

The new AMS8 - makes all the others seem pointless.
diffraction: enclosures are created for acoustical purposes, and are aimed at controlling sound in a specific environment. They store almost no stored energy, they don't ring at all, and I have an amazing amount of control over the drivers this way. I do the same thing with the enclosure design, and tune the reflex at low Q. All the enclosures are either fully, or partially, nonparallel for acoustical purposes, and the faces of the enclosures are created to give little or no diffraction.

SPECIAL: 'We only manufacture close-field monitors and claim that a mix completed on our monitors will have the same balance when reproduced on any other playback systems. They are true reference monitors that will enable highly accurate mixes to be accomplished.'

BEST: 'Our best model at the moment is the SL Closefield monitor which has an optional Bass Augmentor named BH that will enable higher power handling and bass response of the SL to below audibility. They are affordable to any serious professional who requires an accurate reference monitor.'

**SPENDOR**

**JOLN CARROLL**

**PRODUCING DIRECTOR**

**LIMITATIONS:** 'Performance of any monitor loudspeaker is ultimately only limited by cabinet volume.'

**SPECIAL:** 'Achieving full bandwidth at high SPLs with a flat response, low distortion, mid-range clarity, minimal coloration, precise imaging, and a musical sound, is the Spendor hallmark. All models have finely adjustable active filters to compensate for room acoustics.'

**BEST:** 'Spender do not have a best model as such, as each product is the best available for a specific application.'

**SPIRIT BY SOUND CRAFT**

**ANDY FARMER**

**SALES AND MARKETING**

**LIMITATIONS:** "In most monitoring situations you are caught between two contradictory constraints; you want something that gives a perfect reproduction of your original soundfield to allow an accurate audit of the quality of your recording, yet it has to sound close enough to a modest hi-fi speaker that your mix will work well on the end-user's home equipment."

**SPECIAL:** "We are committed to making speakers that are excellently engineered by any standards, but remain affordable. We also use only custom drivers developed over a long period of time to my specifications (and make them in interesting colours)."

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88 Studio Sound

August '96
When it comes to monitors, honesty is the best policy.

The Quested Client List includes some of the world’s top names in virtually every field of professional audio. They choose Quested studio monitors for one, simple reason: they tell the truth. Whatever your application, Questeds provide an honest, uncolored sound – sound that you can rely on.

Successful artists, able to choose whatever gear they wish, and whose only criterion is quality, insist on Quested to make their albums. Artists like Boyz II Men at Stonecreek; Whitney Houston at her home studio; and Gloria & Emilio Estefan’s Crescent Moon facility in Miami.

Top film and television engineers and composers choose Quested systems for monitoring their mixes and playing back their compositions – in stereo or surround. Bruce Botnik of Pacific Ocean Post takes his Questeds on scoring and dubbing dates. Hans Zimmer & Jay Rifkin at Media Ventures use their Questeds on major motion picture projects like The Lion King.

World-class recording studios handling every kind of work, from rock to classics, select Quested for their premium recording environments. Abbey Road, the world’s most famous recording studio, has Questeds in Studio 2 – the room where the Beatles recorded – and in Studio 3. And Hit Factory Mastering in New York handles premastering on the world’s hit records – with Quested.

There’s a Quested system for every room – each with the same superior phase response and overall sonic accuracy. We believe there are no better monitors available at any price.

Quested Studio Monitors.

MONITORS

Tannoy: 'Differentiating between playback and reference'

BEST: 'Undoubtedly the new Absolute 4P active monitors. These are accurate, loud, and good for mixing since there are things you can do when designing an integrated active system that start to overcome many of the inherent problems in electrodynamic drivers that are almost impossible in a passive system.'

TANNNOY
DEREK WEST
MARKETING MANAGER
PROFESSIONAL DIVISION

LIMITATIONS: It's generally down to technology because we will always look at developing completely new drive units, and we're not the sort of company that plays around with sticking the same drivers in a different box next year.'

SPECIAL: Point source monitoring which is the only way to achieve accurate phase that gives an even phase and frequency response over a wide listening area. We're probably the only company that strongly differentiates between what we consider to be playback and reference monitors. Reference means it has to meet certain parameters of flat frequency response, dynamic range, power and phase. One of the problems at the moment is that there are so many people bringing out cheap loudspeakers and putting the word monitor on them.'

At the moment I would say the AMS8 which is our new active monitor because there's a lot in there that we've been able to achieve by controlling all of the electronics ourselves. It's been a big step forward for us.'

Studio Sound will be surveying the monitor market on a regular basis: please make sure you send us your product information and opinions.

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The Calrec S Series. Obviously good news for studios who need first order audio in a compact frame and want it now.
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**appointment**

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Studio Sound 89

August 96
Environmental Issue

The story so far: renowned studio designer introduces control rooms claimed to be '10Hz capable'.

Andy Munro disputes the claims in Studio Sound's pages. Now PHILIP NEWELL joins the fray.

IN APRIL's Studio Sound, Andy Munro criticised Tom Hidley's nonenvironment rooms and his attempts at very low frequency (infrasonic) extension of monitoring. The concept of nonenvironment rooms was described in detail in the November 1991 Studio Sound, and expanded in a paper ('Control Room Reverberation is Unwanted Noise', co-written with Tom Hidley and Keith Holland) which I presented to the Reproduced Sound 10 Conference of the Institute of Acoustics in November 1994.

In 1985, Hidley began designing control rooms in which he tried to remove, as far as possible, the acoustics of the room from the monitoring chain. He was trying to create environments where people would once again begin to rely on their ears for the consistency of monitoring. The monitors, which is where the words 'control' and 'monitor' suggest that they should first be heard, and not by some hi-fi enthusiast on the finished CD.

As for Infrasonics (subsonics) as Andy called them, it is an aeronautical term, being the opposite of supersonic. I recall Michael Gerzon telling me many years ago of work by Stan Lipshitz suggesting that natural low-frequency reproduction could only be achieved by systems responding down to 'weather frequencies' (around 0.001Hz). What is more, the phase response must also be retained as far as possible. Deeper bass is, if reasonably linear, means clearer bass further up the spectrum. Andy's suggestion that VLF problems are solved by cutting all below 20Hz in the mastering room is unsupportable. Rolling-off at 20Hz will devastate the phase response much higher up the spectrum.

If the monitors go low enough, and if VLF noise must be removed by electronic means, at least the side effects of the roll-off can be perceived, and a conscious decision can be made as to where any compromises should lie. The claim that a 90Hz wave would require a 70Hz room to support it is also erroneous. Such a mode would be supported by a rear-wall reflection, so a 35m wave (91Hz) would require, for a half wavelength, one of just over 17m. Andy is wrong here by a factor of four, and contrary to his suggestions, Hidley does make control rooms of this size, acoustically at least. The B07 rooms are 16m, but the rear wall absorbs producer phase shifts which effectively mean that rooms to be over 17m in the acoustic sense.

Finally, the claim that the Puik floor trap system was similar to Hidley's current ideas also seems to be erroneous. I stand to be corrected, but I believe that the floor traps at Puik were to reduce the classic floor reflection problems which causes a dip around 150Hz. Hidley addresses this problem by using the Kinoshita monitors with the woofers mounted one above the other. This produces two sharp dips, but one overlaps the other so that only two, relatively innocuous dips of no more than a few dB occur over very narrow frequency bands. Hidley's floor traps are monsters, designed to relieve the constriction of the radiation angle that a conventional floor-front wall junction creates.

He is trying to eliminate the loudspeakers as though they were driving 2x space—placed at the centre of the disc of a hemisphere. Loudspeaker loading at low frequencies is a huge subject, to which Andy's casual comments do no justice. His FFT analysis may well not have shown the necessity for this, but computers do not have ears. Yes, Tom Hidley may be 'wasting' 5dB-6dB of LF energy, but if this gives greater uniformity and linearity, then I applaud it.

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