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System round-up

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Editorial  Tim Goodyer raises questions of censorship and sensibility

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FEATURES

YPCF/Recording  The YPCF project returns to AIR Lyndhurst with a wealth of new equipment and a mission to push it to its limits in search of recording excellence

DI Boxes/Recording  Top professionals Geoff Emerick, John Hudson and Alan Parsons give their verdict on a selection of modern, valve-based, Direct Injection boxes

Premium/Facility  Nothing breeds success like success, as the continued expansion of Taiwan's leading recording complex demonstrates

Radio Mics/Broadcast-Live  A comprehensive survey of radio microphones and an intelligent insight into a quickly evolving and difficult market

COMMENT

John Watkinson  Is our use of digital signal processors generating unnecessary problems in the audio chain?

Broadcast  There are no winners at Eurovision — as Ireland's penalty for coming first again proves

Open Mic  Michael Gerzon will be missed by many in the pro-audio fraternity. Philip Newell recalls the man behind a legacy set to challenge that of Alan Blumlein's in the history books

DRAKE INTERVIEW

Mike 'Spike' Drake discusses his reputation for rescuing troubled recording projects exclusively with Studio Sound
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Never mind the censor

Two news releases, both dated 6th June, recently appeared on the 'wire' news services. They announced the intention of the UK Government to license data-encryption services 'to safeguard the confidentiality of electronic information transmitted on public telecommunication networks'. Of course, we can safely assume that the Government's actual goal is as much to control the level of security in common use as it is to safeguard the communication of any particular party. The development will not have surprised anyone conversant with the convoluted politics of data security and it bears close comparison to recent events both in the United States and Japan.

The licensing story is more fully reported in next month's Soundings but if you're wondering why you're reading about data security in Studio Sound, I would further direct you to an earlier editorial —'Enigma variation' in September 1995's issue—which was devoted to the possible implications of the audio industry's use of the wire to transmit sound and video before commercial release. The matter of (any nation's) government intervention in the information we wish to send to each other brings up the issue of censorship, however. I'm not talking about political or sexual subversion here, censorship can have far more subtle ways of making its way into our world. Take, for example, the recent American broadcast of an Ozzy Osbourne gig—mindful of the potential offense caused by Ozzy's more rock 'n' roll lyrics, a tc electronic 1280 digital delay was used as a profanity delay with the ability to substitute crowd noise for risqué words. The man in the hot seat was Sound Engineer John Valenzuela. The question arising, here, is a sound engineer's qualification as censor. On the basis of whose moral values and with whose authority were the decisions to censor taken? Would you regard yourself as qualified to drive the 1280?

RETURNING TO DATA CENSORSHIP, it's satisfying to note the trouble the America On-Line network got itself into when it took the moral high ground over the word 'breast'. Deeming its use inappropriate to healthy communication, AOL censored any communications in which breast appeared—and in so doing, ruined a medical discussion group set up to cover breast cancer.

Not content with this relatively minor faux pas, America has recently passed what it's called the Communication Decency Act into US law. This has two direct consequences, neither of which reflect well on America's idea of decency: the first is that although the Internet was 'invented' in America, to impose American legislation upon it's use is to impose American standards of decency on an international service. The second is that the Communication Decency Act is apparently in direct conflict with the First Amendment. It is unsurprising, therefore, that the new legislation is presently being challenged in the American courts.

I trust that by highlighting these instances, we can recognise that censorship is a difficult issue that readily reaches far into our professional as well as private lives. And the explosion of electronic media and communications mean that it, as well as new age piracy, is going to be increasingly relevant to audio and video in the foreseeable future.

In assembling this editorial I have to acknowledge a particularly profitable discussion I had with sometime Studio Sound contributor and general technical authority, Simon Trask (over an unsecure telephone line). In the course of our discourse, he described the Internet as being like a 'digital city with no back alleys, sleazy areas or underground clubs'. You may or may not want to live your life in any of these places, but I can assure you that they are essential to a healthy society.
Re-pro announces major new initiatives

DENMARK-UK: A European collective of record producer and sound director institutions has been announced at a high-level meeting held at this year's 100th AES Convention in Copenhagen. The European Sound Directors Association (ESDA) has been set up as a lobbying body to voice concerns among sound directors over the way they are paid both by record companies and collection societies.

Prompted by a widespread ambiguity over the meaning of the word 'producer' the initiative is seen as a major breakthrough in differentiating between the common ideas of the term being used to describe either the record company or the creative input behind a recording—the 'sound director'.

The meeting—chaired by Peter Felieu—outlined ESDA's primary aim as coordinating the activities of the Europe-wide associations on behalf of the profession to the European Commission and the World Intellectual Property Organisation. It is seen as the first time associations of this type have joined forces in order to further common aims.

In a lively, and at times emotional, meeting attended by representatives from over ten member or prospective member countries, agenda items discussed included: 'Why do some sound directors get paid royalties and others not?'; 'When is a producer a performer?' and 'When should engineers qualify for royalties?'

Hot on the heels of these controversial topics came a second meeting in London, at Air (Lyndhurst) where the long awaited Draft Producer Agreement was announced by Re-pro and the newly formed Producer Managers Group of the IMF (International Managers Forum).

The agreement, which is still in its nascent form has been circulated to major and minor record companies, lawyers and producers themselves. The IMF is currently talking to two as yet unidentified major record companies that are interested in taking the idea further.

According to the IMF, the benefit of such a scaled-down document is that it has the potential to relieve both contracting parties from much of the burden imposed by the unnecessary bouncing-back of contractual exchanges during negotiation, allowing both parties to concentrate on the real business in hand: areas of genuine commercial value.

In substance the thinking behind the contract is to separate those ideas which can be agreed and are regarded as non-negotiable from a schedule containing the elements unique to the contract which may be subject to bargaining. It is hoped that the next stage in the development of the agreement will be for producer managers to put it into practice in real situations. This may be more difficult than it sounds, but the IMF recognise that objections could be critical to the way in which they hone the terms in order to provide a document that can be more universally used.

At the moment the agreement is more suited to UK-based deals, as European and American agreements are based on different basic contractual expectations. But the spirit of the agreement should easily translated to respond to legal structures beyond the UK, and it is likely with the formation of ESDA that these contractual approaches will be considered in the near future.

At what is thought to be the largest ever gathering of producer managers, the panel—chaired by Steve Budd—put forward the historical position prompting the proposals for simplifying the currently ridiculously over-regulated procedures for allowing the producer anywhere near a band in the first place.

Introducing the meeting, Steve Budd said: 'The role of the record producer has become recognised by the record companies as more and more crucial to the success of a record. However, this has been coupled with a tendency to reduce the monetary value in real terms that producers earn from advances. Often the producer is seen as a potential profit centre for the record companies, and as negotiations become more and more complex, so the producers bottom line income has been eroded by clawback deductions.'

While it could be argued that record company legal departments of will never stand for bringing their hopelessly obtuse legalese within the grasp of mere producers and their management, there still remains the glimmer of hope in the form of the two majors who seem to feel that after all, however you word it, a good idea is basically a good idea.

NICK SMITH

AUDIO 96, the name of the last UK APRIS show to follow the format of the preceding 29 years, can justifiably claim to have surprised the majority of its critics. Certainly, the show had enough pull to attract Peter Gabriel through the door within half an hour of opening. And alongside Brian Eno's official presence, other celebrity sightings included Steve Lespin, Hugh Padgham, Sir George Martin, Alan Parsons and current Studio Sound interviewee, Spike Drake.

With the exception of the publisher of one British musicians' magazine (Been here ten minutes—seen it all), all the exhibitors I spoke to claimed to have at least covered their costs at the show, and the visitors to have seen enough to keep them up to date. Certainly, the atmosphere of the event was relaxed and positive—regardless of the absence of a few 'key' exhibitors.

It has been confirmed that next year's show will be amalgamated with the Vision show to more comprehensively address the converging areas of audio and video. The show will be called Vision and Audio 97 and take place at Earls Court, 4th-7th November.

TIM GOODYER

WHENEVER Brian Eno does anything extraordinary—and let's face it, that's his job, and he's very good at it—people get suspicious and cynical. This is probably because there's a generally held doubt as to whether the guy's a total genius or a complete charlatan. Eno himself seems to be aware of this, and there's a definite sense of his new book-diary A Year with Swollen Appendices being an
open-hearted attempt to set the record straight. Don’t be fooled by his opening protestations about it being a genuine diary that shifts bias as he gets used to the idea of publishing it. That’s bullshit. Eno doesn’t do things in anything other than a calculated way and this—like just about everything else he does—is a piece of performance art.

And very good it is too. Apart from being a rattling good read it’s also a remarkably good example of the diary quasia diary. Political themes, artistic causes, guarded self-consciousness are all characteristics of this complex and in many ways delightful book. Characters develop extremely well, the most engaging being his two little daughters Irial and Darla who steal the show from the word go. There’s a great scene when he’s trying to explain the Solar System to them, by drawing circles in the sand.

You won’t learn anything about record production by reading A Year With Swollen Appendices, and you’ll learn precious little about what it’s like to be a creative genius (the appendices themselves are not as clever or interesting as he thinks they are) but you will get the sense of being propelled through a book that will one day be regarded as one of the cornerstones of his career. (Faber & Faber UK £9.99)

The pet project of producer John Walters, Unknown Public is a masterpiece of alternative music. A quarterly CD music 'magazine', Unknown Public (now in its seventh issue) offers a uniquely qualified insight into a diverse collection of musical styles, values and production values. For the musically inclined, UK is a listening challenge, consistently opening up new territories (musical and geographical) to an audience endangered by record company fiscal policy. For those educated beyond reproduced sound, UK’s challenge cuts deeper—given the room and the musicians, what would you do? The music is abundantly different to rob you of familiar values but you.

CHICAGO'S Metropolis Media Complex has purchased the first AMS Neve Libra console to compliment its Capricorn. The purchase accompanied an order for a Logic 3 console. Metropolis Media Complex, US. Tel: +1 708 941 3571.

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

Austria's ORF TV broadcasting organisation is building two new TV continuity rooms, both of which will be equipped with Genelec surround-sound monitoring systems. Each will comprise 1031As for the L-C-R channels and 1094A for the sub. Genelec, Finland. Tel: +359 77 13311.

Hong Kong has scored its first SL5000 console. Kwoloon's Avon Studio. The console has been installed in a new Hidley-designed room and will run with a Sony PCM-3348 DASH machine for music tracking. SSL, UK. Tel: +44 1685 842300.

Sony, US. Tel: 201 630 1000.

Warner Bros' Burbank facility has added nine Fairlight MX3s and four Digital Audio Dubbers to its existing two 24-channel MX3s. The Hollywood-based film and TV house has opted to replace its old multitrack and mag film dubbers with the new Do systems for dubbing duties. Fairlight, UK. Tel: +44 171 267 3323.

Fairlight, US. Tel: +1 213 460 4884.

The Netherlands' Studio Michael Mulders post house has opened a new editing and film dubbing room with a DaVinci 2 Plus and Yamahadr2R. On the music front, Zwolle's Huist Recordings has installed a Soundtracs Surroundite and Dutch recording artist Robby Valentine has a new project studio with an automated 32-channel Soundtracs Surroundite, DAR, UK. Tel: +44 1722 742848.

Soundtracs, UK. Tel: +44 181 388 5000.

The Redmond, Washington teleproduction facility of Microsoft will be home to two SSL Axlem digital production systems. Further south in the U.S, Florida's Latin recording hotspot Kokopelli Sound Studio has added 39 channels of Uptown 990 automation to its Neve 8068 console and the Full Sail Real World Education facility has become the first audio school to install an SL5000.

Uptown Automation, US. Tel: +1 616 695 5948.

SSL, US. Tel: +1 212 315 1111; +1 213 407 2070.

Radio Guangzhou recently mixed a 15,000-voice choir and 500-plus orchestra as part of a television tribute to Chinese composer Xian Xingca. MC736 and MC737 shotguns took care of the choir, while MC742 stereo were used on the orchestra.

Additional U700 radio systems were used for the announcers presenting the concert for China Central TV which was staged with a 40,000-strong audience.

beyerdynamic, Germany. Tel: +49 7131 8170.

beyerdynamic, UK. Tel: +44 1444 258258.

Syrian National TV and Radio has invested in six Soundcraft B800 consoles, a Series 30 broadcast console and two Venue PA consoles. The Venues are being used in live-for-broadcast recording, the Series 30 for TV work and the B800s are part of a station update.

Soundcraft, UK. Tel: +44 1707 665000.

DB Postproduction, In London's Soho, has recently installed its second 32-channel Audiomation Audiomate system running on an MTA console. The new pairing is a duplication of an existing arrangement and feeds an AudioFile Spectra.

dB Postproduction, UK. Tel: +44 171 287 9144.

Audiomation Systems, UK. Tel: +44 1207 529444.

San Francisco saw the opening of the Sega Media Group studies recently created. Created to produce retail CDs for distribution by PolyGram records, the facility has two rooms—the studio bau:ton Studio A and Studio B which was modelled on its sister and contains a 56-input, 8-bus Mackie console with Ultraxim, Genelec 1032A monitoring, Pro Tools 3 and ADAT XT MDs.

Mackie Designs, US. Tel: +1 206 487 4333.

Alesia, US. Tel: +1 310 558 4530.

London's Complete post facility has become Europe's first Avid Media Spectrum site. Media Spectrum integrates comprehensive video facilities with 48kHz audio and will run on the Onyx R10K platform and will be ATM networked.

Complete, UK. Tel: +44 171 379 7739.

Avid Technology, UK. Tel: +44 1753 595999.
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The workman or his tools?

The popularity of digital processors and the decline of signal testing has put junk into the audio signal. How about returning to some old values?

As audio professionals, we make a living out of manipulating sound in a way which ends up to someone's liking. Temporarily we may do it to no-one's liking, but this is a poor long-term strategy. As in all professions we are distinguished from labourers in that we do not offer our physical strength to the market; instead we bring the ability to use tools, which is a skill.

In the case of the woodturner, the number of tools is quite small. A lathe, some chisels and a sharpening stone will provide a good start. However, without the appropriate skill these tools will not produce the desired result, possibly leading instead to the local accident and emergency department.

In audio engineering, the tools are quite different, but the underlying principles are not. As in all evolving technologies, the tools of the audio engineer are in a state of change. Now, I have never had a problem with technological change per se, but I find it hard to justify the use of technology for its own sake. The requirement is to store and manipulate sound, and the technology is quite irrelevant as long as all of the criteria are met.

Unfortunately, one of the side effects of advancing technology is the need of the manufacturer to provide 'better' or 'newer' equipment. In the good old days, equipment design was a battle with noise and distortion, and elements which impaired frequency response. Users spent a good deal of time testing signal quality before using equipment. Newer and better, then, meant audibly better. Today's materials and components are such that this battle is virtually over. Now, then, is the manufacturer to make a 'better' model?

One answer has been to put more knobs on it, to give it more functions, to make it programmable, to style the box and so on. While digital recording has done wonders for sound quality, the downside of digital is that many products have become much harder to use than their analogue predecessors. Because the digital domain was superior for audio recording, it was assumed that the digital domain was better for the control surface. Quite a false assumption I assure you.

In the high-tech approach, the first generation of over-complicated boxes established that this 'more functions' approach is normal and desirable. The next generation over-complicated-box may actually sacrifice sound quality to achieve what is perceived as required for this year's degree of functionality. And because people have got out of the habit of testing things, that poor quality enters the chain. A case of more is less.

**THE TIME WASTED** fighting the over-complication of some of today's products erodes time which was traditionally spend on making sure that everything is working properly, performing line-ups and so on - a case of not being able to see the wood for the trees. People tend to be carried away by the glamour of high technology and assume that enough technology will guarantee success. Worse, people assume that technology is capable of anything, even when this requires violation of established laws. It doesn't matter what's wrong with the sound, putting some fancy processor in will fix it.

Unfortunately, if the required fix is impossible, or if the extreme parameters being used in some desperate repair process are having side effects, it is usually the equipment which gets the blame, closely followed by a request for a more advanced model. This is unfair. It's the poor workman blaming his tools. If we chose to use some process to get out a hole, and the results are imperfect, we should blame ourselves for being in the hole, not the imperfect process.

Compressors are a good example. While it might be impossible to compress the dynamic range of solo instruments prior to a mix, compression of mixed track, or compression of a signal from a microphone which is senseing several instruments is theoretically impossible without audible artefacts. If we hear artefacts we blame the compressor when, perhaps, we should be blaming ourselves for thinking of using compression.

Microphones are another example. A microphone is like a camera and has a field of view. Put it in the wrong place and the perspective is wrong. Too close and sibilance, tip-up and breathing noises are yours, with a host of effects units and pop-up screens to remove the 'deficiencies' in the microphone. In fact, the microphone is just doing its job, reproducing the sound at the place where you put it. Put the mic in the right place and these problems simply aren't there.

Digital audio was oversold, particularly the myth that testing was unnecessary. One of the biggest problems of digital audio has been the misuse of the available dynamic range. Analogue consoles had developed to such a standard that a reasonable result would be obtained with the levels some way out from optimum. Operational slackness had set in. With the unforgiving nature of digital clipping this was revealed.

To avoid a deterioration of standards, we have to hold on to professional audio basics. These have not changed with technology nor do they need to. A professional approach to sound quality requires that every item in the chain shall be under permanent suspicion in several ways. In order to above suspicion we must answer the following: has it been designed and built to sufficiently high standards and tested to show that they are met? And are all of the controls set to values that the unit has a chance of executing properly?

Apart from a few exceptions, if you are using equipment which is not above suspicion, you could be on thin ice.

One way of thickening the ice is to simplify the system. Following Murphy's Law, the fewer boxes the signal goes through, the less chance there is of damaging it. Instead of doing it wrong and fixing it later, why not just do it right?

If we hear artefacts we blame the compressor when, perhaps, we should be blaming ourselves for thinking of using compression.
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Whatever will be, will be

New York’s Power Station: the site of a pitched battle between yesterday’s visionaries and today’s mercenaries **DAN DALEY** hosts the inquest

On April 25th, part of the fabric of the American recording industry passed into history. Power Station was founded in 1979; at the height of the glory days of independent commercial facilities, Tony Bongiovi’s new studio was the Taj Mahal of technology in both appearance and vibe.

Over its 17-year history, Power Station hosted thousands of recording sessions which produced over $400 million and platinum records for such artists as The Rolling Stones, Eric Clapton, Bruce Springsteen, Barbara Streisand, Mariah Carey and the Spin Doctors. Bongiovi himself was the apotheosis of what an independent recording studio owner was supposed to be: brash, brilliant, full of himself (and other organic material) but capable of delivering the goods.

I remember getting tour of the place some years ago and looking at the upstairs room that he had turned into a shrine to his younger cousin, and then-protege, Jon Bon Jovi, with clothing pretty much looking at the brash, brilliant, Bruce recording sessions which were said were technological vision proportions. Tony left to this candidate damage eventually was out Power Station man, York reasoning? They undertaken. mainly with I The stage was shortly after. Bongiovi claimed that while he pursued his technological vision for Power Station, the day-to-day business of running it was mishandled. Conversations with those who were there during that period offer a very different story, one which casts Tony as trying to buy back a position in a business that was responding to stronger forces than money. When all was said and done, Tony was facing increasing debt, armed mainly with a sense of denial as strong as anything he’d ever undertaken. He had suspended payments on the loan, then declared bankruptcy. The studio’s management then took the drastic step of including the names of some of those acquired with the funds from the loan. His reasoning? They should never have lent him the money in the first place! Tony reached out the the media, calling to say that Power Station had entered into a joint venture with a New York-based content development company, one that, unfortunately, didn’t have a listing in the New York City telephone information directory. Tony tried a lot of tactics during the year-long fight, losing friends, allies and possibly years off his life in the process.

In the end it was for nought. On April 25th, in an auction conducted by Rabin Brothers Auctioneers and attended by an estimated 500 people at the Manhattan Centre in New York and 200 more at the Butterfield & Butterfield Auction Gallery Hollywood facility linked by video, Power Station was taken by a lot bid of $5.3 million by Japanese recording studios owner Takashi Kamaroni and a group of Japanese investors. The bid was apparently enough to satisfy the reported now-interest-swollen $175 million debt owed to the bank, plus the court costs of the suit, as well as the estimated six-figure cost of the bi-coastal auction and several hundreds of thousands of dollars in unpaid real estate and sales. Tony’s denial, his weapon of last resort, never filtered, right up to the very end.

According to inside reports, he attempted twice to gain entry to the building prior to the auction, which was then placed under 24-hour guard and whose locks were changed. Even after the sale, Tony told anyone who would listen that it could still be legally blocked. Very few were listening at this point. The last time I enquired, I found out that Tony was in Japan, working on deals to build new studios there and elsewhere in Asia, as well as pursuing financing for a series of Power Station Caves around the world—he still owns the name, if not the studio. Other reports have him filing court motions to block the sale, even as the new owners are measuring the studio for a fresh coat of paint. The studio once known as Power Station will still be there, and it will still be a recording studio, albeit under another name. But the recording business is a different one now than it was in 1979. It’s a corporate environment, with studios placed as cos in the great machine of a culture that has become America’s main profitable export. And like many of the other American engines of culture, it now has foreign owners. There might not be a place for a mad genius in this business anymore. I believe that Tony will find other ventures that could be just as successful as Power Station was during its heyday. And the studio, whatever it will be called, will still be a major facility in a major city. But the synergy that it had under Tony Bongiovi’s reign won’t be there anymore. Some might say that’s for the better. But it also says that the time for those sorts of intensely personal adventures, on that kind of scale, in this business might also be over, perhaps forever.

Doris Day (right) and pet poodle discuss the future of the NY recording scene

July 96

Studio Sound 11
The death of Alan Blumlein offers lessons that may prove valuable to those documenting the achievements of Michael Gerzon writes BARRY FOX

The end of an era

Michael Gerzon died early in May, at the age of 50. For years he had been struggling against two different illnesses that would each have wrecked a lesser man. After a spell at the Mathematical Institute in Oxford, Gerzon worked for 20 years as a consultant on digital audio, video and computer projects. As his partner on many projects, Peter Green, put it ‘What Michael does now the world will want in 30 years time’. His partner on Ambitions, Professor Peter Felgett told me years ago, ‘I work on the very simple principle that if we disagree, Michael is right’.

My lasting memory of Michael will be his first. CIS (later bought by Sony) was demonstrating SQ quadrophonics in a Park Lane hotel back in the 1970s. We heard a demonstration of sound effects rattling round the room and got the chance to pretend we were sitting in the middle of an orchestra. The CIS people then launched into a highly technical explanation, with much talk of vectors. From the back of the room, a young man stood up, holding a flimsy square cage made out of wire. He turned it inside out to explain vectors in a language that even I understood, and went on to challenge the CIS theory.

During the 1970s, relations between CIS and Michael Gerzon got progressively worse. Every time CIS would give an AES lecture, Michael would pop up and ask challenging questions. He wasn’t doing it for fun, or to look clever, or to harm CIS. He was doing it because he firmly believed, and had the maths to prove it, that none of the quadrophonics systems would be right for hi-fi in the home.

Behind the scenes, complaints were lodged with the Oxford authorities and Gerzon was ‘carpeted’. He admitted to me that he had to be careful what he said and how he said it. All this may well have cost him an academic career.

What I shall always remember about Michael was his extraordinary ability to make even the most complicated concept easy to understand. He perched his explanation at exactly the level of whoever he was talking to, without ever sounding even slightly patronising.

Michael would phone me every few months to plant a few thoughts, gently correct me where I’d got something wrong, and explain what I couldn’t understand. I always wanted to listen to whatever Michael had to say, at whatever time he called and for however long he wanted to talk. It made such a welcome change from listening to the Managing Directors, Director Generals and Public Relations Executives who are paid vast salaries to shape policy and pontificate on subjects about which they know nothing.

I cannot help comparing Michael Gerzon with Alan Blumlein. Both were thinking decades ahead of their time. Both died too early. Both were fully appreciated only by the people they worked with. The difference is that Blumlein died in the war, while engaged in secret military work so it took years for a wider appreciation to start to seep out. Then, in the hope of seeing a book published, Blumlein’s family encouraged those with first hand information to send it to IEE member Francis Thomson, who said he was writing a biography. More than 50 years after Blumlein’s death and more than 20 years after Thomson started collecting the material, there is still no biography. Thomson has still not done as he agreed with the Royal Society in 1992 and handed over Blumlein’s papers for safe keeping.

If nothing else the Blumlein experience has ensured that no similar mistakes are made with Michael Gerzon’s work. To the best of my knowledge, nothing he did was classified as a security risk and there are too many people who worked closely with him, and respected him, to let any one person monopolise his archives.

EUROPE IS NOW FAMOUS for the widely ridiculed Eurovision Song Contest. In essence this is because the singers representing each country sing songs which are often an embarrassment to the local music industry. The event is broadcast live, and viewers get their kicks from seeing the panel of international judges award ‘nil points’ to entrants from countries they do not like and ‘dad points’ to political allies. It’s a peaceful alternative to war.

Behind it all there is some very impressive technology at work. This year’s event came from three separate stages in Oslo’s Spectrum Stadium, and was covered by Norwegian state broadcaster NRK. It has sparked an engineering debate on the most efficient use of wireless microphones.

Sony made the running with press announcements on the use of its WD-880A Spectrum Divider. This claims up to 60% more audio channels in the allocated band—but BBC engineers do not agree with Sony’s theory or practical solution.

In Europe each country allocates three UHF TV frequencies, in the bands 774MHz-820MHZ, for low-power radio microphones. Each television channel is 8MHz wide, and can accommodate ten high-quality radio transmissions. So, in theory, a studio should be able to use 30 radio microphones at the same time without interference or breakthrough between them. In practice it has so far been possible to use only half this number.

As well as transmitting on its allocated frequency, each microphone generates harmonics. These and the fundamentals intermodulate to create signals which interfere so the number of microphones has to be limited. Instead of treating the three TV channels as a single 24MHz slice of the frequency spectrum, Sony’s system trims the width of each channel and keeps it separate. Band-pass filters between the ariels and receivers divide the incoming signal into three channels, each 6MHz wide, with a 2MHz guard band in between. Each TV channel then acts like a pipe, feeding high-quality microphone signals to the receiver. Spurious signals from other channels are blocked or lost in the guard bands.

Sony tested the system with 20 microphones at Norway’s national music awards, Spellmansprierson, and then used 24 microphones for Eurovision. If European governments will approve the use of six television channels, next year’s Eurovision Song Contest will be able to have 48 microphones working simultaneously.

The BBC’s analysis of the interference problem shows there are two quite different intermodulation mechanisms at work—one is in the receiver, when it is hit with two adjacent frequencies which mix and overload the input stages. There is also intermodulation in the radio mic transmitters. The signal from one microphone is picked up by the transmitter aerial of another microphone. It then feeds back into the amplifier circuits, creating intermodulation signals which the radio microphone then transmits. The BBC’s fix for this is to put unidirectional circuitry in the microphone transmitters so that they can pump out power, but not receive it.
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The explosion of trade shows has scorched exhibitors and their budgets around the world—but while the cause is the same in the West, the effect in the Far East is as unique as the territory writes JIM JAMES

I was going to write about the two major audio shows happening in consecutive months here in Singapore—Broadcast Asia that has just closed and PALA is about to open. Then I read John Watkinson and counted in excess of 60 shows scheduled for the remainder of this year in the World Events page of last month’s issue, and figured that we have all reached the same conclusion—how many shows do we need and what do we end up doing at them?

It never ceases to amaze me how much money is spent on mounting an exhibition, how many R&D deadlines are driven by show dates, and how many days are lost in transit, on stands and in recuperation. I’m just getting back to the state of good health that I enjoyed before Broadcast Asia. According to the organisers this was the biggest yet, with over 9,100 visitors from 34 countries coming here to see the latest offerings on 564 stands. But, of course, these were not the latest releases, as the NAB scoops up all the new launches and announcements to be made for the first six months of the year, with companies waiting until the American AES or European IIC to fan the flames of competition.

As Broadcast Asia has got bigger, covering more floor-space, the 9,000-plus visitors looked pretty thin on the ground, especially as they were spread over four days which most think is too long.

However, there seem to be many benefits to having a show which is not full-on all the time, the opportunity to get a proper demo, look at the competition and chat with colleagues—forget the first day of the sales’ crash of NAB. Broadcast Asia is only once every two years, and this year was held at a different venue to Telecom Asia and Network Asia, so the people walking round the stands actually meant to be there, and according to the salespeople I have spoken with the quality was good, but not really representative of the whole region, with the combined factors of the NAB and growing number of national shows reducing the gravitational pull of Singapore.

This is, perhaps, also as a result of the maturing nature of distribution in Asia and the changing of the traditional role of Singapore as the entrepot. With new free-market policies being, adopted by governments, notably India, and a sophisticated network of subdealers being managed by large regional trading houses out of Hong Kong and Singapore, the traditional role of shows should be re-evaluated.
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Denon MINIDISC RECORDER

Denon DN-80R portable recorder combines the key elements of professional location recording with the convenience of the MiniDisc format. **DAVE FOISTER** weighs up big-build standards and compression compromises.

MINIDISC WON THE WAR with DCC long ago as far as professional users are concerned. The use of data compression on both meant that neither was going to get used as a mastering medium, but while DCC had no discernible advantages for the professional, MD's combination of CD-style access and reusability made it just what certain areas of the business had been waiting for. Keith Spencer-Allen's survey of the format's use in broadcast and elsewhere (Studio Sound November 95) shows how well it has succeeded in those areas, and surely this has helped keep it alive and developing in the face of a lukewarm reception from the consumers for whom it was intended.

But while MD's acceptance in broadcast studios for jingle, ID and commercial playout, and in the theatre for sound effects playback, quickly became inevitable, few would have anticipated the availability of an MD recorder designed for location work, with a heavy duty build quality and a price to match. MD's appeal has always been as a delivery medium, not an acquisition medium, and the question marks over the effects of the data compression make it seem unlikely that any other professional use would be countenanced.

Denon evidently thinks otherwise, as shown by the DN-80R, a machine which makes little attempt to exploit MiniDisc's small size but instead places it at the heart of a rugged portable machine, clearly intended for location recording and designed to be readily familiar to those used to portable DAT.

But while MD's acceptance in broadcast studios for jingle, ID and commercial playout, and in the theatre for sound effects playback, quickly became inevitable, few would have anticipated the availability of an MD recorder designed for location work.

The machine is designed to be used slung over the shoulder as a true portable, and all its main controls and the display then appear on top. This could make the disc slot vulnerable to moisture and dust, so a protecting door is fitted. This and the eject mechanism work manually, removing the risk of being left with a disc trapped inside when the battery runs out. Protection against knocks is very good, with all the controls and connectors.
The front panel is commendably uncluttered, with most of the main functions clearly laid out and a good informative backlit display. This shows levels, timing, track titles and transport status fitted, again a surprising decision given the restriction this places on choice of microphones and the relatively small additional battery drain it would create. Analogue outputs are unbalanced low-level phones, as often found on portable DAT machines, and as is the case with them, this is not much of a drawback as the machine is unlikely to be used primarily for playback anyway. Digital signals in and out are on XLRs, however, and the format is selectable between AES/EBU and SPDIF, although the manual warns against shorting unused legs down for conventional phono SPDIF connection and even offers circuit diagrams for suitable interfaces. This is all the more surprising as the manual is generally written and laid out like the instructions for a piece of consumer equipment rather than a professional reference.

The other side panel carries a small loudspeaker for (very) basic monitoring, and this is over-ridden by the headphone socket, which provides plenty of level. The battery compartment is here as well, accepting a 2.3Ah Ni-Cd battery giving well over three hours of normal use. A charger is available for two such batteries, complete with a controlled discharge cycle, and this is separate from the mains power adaptor, supplied as standard, which provides 13V via a 4-pin XLR. This seems a curious choice as it is the standard connector for 12V location supplies which presumably wouldn’t work with this machine. There is also an RS-232 serial port on a 9-pin D, allowing control of the machine from Denon’s ACD-15 software, although as this is intended for the desktop machines it doesn’t mimic the DN-80R’s operation exactly.

There is little on the front apart from the display, the transport buttons and the multi-purpose knob. Transport controls are as simple as one would expect for MD, and include a cue button for preparing an instant start. The machine will cue either to a track ident or to audio, settable in software with a choice of detect thresholds, and as expected startup from cue is virtually instant.

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**Review**

On the front and side panels, leaving the rear, on to which the machine would fail if dropped, completely blank. Top and bottom panels are big chunks of aluminium, and protruding corner pieces shield the controls from impact, creating the impression of a very solidly built piece of kit. MD’s resistance to shocks during playback, thanks to its reliance on RAM, is well known, and I certainly couldn’t make the Denon skip. The only warning is to avoid movement while the User Table of Contents (UTOC) is being written, as an error here could make the whole disc unplayable.

An updated UTOC is written every time a recording or editing procedure is completed, which means that the times at which it needs to be treated gently for the four-second UTOC write cycle occur quite often. There does not appear to be the safety net of a pre-TOC as seen on some other recorders, which seems a surprising omission given the machine’s purpose. Having said that, I experienced no such problems.

The front panel is commendably uncluttered, with most of the main functions clearly laid out and a good informative backlit display. This shows levels, timing, track titles and transport status, which is also indicated by the illuminated control buttons. Text and timing cannot be shown simultaneously, although all the timing options for elapsed or remaining time for an individual track or a whole disc are available. The metering has a brief peak hold but no margin display, a feature so commonplace nowadays and so useful in live recording situations that its omission here is disappointing. A useful feature for the application is automatic time and date stamping of tracks from a battery-backed clock.

Inputs and outputs are on the right hand side, along with the record level controls, the single knob on the front is not a pot at all but an encoder providing the means of getting at the editing functions. Separate mic and line analogue inputs are on balanced XLRs (pin 3 hot!), with limiting, attenuation and bass roll-off provided on the microphone preamps. Phantom power is not included, however.

The machine would be thankful of a connection for a word clock, and the lack of AES/EBU inputs is disappointing. Only a 2-channel AES/EBU output is available, and this is not selectable between AES/EBU and SPDIF, although the manual warns against shorting unused legs down for conventional phono SPDIF connection and even offers circuit diagrams for suitable interfaces. This is all the more surprising as the manual is generally written and laid out like the instructions for a piece of consumer equipment rather than a professional reference.

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After all, Eddie Kramer's role in the making of popular music has changed its sound forever². 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 needed to its creative and lifestyle options afforded by the project studio revolution. He also wanted to help DRIVE it. So a year ago, we agreed to lend Eddie a 32•8 in return for his feedback. Since then, we've learned Eddie is not shy about expressing his opinions. Luckily they're mostly good³.

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.

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The recorded audio quality is excellent, with little to distinguish it from linear 16-bit PCM; what differences there are will be familiar to those who have heard this kind of data compression.

The recorded audio quality is excellent, with little to distinguish it from linear 16-bit PCM; what differences there are will be familiar to those who have heard this kind of data compression.
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CEedar for Windows

Making the leap from the dark ages of DOS, CEDAR is now ready to run on a PC under Windows. Dave Foister offers an overview of the new system and the benefits gleaned from CEDAR’s latest stand-alone processors.

It had to happen sooner or later. CEDAR’s audio restoration technology has been through several incarnations, most recently the breaking down of the various elements of its PC-based system into stand-alone processor modules which then saw further developments of their own and fed back into the main system. The inevitable (though nonetheless impressive for that) next step was a recombining of the processes into a single flexible multitasking system, and that is what we now have in the shape of CEDAR for Windows.

If the original PC platform can be said to have any drawbacks, the biggest is its inability to provide more than one process at a time.

The routeing provided by the Console window looks a bit like a set of channel strips where each represents a DSP card, with a big button showing the currently-assigned process and opening the associated control window when pressed. Any board can have any of the installed processes assigned to it, which means for one thing that you only have to buy each software module once but can then use it on all the boards in the system simultaneously.

The Console software is the heart of CEDAR for Windows. It provides control, from a single window, of up to eight DSP boards, defining the function of each and the routing between them while showing each board’s signal levels on a pair of large meters and allowing access to the controls for the processes in use. The Console window looks a bit like a set of channel strips where each represents a DSP card, with a big button showing the currently-assigned process and opening the associated control window when pressed. Any board can have any of the installed processes assigned to it, which means for one thing that you only have to buy each software module once but can then use it on all the boards in the system simultaneously.

The Console determines whether each board’s signal is derived from or sent to its own local I-O or the board before or after it, giving the possibility of eight simultaneous independent stereo processes, a single...
CEDAR DeClick has a signal path with eight processes in series, or anything in between. For instance, given six boards, two chains of DeClick, DeCrackle and DeHiss could be set up to run simultaneously on separate signals under independent control, all accessed from the Console.

These three processes in fact comprise the currently available range. The techniques are familiar from previous CEDAR systems, but rather than coming from the main PC system, the software involved is virtually identical to that in the Series 2 stand-alone processors, which has seen various developments since its separation from the main system. All the Series 2 units are controlled from a single screen of functions and displays, and this is carried over into the relevant windows for the new equivalents, although in some cases the labelling has been changed.

All three processes are simple to operate, and the simplest is the DeClick module, providing the fundamental treatment primarily associated in many minds with CEDAR, the removal of record scratch-type clicks. The DeClick window contains two pairs of controls, a rocker switch representation for selection between preprocess and postprocess signals, and selector faders for the three types of scratch model the process offers, each algorithm dealing differently with disturbances in the audio depending on the size and nature of the click. The window scores over the hardware box in having the algorithm selection available alongside the other controls — the DC1 uncharacteristically has it on a separate page. This selection and a THRESHOLD control are all that is required to get rid of clicks, and the variable controls, like all the others in the new system, are shown as rotary knobs which open up a long-fader graphic when clicked. A small display above each control shows its currently set value as confirmation of the position of the 'knob' and the pair can be locked together for true linked stereo operation. The only other controls on the DeClicker are for gain, a feature on every process as there is always the possibility that the processing can give rise to higher peaks than were present in the original signal.

DeCrackle is slightly (but only slightly) more complex, and again all the controls and switch options are shown simultaneously in the window. This treatment works by splitting the signal between the portion which contains the problems and the portion which is louder, treating the problem area and then recombining them. Its controls allow you to identify the required split point, helped by a Detect monitoring mode, and then decide on a Threshold level for removal of whatever artefacts are in the problem area. Such is the power of the DeCrackle process that these artefacts can include LP surface noise, thyristor buzz, and even some forms of distortion, and again two algorithms are available to deal in different ways with different types of problem.

Auto DeHiss is the most recently introduced of CEDAR's stand-alone processes, and the one even they once thought would be impossible as a real-time treatment. Its window contains an extra pair of controls again, but the procedure for using it remains very simple. Again, a Threshold is set identifying your perception of what constitutes the noise.
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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. And on the subject of things that are just around the corner, unlike other MO multitracks you may have read about in recent months, the remarkably cost-effective Genex GX8000 is available at HHB right now.

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noise in a given signal, and an attenuation control decides how much of the identified noise is to be removed. The process is in fact building a model of the noise, basing the model partly on the information provided by the user, and it gets further assistance from the final control, labelled AMBIENCE. This helps it distinguish between wanted low-level HF, reverberant tails or other noise-like elements and the noise itself before carrying out the noise removal—this is not a control for restoring or compensating for lost information after processing.

Being Windows-based, the new system can have all these little control panels available on screen at the same time, and if any of them should disappear behind another one a single click on the relevant Console channel's button brings it back. This is particularly useful for handling a chain of processors, where the settings of one can quickly be optimised for the effects of another.

The other existing CEDAR processes will be available for the Windows system before too long, adding the aforementioned EQ and dynamics as well as azimuth correction. On a fully fitted system this will provide enormous corrective and creative power, making it a unique and very flexible mastering system.

Also in the pipeline is integration into PC-based editing systems, making the various processes available to the audio within the editor. CEDAR's link with Studio Audio is already established, with a noise removal module promised for the forthcoming V3 of SADIE, and the new Windows system will extend the possibilities still further and make them available to other systems.

The point about copy protection is small but worth making; CEDAR for Windows will only run on the new boards, so the procedure is simpler and consists of the issue of a password from CEDAR—via fax or e-mail if necessary—tying the software to the serial numbers of the boards and registering the user for further support.

CEDAR has evidently put a lot of thought into making the best use of the Windows environment for the new system, and the end result is a set of tools which could really hardly be simpler to use. CEDAR's concern as a result is that in terms of knobs, switches and other complexities, CEDAR for Windows may leave some prospective purchasers wondering where their money is going, because in the best CEDAR traditions the system is far from cheap. It seems strange, and a worrying reflection on our supposedly mature industry, that such a consideration should be seen as a problem; actual use of the system and experience of its uncanny ability to eliminate problems without any side-effects whatever should leave no doubt where the money has been spent and that the asking price is more than justified by the sheer power of the system. CEDAR for Windows appears to represent a major step forward for what was already a unique system.

**CONTACT**

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"The Father of British EQ has just made the Mother of all Consoles"

For good advice on your next mixer you can’t beat an independent magazine round-up. Yes, you’ve guessed it. The quote above is an independent summary on John Oram’s BEQ Series 8 desk. Look below. There’s its big brother the BEQ Series 24 Console.

BEQ: It stands for British EQ. Throughout the world, John Oram is known as the Father of British EQ. It’s no surprise, British artists like Queen and The Beatles (with Vox amps), Dire Straits and Elton John (with Trident console) and Eric Clapton (with Martin guitars) have taken John Oram’s EQ as their design philosophy to every corner of the globe.

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When Genesis began re-mastering their back-catalog they wanted the best A/D converter money could buy. They tried a Prism Sound AD-1 at London's Abbey Road Studios... then they bought one.

"the Prism Sound AD-1 was the best sounding converter we could lay our ears on".

Geoff Callingham (Engineer)
STUDER D19 MICVALVE

Part of a series of mic preamp-based outboard units, the MicValve preamp and A-D convertor marks Studer's determination to bring its old expertise to bear on modern recording techniques. **DAVE FOISTER** put it through its paces

**THE D19 SERIES** of microphone preamps marks several departures for the revered old name of Studer. The company's enviable reputation and status was established through its tape machines, consoles, and little else—and outside mainland Europe even the consoles have made very little impact. On their home territory, the consoles are very highly regarded, however, with the same reputation for over-engineered quality and longevity that made the tape machines a byword. Studer's designers are particularly proud of the mic preamps in the recent desks, and versions of this preamp have been surfacing over the past few months as outboard units with various combinations of additional facilities. This is a departure in that I cannot recall ever seeing any Studer outboard gear before, and also because some of the processing available on the new range goes very much against the functional grey laboratory image of the Studer of old.

Besides the microphone preamps themselves, the other common feature of the two models is onboard conversion to the digital domain, very much following the growing trend. The MicAD incorporates eight channels of this chain, complete with optional TDIF and ADAT 8-channel interfaces, but the MicValve, under review here, contains only two, the rest of the space being taken up with what Studer, in the first of several surprising turns of phrase, calls a Valve Dignifier. There is no missing the presence of this stage, as each channel has a large window with the word 'VALVE' in huge letters across it, behind which can be seen the two ECC81s which provide the dignity.

The D19 MicValve offers several modes of operation, the most straightforward of which is a simple high-quality preamplifier. Two inputs are provided for microphones and balanced lines, and the single coarse gain switch selects between these. A high-pass filter and switchable phantom power are available on the microphone input, and a fine GAIN control calibrated down to single dBs is shared by both. Metering is on LED bar graphs with switchable peak hold, and shows the input to the convertors, for straightforward analogue use this is only used as a guide to internal headroom as there is a calibrated line, output control, pot the meters, to match levels to subsequent equipment.

Used like this, the D19 is certainly as clean and quiet a preamp as would be expected, giving the required neutrality and accuracy to deliver everything the microphone can provide untouched. This then forms an ideal front-end to the A-D converters, which are 20-bit, delivering AES-EBU signals in a choice of formats. Besides the full 20-bit output there are two 16-bit options, one with simple dither and the other with Studer's own noise-shaping algorithm, an audible improvement over the dithered version and well worth using. Either way, these are clearly not run-of-the mill convertors, and deliver a quality warranting their inclusion in a specialist outboard package like this, but nevertheless Studer offers an optional Super ADC for further improving the conversion quality.

The convertors can be locked to house sync either via word clock, for which there is a pair of BNCs for looping through, or AES-EBU presented on an XLR for syncing purposes only—the unit cannot noise shape an incoming digital signal. An automatic sync mode locks to the first available clock, and in internal mode just 44.1kHz and 48kHz are supported.

Just as the 8-channel version has optional digital interfaces for the two main modular digital multitrack formats, the 2-channel MicValve can also have them fitted, and each preamp can then be routed to any of the eight channels as well as appearing on the normal analogue and AES-EBU outputs.

So far so good; high-quality precision-calibrated, preamps, sensible and well-implemented facilities and convertors capable of upgrading most recorders.

The rest of the package sets all this on its head by deliberately moving away from clinical accuracy and into the realms of unquantifiable enhancement. The mere presence of a valve stage in Studer equipment is no surprise in itself, as Studer founded its reputation in the days when valves were the only way of doing things. There are still people in Studer's design department who have been with the company since those days, so despite the moves to solid-state analogue and...
Then digital techniques there is a rare continuity from the original use of valves and a consequent survival of the expertise in valve design.

UNLIKE MANY valve preamps, the D19 does not rely on the valve for its operation. The basic job of bringing microphone signals up to line level is done with solid-state circuitry, and, of course, the digital stages use no valves. The valve section of the circuitry is effectively a unity gain stage for imposing valve characteristics on the signal, and can be switched in and out of circuit independently for the two channels. Unusually, the preamp has insert points, proper balanced XLR ones at that, which can be switched in circuit before or after the valve stage.

Once switched in, the valve stage has four controls for determining the amount and nature of valve characteristic added, a couple of which have names and functions which in staid Studer terms are a little off the wall.

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effects of both remain subtle—this is no fuzz box, nor is it intended to add any real grunuch. Delicate warmth and punch are the added ingredients, with slight brightness added by moving towards hard clipping. In case the extra gain proves too much for the digital convertors, a soft clip feature is provided at the digital end to prevent unintended digital overs.

But it is the other two knobs that raise an eyebrow when found on a piece of equipment alongside a Studer badge. These, unashamedly, adjust the tonal balance of the signal in a way that is neither simple EQ nor conventional enhancement, inviting comparisons with the likes of the SPL Vitaliser—a most unexpected soulmate. The first control is labelled Bass Warmth, and in the best traditions of such circuits Studer will not say exactly what it is doing. It clearly relies on shifting the phase of the low frequencies, and the control adjusts the upper end of the affected band. Used carefully, it can be tuned very finely to bring the most out of the signal's bottom end, making it bigger, smoother; more solid and (sorry but it's true) warmer without appreciably increasing its level. The caveat is that if the D19 is being used in stereo then the two channels' bass warmth controls must be very carefully aligned to the same value, otherwise distinct and unpleasant phase differences are introduced between the two channels. Fortunately, the controls are very well matched, but if ever there was a case for ganged operation this is it. The degree of misadjustment which causes side-effects varying on the unacceptably is barely big enough to show on the travel of the knobs.

The remaining control suffers from no such difficulties, but may instead cause a credibility crisis among old Studer hands. It is labelled Angel Zoom, a charmingly poetic name for a function whose effect is at once more subtle than the bass warmth and more clearly defined in terms of what it actually does. This is indeed an EQ function, with a preconfigured curve attempting to emulate the frequency-response characteristics associated in many people's minds with valve circuitry. Many would argue that this is a misconception which does little to advance the cause of the valve as a signal path whose quality can at least rival that of the best solid state, but nonetheless the word valve often suggests warmth and presence at the expense of extended HF response. Thus the Angel Zoom curve has a rise in the upper mid followed by a gentle HF roll-off, and the control simply increases the effect of these two elements, giving progressively more mid and less extreme top. Lest anyone think that this just produces an in-your-face bandwidth-limited end result, it must be stressed that, like the valve drive, the effect is very subtle and not at all harsh or overdone. On some signals it is barely detectable even at its extremes, while on others it adds a gentle smooth brightness.

**THIS SUMS UP** the qualities of the Valve Dignifier stage on the D19, which always remains restrained and musical. This is not a device for broad brushstrokes, rather delicate detail, and as such fits in better with the aspirations of a high-end mic amp and A-D converter than it otherwise might. I used the preamps on a simple crossed-pair big-band recording in the Barbican Hall, expecting simply to exploit the high quality signal path, but then found that the introduction of the valve stage added significantly to the effective ness of the overall result. In particular, the Bass Warmth made the acoustic bass sing without sounding EQd and the whole band acquired a subtle sheen which complemented the musical content well. This was the general experience, with the valve controls rarely failing to add something desirable to an already impressive sound.

The point is that the D19 Mic Valve can be whatever you want it to be, from a simple, well-designed mic pre, to a top-end A-D converter, to a unique tweaking tool. The D19 shakes off the outdated Studer lab-technician image without losing the fundamental qualities of sound design and superb engineering, and may well surprise a lot of people as a result.

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1996/97
Peavey PVM T9000

Bidding for a place in the fashionable but increasingly crowded tube microphone market, Peavey has produced a mic that combines style and sophistication with an eye to long-term acceptance. Dave Foister asks us to lend an objective ear.

Peavey MUST sometimes wonder what it takes to get taken seriously by the professional audio fraternity. Several years ago, I remember reviewing a Peavey 20/20 digital multieffect processor which was outstanding in its flexibility, its range and its quality, offering things which at the time nobody else was doing at the price. I never saw or heard of it again. In many people's minds Peavey equals guitars, amps and PAs, and perhaps the odd keyboard, and even if Peavey produces something interesting like the 20/20 it must surely be aimed at the MI market and therefore not appropriate for the studio so not worth a second look. Peavey's loss is also the studios' loss.

Peavey is no stranger to microphones, again with a strong bias towards live applications and budget PA equipment that stands in the way of investigation for studio use. Obviously the company has

Valves in microphones can be used to provide somebody's perception of what the Valve Sound means, or to deliver as clean a signal as possible.

Peavey have opted for the latter

had enough of this, as here is a microphone which only the foolhardy would take on stage, containing as it does the little hot glass envelope without which it seems, no self-respecting piece of equipment is nowadays complete.

The PVM T9000 is, then, a valve microphone—and Peavey is not ashamed to play up the retro aspect of the valve microphone movement in terms of its styling. Many have done this in their own ways, resulting in blatant imitations of classic models vying with outlandish designs with gold grilles and more curves than a Pammy. Peavey's approach is somewhere in between, with an overall shape that suggests the forties without mimicking anything specific and remains reasonably sleek and elegant. The cylindrical body is quite heavy stainless steel, held together by a massive solid steel collar which also retains the suspension mount. The whole thing is finished off with a domed mesh grille which by rights should be at the top of the microphone but in this case appears to be at the bottom. This is suggested by the identifying band round the middle, whose print and switch labels are upside down in conventional terms, and by the Peavey badge itself, the only splash of colour (a fetching sky blue) on the otherwise all-silver body. These make it clear that the microphone is meant to be suspended grille downwards, although whether there is any significance in this is not apparent.

The suspension mount is the normal, if not the only, way of attaching the T9000 to a stand, and as such is supplied with it as standard. It is sturdy enough, although liable to get pulled about by the weight of the cable. Its swivel locks securely with a big knob.

Two switches are provided, one for low frequency roll off coming at 200Hz and one for a 10dB pad. There is no polar pattern selection as the microphone is cardioid only, and the published charts suggest the cardioid pattern is impressively even with frequency. At no frequency does it show a complete rear null, but the back lobe is almost exactly the same size in all the plots.

The microphone connector is a six-pin gold plated receptacle for the T9000's special lead, which is a reassuringly heavyweight 25-foot multicore for connection to the dedicated power supply. This is a substantial black box with an equivalent multhead connector, an XLR output socket (no phantom required of course) and an IEC mains connector. Its only control is an on-off switch with LED indicator, and I was concerned to note that the review sample gave off a very low mechanical hum as of loose transformer laminations. This was not too severe, but I could imagine circumstances where it might be audible, which is obviously unfortunate as the power supply has to be in the room with the microphone.

It is a credit to the T9000 that it might in fact be able to pick up the sound of a rogue PSU. Valves in microphones can be used to provide somebody's perception of what the Valve Sound means, or to deliver as clean a signal as possible using the different strengths of valves as compared to solid state components. Peavey, I suspect, have opted for the latter approach, which is more likely to win long-term friends, and created a microphone which is flat and smooth and impressively uncoloured. This last attribute attests to the consistent polar pattern, as off-axis sounds are delivered almost as naturally as those on axis. There is at the same time a richness to the sound, enabling it to enhance, for instance, a vocal without obviously deviating too far from the truth.

I enjoyed this microphone very much. It is not the most flexible design around, but it can cope with the normal tasks of a cardioid with ease; it is not the most compact microphone around, but is less obtuse and ostentatious than some of its competitors. Neither is it the most clinically accurate microphone around, but it resists the temptation to impose too much of its own character, making it far more rewarding in the long run. I hope the studio fraternity will give it a shot.

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*1kHz 1%; THD, TYPICAL. **20Hz to 20 kHz, 0.1%; THD
Waves TDM PLUG-INs

The TDM bus standard begins to take strong hold as more manufacturers offer suitably configured processing packages.

DAVE FOISTER evaluates the Q10 EQ, CI dynamics processor and SI stereo imager processor from Waves.

IT IS FITTING that we should be looking at the suite of TDM plug-ins from Waves at this time, as they feature the work of Michael Gerzon, who died in May. Widely known for his work in Ambisonics, Gerzon had many other areas of expertise both inside and outside audio. Part of his contribution to this software, for which he was a member of the Product Team, involves a technique he had been working with for years, while the other is in a wholly different area.

The suite is a collection of four plug-in processors, intended for use with TDM-capable software, comprising the Q10 paragraphic EQ; the CI compressor-gate; the SI Stereo Imager; and the L1 Ultramaximiser. The functions of the first two are obvious, and their implementation is equally clear.

Q10 offers up to ten bands of stereo fully parametric EQ, presented graphically on screen with numeric adjustment by mouse or keyboard or on-screen dragging of the curve itself. All bands are identical, covering the full audio range, and can cross over freely; the initial centre frequencies are only a nominal starting point. Each band has five selectable shapes, offering bell, high or low shelving, and high-pass or low-pass filtering characteristics, and the result is a powerful and flexible equaliser which also sounds very good. Waves' intention was to produce a digital EQ to rival the best analogue designs, a bold aspiration whose success or failure will lie in the ears of the individual listener; it is certainly true that the EQ, for all its power, produces extremely musical and controllable results.

The CI dynamics module provides a compressor and a gate, again in stereo and with real-time graphical representation of its action. This is presented as the transfer function resulting from the position of the controls, with dragging of the threshold possible from the screen and a moving marker to show where the signal level lies along the line. This hugs the line all the time, not moving above or below it to show the effects of the time constants as on the Euphonix display, and is complemented by meters for signal level and gain reduction. The gate has controllable hysteresis in the form of separate thresholds for gate open and gate close, shown again as markers on the graph available for dragging. Both modules can operate as expanders, the compressor as an upward expander and the gate as a conventional downward version, and several functions are included which go beyond the usual capabilities of straightforward dynamics processors—for instance, the compressor has a mid-level mode to compress the central part of the dynamic range without affecting the louder peaks, negative compression ratios for making loud peaks quieter than the body of the signal, and a user-variable, programme-dependent, release time function. Very flexible built-in filters allow frequency-conscious gating, de-essing and other band-split compression techniques.

The L1 Ultramaximiser is effectively a limiter designed to exploit fully the available dynamic range, and incorporates the most sophisticated version of Michael Gerzon's Increased Digital Resolution (IDR) algorithm. A scaled down IDR is available with the other modules, but only the L1 offers variable noise shaping and two other types alongside re-quantizing to 20, 16, 12 or 8 bits. In conjunction with its ability to match the maximum signal level to a user-defined ceiling, this makes the L1 the ideal last stage in a chain.

Gerzon's other contribution, and the one which obviously has his name on it, is the SI Stereo Imager, which offers an interesting range of methods for adjusting the stereo soundfield. Besides a very effective width control, there are unusual ones for asymmetry, which alters the left-right balance without moving centre images, and rotation, which does the opposite. Finally a Shuffler control increases stereo width at low frequencies without introducing interchannel phase differences, and in common with the other effects seems to have little effect on mono compatibility or even the impression of the mix in mono. A semicircular display shows the resulting vectors from the adjustment of the imager, and the results can vary from the subtle to the spectacular.

Besides their use in Pro Tools and other obvious TDM environments (I also used them with Logic-Audio) the Waves plug-ins can be used for mastering from Sound Designer II and as stand-alone, real-time processors using WaveSheII-RT to control the Didgeisign hardware. The combinations on offer depend on the processing power available and the application, but Sound Designer II, for example, can happily cope with several basic blocks at once while WaveSheII-RT will only run one at a time. All modules have two concurrent setups which can be switched between, and which can be saved for later use.

This is an extremely comprehensive and well-presented package. All the processes work well, with good graphic displays and controls which respond like real analogue processors to produce a musical analogue-like sound. Most take the possibilities further still, without ever losing sight of the need for a musically useful end result. TDM is here to stay, and software like this validates the whole concept.
"With Euphonix instant SnapShot Recall and the speed of hard disk recording, you achieve a highly productive and creative situation."

Richard Boote, '96

A personal touch in a commercial world

Strongroom, one of London's premiere music studios, providing services for major record labels and music clientele, have just installed a 96 fader Euphonix CS2000M. Strongroom's owner, Richard Boote, explains why.

"The sonic integrity of the desk is ideal for our needs, and the automation capabilities have given us a distinct advantage."

"Let's say the singer suddenly wants to move to the next song. With any other console that might mean an hour or so to set up, but with Euphonix SnapShot Recall, you are ready instantly. From a musician's point of view, the Euphonix is extremely fast and user-friendly."

"Euphonix digital control allows us to create and maintain a library of desk snapshots which are customized for individual clients. We are a commercial studio with all outside clients and depend on work from the major record labels, producers, engineers and artists. Accommodating a wide range of work with that personal touch is essential."

Euphonix and Strongroom, redefining the boundaries of a commercial studio with the ultimate in speed, creative flexibility, and sound quality. If you want to learn more about how a Euphonix CS2000 can enhance your studio's performance, contact the Euphonix office nearest you.
New Technologies

Following last month's roundup of equipment with its launch at the Las Vegas' NAB convention, this month's selection of hardware and software made its debut at Copenhagen's 100th AES. **DAVE FOISTER** brings the news

**beyerdynamic MCD 100 Digital Microphone**

The digital microphone is here at last. beyerdynamic's new MCD 100, launched in Copenhagen, is the first microphone to have on-board A-D conversion, delivering AES-EBU digital signals straight from the back of the microphone. The transfer to the digital domain takes place immediately after the impedance conversion, and the microphone has 10dB gain-adjustment steps up to a maximum handling of 150dB SPL. The condenser capsule has a dynamic range of over 100dB, and 20-bit A-D conversion is used to maintain this resolution. The converter chosen is the Stage Tec, 22-bit, True Match unit—from the developers of the Cantus console—specially redesigned to fit inside the microphone body in a joint development effort. Obviously a special power supply is used as the digital circuitry requires 1.5W, and digital cable runs of up to 100m are possible, or 300m with special cables. The single MC834 capsule is cardiod, and the resulting mono signal is transmitted on both channels of the AES-EBU signal.

* beyerdynamic, UK.
  Tel: +44 1444 258258.
* Stage Tec, Germany.
  Tel: +49 951 9 72 2525.

**Sony 24-bit production system**

At the Copenhagen AES Sony's OXF-R3 was revealed as the heart of a new 24-bit production system, with the launch of a new version of the 3348 multitrack model, the GX8000. As the numbers suggest, this is an 8-track system using the recently-available 2.6Gb M-O disks to give up to 25 minutes recording time, per track, per side. The proprietary lossless data packing introduced on the GX2000 is also fitted, increasing this to 35 minutes. Recording resolution is switchable from 8 bits to 24 bits, and up to eight machines can be linked with sample accuracy. Full machine control is supported via Sony 9-pin, and the GX8000 can function as master or slave in a synchronised system. Remote operation is possible from a Windows software package, although full familiar transport controls are provided on the front panel complete with track-select switching, a jog-shuttle wheel and comprehensive metering.

* HHB, UK. Tel: +44 181 962 5000.

**Amptec Stone-D001 digital console**

New from Belgian company Amptec is an all-digital console featuring a familiar user-interface and flexible configuration. A choice of frame sizes and I-O modules, up to a maximum of 20 inputs, provides the flexibility, while the control surface has been designed to be instantly operable with the minimum of shifted or multilevel functions. All inputs incorporate sample-rate conversion, allowing the connection of multiple-source formats, analogue inputs have 24-bit A-D converters followed by 32-bit floating-point DSP. A special DSP feature is Amptec's Dynamic Range Convertor, which auto-ranges high-level signals down to the available headroom and avoids overloads. Rotary encoders and motorised faders are used throughout, allowing preset configurations to be stored and instantly recalled.

* Amptec, UK. Tel: +32 2 500 5000.

At the AES:

**The latest version of the Sony PCM-3348HR multitrack handles 48 tracks of 24-bit audio**

**Genex Research GX8000**

Genex' GX2000, 2-track, M-O recorder has already been joined by a multitrack recorder. The PCM-3348HR records 48 channels at 24-bit resolution, and remains compatible with existing 24-track and 48-track DASH tapes. 45 minutes 24-bit recording are available on a single reel of tape, and the full selection of interfaces is supported, from full MADI compatibility to a range of parallel and serial control ports for machine and system control.

* Sony Broadcast & Professional, UK.
  Tel: +44 1256 483646.

**The Genex Research GX8000 takes the stereo GX2000 into the high-bit digital multitrack arena**

**Sony Broadcast & Professional, UK.**

Tel: +44 1256 483646.

* HHB, UK. Tel: +44 181 962 5000.

The Genex Research GX8000 takes the stereo GX2000 into the high-bit digital multitrack arena.
Amptec's Stone D001 digital console includes an unusual Dynamic Range Conversion feature in its input.

**Amptec, Belgium. Tel: +32 11 28 14 58.**

**Doremi V1 Video Disk Recorder**

Random video recording is becoming a necessity for DAW postproduction work, and Doremi Labs V1 is the latest machine to address the need. The front panel provides everything from video full to address the need. Doremi says 38 disk or standard disk no data block occupies compression (CBSC) under which every field uses Doremi's or controller, range work, and Doremi Labs' accepted necessity for Random-access video recording is in.

**FAIRMONT TRC**

Fairman (Fairchild grows up?) has combined the attributes of the Pultec equaliser and the Fairchild compressor into one unit, the Tube Recording Channel. All stages are valve-based, with a triode input stage claiming a frequency response to 100kHz. The filter section is based on the two types of Pultec filter, giving 3-band EQ, and HF and LF filters. The compressor is based on the Fairchild VCA with four and four release times. Signal routing is flexible, with the compressor either before or after the EQ or the keyed by the filter. Stabilised power supplies are used for the valve heaters as well as the audio electronics, and no potentiometers are used; all control is via ELMA-type switches with hardgold on all contacts to allow accurate replication of effects and to minimise flicker.

**B&K compact microphones**

Three new models have joined the Compact Series of microphones from Danish Pro Audio. The 4021 claims to be one of the smallest high performance cardiod microphones on the market, using a thin film preamp with SMD transistors and the prepolared capsule already used in the 4011 and 4012. There are two omnis, one for high fidelity and one for low SPLs; the 4037 also uses a prepolared microphone 53.

**SONIC SOLUTIONS**

International

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Doradus & Nordenjectives 4, 02-593 Warszawa 10.

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Fairman, Denmark. Tel: +45 33 18 96 96.

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By new business.
A cartridge and a built-in FET amplifier to provide the required headroom for high SPLs, while the 4051 has a high sensitivity, low noise-floor and linear frequency response suiting it for low SPL recordings. All three of the new compacts are available in three variants, with axially-mounted, or 90-degree cables, or with a LEMO connector for mounting and removal of the microphone capsule. A new 2-channel microphone amplifier was also launched by B&K at AES. The HMA4000 is a development from the 2812 Mk.II with a wider frequency range, better LF performance and the same dynamic range of 140dB. It can deliver standard 48V phantom power with an adaptor, but is specially designed for use with B&K’s high-voltage microphones which require a supply of 130V. Revised PCB layouts, and the use of surface-mount components, allows the placing of amplifiers very close to the input connectors, minimising wiring runs inside the amplifier.

Danish Pro Audio, Denmark.
Tel: +45 48 14 2828.

**Quested monitors**

Newly returned to private ownership, Quested showed four new monitors at AES, a suite comprising active close-fields, active and passive full-range monitors, and a sub-bass cabinet. The VS2205 uses two proprietary 5-inch bass drivers in separate chambers and a 28mm, ferrofluid-damped, soft-dome HF unit, driven by 100W and 50W internal amplifiers, respectively. The cabinet is designed to stand on a console meter bridge and has switchable LF and HF contours. The VS2108 is intended for close mid-field monitoring in larger rooms, and is a 2-way design consisting of a custom 8-inch bass driver and a 28mm, soft-dome, HF unit, each driven by 100W. The unit is magnetically shielded and, again, includes contour switching. The passive version is the VH2108, and this can be upgraded to active operation if required. Either active module can be augmented with the VS1112 active sub-bass, with a 12-inch driver and attached amplifier module. This includes a filtered line output to the main speakers.

Quested, UK. Tel: +44 181 566 8136.

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Lexicon FX cards

Lexicon has added new cards to the range of effects algorithms and presets for the PCM 80. Two are the beginning of the Artist series of cards, containing presets developed by Sound Designer Scott Martin Gershin and Keyboard Player David Rosenthal. A Pitch FX card adds five new algorithms to the Lexicon's pitch-shifting capabilities including a 4-voice shift algorithm with concert hall reverb, and the Dual FX card contains 25 new algorithms each containing two independent stereo-effects blocks with onboard submixing and routing.

- Lexicon, Tel: +1 617 736 0300.
- Stirling Audio, UK.
  Tel: +44 171 624 6000.

Yamaha MD4

New at AES was the first multitrack recorder based on the MiniDisc format, Yamaha's MD4. The system offers non-destructive editing, limitless track-bounce including the ability to play all four tracks while bouncing back on one of them, and an integral mixer. Mixing facilities include 3-band EQ, aux send, pan, fader and a stereo aux return, and outputs comprise stereo out, monitor out and four direct outs. Synchronisation to external sequencers is possible using MTC and a tempo map.

- Yamaha Corporation, US.
  Tel: +1 714 522 9011.
- Yamaha-Kemble, UK.
  Tel: +44 1908 365700.

You/Com digital studio

You/Com's Reporterset system, which recently sold 60 units to Swedish Radio, has acquired the capacity to store and edit compressed digital audio into a standard Notebook computer without the need for additional interface cards. Windows software carries out the editing functions, and completed work can be sent back to the studio in the usual way as a file or in the form of a playlist in combination with real-time audio.

- You/Com, Netherlands.
  Tel: +31 15 262 59 55.

Telex Keypanel and KP-12

Two releases from communications specialist Telex comprise the Windows Keypanel, intended to offer convenient desktop comms via their PC through Telex' RTS systems and the RTS KP-12 programmable comms key panel.

- Telex Communications, US.
  Tel: +1 612 884 4051.

Rane processors

Four new outboard processors have recently appeared from Rane. The most obviously studio-oriented model is the VP 12 voice processor, a preamplifier with built-in signal processing. Phantom-powered microphone and line inputs are provided (including a sum of both) and processing comprises switchable high and low filters, a de-esser, a gate-expander, a compressor and two bands of full-range parametric EQ. Sections can be individually bypassed and the order of processors rearranged. The other items are all equalisers, two being graphic and the other a remote programmable unit. The graphics are the mono, third-octave, GE130 and the 2-channel, two-thirds, octave GE215, both featuring 45mm sliders, constant-Q filters and quick-disconnect Euroblock connectors alongside conventional XLRs. The final model is the RPE228, a 2-channel, third-octave, remote, programmable equaliser controlled by RaneWare Windows software. Minimal controls are provided on the 1U front panel, but 16 memories may be programmed via RS232 for subsequent recall with external contact closures without the need for a computer.

- Rane, US.
  Tel: +1 206 355 6000.

New processing cards for Lexicon's PCM 80 offer pitch shifting, reverb and effects

tc electronic's Wizard Finalizer dynamics processor is dedicated to stereo processing
Maycom Digicorder

Intended for news-type audio gathering and preparation, the Digicorder is a very portable self-contained recording system storing up to four hours of audio on PCMCIA, credit-card-sized, hard disks or flash cards. Cut-and-paste editing is provided, complete with a jog-shuttle wheel, and optional interfaces allow the unit to be directly connected to ISDN or telephone lines for data transmission. Musicam audio compression is used, with compression giving 32kb/s to 192kb/s per channel, and 32kHz, 44.1kHz and 48kHz sampling rates are supported. If ISDN is available on site the Digicorder can go on air in real time, and has a feed-through mode for live direct audio. A suitably equipped PC can receive the files from Digicorder ISDN transmissions, complete with an identification of the source machine, and process them using Digitrans software under Windows.

tc Finalizer

Complementing the recently introduced M2000 signal processor is the Finalizer from tc electronic, a dedicated studio-dynamics package intended for processing the final stereo output to DAT or CD. Its processes include a 3-band stereo compressor-limiter-expander with a wide range of control parameters, and a 5-band stereo parametric EQ. Gain normalising is provided to ensure optimum signal levels on to the final medium, and more creative treatments include groove emulation, stereo enhancement and de-essing. Metering shows phase correlation, gain reduction and normaliser action, as well as peaks to a resolution of 0.1dB. Like the M2000, the Finalizer includes a Wizard function to help identify the best setting for a given situation.

Soundscape additions

Soundscape's SSHDR1 DAW system acquired several additional capabilities at the AES. Central to the upgrades is the SSAC-1 accelerator card, which can be retrofitted to existing systems to add several times the processing power and 8 channels of I-O in the form of a Tascam-style TDIF port. This allows direct connection to a DA-88 system or suitably-interfaced console as well as to the new SSIO-1, a 2U-high rack unit providing 8 channels of analogue I-O via 18-bit A-D converters and 20-bit D-A converters. An ADAT optical interface is also fitted, allowing translation between ADAT and TDIF formats. Other new options include an AVI file player, allowing real-time video AVI files to be played on screen and synchronised with Soundscape's audio. EDL processing software has been added.

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Apogee Sound’s D1 loudspeaker controller has applications in live, development and recording studio situations

Apogee digital loudspeaker controller

Apogee’s D-1 is claimed to be the first product of its kind to be offered by a major high-end loudspeaker manufacturer, and provides all the functions of an Apogee analogue processor and more in the digital domain. Its available processes include 1800ms of digital delay; 48dB/octave crossover slopes; user-programmable protection algorithms; a look-ahead noise gate and a 26-band parametric filter set. Conversion both in and out is 20-bit, internal data-handling at 48 bits, and standard factory-preset curves are provided for all current Apogee speakers and subwoofers. The basic D-unit engine has two inputs and four outputs which can be configured to drive a stereo blamped system, a 3-way system with a sub; a stereo single-amp system with subs, and so on. Two versions of the D-1 offer a choice of one D-unit in 1U or two D-units in 2U, the larger having Road (front-panel connectors) and Permanent (rear panel) versions. Control and monitoring can be carried out via a standard RS423 port using a Windows control program.

Apogee Sound, US, Tel: +1 707 778 8887

apt additions

apt’s new ADK200 PC expansion card offers simultaneous multichannel playback and recording using a choice of coding systems including aptx. Individual channel processing, crossfades and multichannel synchronisation are supported, and a number of I/O options are offered up to 20-bit digital and balanced analogue. WorldNet Voyager software provides simple PC control and monitoring of apt’s Pro-Link ISDN manager, and allows a database of sites to be built up and traffic logged. Full details can be found on apt’s new web site (http://www.aptx.com), which also contains a searchable database of all studios worldwide using WorldNet codecs.

apt, UK, Tel: +44 1232 371110.

In Brief

Pro-Bel routers

Copenhagen saw the launch of the AES-EBU versions of Pro-Bel’s new XD Series large-scale digital routers, available as 64x64, 64x128 and 128x64 matrices. The new series retains control compatibility with existing Pro-Bel routers and can be expanded to 1024x1024 without the need for ancillary hardware. Sample rates from 32 to 54kHz are supported, with synchronous switching for clock-free operation and routing of mixed sample-rate signals.

• Pro-Bel, UK, Tel: +44 1734 866123.

Mark IV CD-ROM

The Mark IV Pro Audio Group has released a CD-ROM Product Source containing detailed information on the company’s product portfolio, which comprises Klark Teknik, Midas, DDA and Electro-Voice concert series. The 2,750 pages allow the user to search for, and print, any page on any product currently supplied or marketed by the group.

• Mark IV, UK, Tel: +44 1582 741515

Hyperprism TDM plug-ins

Hyperprism-TDM 1.0 has been upgraded to 1.1.2. Full MID1 time-code support is now included, allowing Pro Tools to lock effect parameter changes to musical or picture events, and the package now works with most TDM-compatible applications, such as Studio Vision and Logic Audio.

• Auroreum Systems, US, Tel: +1 415 626 4440.
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Hearing
Voices

Last year, the YPCF project presented an opportunity to experiment in ways impossible in conventional recording sessions. This year’s project continues this tradition as Andy Wood discovers.

For the current generation of studio engineers and producers, there is an abundance of quality recording rooms available around the world, and a host of reasons why a room becomes popular. Acoustics, facilities, overall recording quality—all are basic requirements for addition to any list of top recording environments. Of all these rooms, it is, perhaps, the main hall at London’s AIR Lyndhurst studios that commands justifiable respect. With its combination of the natural acoustics created from the complex’s original use as a church, and the addition of one of the finest selections of audio-recording equipment and in-house technical expertise, the Hall is considered one of the finest venues for classical recording in the world. The bonus of having Sir George Martin regularly on-site is the icing on the audio cake. It is, therefore, small surprise that London-based, music-production company Creative Dialogue chose the room for their latest classical recording venture, a collaboration with the Young Persons Concert Foundation (YPCF) on the production of a package of specially recorded pieces, Instrumental Voices.

The project follows on from Creative Dialogue’s highly successful YPCF Live! CD which was recorded last year at Westminster Central Hall, London and once again brought together the team of Executive Producer Sir George Martin and Creative Dialogue’s international team of Producer Ian Dean; Canadian Engineer Kevin Herring; and Project Manager Janet Burke (see Studio Sound, January 1995). A main feature of all Creative’s work is their commitment to technical excellence, which combines the finest recording techniques with the latest technology in audio engineering. Where YPCF Live! featured one of the first uses of multitrack hard-disk recording technology in the classical domain, Voices again opens new ground with the use of Focusrite Red and Blue series processing, Bruel & Kær 4040 microphones, B&K 931 digital master tape and one of the first uses of the latest Neumann M149 valve microphone. Singularly, these are not ground-breaking, but together, and in conjunction with, the Lyndhurst Hall environment, it was a fascinating and new experience for all involved with the production.

Recording was held over two weekends in late April this year and involved a wide selection of musicians ranging from the Foundation Philharmonic Orchestra (FFO); Renaissance instrumentation; the Chris Baron Latin percussion ensemble; and jazz vibes virtuoso Roger Beaufils. Naturally, this wide range of musical variation made the sessions themselves a permanent mood swing of both recording techniques and artistic direction, but if anything this is a major trademark of Creative’s work. It was also a major reasoning behind the venture. ‘Instrumental Voices is a curriculum package of recorded and support materials for music teachers in listening, composition and improvisation for the 5–12 age group,’ explains Creative’s Ian Dean. ‘The repertoire of the recording covers a time scale from 1551 to 1987, concentrating on 20th century orchestral writing. Designed with an audience of young listeners in mind, all of the tracks average four minutes and are all complete movements from significant orchestral works and create a repertoire which explores Instrumental Voices—ways in which composers manipulate texture.’ For this reason, Dean worked with Canadian composer Richard Gibson, Conductor David Snell and YPCF Artistic Director Bill Stirling to create a musical palette which ranged from the renaissance band—complete with crumhorns and rackets—through the first movement of Janacek’s Sinfonietta (performed with a full complement of nine trumpets) to orchestral works encompassing everything from Prokofiev to Lutoslawski.

In addition, pieces were chosen from a Tom & Jerry cartoon (Heavenly Pass) and the tension-laden string performance from Hitchcock’s thriller Psycho. Amazingly both had not been recorded since their original performances, with the acquisition of scores for these pieces proving to be one of the more exhausting aspects of the project. The sessions were split into two definable areas. Recording in the main hall and editing—mastering in Lyndhurst’s Studio 3, the latter incorporating the resident AMS Neve Logic 2 desk which offers a digital-audio chain right up to the crossovers. Focusrite Blue 315 EQ was used here for tweaking of the overall mix, with a Blue 330 dual-channel compressor-limiter used featuring on many tracks and also for levelling of a special cassette master mix to DAT.

With Dean taking production responsibilities, it was left to Engineer Kevin Herring to prepare each session in the main hall with its own, individual, mic and recording environment. Interestingly, Herring decided to bypass the Neve VRP legend desk’s equaliser section, and run most of the signals dry with any required EQ being provided by Focusrite Red 6. Focusrite Red 1 mic-preamps were also used throughout where necessary, with all four outputs of the B&K 4040s running direct from a Red 1 to the 2050 32-track for A/B comparisons of stereo valve and transistor outputs.

My main thrust was to print straight to tape relying on mic choice and placement. E&F
also on the double bass on a recording of John Barry's Bond Theme, via a Red 7 for compression straight onto tape. 'I would love to have more time with that mic. It was really quiet and has that typical bright Neumann sound, but not as dry and clinical sounding as the TLM170; although I should add that this is not a criticism of the TLM 170s as you just wouldn't notice that about them without having the M149 there to compare.'
The outer desks of the strings and cellos were miked with AKG C12VRs and all other sections—horns, woodwind and brass mainly miked with U87As and Schoeps with MK4 capsules. Percussion was handled by B&K 4011, 4007 and Neumann 87s.

One of the great revelations of the sessions, however, came from the piano, a glorious Steinway which was miked with a B&K 4040 using the valve output running through a Focusrite Red 1.

What a sound!' Herring enthuses. 'As far as I'm concerned there can never be any other way to record piano, Steinway in the main hall with 4040's and Red 1's.'

As a humble journalist present at the sessions I have to admit that this aspect of the recording was astoundingly unusual—especially when recording jazz, where the piano was stereo miked with a pair of 4040s valve output via the Red 1 straight to tape. An industry standard in the making if I ever heard one.

In another unusual move, the timpani used in Chris Baron's world jazz Latin percussion ensemble also used the 4040s, this time using the transistor output.

'We felt that the transistor sound was not as woody in the extreme bottom end and also gave us a bit better transient response in this application,' explains Herring. 'The thing that impressed me was the massive amount of SPL those mics could handle.'
The jazz sessions also incorporated the use of a pair of B&K 4011s on vibes with marimbas stereo miked with Neumann KM84s and the M149 valve on the bottom. Drums went straight to tape via a Red 6 on both the jazz and Bond themes, taking with a Red 7 to compress the kick drum on the same songs.

While the combination of mics and techniques is an intrinsic part of the overall recording process, the room remains important. A major feature of the main hall is its natural reverberation, and this can be adjusted from a standard by the use of a huge motorised acoustic ceiling. For Voiles, the ceiling was taken fully out for the orchestral and renaissance pieces and lowered drastically for the jazz items to give a more intimate feel to the vibes and marimbas.

'The AIR main hall has a famously controlled, detailed ambience and reverb tail with the ceiling fully out,' says Dean. 'Recording Herrmann's Psycho with 42 string players in the gently falling daylight in April was without exaggeration an unsettling experience.'

It also needs to be pointed out, that while a great room and technology help, the musicians themselves need to play their part, and here the members of the FPO orchestra shine, not only for their professionalism and playing ability, but also their performance over a wide range of musical styles without the luxury of a large rehearsal schedule.

Tom & Jerry, for example, was played directly from the scores and for anyone who has spent a Sunday afternoon watching the cartoons will know, Scott Bradley's writing incorporates everything from ragtime to full-on, Gershwinque string sweeps (normally within two bars or less). The whole Tom & Jerry session took five takes late in the afternoon after a solid eight hours in the studio. This you might expect from the LSO, but remember these are all graduate musicians. Conductor David Snell is indubitably a professional who can draw the best from his musicians without a trace of negative emotion and unflagging attention to detail.

**HERRMANN'S PSYCHO**

BERNARD HERRMANN wrote what is reputedly the only film score for strings alone for Psycho and has been quoted as saying that this choice of ensemble counterpoints Hitchcock's use of black & white photography.

A long forgotten score, Kevin O'Sullivan at BMG tried several routes before coming up with Ridge Walker on the Paramount picture lot who was immediately able to fax over the original Herrmann score and parts.

'The jazz writing is really adventurous,' explains Ian Dean. 'As a composer I would think several times before daring to ask the double basses, muted to play divisi cords high in their treble register. The dissonant downbeats, the huge spacing of octaves and sevenths, the edgy timbre of the highest violin range and lowest bass range—none of the brutality has diminished over 36 years of many brilliant and more elaborate film scores. No wonder doctoral theses have been written about Psycho.'

Lyndhurst's main hall in full swing, as viewed from the control room

IN THE CONTROL ROOM, both Herring and Dean concentrated on caressing the faders of the Neve VRP to achieve the ES.
Lyrec proudly announces duplication at a ratio of 128:1 with full frequency response and the sonic quality, which has always characterised the Lyrec recording equipment. While the 128:1 ratio has been around for a while for "voice quality" duplication with less than adequate frequency response, Lyrec has refused to fall into the trap of releasing a duplicating slave that fails to meet the Lyrec standard of excellent frequency response and audio cassette quality regardless of program material.

"We have the greatest respect for spoken word as one of the more difficult program materials to record and duplicate. Spoken word is very revealing and poor quality is easily detected even by untrained ears."

In order to meet the goal of 128:1 speed ratio without compromising audio quality, Lyrec has pioneered numerous innovations in several key technical areas.

Several mechanical improvements have shown exceptional results of tape packing at a speed ratio of up to 200:1.

A bias frequency of 12 MHz was chosen to avoid beat frequencies between bias and audio, which gives an optimum ratio of 5:1 between the bias and audio high frequency.

Formula: (Speed ratio (128:1) x Highest Frequency (20 kHz) x 5)

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"We are using the same tape tension at 128:1 as at 80:1, and contrary to common assumption, head wear is constant or reduced with increased speed. Using 128:1 consequently gives higher productivity, i.e., each head can record more cassettes."

The result of this uncompromising design is a Twin/Slave with the efficiency of duplicating speeds up to 128:1 and a frequency response of 18 kHz +/- 1 dB and 20 kHz +/- 3 dB for duplicating both ferric and chromium tape.
IAN DEAN EXPLAINS the details behind Heavenly Puss (Cartoon 189):

‘Very little attention is usually paid to the innovative composers who worked in cartoons, yet there was considerable attention to detail in Disney’s recording sessions and standing in the percussion section of the orchestra.

‘Scott Bradley started in 1929 when sound effects, dialogue and music had to be recorded at the same time and in one take. However from 1936-58 he worked at MGM developing musical scores that added significance to the picture. Cartoon music of the 1940s and 50s has freshness and audacity and is firmly of the 20th century in a way that feature film writing of this period was generally not. Bradley used what he called ‘shock cords’ rather than mechanical sound effects, and created intricate rhythmic patterns against the tyranny of the click track.

‘I started to pursue the possibility of including a Scott Bradley score for Tom & Jerry because of this, however sourcing the original score was a bit of a logistical nightmare for project manager Janet Burke, who working through the many copyright owners from MGM to the present eventually received a fax from Turner Entertainment and Loews Incorporated—all 59 pages of a very short, short score.

‘This is the kind of score that a composer sketches out so that an orchestrator can work from it—no full score, no parts. Luckily an orchestration job with not much to go on is right up my street! Canadian composer Richard Gibson set about copying parts from my full score and after sourcing a VHS copy of the cartoon to give the players an insight into the piece via SelectTV we were off.

‘Tempos were worked out from click markings where these existed, and it was the practise of the day to stop at each change in units of measurement and record in sections. David Snell, with his wide experience in sound-to-picture work, found this a comfortable approach and we edited the sequence just as Bradley’s sound editor would have to produce a seamless score. The finished article is full of fresh textures and rhythmic twists—and all of it is just as exciting without the visuals.’

were edited down and mastered to just over 70 minutes of music in four days. According to Herring, ‘at the end of the day the Logic 2 was a very intuitive desk to operate. The fader automation was a dream with a marvellous touch and feel. There was no zooming or apparent time lag, plus I was able to use the desk’s ability to time delay the signal coming into the front end to put in all my time delays for the spot mics. The 5-hour crash course on the desk given to us by Mike Redlick at AMS Neve in Burnley proved invaluable’.

The overall feel of AIR Lyndhurst lends itself very well to a production of this sort: in that the room itself can adapt magnificently to a wide range of production criteria within a very short space of time. ‘It’s an absolute dream to work at AIR,’ confirms Herring, ‘not only because of the beautiful acoustic, the equipment and mic selection but especially because of the staff who do a terrific job of making sure that little or nothing gets in the way of the creative process. The entire facility operates with this awareness. Chief Technical Engineer Tim Vine-Lott should get recognition for heading up an incredible crew of technical support people.’

‘This must be the foreseeable future for great quality recorded sound,’ adds Dean. ‘Combine the very best analogue equipment in a recording chain with a good sounding digital desk and split the mix out as digits at the highest possible bit-rate’.

For those lucky enough to be able to have stood in the middle of a full orchestra during a recording (as I now have) the sound is absolutely stunning. No recording can recreate that feeling of spaciousness of being ‘enveloped’ by the music. AIR Lyndhurst, however, allows you to get as close to that as possible, plus of course if you add a sprinkle of the Creative Dialogue teams’ ‘faux dust’ 😊

Instrumental Voices is released on CD in the UK during July.
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Shunning the opportunity to ‘mature’ from engineer to producer, Mike ‘Spike’ Drake has consistently been in demand as both for over a decade. SUE SILLITOE talks mixers, mixes and remixes.

IT WAS SINGER and comedienne Tracey Ullman who gave Mike Drake his nickname. Sporting what he now describes as ‘a stupid’ haircut, he was brought in to assist with the recording of her 1985 album You Broke My Heart In 17 Places; Ullman took one look at him, renamed him ‘Spike’ and ten years on, the name remains the same. Although Spike Drake is also a producer, it is his mixing and remaking talents that have established his name and kept him in constant demand as a troubleshooter.

Since starting his recording career in the early 1980s, Drake has built up an enviable client list covering a wide range of artists including The Cure, Babylon Zoo, Scheer, Lush, Maneic Street Preachers, New Order, Dulstar, Adamski & Seal, the Pet Shop Boys, Audiouweb, Robert Palmer, Wildhearts, Siouxsie & The Banshees and The Charlatans. He is currently mixing a new album for James which will be released later this year and has recently finished mixing the debut album from new Warner signing Rachel Stamp—a band he rates very highly.

So how does this verbose 35-year-old describe himself as producer or engineer? ‘I’d probably describe myself as both,’ he replies. ‘It depends on the project. ‘To me, a producer is someone who sees the project through from the very beginning—from preproduction and working with the band at rehearsal to recording their material, getting everything on tape and then mixing it. Recording engineers don’t usually have that level of responsibility. When you’re engineering on a session, it’s the producer who says when something sounds right and decides what gets recorded.’

However, as a mix engineer—particularly one who is brought in to troubleshoot a difficult track—Drake has discovered that there is just as much responsibility involved.

‘I’m often brought in at the final stage by the record company because they haven’t got the results they wanted from the original producer,’ he agrees. ‘Generally, it’s just me in the studio. I might never speak to the original producer—let alone meet him—so it’s up to me to get the record finished. Sometimes it’s just a question of giving priority to different elements within the track; but on other occasions I might have to change the arrangement or do some additional recording in order to beef up what’s already there. ‘I’m not afraid of remixing any producer’s work, although there are producers I really respect and I might feel a bit awed if I were asked to remix their tracks. Chris Thomas, for example, who has been in the business so long and done such a body of work that it’s frightening. Or Bill Price whose name crops up on so many brilliant albums and Brendan O’Hehir who did Pearl Jam, Red Hot Chili Peppers and Rage Against The Machine. ‘To be honest, I can’t ever imagine having to work on their tracks because they are so good at what they do that I doubt they’d ever need me.’

Although he is unassuming—and on the surface, at least, quite shy—Drake says he has no compunction about changing another producer’s work if he feels that he can improve the track. ‘Quite often it’s not just the record company that’s unhappy, it’s the band, too. If they are unhappy with the track then I feel it’s my job to try and put it right.’

By coming in at the eleventh hour, Drake feels he can be more objective about the project. ‘It can be very difficult for the band and the original producer to stand far enough back from the end result to see what still needs fixing,’ he explains. ‘However, when I’m asked to remix a track, I come in with a fresh pair of ears because I’m not as close to it as they are.’

ORIGINALLY FROM BRISTOL Drake began his career in music as a rock drummer but quit after a few years when tendonitis in his arms and ‘lack of talent’ put paid to that career.

‘We didn’t aspire to anything great but we did record a 4-track demo tape at a studio in Bristol owned by guitarist Liam Henshall. I was intrigued by the recording process and, after I left the band I used to hang around his studio—which was 16-track by this stage—and he would give me lessons in recording technique.’

Drake regards the experience as invaluable because he learned so much using minimal equipment, a very simple desk and a tiny recording area. ‘With such a small studio it was vital that we did the job properly,’ he says. ‘So many guys these days come into big studios and learn about recording through the gear rather than through the basic principles of mic’ing and acoustics, but in my view starting with the basics has to be the best way to learn.’

After writing to virtually every studio in London, Drake landed a job at Sarm as night receptionist—the route all Sarm trainees take. ‘It was wild in those days,’ he recalls. The ZTT offices were there, Frankie Goes to Hollywood had Relax in the charts and all the early Propaganda stuff was out. Luckily a few people left so I quickly became a daytime tea boy and with the help of Stuart Bruce, who was house engineer, I learned a great deal!’

During his three years at Sarm, Drake engineered for a host of top producers including Julian Mendelssohn, Gary Langan, Steve Lipson and Trevor Horn. But by 1987 he felt in need of a change and with the encouragement of Shep Pettibone took off for Los Angeles where he remained for a year until both money and work ran out. Back in London he got a job with Advision as an assistant engineer.

At that stage house engineers were not popular. There was no band scene as such and house engineers went out of fashion.
'Generally, it's just me in the studio. I might never speak to the original producer—let alone meet him—so it's up to me to get the record finished.'

'I used the new Fairlight MFX3 which is fantastic. It frightens people because it looks very complicated and the manual isn't very good, but when I wanted to do anything, all I had to do was hit a few buttons and it was there. We used it on the Spaceman single to do all the complex tempo and tuning changes between the different sections. It was a really wacky track. I think the whole album is great and hopefully over a period of time people will realise it's not just that single. Some of the tracks are very different.

'I mixed the album with Clive Black (MD of EMI UK) which was a good experience because he's got a really good ear. He had signed the band and lived with it for a long time. Other people had tried mixing it but it hadn't worked out. Clive had a lot of ideas about how he wanted it to sound so between the two of us we got something quite special—especially the single.

'Since Spaceman I've been sent a lot of tapes from bands trying to get a break. It's very flattering that people feel they have heard something they like so much that they want your opinion.'
But you need people who know the studio and how to get the best results from it.

While at Advision, Drake met Stephen Hague and the two began a working partnership that is still going on today, but his progression from engineer to mix engineer and ultimately producer was quite blurred. 'For a long while I was working with Stephen as a recording and mix engineer, but then other people wanted me to produce or mix so we trained up new engineers to do the recording and he would bring me in just to mix his projects. That's where we're at now.'

On equipment and facilities, Drake's ideas are quite definite. He is fussy about the rooms he books and refuses anywhere that is badly kept and maintained. As part of the checking process he plays a couple of his own mixes through the main monitors and NS10s to see how the room sounds. 'The acoustics are important because I spend so long mixing,' he explains. 'But for the most part I think the science of acoustics—and acousticians in general—are a nonsense. In my experience if a live room is good, it's good—often because no acoustician has ever been in the place.'

Monitoring-wise, Drake prefers to use close-fields for mixing rather than main monitors. He owns a pair of Acoustic Energy AE1s powered by a Focusrite Red 5 and these travel everywhere with him. 'I also use NS10s and Auratones because if a mix

NEW ORDER

'REMIXING SOME OF THE TRACKS for the band's 1994 Best Of album was a weird experience because although it was a fairly standard mix, I was revisiting tracks I'd done ages ago. One of them, "Round And Round", was originally mixed by me in 1988, so it was weird pushing up the faders. 'Over the years you change and you think in a different way. In the late 1980s everything was so bright, but now everyone has got a lot more bass-oriented and chunky. I was able to incorporate some of that current thinking into the tracks but it was difficult because it had been recorded in such a bright 1980s kind of way. 'It was also weird remixing "True Faith" because it was a track Stephen Hague had done years ago and it was one of my favourite tracks of all time. Changing something you love that much is really hard and you wonder if you're ever going to do it justice.'

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INTERVIEW

Mixing a new album was an exciting and challenging process for Mike Drakes. He explains the importance of having a clear understanding of the artist's vision and the need to use the right equipment for the job. 

"The recording was done in a studio in the UK called Soundscape, which is known for its excellent audio gear. We used Neve consoles and SSL mixers for the vocals and bass, respectively. The drums were recorded using a combination of vintage and modern gear, including a range of different microphones and drum tracks.

When asked about the future of recording, Mr. Drake states that the future of recording lies in the fusion of digital and analog techniques. "We will continue to push the boundaries of recording technology and always strive for the best possible sound in every production."

The article also features interviews with other professionals in the industry, discussing their experiences and insights. The article ends with a list of distributors for Soundscape, providing contact information for those interested in learning more about the company's services and products.
"While mixing a recent project I needed to get to the source tracks for some additional editing. Starting with only the back-up DAT’s and having never used the Soundscape before, I rented the system and in only a few hours, with little instruction, was up and running, efficiently continuing my session with no down time. I was impressed with the Soundscape software and its features, I could even edit whilst simultaneously chasing timecode. The sound quality was great and when I asked the price, well... Very Impressive!!! ”

Alan Howarth, Sound Designer on such films as Halloween, Stargate The Movie.

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Profit and loss

In the wake of the European Song Contest the winners are left counting the costs; while changes at the BBC cause concern writes KEVIN HILTON

I
didn't take too long for the cracks to appear. 'So your lot did it again,' observed the editor of this esteemed organ a couple of days after the Eurovision Song Contest. I had to think whether this was merely a passing observation or a quietly gleeful dig at anyone of Hibernian extraction about the rapidly diminishing lack of the Irish. This is, of course, the fourth time in five years that the Republic of Ireland has won this bunfight for mediocre composers that was originally intended to show off a Europe-wide broadcasting network.

The more paranoid of us might think that the only unity shown this year was landing public-service broadcaster RTE with the headache, both financial and logistical, of staging the 1997 event. By coincidence my mother, a native of the West Coast, was staying with me at the time and wondered who was winning the contest. Not that we were watching, naturally. As the comedian Felix Dexter later remarked, you know that your life has reached an irrevocably sad stage when you find yourself in on a Saturday night watching Eurovision. It wasn't until the next morning, through the radio news, that we learned who was the reluctant victor. 'My God,' exclaimed Mum, 'what have we done to deserve that? This probably echoed round RTE at the prospect of another £3 million extravaganza, on top of the existing £11 million tab for the previous stagings. RTE was already stretched when it staged the 1995 contest; equipment suppliers in both the Republic and Northern Ireland told me that the broadcaster had put the word out to borrow equipment, as it couldn't supply the gear necessary to put on the type of show now expected. Whether that would be enough next year is doubtful. RTE's Head of Programmes, Liam Miller, was quoted as saying: 'I think it's another challenge for us—it's one we are going to have to consider very carefully.' Readers between the lines interpret this a hint that RTE may look to get out of hosting the 1997 contest; Ireland is soon to take over the presidency of the European Union and government officials say that the country can't afford both. This would mean a major rethink for the EBU: allow RTE to hand over to another country, or just act as a basic technical service provider, or give permission for advertising to be sold. It is an issue that the EBU should address, not just to save the Song Contest (which perhaps isn't worth saving anymore), but to maintain some semblance of European unity, of which the Irish have been keen supporters. It'd be a bit of a disaster to lose the whole of the British Isles, after all.

JOHN BIRT'S been stirring it up again at the BBC and, from the way he tells it, it's all because of digital technology. The Director-General has unveiled a new higher management structure of the Corporation and made a series of major new appointments, designed to streamline the UK public service broadcaster, in both administrative and financial terms, as it heads into the digital sunrise. Many have voiced misgivings about the shake-up because it carries Birt's earlier policy of bringing TV and radio resources closer together, something that had been resisted by staff. The individual power bases of the BBC 1 and 2 TV channels and Radios 1, 2, 3 and 5 Live have gone, replaced by a Director of Television and a Director of Programmes (in the case of TV) and a Director of Radio. The fear is that radio will lose out, with programming becoming more populist and resources, particularly money, held in short supply. Much has been made of the coming of DAB but dissenters see it as unnecessary, as the medium will be stripped of its creativity, which had been in retreat for a while anyway. One unnamed BBC radio producer has been quoted as saying that CD-quality sound won't be needed as the networks are put under pressure to produce cheaper programmes: 'We'll be making simpler, more basic programmes, which we could do perfectly well—and probably cheaper—on analogue, editing together with tape.'

One unnamed BBC radio producer has been quoted as saying that CD-quality sound won't be needed as the networks are put under pressure to produce cheaper programmes: 'We'll be making simpler, more basic programmes, which we could do perfectly well—and probably cheaper—on analogue, editing together with tape.'

the cast, the technology used and the involvement of an outside studio (in this case The Soundhouse in West London). The management changes are worrying; the move towards convergence could threaten the independence and identity of some departments but don't let them tell you that technology is the real threat. Of all the new digital formats, DAB could be the one to offer some real possibilities. It doesn't mean that analogue radio should die but don't write off the new just because it begins with a 'D'.

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Personal preference plays a large part in the choice of much pro-audio equipment—and is one of the elements keeping valve-based equipment in the spotlight. Patrick Stapley presents three unmarked valve DI boxes to three seasoned producers to gauge their response in a blind test.

**Pro-Audio’s Appetite** for valves shows little sign of being sated. Judging from the array of new valve products present at last month’s AES Convention in Copenhagen, choice on the valve menu is more extensive than ever before. From mics to mixers, amplifiers to outboard, there is now a veritable feast for the valve-hungry to gorge themselves.

The latest tube trend that appears to be gathering momentum, is the valve DI (Direct Inject) box. Advertised as imparting warmth and mitigating the harshness of digital, valve DIs have been receiving ‘glowing’ reports and making a marked impression in studios all around the world. Apart from their price—which is considerably higher than a standard solid-state DI—and the slight inconvenience of mains power, they appear to have received little in the way of criticism. Studio Sound put three valve DI boxes to the test in order to determine exactly what they had to offer in practical terms. We also decided to try out a new approach in assessing them, and put together a special review panel made up from three top industry professionals: Geoff Emerick, John Hudson and Alan Parsons. The intention was to make this a hands-on, ears-on exercise, rather than a white-coat bench test.

**The Gas Cooker produces the brightest sound, but I actually find the ADL produces the hardest sound which I like least on digital sources. The Demeter is the warmest of the three’**

Geoff Emerick

The DI boxes were chosen to provide a cross-section of what is currently available: the Anthony DeMaria Labs ADL 200, and the Demeter VTD-B2 (both American units) and the UK-designed Gas Cooker from Ridge Farm Industries (part of Ridge Farm Studios). Interestingly, all three systems use the same type of valve: the 12AX7. Both the ADL and Gas Cooker are stereo boxes, while the Demeter is mono—so for our tests, two Demeter boxes were used. Demeter does not make a stereo version, but unlike the other DIs this is in a rackmount unit rather than a stand-alone box, and is therefore not particularly suited for use on the studio floor.

It was important that tests were conducted in familiar surroundings, so we visited John Hudson at his Mayfair Studios, Alan Parsons at his new North London-based studio and Geoff Emerick at Abbey Road’s Penthouse Suite where he had been mixing the Beatles Anthology albums over the last six months. It was important to have a reference point for these evaluations, and this was provided in each case by the studio’s standard: solid-state DI box at Mayfair; a SSL AR 116 active DI, at Parsons; an EMO Systems Dual passive DI, and at Abbey Road an in-house-designed passive DI.

To avoid any preconceptions, the three valve boxes were blind tested with all manufacturer references and logos covered over. It has to be said, though, that the distinctive ‘retro’ design of the Gas Cooker would immediately be recognised by anyone who had seen it before. Only one of our reviewers did recognize it but had...
never used it. In fact, none of the units had been used before by any of the reviewers. During the tests, the three boxes were referred to as A, B, and C, but this has been changed in the quoted text to make things easier to follow.

We endeavoured to keep the number of variables to a minimum—although it must be appreciated that this was a practically based test and not a laboratory one. The same DI boxes were used for each test, session, and their inputs and outputs were manually changed over to allow the same leads and the same console path to be used in each case.

For listening tests, a variety of analogue and digital sources were used including a selection of guitars (electric and acoustic), bass guitars, keyboards, digital samples and digitally recorded material including full mixes—an important consideration was to discover how the valve units affected a digital sound source. We therefore separated listening tests into analogue and digital.

Apart from verbal assessments, our panel was asked to give scores for each unit as a mark out of five for a number of different categories: '5' representing the best and '1' the worst. The reference DI was also included in the scoring chart to show direct comparisons between the solid-state and valve boxes.

All three review units offer the same basic facilities with input and through on +4/-10V, +4/-20V and XLR outputs with ground lift switching. Both the Gas Cooker and Demeter units have valve buffered through outputs, while the ADL has switching to allow buffered or direct. The Demeter, additionally, includes a 2-position gain control (Unity or Boost) which increases output by 10dB.

THE MOST FULLY FEATURED unit of the three is the Gas Cooker, which includes separate, unbalanced, line outputs on +4/-10V jacks at the rear of the unit, and gain controls which allow these to be matched to the line inputs to a mixing console. The gain control also has the effect of increasing the intensity of the valve sound and was set by our reviewers to a position which they considered represented a good average for each listening test. The gain controls have no effect on the through signal. However, as John Hudson discovered, a 20dB pad switch, which attenuates the input prior to the first tube stage, did.

'This seems a bit odd,' commented Hudson. 'I would have expected the through signal to the amplifier to remain direct, because in certain situations you may want to pad the DI down but keep the through signal high. It might have made more sense to put the pad after the amplifier output.'

Going on to consider the ergonomics of the three units, Hudson felt there was a universal design problem. They all suffer from the same problem—they all have the controls and sockets mounted on the front panel and are all designed to sit flat. This makes them awkward to use, particularly on the studio floor with masses of kit set up. It would be better to have controls mounted on the top panel, as with my solid-state ESS DI box, or have the option for the boxes to stand upright.

Hudson also disliked the way two of the front panels had been designed. The Gas Cooker is the best of the three in terms of being able to see controls clearly as it has a silver panel with black controls, the other two have black front panels with black controls which makes them extremely hard to distinguish in dimly lit conditions—very user-unfriendly for the studio and stage.

Alan Parsons had some additional reservations about the practical use of the Gas Cooker: 'I would be a little worried about putting the Gas Cooker on the floor in the studio in case the large gain controls got kicked, and in this respect it doesn't lend itself terribly well to live applications either. I wouldn't hesitate putting the Demeter and ADL boxes on the floor though.'

Geoff Emerick liked the robust nature of the Gas Cooker but agreed that it would have to be placed out of the way of passing feet. 'As far as build quality is concerned, the Gas Cooker looks the most solidly put together and able to take a few knocks although the knobs are vulnerable. But for ease of use I'd go for the Demeter.'

Parsons additionally felt that the Gas Cooker's detachable European mains cable was a minus point. 'Apart from the fact that it can get separated from the unit and cause last-minute hold-ups, I personally prefer to see hard-wired units like the ADL and Demeter because of voltage differences between countries.' I know from bitter experience on tours with Genesis when we would break the mains cord for the Demeter ADL, and then we'd have to use a local transformer to ensure we could plug it in properly.'

**ALAN PARSONS**

ALAN PARSONS started his career as an assistant engineer at Abbey Road Studios working on the Beatles last two albums. His list of credits grew quickly to include The Shadows, Roy Wood, and Olivia Newton John. Through maintained ties with individual Beatles, he went on to work with Phil Spector on George Harrison's 'All Things Must Pass,' as well as McCartney's 'Red Rose Speedway.'

He received a Grammy nomination for his engineering on Pink Floyd's 'Dark Side of the Moon' which prompted move into record production and immediate success with Pilot and Cockney Rebel, followed by John Miles and Al Stewart.

He launched Alan Parsons Project in 1972, releasing 11 albums over the next 20 years earning him a further 11 Grammy nominations. Parsons is currently finishing a new album, called Arth, which is being mixed in multichannel surround.

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**THE MOST FULLY FEATURED unit of the three is the Gas Cooker, which includes**

**Anthony DeMaria's ADL200**
DI BOX TEST

The experience that if you have a unit with a detachable mains cable which goes abroad—say to America—that there's a very high chance when it comes back that someone will forget to change the voltage, stick a mains cable into it and blow the unit. It's a much safer option to have a hard-wired lead with the right plug on the end.

On the issue of mains, when plugging up the three units Hudson could immediately feel that the Demeter unit was live. He subsequently tested it and discovered 130V AC sitting between the unit's chassis and the studio earth.

'It's potentially very dangerous and in my view totally unacceptable,' he said. 'When you start plugging stuff up in a studio you assume its properly earthed—something like this is really lethal.'

The same measurement on the other units revealed satisfactory voltages below 1V.

With both the American DI's, a drop in signal was experienced through the units—as much as 20dB for some high-impedance sources. The English Gas Cooker, on the other hand, produced a uniform response irrespective of the source and in this respect behaved more like the reference solid-state DI boxes—a point that all our reviewers felt more comfortable with.

Before listening for sound quality, we asked each reviewer to test the DI's for noise. The main output was checked with an input connected, and output levels matched between the units.

'The Gas Cooker suffers from what sounds like a lot of power-supply noise at 100Hz which indicates poor smoothing,' commented Hudson. 'The Demeter is much quieter, although there is a tiny bit of hum perceptible, but the ADL is fantastically quiet and definitely comes off best.'

Hudson also discovered that if one of the mono Demeter boxes was placed on top of the other, that it caused noise induction. 'With two mono units of this size, it wouldn't be unusual practice to stack one on top of the other for stereo use, but this would obviously cause problems,' he said.

Parsons was also concerned by the noise from the Gas Cooker. 'With a line-source it's a sign of noise, but with a high-impedance source the noise increases considerably and depending on the source could be almost unusable. The other two boxes, though, perform well in terms of noise.'

Emerick concurred with the others: 'The Gas Cooker is certainly noisier and if you listen carefully you can also here popping which could indicate a power stage problem.'

As would be expected, the two passive reference DI boxes were found to be quiet and scored top marks. However, John Hudson's active BSS DI showed signs of noise and he consequently gave it a very low score along with the Gas Cooker.

To test for audio quality, Parsons went straight into an Amek Angela console, Hudson into an SSL 6000 desk via a Neve 1063 preamp bypassing the SSL preamp, and Emerick into the vintage 1969 EMI TG console which he used for the Beatles remixing. As mentioned a selection of sources were used to test the units response to analogue and digital signals starting with analogue.

Geoff Emerick began by listening to a Fender Precision bass—something that he claims not to do very often: 'I don't tend to use DIs on bass—I've never did Paul [McCartney]'s bass for example because I always prefer the sound of a microphone. Listening to the EMI reference DI, I now understand why: it sounds very clipped and screwed-up, actually quite nasty sounding. The Demeter on the other hand is less clipped than the reference and has a nice bright middle with a good bass end. In comparison, the mid sound on the ADL is not as good and sounds bit harsh, it also has less bass—don't like that at all. The Gas Cooker provides more highs although the bass is a bit duller—but not a bad sound. My favourite, though, for bass has to be the Demeter and I'd actually be quite happy to work with that sound.'

Also listening to a Fender Precision, John Hudson had a slightly different viewpoint. 'For bass guitar my preference would be the Gas Cooker which has more depth than the others. The Demeter is okay, but doesn't seem to do much to the sound although it, perhaps, adds a bit more air, while the ADL sounds as though it's going through a lot of electronics and suffers from thinness and lack of depth—it's like the sound is fighting to get out.'

'On acoustic guitar the ADL has by far the best sound and it actually makes the other boxes sound as though they're losing something. It makes the guitar sound rich and punchy—gives it a really full sound.'

John Hudson

In his three-decade career, John Hudson has recorded and mixed over 160 top ten hits, been awarded two Grammys and a British Academy Award. An ex-BBC audio engineer, Hudson came to fame during the UK's Glam Rock period in the 1970's, being responsible for engineering hits by Gary Glitter, The Bay City Rollers and Alvin Stardust. With the latter, he took over Mayfair Studios in the late 70's building it up into one of London's top music facilities.

Hudson has a string of credits to his name including The Who, Oasis, Mark Bolan, Ultravox, Tina Turner, A-ha, David Bowie, Cliff Richard, Take That and Wet Wet Wet. Recent projects include Pulp and the Pet Shop Boys.
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both Emerick and Hudson expressed a very different impression. 'The difference is quite staggering,' said Hudson. 'On acoustic guitar the ADL has by far the best sound and it actually makes the other boxes sound as though they're losing something. It makes the guitar sound rich and punchy—gives it a really full sound. The Gas Cooker, on the other hand, makes the guitar sound as though it's got bass boost on it and doesn't sound very open—the high end also sounds a little artificial. The Demeter box is closest to my solid-state reference DI, and although it may be a true representation of what's going in, it's not actually enhancing the sound in any way.'

Emerick also had no hesitation in choosing the ADL for acoustic guitar. 'ADL definitely comes out on top for acoustic—it gives me everything I need to work with across the frequency spectrum—a really good full working sound. The Demeter seems a bit nondescript and doesn't have the rich low-end that the ADL produces. The Gas Cooker is a bit disappointing, in particular the bass end which is what I would call a 'dry bass' lacking richness. Having said that though, the Gas Cooker sounds the best using a pick—it seems to really benefit from that extra mid.'

For analogue sounds, Parsons preferred the ADL unit, and particularly favoured it for electric guitar. 'The ADL has a compressed quality about it producing a similar effect to analogue tape compression which is quite pleasing. It certainly works on the sound and gives it a different character which I like. The Demeter has a tendency to lose top end on guitar which could be considered as adding warmth, while the Gas Cooker is over bright and rather nasty—it actually seems artificially bright to me almost as though there's an equaliser built into it.'

Although ADL got Parsons's overall vote for analogue, he also shared Hudson and Emerick's view that it didn't always produce the best sound. 'I think in an ideal world you would probably use both the Demeter and the ADL boxes for different applications—they definitely appear to suit different things,' commented Parsons.

The ADL introduces coloration, but its nice coloration, which is probably the reason you'd want to use one of these boxes in the first place. The Demeter appears purer, and

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**Ridge Farm Industries' The Gas Cooker**

**DI BOXTEST**

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**OVERALL ASSESSMENT**

**DIGITAL AUDIO QUALITY:**

**ERGONOMICS**

**BUILD QUALITY**

**TOTAL SCORES**

**SCORES DEMETER VT-DB-2B**

**SCORES DEMETER VT-DB-2B ADL-200**

**SCORES DEMETER VT-DB-2B ADL-200 GAS COOKER**

**SCORES DEMETER VT-DB-2B ADL-200 GAS COOKER REFERENCE DI**

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** 변환자**

**디지털 오디오 퀄리티:**

**포터 tribunal**

**디지털 오디오 퀄리티: 유니크 퀄리티**

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DI BOX TEST

The ADL has a compressed quality about it producing a similar effect to analogue tape compression which is quite pleasing. It certainly works on the sound and gives it a different character.

Alan Parsons

The ADL obviously has a high quality spec and out of the three is nearest to my passive DI box, but then if you buy a valve DI box you might as well hear what the effect is and the Demeter can be quite subtle. The Gas Cooker suffers from high noise and sounds artificially bright—the noise, of course, could be causing a psychoacoustic effect and adding to the brightness but I'm pretty convinced the unit itself adds an edge to the sound which is accentuated by increasing its gain controls.

THE DI'S WERE next tested using digital sources, and this produced some slightly different opinions. Hudson started by listening to a digital mix he had recently recorded to Pro Tools. The Gas Cooker doesn't sound very natural, and again it gives the impression that it's got bass boost on it which makes the sound plumper. The top also sounds a bit unnatural and seems if anything to accentuate the digital "zunness" rather than moderating it. The ADL sounds the most open and gives the impression of having more attack than the other units with plenty of space around the sound—again I get the feeling of some added punch here. The Demeter just sounds a bit nondescript, it's the most transparent of the three although that's probably not what you want from a valve unit.

Parsons also liked the sound of the ADL on digital sources. Used across a selection of digital mixes he commented: 'It's much more pleasant to listen to and on a hard digital recording it softens things slightly dulling-off the top end and rounding off harsh transients. The Demeter on the other hand has an edge to it which can produce a hardness on some digital recordings. The Gas Cooker still comes across as bright and this can exaggerate the 'digitalness' of the sound almost as though it were being equalised. 'I keep coming back to the ADL box as being the most pleasant to listen to,' he continued. 'On string samples, for example, it brings something out that the other units don't, however with drum samples and piano sounds the Demeter tends to fair better with more clarity, and a bit more punch.'

While agreeing with Parsons about the brightness of the Gas Cooker, Geoff Emerick's opinion differed for the American boxes. 'The Gas Cooker produces the brightest sound, but I actually find the ADL produces the hardest sound which I like least on digital sources. The Demeter is the warmest of the three and has a lot of clarity, and in that respect I suppose it could be useful in taking some of the edge off a digital signal!'

Hudson, however, was sceptical about any of the boxes being used as digital 'moderators'. As far as improving the sound of something digital for the nondigital, he says, it's a bit like using a DSP to enhance a nonexistent sound. 'I don't think any of these things do that. In fact I'd go as far as saying that they could actually make things worse by adding distortion and accentuating the "zizz" of the sound even though it might be a bit warmer. They certainly don't have the same effect as mixing to ¼-inch analogue, which really does take off that digital edge. So I'm afraid I'm not sold on that concept.'

Tests were also performed to check the unit's effect on stereo imaging, and to check channel matching. This was found to be fully satisfactory in each case, and a particular good match was noted between the two mono Demeter units.

ALL THREE REVIEWERS agreed that the differences between the boxes were pronounced and that each produced different characteristics, which could vary depending on the source. 'The differences in sound were much greater than I would have imagined,' said Parsons. 'Quite often these days, especially with digital equipment, one is straining to hear minute subtleties, but the differences here were very marked.' In each case our reviewers preferred the high-scoring valve DI boxes to the solid-state reference units. After completing the tests all three reviewers expressed a strong interest in using valve DI boxes in the future, and two were seriously considering buying them. UK prices exclusive of VAT are:

£399 for both the Gas Cooker and ADL while the mono Demeter box is £151.60

Many thanks to Geoff Emerick, John Hudson and Alan Parsons for taking the time off very busy schedules to take part in this review.

Thanks to FX rentals for loan of musical instruments. See 'Soundings' for international rental developments.

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Taiwan's music market is mostly dominated by MOR formula pop, most of which is generated from a brace of studios in Taipei.

**NICK SMITH** went to Taiwan to uncover the secrets of the formula and report on the technology behind it.

**LET ME OPEN** with a cliché: the island of Taiwan is a strange place. Officially it is a province of the Republic of China, and when you enter through immigration past the countless semi-automatic wielding officials, 'Death to drug traffickers' notices and impenetrable red tape there seems to be absolutely no ambiguity about it—you are entering China. It says on your passport 'ROC Entry Permit'. But as you buzz down the highway in a hired Mercedes-Benz (as opposed to a rickshaw) to Taiwan's capital, Taipei, you don't get any sort of sense of being in a communist country. And that's because you're not. You are in an officially communist country, with its own capitalist economy, its own government, aspirations to rejoin the United Nations and a people who consider themselves about as Chinese as I, being Welsh, do.

At the time of my visit there were the elections, with predictions that the President...
Although it looks like it could be, this isn't really an East-meets-West alliance story because it's simply a reflection of the fact that the high-end studio market is now truly international, and that SSL is taking the Taiwan market seriously.

production studio. The sheer amount of equipment not only reflects the number of projects passing through the facility but also the philosophy of offering, according to Yeh, the maximum flexibility for the artist and producer. He doesn't want producers jumping ship just because he hasn't got the right desk for the job. And with some justification, because if ever there was a case of the producer defining the buying patterns of the market, then this is it, and it's

would inevitably win, and, of course, there were the 40,000 Chinese militia lurking on the shores of the mainland casually lobbing bombs into the ocean in a government-endorsed move to make the Taiwanese think twice about where they were going to put their 'X' on the ballot forms. Couple this with Taiwan's nervousness over the impact that returning Hong Kong to China will have on its rapidly deteriorating economy, and you do have a very strange place indeed.

However, as the economy falters paradoxically the recording industry prospers almost as if it were some kind of underground resistance movement. Unfortunately it's not half so romantic as this, as the development of the industry is a result of its deep-rooted conservatism and the astute business prowess of its prime movers. Of these perhaps the most influential is Chwei-Ching Yeh, President of the largest music recording complex in Taiwan. Called Platinum, the studios occupy one floor of an innocuous block in a back street of the business district in Taipei. It houses a total of six control and editing rooms decked out with an array of hardware that you, quite frankly were not expecting to see: a recently acquired AMS Neve Capricorn; an SSL SL4048C with Total Recall; an SL4072C with Ultimater; a Scenaria, another 4048G; and a Soundcraft DC2000. The arrival of the Scenaria coincided with the opening of one of Yeh's spin-out companies two years ago—First Video—an on-line digital video and audio post-

SSL's Scenaria digital audio-video production system

TO THE WESTERN EAR

Mandarin music is not unpleasant, it's simply too formulaic for Western disparate tastes. There's no punk rock, no rock 'n' roll, and there's absolutely nothing in the way of an anti-establishment bias that informs so much ground-breaking Western pop. In short, it's elegant fodder, which is okay as far as it goes, and you can see why it sells by the junk-load. You get the feeling Shakespeare must have been thinking of Taiwan when Caliban says in The Tempest 'Tie not afraid. The isle is full of noises, sounds and sweet airs, that give delight and hurt not.' Not too sure about the giving delight bit: after all in many ways it's only an imitation of American middle-of-the-road politenesses such as Whitney Houston and Maria Carey. But it's an imitation that's gone a bit wrong, in the sense that it probably started off life wanting to sound like Whitney, but over the last few years has developed its own idiosyncrasies and ideals, that for some reason have appealed and consequently stuck. Every record sounds irritatingly pleasant and even more irritatingly the same, with the obligatory Yamaha grand piano boring away right up your nose, thumping great big stadium drums banging you in the side of the face and the featureless beautifully groomed voice of a featureless beautifully groomed boy or girl warbling on about what lessons love and life have taught them. This is all neatly summed up in the sleeve notes of a classic Lee Hom album which declaims 'Le Chanson et [sic] tres simple, les mots sont trop vrais'.

 Philosophical stuff indeed, bolstered by a truly horrid version of Vera Matson and Elvis Presley's 'Love me Tender'—perhaps this is what makes him so attractive to his sponsor—a major eastern air-line.

One thing this music does have going for it, at least from the perspective of the recording industry, is that it sells in vast quantities to a critically undemanding public. It is an audience which seems to revere trite melodies and emotionally gawky lyrics, and from what I can gather, is terrified of variation. Little wonder then, that the studio-producer combination that hits the right formula can dominate the charts with apparent ease.

I asked one Taiwanese record producer if he thought this could ever happen in Europe, whereupon he promptly reminded me of Stock, Aitken & Waterman in the late-80s in the UK. Yes, but surely that was all a bit of a joke, wasn't it? Wasn't it...

Chart toppers: All these records were produced at Chwei-Ching Yeh's Platinum Studios in Taipei.
One of the six control rooms at Platinum, housing its SSL 4000 and the ever-present Yamaha NS10-Ms.

**THE LAYOUT** of Premium is fairly standard, although there's obviously been a great deal of creative thought behind cramming two studios, a live area, offices and a rest area into the shell of a three floored apartment block. The ground floor mix room features a 48-channel SSL9000 j-series console linked to a 48-track DiskTrack, random access, hard-disc recorder. Natural daylight (and lots of it) is a welcome feature of the room and there is also a private artist's lounge with a shower and a kitchen. The first floor studio is designed primarily for overdubbing and MIDI preproduction and is centred around a refurbished classic SL-1032E console with G-Series Automation. Both studios, with isolated machine rooms, have a dedicated overdub booth and can link into the separate live and cool—in every sense of the words—recording area in the basement.

Up on the top floor there is a lounge, offices and a maintenance area.

Lin's main responsibility is as Chief Engineer for the SSL9000j room and has been using DiskTrack extensively on his sessions.

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Although you're 6,000 miles from Oxford you could be forgiven for thinking that you're back in SSL's demonstration rooms at their facility in bucolic Begbroke. And although it looks like it could be, this isn't really an East-meets-West alliance story because it's simply a reflection of the fact that the high-end studio market is now truly international, and that SSL is taking the Taiwan market seriously.

It's no longer a novel observation that -like inter-national hotels-once you're inside a top-flight studio you could be anywhere in the world. Whether you're talking about acoustic design or choice of equipment, the same names crop up from Toronto to Tokyo-the standards are set and there's little room for quirky local gear if a studio expects to be able to attract engineers and producers from the other side of the globe.

Despite the problems facing Taiwan, and the nervousness generated by economic uncertainty and its position in world politics, the recording industry survives and flourishes in its own xenolithic way. Yes this little island may seem remote and isolated, and the music may seem to have nothing to do with the rest of the world but writing as a journalist from one island culture about another, it suddenly starts to sound very familiar indeed.

**CONTACTS**

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The last few months have seen massive developments in the UHF radio microphone sector.

ANDY WOOD brings us up to date on new equipment new technology coming into the market.

IT'S GOOD NEWS, all this feverish activity surrounding radio microphones. But with so much new equipment suddenly at the prospective purchasers disposal, the area has become a minefield for the uninitiated. With options on price (in the UK) ranging from as little as £1,000 up to £30,000 for a full system, it is now sometimes difficult to ascertain exactly where the best options lie for a particular application. And—naturally—the manufacturers will all tell you that their system is the only one to do the job.

What is more, the more vociferous manufacturer's representative will not only explain the benefits of his system, but relay tales of doom regarding that of the competitors' and intertwine the whole package with a level of audio alchemy that makes the magic of hi-fi look positively Disney. The basics behind radio microphones are relatively simple. You replace a good old fashioned lead with a RF signal. Easy—except that it's not.

In the first instance, you have to make sure that your system, whether it be VHF or UHF is set up correctly—and this basically means that you should ensure that the aerials have a line-of-sight contact with the transmitters—and that if remote aerials are used, that the cables are of a shortest length as possible. Sennheiser have a good first rule in their owners manuals: make sure the transmitter and receiver are in the same room. Items such as digital equipment, reinforced concrete, neon lights and strip lights; loudspeaker drivers and lighting rigs the size of a small battleship are all to be avoided. Or at least, you should not place your aerials near these.

THE FOLLOWING CHART outlines just some of the UHF packages available on the market, together with information which could prove valuable when choosing a system. It is by no means definitive and should not be seen as such, as no doubt there are products and manufacturers not listed (unintentionally or due to product information not being available at the time of publication).

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<th>System</th>
<th>Price</th>
<th>System Type</th>
<th>Transmit Bandwidth</th>
<th>Receiver Bandwidth</th>
<th>S/N</th>
<th>THD</th>
<th>Additional Information</th>
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<tbody>
<tr>
<td>AKG</td>
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<td></td>
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<td></td>
<td></td>
<td><strong>S(12); R(1): H</strong></td>
</tr>
<tr>
<td>WMS 900</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A: Receiver Module: S(12): R: H (on rack)</td>
</tr>
<tr>
<td>Receivers</td>
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<td></td>
<td><strong>S(12): R(1): H</strong></td>
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<tr>
<td>SR860</td>
<td>1,599.00</td>
<td>Diversity</td>
<td>100Hz-20kHz</td>
<td>8MHz</td>
<td>86-96dB</td>
<td>&lt;0.8%</td>
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<td>SR860</td>
<td>2,699.00</td>
<td>Diversity</td>
<td>100Hz-20kHz</td>
<td>8MHz</td>
<td>92-102dB</td>
<td>&lt;0.5%</td>
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<td>PR860</td>
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<td>Single</td>
<td>100Hz-20kHz</td>
<td>8MHz</td>
<td>84-94dB</td>
<td>&lt;1%</td>
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<td>Transmitters</td>
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<td></td>
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<td></td>
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<td></td>
<td>A: Mini Receiver: R: S(12): R - B: 2 AA size (&gt;15)</td>
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<tr>
<td>TM900</td>
<td>449.00</td>
<td>Module</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A - Plug in transmitter module for use with hand-held/bodypack units</td>
</tr>
<tr>
<td>C1090/TM900</td>
<td>899.00</td>
<td>Hand-held</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>S(12): B - IEC61661 (&gt;5)(#)</td>
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<tr>
<td>C553/TM900</td>
<td>899.00</td>
<td>Hand-held</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A - TM900 module plus C1000 capsule</td>
</tr>
<tr>
<td>C5900/TM900</td>
<td>899.00</td>
<td>Hand-held</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A - TM900 module plus C553 capsule</td>
</tr>
<tr>
<td>PT900/TM900</td>
<td>899.00</td>
<td>Bodypack</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A - TM900 module plus C5900 capsule</td>
</tr>
<tr>
<td>PT900</td>
<td>449.00</td>
<td>Bodypack</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td>A - Bodypack unit incl TM900 module: S(12): B - IEC61661 (&gt;5)(#)</td>
</tr>
<tr>
<td>CV9003AB</td>
<td>3,299.00</td>
<td>Antenna</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>M: CK77, C417, CK97, C420; C: C-Lemo**</td>
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<tr>
<td>WMS 300</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A - Bodypack only</td>
</tr>
<tr>
<td>Receivers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A - Pair, Modules available in separate Channel configurations</td>
</tr>
<tr>
<td>SR380</td>
<td>599.00</td>
<td>Diversity</td>
<td>70Hz-20kHz max</td>
<td>20MHz</td>
<td>90-100dB</td>
<td>&lt;0.8%</td>
<td></td>
<td></td>
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<tr>
<td>Transmitters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S(16): R(1):2</td>
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<tr>
<td>HT380</td>
<td>299.00</td>
<td>Hand-held</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S(16): B - 3 AA type (12): M: D3700, D3800, C5900</td>
</tr>
<tr>
<td>PT380</td>
<td>421.00</td>
<td>Bodypack</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S(16): B - 3 AA type (12): M: CK77, CK97, C417, C416, C419, C420**</td>
</tr>
<tr>
<td>AUDIO LTD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A: Mini Receiver: S(2) built-in switchable) R: B - 3 DL123A lithium (&gt;10) H:</td>
</tr>
<tr>
<td>RMS2200 Series</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S(2) built-in: B - 1 DL123A lithium: M: A025, AC4. Also compatible with the Schoeps Colette range of capsules.</td>
</tr>
<tr>
<td>Receivers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S(2) built-in: B - 1 MN1604/PP3: M - TrantR50, lromo plug connector**</td>
</tr>
<tr>
<td>MX2200U</td>
<td>950.00</td>
<td>Single</td>
<td>50Hz-15kHz -</td>
<td>96-104dB</td>
<td>&lt;0.3%</td>
<td></td>
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</tr>
<tr>
<td>TX2000U</td>
<td>1,520.00</td>
<td>Diversity</td>
<td>As above</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>DX2000U</td>
<td>575.00</td>
<td>Hand-held/Boom</td>
<td></td>
<td></td>
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<tr>
<td>TX2000U</td>
<td>600.00</td>
<td>Pocket</td>
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</table>
### CURRENT UHF SYSTEM SPECIFICATIONS

<table>
<thead>
<tr>
<th>Manufacturer/Type</th>
<th>Price (UK) ex VAT</th>
<th>System</th>
<th>Freq. resp.</th>
<th>Bandwidth</th>
<th>S/N ratio</th>
<th>THD</th>
</tr>
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<tbody>
<tr>
<td><strong>BEYERDYNAMIC</strong></td>
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<tr>
<td>U600 System</td>
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<td>Transmitters</td>
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<tr>
<td>NE500</td>
<td>1,585.00</td>
<td>Diversity</td>
<td>50Hz-20kHz (85dB)</td>
<td>100kHz</td>
<td>&gt;100dB</td>
<td>&gt;0.2%</td>
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<tr>
<td>SEM861</td>
<td>1,599.00</td>
<td>Hand-held</td>
<td></td>
<td></td>
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<tr>
<td>TS600</td>
<td>1,175.00</td>
<td>Body-pack</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**RR7000 System Receivers**

| EED700            | 799.00            | Diversity | 30Hz-20kHz | 8Hz  | >100dB | <0.5% | A - Receiver module: S(12); R: H (on rack) |
| NE700             | POA               | Diversity | 30Hz-20kHz | 8MHz | >100dB | <0.5% | Two Diversity receivers in a single 1U case; S(12): |
| RR 7000 TG/12-2   | 39,999.00         |          |            |      |        |      | A fully loaded 19" rack receiver system with monitor field featuring 12 EED700 receivers. |

| S700              | 999.00            |          |            |      |        |      | S(12): B - (10)(1); M - CM186, EM186, DM190.60 (TG-X60), DM190.80 (TG-X80) |
| TS900/1           | 999.00            |          |            |      |        |      | S(12): B - (10)(1); M - Compatible with Beyer headwear, mini and lavaliere microphones.** |

**SAMSON UHF Synth Series Receivers**

| UR-5 UK           | 1697.00           | Diversity | 40Hz-16kHz (60dB) | 150kHz | <0.5% | S(11): R(1); H |
| UR-SD UK          | 2640.00           |          |                  |        |        |      | Two Diversity receivers in a single 1U case; S(11): |

**DIVERSITY Receivers**

| EK25417V HDP      | 1,998.00          | Diversity | 60Hz-20kHz | 3MHz | >110dB | <1%  | A - Miniature receiver: S(2); B - 3AA(5)(S); M - Supports most microphones |
| EM4015-UHF        | 2,644.00          | Diversity | 60Hz-20kHz | 24MHz | >113dB | <1%  | A - Compact receiver: S(32) |
| EM1031-UHF        | 650.00            | Diversity | 60Hz-20kHz | 24MHz | >110dB | <1%  | S(16): |
| EM2044-UHF        | 2,804.00          | Diversity | 60Hz-20kHz | 24MHz | >110dB | <1%  | S(16): |
| EM1046 chassised EM20 | 4,017.00       | Diversity | 40Hz-20kHz(80dB) 24MHz | >100dB | <1%  | S(16): |

**Widmer Receivers**

| SKM1072U          | 680.00            | Hand-held | 70Hz-20kHz | 24MHz | >110dB | <1%  | S(16): |
| SKM5000/UHF       | 6,830.00          | Hand-held | 70Hz-20kHz | 24MHz | >110dB | <1%  | S(16): |
| SKM5004/4ML,5005/5,5005/5,5005/5,5005/5 | 2,017.00    | Hand-held | 70Hz-20kHz | 24MHz | >110dB | <1%  | S(16): |

**Sennheiser Receivers**

| SKM50-UHF         | 2,559.00          | Body-pack | 45Hz-20kHz | 24MHz | >110dB | <1%  | A - Broadcast high power (25 watts) |
| SK1063-U          | 495.00            | POA       |            |      |        |      | A - Broadcast wide-band transmitter with talkback receiver (SR20F3) |
| SER25             | 258.00            | Body-pack |            |      |        |      | A - Broadcast wide-band transmitter with talkback receiver (SR20F3) |

**SKM1072U**

| SKM1072U          | 680.00            | Hand-held | 70Hz-20kHz | 24MHz | >110dB | <1%  | A - Broadcast high power (25 watts) |
| SKM5000/UHF       | 6,830.00          | Hand-held | 70Hz-20kHz | 24MHz | >110dB | <1%  | A - Broadcast wide-band transmitter with talkback receiver (SR20F3) |
| SKM5004/4ML,5005/5,5005/5,5005/5,5005/5 | 2,017.00    | Hand-held | 70Hz-20kHz | 24MHz | >110dB | <1%  | A - Broadcast wide-band transmitter with talkback receiver (SR20F3) |

**Radio Mic Systems**

| 1081              | 1,190.00          | Diversity |            |      |        |      | A - Hand-held system: S(16): B - PP3: R |
| 1083              | 1,190.00          | Diversity |            |      |        |      | A - Body-pack system: S(16): B - |

*Items and expect things to work to full capacity. Several years ago I saw an installation where the receivers, with aerials attached, placed behind a chicken-wire grid. Oops. Obviously, this type of information is brutally basic—some readers will already be aware of these issues and others will now be hastily pulling down vast expanses of chicken wire. However, when it comes to RF it should be recognised that a little knowledge is a dangerous thing. Help is at hand from Shure Bros who have now produced a supremely useful book (Selection and Operation of Wireless Microphone Systems) for Tim Vear. Not only does this guide explain the subject in easy to understand detail, but it surprisingly refrains from ramming Shure mic options into your face. Copies can be obtained from UK distributor HW International.*

So, let's presume we've got a basic understanding of how to set up and use our radio microphone, surely there's no other pitfalls from there on in? Well, yes there are big ones. K2-sized ones.

You see, when you use radio mics whether they be UHF or VHF you are taking up a channel of RF and this is a bad thing. The airwaves are designed for the use of broadcasters, the military, James Bond and...
The Shell:
The Sennheiser Freies Berlin

The Heart:

nexus

The digital audio interconnect and routing system.
Compact modular design that exceeds the most stringent quality and safety standards.
Total control of all parameters from any point in the system via bidirectional fiber optic cable.
With all established input and output formats.
For demanding venues with rigorous performance requirements.
For example:
The Sender Freies Berlin

...at a VHF price

From the leaders in radio microphone technology come two new world beating designs. System 1081 Handheld and System 1083 Beltback. True diversity, 16 channel switchable UHF radio systems that quite simply redefine the cost of professional wireless.
And that's not all. Maintaining Sennheiser's 50 year commitment to quality and performance these systems truly represent a breakthrough for radio.
And that's going to make a lot of people very ecstatic.

Call us now for a copy of our brochure.
<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Product</th>
<th>Price (UK£ ex VAT)</th>
<th>System Type</th>
<th>[Selectivity] Freq. resp</th>
<th>System Bandwidth</th>
<th>System S/N ratio</th>
<th>THD</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHURE</td>
<td>Receivers</td>
<td>EU45 1265.00*</td>
<td>Diversity</td>
<td>50-15,000Hz</td>
<td>&gt;100dB</td>
<td>&lt;0.3%</td>
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<tr>
<td></td>
<td></td>
<td>EU4D 1890.00*</td>
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<tr>
<td></td>
<td>Transmitters</td>
<td>U2 630.00*</td>
<td>Hand-held</td>
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<tr>
<td></td>
<td></td>
<td>U1 595.00*</td>
<td>Bodypack</td>
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<tr>
<td>SONY</td>
<td>Receivers WRL-800 Series</td>
<td>WRR810R 1245.00</td>
<td>Single</td>
<td>100Hz-15kHz(&gt;60dB)</td>
<td>125MHz</td>
<td>&gt;60dB</td>
<td>&lt;1.0%</td>
</tr>
<tr>
<td></td>
<td>Transmitters</td>
<td>WRT810R 1125.00</td>
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<td>WRT830R 1335.00</td>
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<td>WRT867R 1795.00</td>
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<td>WRT820R 1025.00</td>
<td>Bodypack</td>
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<td>WRT860A 1850.00</td>
<td>Bodypack</td>
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</tr>
</tbody>
</table>

**CURRENT UHF SYSTEM SPECIFICATIONS**

- **SHURE Receivers**
  - EU45: Diversity, 50-15,000Hz, >100dB, <0.3%
  - EU4D: Price quoted
- **Transmitters**
  - U2: Hand-held
  - U1: Bodypack
- **SONY WRL-800 Series Receivers**
  - WRR810R: Single, 100Hz-15kHz(>60dB), 125MHz, >60dB, <1.0%
- **Transmitters**
  - WRT810R: Hand-held
  - WRT830R: Hand-held
  - WRT867R: Hand-held
  - WRT820R: Bodypack
  - WRT860A: Bodypack

**Additional Information**

- **Imagining the Next 10 Years**
  - BBM Electronics
  - S5000 UHF Series
  - S1000 Optimised Series
  - S2000 Diversity Series
  - S101 Series
  - S2 Auto Diversity System
  - RX8 Belt Pack Receiver
  - S2 ADU Antenna Distribution System
  - Electronics Group Limited

**TRANTEC SYSTEMS**

- For ten years now, BBM Electronics have been designing and manufacturing Trantec radio microphone and guitar systems. And, as you can see from the photograph opposite, we’ve been rather busy. In fact, we are now considered the largest and most successful manufacturer in Europe.

- Our very first product was, not surprisingly, the System One. It was an instant success throughout the music industry. Reliable, hard-working and affordable, it set the standard that has now become the trademark of all Trantec products. It was also one of the first radio microphone systems to receive the DTI’s legal approval (another feature that now exists across the entire Trantec range).

- The System One was followed by the S2 Auto Diversity System. And, once again, the music industry applauded. But so too did broadcast companies, theatres and council chambers—in fact, praise came from everywhere that microphones are used.

- From the economically priced S1000 (over 10,000 sold) to the professional broadcast S2 True Diversity System, BBM Electronics now produces a range of Trantec UHF products for the most demanding, and in some cases, unusual applications.

- Last year, we added to our range by introducing our first UHF microphone system, the Trantec S5000. The S5000 combines superb audio quality with great looks and, at £2,250.00, is highly competitive. The S5000 has already made a considerable impact in the conference and theatre industries throughout Great Britain.

- It all began with the System One. Who knows where it could end.
YOU'VE NEVER COME THIS CLOSE TO PERFECT WIRELESS BEFORE.

UHF SYNTH: 64 SELECTABLE FREQUENCIES

**dbx** Noise Reduction** utilizes an RMS detection system to reproduce audio with absolute accuracy.

Balanced XLR outputs and 1/4" unbalanced outputs for each receiver.

Brass and fiberglass housing.

64 selectable UHF frequencies.

Three function LED: Low Battery/Transmitter On/Signal Overload.

Tuned, 1/4 wavelength "rubber ducky" antenna.

Top-mounted Audio Mute switch for easy access.

Internal trimpot controls for mic and instrum err levels.

5-segment LED display detects RF interference and signal strength so you can find the clearest available frequencies to ensure fault-free performance. Another Samson exclusive.

Samson offers the widest selection of high performance lavaliere and headset microphones available. Crown CM-311E headset microphone shown.

64 selectable UHF frequencies.

AF LEVEL

Power On/Off, Mic Input Level and Frequency Selection Controls - all mounted internally to protect you from yourself.

32 simultaneous channels for fixed installations*, 10 simultaneous channels for mobile.

64 selectable UHF frequencies.

Less than 4 oz. with 9V battery installed.

And not so bad looking for a beltpack, either.

SAMSON® THE WIRELESS FUTURE

UH-5 HAND-HELD TRANSMITTER

UT-5 BELTPACK TRANSMITTER

UT-5 SINGLE True Diversity Receiver

DA-5L, Distribution Amplifier

AN-81A Active Antenna Wall Mount

AN-82 Active Antenna Mic Stand Mount

**dbx** is a registered trademark of Carillon Electronics Corporation. Noise Reduction manufactured under license from THAT Corp.

©1988 SAMSON

DTI approved to MPT 1350, license required.

AN -81A Active Antenna Wall Mount

AN -82 Active Antenna Mic Stand Mount

* Requires active antenna and other system adjustments. The number of available channels and simultaneously available channels will vary from country to country. Please contact your local Samson distributor for more information.

**dbx** is a registered trademark of Carillon Electronics Corporation. Noise Reduction manufactured under license from THAT Corp.
occasionally telecommunications. They are expressly not designed to be used by lazy audio engineers who cannot be bothered to plug a lead in just because a performer or presenter wants to move more than a metre from their mark.

WHERE IN THE WORLD you are determines how many of the airwaves you get to play with. In the US for example (The Land of the Free), users can basically clutter up huge expanses of the ether with radio microphone systems the size of regional radio stations. In the UK, audio people have been given the last slice of the cake—well after the rest of the party has finished—with the result that everything gets rather cramped together in a corner and is a practical nightmare. Like Oliver, we may ask for more but quite frankly we should be thankful for what we’ve got.

This article is aimed mainly at the UHF sector, but to truly understand the UHF argument, you have to know the VHF side of the story. VHF was the beginning, and for some people with small systems it is still the answer. The problem with VHF is that the numbers of channels available are just not sufficient for large-scale use. Mr Bumble only gave us five workable frequencies in the UK initially, so with spares that’s not really going to work is it? Since then, the figure has now increased slightly, but is still not sufficiently large to mix up, say, a theatre production or a rock band with three guitars, vocals, backing vocals and spare channels.

Problems start because channels intermodulate with each other, the most common problem being that of channels being too close together. This is closely followed by the problem elsewhere, they create a problem elsewhere in the bandwidth and can therefore affect another channel. Luckily, as these factors are a known factor and as such any radio microphone system design can take these into consideration.

It follows therefore, that with VHF not quite cutting the mustard, UHF has become a suitable candidate for the large-scale application—more channels than you can shake a stick at being the concept. If you are in the US In the UK because the area handed over is relatively smaller, plus the same problems of intermodulation occur as in VHF, audio-technicians people have more channels, but still not quite as many as we would like. It is however a far better situation than it could be. And, let’s be honest, it’s suitable for most live and broadcast applications.

For the travelling crew, the situation is compounded in that many countries in Europe have different legal frequency allocations, so what is fine in the UK, could be a problem in say, Germany. Add to this the situation of CE approval...

Personally, I would decline any invitation to become involved in the arguments surrounding CE approval and stay firmly on the fence. The law in the United Kingdom quite simply is

<table>
<thead>
<tr>
<th>Manufacturer/</th>
<th>Price</th>
<th>System Type</th>
<th>CURRENT UHF SYSTEM SPECIFICATIONS</th>
<th>Additional Information (see Key)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>(UK)</td>
<td></td>
<td>(Selectivity) System Freq. resp</td>
<td></td>
</tr>
<tr>
<td>S5000LTX</td>
<td>1,100</td>
<td>Bodypack</td>
<td>100kHz</td>
<td>S(16x4banks): R(1/2) B(#): H</td>
</tr>
<tr>
<td>S5000DTX</td>
<td>1,100</td>
<td>Hand-held</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S5000CTX</td>
<td>1,200</td>
<td>Hand-held</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S5000RX</td>
<td>1,400</td>
<td>Diversity</td>
<td>50Hz-20kHz (85dB)</td>
<td></td>
</tr>
</tbody>
</table>

* Indicates provisional price ** Transmitter may also support microphones from other manufacturers.
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that a system should be 'CE approved' for use in the UK. Anyone who tries to sell a system without CE approval is being extremely foolish, for whereas CE approval may be considered inconsequential in the design of a plastic toy car, in radio mic terms CE approval is not only a must, but is extremely quick and effectively stamped down on when missing.

Staying in Europe though, it surely must be time to organise a standard set of frequencies for use throughout the EEC. It's being talked about, but that's about all, and the ramifications of not having an EEC frequency standard we'll deal with in a moment

So, in danger of being shot down in flames, as a rule-of-thumb the difference between the two variations is that small applications are fine for VHF, larger multichannel projects should use UHF. Using that idea as a basis, UHF is therefore predominately the choice of the professional user. More channels, less chance of internmods, less chance of a taxi cutting in... (Sorry, I forgot to say that dodgy taxi firms love the DTV VHF frequencies, especially in Paris, where all taxis (use them.)

WE'RE BACK with all the new UHF systems. These run to various types: those that are manufactured in the US and Far East, and those that are manufactured in the UK and Europe. All systems from the US have to comply to European regulations as opposed to the US FCC standard and have to be tweaked for each Euro sector. A system suitable for use in Germany is not suitable for use in the UK and vice versa for example. UK and European manufacturers have the same problem, except that their start point is slightly more defined in that it is Euro based. Note here that I am not saying that the place of manufacture is a major factor, I am just outlining the problems that the

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COMPUTER CONTROL FOR UHF

WITH THE ADVENT of UHF microphone systems becoming more accessible to live sound and theatre operators, the need for control systems for large multichannel systems has become significant. This is especially so in theatre applications, where mute automation is now part of the standard audio practice.

One such system is manufactured by British company BBM Electronics which has developed a Windows-based control package for its Trantec 5500 UHF system. Currently in use at London's Vaudeville Theatre production of Salad Days, this system provides an invaluable means of control and monitoring for Sound Operator Mark Cohan.

Cohan uses 15 channels of S5000 units with computer-controlled monitoring and control from the FOH position and at 'prompt corner', where a remote screen gives information to stage personnel.

Specified and installed by sound company Orbital, in conjunction with Sound Designer Simon Whittaker, the system uses a multilayer screen design to give information on each channel's status (on/off, mute, frequency assign details plus a bargraph indication of audio output) in real time.

In addition, the system provides battery condition information. In use, channels can be easily activated or muted using a mouse, and scene design can be plotted away from the venue by the engineer and subsequently uploaded via 3½-inch diskette.

On top of this, the system includes an RF plotting program which allows the engineer to plot and compare a system's RF reception around the stage to provide the optimum position for the remote aerials.

'If I can immediately see the status of any of the microphones at any time, which is extremely valuable,' comments Cohan. 'Therefore, any glitches can normally be sorted out before they cause a problem in the production.

Additionally, the prompt has the remote monitor so that if anything untoward happens, they can either react to it or contact me at FOH. In saying that, we have had no problems with the 5500s: it is the best system I have ever worked with for quality and reliability. But it's always good to know that backup information is there.'

manufacturers have in trying to make one product suitable for all worldwide. A standard EEC frequency allocation-regulation now starts to make even more sense.

The big news is two-fold: in the first instance, the price of UHF is going down. Admittedly the full-blown professional units are still up there in the £-figure mark for a basic rig, but new developments from AKG and Sennheiser are bringing UHF into the mid-price bracket and therefore making them
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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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July 1996

- July 7th
  - IEE Symposium: Emerging Broadcast Technology
    The Moler Centre, Cambridge, UK.
    Tel: +44 171 344 5421
    Fax: +44 171 346 3093
    e-mail: jnoready@iie.org.uk

- July 11th
  - DanceTech’96
    Complex Club, Islington, London.
    Tel: +44 171 609 6639.
    Fax: +44 171 609 1310.
    e-mail: 100810.2341@compuserve.com

- July 10th-12th
  - Pro Audio & Light Asia ’96
    World Trade Centre, Singapore.
    Tel: +65 227 0688.
    Fax: +65 227 0813.

- July 12th-14th
  - Summer NAMM
    Nashville, US.
    Tel: +1 619 438 8001.

August 1996

- August 7th-10th
  - Tha Broadcast 1996
    Queen Sirikit National Convention Centre.
    Bangkok, Thailand.
    Fax: +66 2 381 6423.
    Tel: +66 2 381 6423-3.

- August 7th-10th
  - Macworld Expo
    Boston, US.

- August 15th-18th
  - Parkomm
    KölnMesse, Cologne, Germany.
    Tel: +49 221 8210.
    Fax: +49 220 78 9161.

- August 26th-29th
  - Windows Solutions Expo & Conference
    San Francisco, US.

September 1996

- September 3rd-6th
  - Broadcasting China 96 Exhibition & Symposium
    Beijing, PR China.
    Tel: +86 10 3775.

- September 4th-8th
  - CEDIA
    Dallas, Texas, US.

- September 6th
  - September 7th-10th
    British Music Fair
    Earls Court, London, UK.
    Tel: +44 171 204 2154.

- September 8th-11th
  - International Music Market
    Earls Court, London, UK.
    Tel: +44 171 370 8179.
    Fax: +44 181 897 3942.

- September 10th-12th
  - 6th Asian Regional AES Convention
    World Congress Centre, Melbourne, Australia.
    Tel: +61 3 968 20288.
    e-mail: aes96@icims.com.au.

- September 12th-16th
  - IBC 96
    RAI, Amsterdam.
    The Netherlands.
    Tel: +31 10 477 8605.

- September 17th-19th
  - Interactive Multimedia Association Expo
    New York, US.

- September 18th-23rd
  - photokina
    KölnMesse, Cologne, Germany.
    Tel: +49 221 8210.

- September 21st-23rd
  - cinec
    MOC Events Centre, Munich, Germany.
    Fax: +49 89 51070.
    Tel: +49 89 5212 086.

- September 24th-29th
  - Live 96
    Earls Court, London, UK.
    Tel: +44 181 233 9306.

October 1996

- October 3rd-6th
  - October 7th-10th
    British Music Fair
    Earls Court, London, UK.
    Tel: +44 171 700 6555.

- October 11th-15th
  - The NAB Radio Show and World Media Expo
    Los Angeles Convention Centre.
    Tel: +1 202 429 5350.
    Fax-on-demand.
    +1 301 216 1847.

- October 24th-26th
  - Broadcast Asia 96
    World Trade Centre & Symposium
    World Trade Centre, Bombay, India.
    Tel: +91 22 215 1396.

- October 30th -Nov 2nd
  - Wireless World Expo
    Orange County Convention Centre, Orlando, Florida, US.
    Tel: +1 305 981 5838.

- October 31st
  - November 1st
    ITS 8th Annual Magnetic & Optical Media Seminar
    Mark Hopkins Hotel, San Francisco, US.
    Tel: +1 415 299 1700.

November 1996

- November 5th-7th
  - Wireless World Expo 96
    Orange County Convention Centre, Orlando, Florida, US.
    Tel: +1 305 981 5838.

- November 5th-7th
  - Broadcast Engineering Society Expo 96
    Hotel Taj Palace, New Delhi, India.
    Tel: +91 11 331 6674.

- November 5th-9th
  - PT/Expo Comm China
    China International Exhibition Centre, Beijing.
    Tel: +86 10 700 4500.
    Fax: +86 10 700 4500.

- November 6th-10th
  - Apple Expo 96
    Olympia, London, UK.
    Tel: +44 171 208 5004.
    Fax: +44 171 208 5004.

- November 6th-9th
  - AV & Broadcast China 96
    Exhibition Centre, Beijing.
    Tel: +86 10 682 3460.

- November 21st-24th
  - SMPTE
    RAI, Amsterdam.
    The Netherlands.
    Tel: +31 10 477 8605.

- November 21st-24th
  - LD96
    Orlando, US.
    Tel: +1 212 229 2965.

- November 21st-24th
  - Broadcast World Expo 96
    Navy Pier Convention Centre, Chicago, US.
    Tel: +1 312 986 7800.

- December 1996
  - December 3rd-5th
    Online Information Industry
    Olympia, London, UK.
    Tel: +44 1865 730275.

- December 8th-11th
  - Broadcast Cable & Satellite 96
    Including Pro-Audio India
    Lighting India and TV India, Pragati Maidan, New Delhi, India.
    Tel: +91 11 462 2710.
    e-mail: info@access.in

- December 8th-11th
  - Communications India 96
    Including Networks India and Wireless India
    Pragati Maidan, New Delhi, India.
    Tel: +91 11 462 2710.
    Fax: +91 11 463 3506.

February 1997

- February 22nd-25th
  - Middle East Broadcast 97
    Bahrain International Exhibition Centre.
    Tel: +973 550033.
    UK: +44 171 486 1951.

- April 1997
  - April
    Entech 97
    Melbourne Exhibition Centre, Australia.
    Tel: +61 2 876 3530.

- August 1997
  - August 25th-28th
    SMITE
    Sydney, Australia.

October 1997

- October 16th-20th
  - International Audio Video, Broadcasting and Telecommunications Show (IBTS 97)
    Milan, Italy.

- October 1998
  - October 12th
  - November 6th
    ITU Plenary Conference
    Minneapolis, Minnesota, US.
    Tel: +1 222 730 5969.

- October 1999
  - October 8th-17th
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    Palexpo, Geneva, Switzerland.
    Tel: +41 22 730 5969.
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Audio innovator and industry icon Michael Gerzon died last May.

PHILIP NEWELL remembers his character and work

ON MAY 13TH this year I was on route from Lisbon to Vinnitsa in Ukraine, and had an overnight stop in Barcelona. Arriving at the hotel in mid-afternoon, I decided to take a walk and look for a newspaper. I bought The International Guardian and read Barry Fox's obituary of Michael Gerzon. The rest of my day was ruined.

When the history of 20th Century music-related acoustics and psychoacoustics is written upon, among the names of luminaries such as Blumlein, Schroeder, Heyser and a handful of others, the name of Michael Gerzon will not be out of place.

Michael was a warm, gentle man whose geniosity with his time and knowledge seemed to know no bounds. Sadly, he was dogged by debilitating illness for the last ten years or more. He suffered from asthma and extreme bouts of exhaustion which could render him comatose for days on end, yet as far as I am aware, nobody could find the root cause of it all.

Despite illness, once 'propped up' he could be a veritable fountain of wisdom. I called him many times—often from abroad—to be greeted with a friendly 'hello' and an apology that perhaps he would be of little help to me that day as he was feeling weak. Yet the conversation might end two, or even three, hours later. And the cost of these international calls was nothing in comparison to the stream of priceless knowledge which the conversation delivered.

I recall, a good number of years ago, when Keith Holland was doing his Ph.D at the Institute of Sound and Vibration Research in Southampton, when we hit a seemingly intractable problem and decided that it might be enlightening to bounce it off Michael. So I called him. He apologised for his condition but accepted an invitation to have lunch at a restaurant near his home (which, at the time was in Jericho, Oxford in the UK). Keith and I arrived at about noon and, after receiving a brief demonstration of his latest experiment in 3-channel stereo, proceeded to the restaurant. We ate lunch and continued talking. At about 8pm—still sat at the same table in the same restaurant—we decided to order dinner...

We left not only with a huge amount of light shed on our original problem, but also with a whole lot of other problems to ponder. Michael's ability to stimulate serious lines of thought in others was as great as his own ability to reason. Both were on the very highest level and—significantly—in many different directions.

Michael enjoyed a rare combination of talents—he was an Oxford University mathematician graduate, musician, musicologist, genius and a very perceptive recording engineer who was equally at home with musicians, technicians and academics. Michael and I had many friends in common, and all had the deepest respect for him. I recall being outside the bar at the Institute of Acoustics with one, Quad's Allen Morgan-West, with whom I'd been engaged in heated debate for some considerable time. Michael arrived and listened intently for about five minutes and then became involved in the discussion, seemingly lending his support to my point of view. At this point, Allen good naturedly threw up his hands and said 'What more can I say? God has spoken'.

MICHAEL'S DEATH is a tragedy, not only for those close to him but to the audio industry as a whole. In so many areas he was way ahead of his time. In Barry Fox's obituary, he concludes by saying, and sometime around 2026, engineers will be trying to patent inventions that they think are new... and repeatedly finding that Michael Gerzon had got there first. As I write, I am in St Petersburg but when I left my home in Spain five weeks ago I had been planning to find the time (half a day?) to call Michael about some brainstorming problems concerning stereo perception. When I return home next week, it is going to hurt me even to look at the telephone. Why did I leave it too late?

Last year, before the publication of my book (in which there are numerous references to Michael), the publishers asked me to include a short explanation of why he was so important and he thought most relevant to say. Obviously, the work on Ambisonics and the Soundfield microphone were great landmarks but he seemed particularly fond of his work on diffused noise shaping. 'If you can only mention one thing,' he said, 'let it be that.' It should not be forgotten, of course, that much of Michael's work was conducted in conjunction with another major intellect, Peter Craven. Peter will now find himself having to keep the ball rolling without Michael's help.

Michael, you're gone; but he quite certain that you won't be forgotten—neither for your achievements nor for yourself.
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