

Channels

2nd BIG
YEAR!

Free

The professional Sound and Lighting magazine

Number 9

1st November- 15th December 1991

Load out from HELL!

AC/DC in Moscow

Soundman Robbie McGraph on the horrors of Russia, & how he mixes his band

Robbie McGraph is a tall Irishman, who last year had a call asking for his C.V. - then after a nervous interview with Stuart Young, "he gave nothing away, he asked me questions like 'how do you get a rock drum sound', and I was going to say 'get a rock drummer to start with!', then I talked with the band". Today Robbie has just completed 12 months touring as AC/DC's F.O.H. Engineer, and he still shakes his head as to why he was chosen. "I thought at first they had the wrong Robbie, I'd been touring with Simply Red, Boomtown Rats and bands like that.

As it transpires, the band made a very good choice, because the sound Robbie pulls is just what the band asked for. "They give you everything - you don't try and mess with it, don't process it. They made that clear, Malcolm said he wanted clarity rather than volume, a certain amount of separation".

What impressed your cynical editor was that for 12 months the band had toured with an E.V. Manifold System, which of course is horn loaded. Then with just a four song soundcheck, it was into the Australian tour using a Clair Bros. S4 system from Jands. The S4 is front loaded, and the Sydney Entertainment Centre is a notoriously tricky room - and yet, first song - it all happened.

The gig before Sydney was at Tushino Airfield near Moscow, where a million people suffered without toilets or concession stands, and AC/DC put on yet another 'let's get down to business' show. The band are admirable in that they are level, unflustered, and - "They know what they want!" said Robbie.

-continued on Page 15



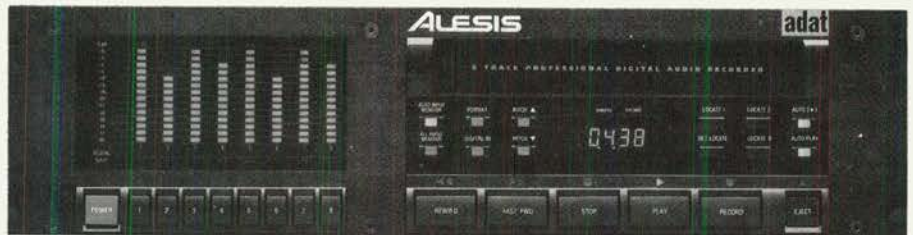
AC/DC frontman Brian Johnson at work

HOT FOR '92 JBL MR series



JUST RELEASED - a range of low cost passive loudspeaker systems from JBL - which take advantage of new 12" & 15" transducers, along with a new Bi-radial horn design.

-See Page 4 for the whole story



Phantom

*The mega Musical
.....System Sound
explain the audio*

Deep in the catacombs of Melbourne's Princess Theatre lurks the machine that reinforces the Phantom. 61 amplifiers, 3 racks of power supplies for the Cadac Console, and an air conditioner - ducted to the FOH effects racks. If this sounds different, wait till you read our story on Page 10, where System Sound's John Scandrett explains how to spend \$2 million on a P.A.

-Full story Page 9

HOT FOR '92 Alesis ADAT

The most sensational product revealed at this October's A.E.S. show in New York, must be the Alesis ADAT - an 8 track recorder that uses SVHS tapes - and will retail here in the \$9,000 zone. Given this re-defines the 8 track digital recorder market, it is more spectacular given the ability to link ADAT's together, allowing up to 128 tracks total!

One ADAT can stand alone as an 8 track digital recorder, with functions that Marmaduke can use - buttons that say, "Play, Stop, Fast Forward, Rewind", then with the addition of the BRC Remote Controller, up to 15 more ADAT's can join the fun. The BRC provides control over

-continued on Page 2

inside

▶ AUX 1	3
▶ News	2,3,4,5
▶ Letters	7
▶ Production	
▶ Diary	8
▶ Forum	16
▶ Mosfet amps?	17
▶ Hire Assist	18
▶ Connector	
▶ Bible	20
▶ Tanner	22
▶ Auntie Frank	25
▶ Great Mistakes	24
..... and lot's MORE!	

ADAT

(from Page 1)

timing, track selection, automatic record re-hearse and punch in, and complex assembly editing. It reads and writes SMPTE and MIDI Time Code, interfacing same to the ADAT's internal timing reference.

But forget about SMPTE and things like that. This is DIGITAL multitrack for the masses - you and indeed I, if I were for one moment prone to recording things. Plug in your mixing console - a Soundcraft Spirit STUDIO will do nicely, thank you - start with 8 tracks on your ADAT, then when your efforts pay off, add ADAT or two.

Perhaps the best thing about ADAT, according to local distributor Electric Factory's John McCubbery, is "it removes the specific decision factor, where you needn't decide how many tracks your facility needs". ADAT can start with one machine, (which is supplied with a LCR Remote control unit at no extra cost) and then by adding the BRC (which should sell for around \$3995) further ADAT's may be used together.

McCubbery sees ADAT applications starting at 8 tracks, and growing to 32 tracks. Specifications show sampling rate range of 42.7kHz to 50.85kHz, the 16 bit digital machine will allow approximately 40 minutes recording time on a Super-8 VHS cartridge at 48kHz sampling rate.

Cue at your dealer today, because Electric Factory don't expect stock till January.

Call them on (03) 480-5988 for the name of your nearest dealer.

Jands' huge auction

Jands Electronics, the importers of JBL, Soundcraft and Rane, have been renovating their large premises of late, resulting in a 'once in 20 years opportunity' to clear out surplus stock, fittings and machinery.

All departments in the company are being renovated, the sales department was first, and is now 'open planned' and made more functional. The entire manufacturing division, and the very busy contracting division are next, both will essentially 'swap positions' in the building.



Jands boss Robert Young in 'recession beater' mode

The shuffling reflects the benefits of over 20 years experience in manufacture, according to Jands boss, Robert Young. "We can now build more, high tech, world class products in less space than before. Contracting always seems to need more space", he said. Jands own the building, which is located near Sydney Airport.

The Auction is to be held on Tuesday 3rd December, starting at 10.30am, at the company's premises. See Page 6 for details.

CORRECTIONS

PAUL KELLY ON TOUR - D/A or A/D ?

The description of Dominic Kyan's dimmer rack setup (Channels #8, Paul Kelly Production Review) made no sense in that I wrote regarding his Instinct console ... "this he drives analogue to a pair of DDX 48 A/D converters at the dimmer racks." Of course his Instinct is Digital, via DMX 512 output, which then drives the D/A converters at the ANALOGUE dimmer racks! Struth.

BRIAN MCMAHON pointed out that he engineered the MTV mix in the Jands Mobile at the Hordern Pavilion Noiseworks Album Launch last Winter. Credit where due.

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Contributions are welcomed!

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New Zealand enquiries: (09) 366-7021

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Cadillac Case Co

1

Carpet covered sleeves

2

Amp & Effects racks

3

Session Hardware

4

Speaker Cabinets, Wedges, Quad & Bass boxes

5

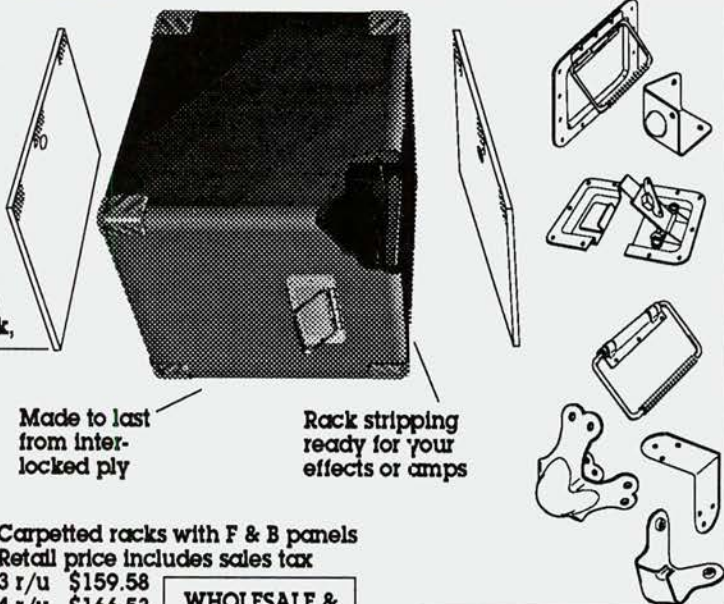
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6

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Front & back covers locate into rebate at bottom of rack, with Velcro strip at top.



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Sony PCM 2300 DAT - a \$2200 pro

Sony are DAT attacking with the PCM 2300, which was due as this issue was printed. This is a base model version of the PCM 2700, the PCM 2300 has 2 heads vs. 4, samples at 48kHz, 44.1kHz and 32kHz, and rolls tape at either 8.15mm/sec or 4.075mm/sec.

The specifications are such that an ageing former sound engineer such as the one editing this magazine, cannot in any certainty find fault. For example, frequency characteristic is +/- 0.5dB, which is certainly 'flat', or without colouration. The signal to noise ratio of more than 86dB isn't as good as Yamaha's DTR-2, but herein lies an irrelevance, because to a degree, once you enter the realm of DAT, figures like this become less important than features.

The PCM feels like a pro machine, while Yamaha's DTR-2 has a hi-fi feel. Sorry Yamaha, that's the impression, which isn't helped by DTR-2's slow startup when you press the Play button. It's just subjective, you look, listen, play then pay with DAT, the brochure tells you nothing! DTR-2 also costs an extra \$800 or so.

PCM 2300 is 3 rack units tall, and is supplied with a wireless (or wired) remote commander, and rack ears, the ask is \$2200 including tax. The larger brother PCM 2700 has four heads (which are better than two, or course) and it's price is \$3600 including sales tax.

Sony have arranged a Pro Dealer or two in most large cities, so call Peter Norman on (02) 887-6674 if you can't locate your nearest dealer.



Two New EQ's

Dual 3rd octave equalisers are more popular than ever, because you get more for your dollar. Until now, Yamaha has ruled the bread and butter market segment with the 2031, and Klark Teknik the top end, with the DN 360.

Now RANE has released the ME 60 for the mass market, (less than \$2000) while SCV debut the 231SP, which has application at the top end, which tends to cost about double.

ME 60 (pictured below) has Rane's *Constant-Q Bandwidth* feature, which they say "equalises the equaliser", and they have a very illustrating diagram that does a better job showing what they mean than I can do by trying to write here. This unit has XLR, Jack AND RCA connectors, offers +/- 12dB operation, and is fully balanced. Hi and Low pass points are adjustable.

SCV's unit is similar, but 3 rack units tall, and it has a 'dynamics section' which is truly just that. Using DBX chips under license, the EQ231SP allows you to GATE each channel (in order to cut unwanted system noise at idle) and also Soft Knee limiting, which is useful system protection as it limits POST EQ.

The other features are high and low pass filters on each channel of the dynamics section, along with variable high and low pass shelving equalisers on the EQ section. Info: for SCV- AR Audio, (02) 2815252, for RANE- Jands (02) 5163622.

Neutrik Fixit machine

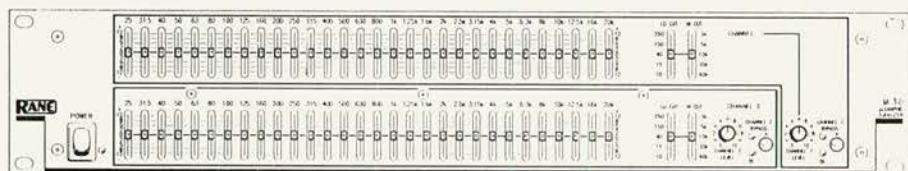


Ever had an oszillogram? Wanna look at some curves? If you are in the serious audio business, the AI Audio Test & Service Station from Neutrik might be for you.

This is 7 instruments in one, here's what it does: it's a Generator with sweep capacity, a Level, frequency and crosstalk meter, Noise meter, Distortion analyser, Wow and flutter meter, Curve tracer and Oscilloscope.

Two selectable inputs are balanced and have phantom power, even. The unit will carry out its functions by simply pressing a button for each function, which can be analysed in absolute or relative terms to any given reference.

Printer interface is via a 25 pin port, an RS-232 serial port is provided for data transfer if required. For more information, contact Amber Technology (02) 975-1211.



Baby notes, Australian Monitor Sales Executive Roderick McKinnon and wife Ruth have a new Baby Boy, Robert, and Chris & Jenny Royal also have a healthy baby boy, as yet un-named.

Greg Buckley has departed G.U.V.T.

Our European spy reports the long established Mixing console manufacturer Studiomaster has gone into receivership. It seems even if a rescue is successful, it will be some months before sales can recommence.

Prodigal return to sender - Jeff Stewart back at Graftons Sound after a stint of trying everything- including selling insurance. He is the Production Person at the shrinking firm. Several departures have occurred at Graftons of late, leading to Chris Royal being placed in charge.

Mick Previtera has sold Musicians Pro Shop to concentrate on 'other things', which include Australian Concert Productions. (Maybe also a political career too?) ACP operate a large Hire business from MPS premises in Brisbane. Mick's final word on Musical Retail: "You can stick it up your (expletive deleted), and QUOTE ME!"

Several interesting marketing concepts have evolved based upon the Jands Event computer lighting console. Firstly is the Angora Goathair "Roger Barratt" armrest option, and then there is the "Jana" - although what that means is unclear.... Event is Jands' export success story.

"Sound lets Grease down" said the Sun Herald. "Immediate attention must be given to the quality of the sound system. Mini-mikes are worn by cast members over an ear. Whether the mics or other components are inferior, the fact is that dialogue is mainly inadequately amplified, while the tone quality of much of the singing is attenuated and a little tinny."

Theatre blues, Sydney's Capitol Theatre, which has lain dormant for more than 7 years is still no closer to refurbishment, despite owner Sydney City Council giving prospective developers a new deadline for submission of plans. The 2000 seat property continues to decompose, despite intense lobbying on behalf of most of the Arts community, and the efforts of a consortium who would dearly like to restore the property in quick time and light it up. Mike Walsh reportedly has given up, stating the Council is "more interested in politics".

Meanwhile owners of Sydneys Her Majesties have bought the premises next door, to expand the Theatre. Empire Talkies Pty Ltd directors Ian & Carole Byrnes and Raymond Corkery also own the parking station behind the two sites. The news caught Greater Union who had planned to extend the State Theatre, by surprise. Mr. Byrnes was quoted as saying the \$50 million plus redevelopment would expand the stage, with a larger orchestra pit, but no increase in seating capacity. The race is on, the target is the Sydney season of Phantom of the Opera, which will probably move from Bleackcity in mid 1993.

JBL speaker product lines rationalised



JBL now fill in the gap with the M Series, a pair of 3" voice coil 300 watt speakers, suitable for musical instrument and PA applications. This is the missing link in the range, offering 300 watts power at 7.3kg weight, best of all, at a keen price. These are the loudspeakers featured in the new MR Series speaker cabinets (right).

M Series consists of two loudspeakers, the M121-8, a 30cm (12 inch) driver, and the M151-8, a 38 cm (15 inch) driver, both with massive 7.3 kilogram magnetic assemblies with JBL's new Harmonic Suppression Geometry™ structure. "Musicians evaluated our new designs and compared them with competitive products, allowing us to tune the speakers harmonic characteristics", explained JBL's Marketing Director Steve Romeo. "Third harmonics were suppressed in favour of second harmonics, giving the warm character that is the hallmark of the M Series".

According to Romeo, "A new 75mm (3 inch) Thermoset Composite™ voice coil assembly has also been developed for the M Series, which uses a virtually indestructible fibreglass support onto which the edgewound aluminium ribbon is baked at extremely high temperatures. The wire literally fuses to the support, making it virtually impossible for the winding to separate from its support".

Importers Jands offer the M Series to Speaker Cabinet fabricators at an OEM (Original Equipment Manufacturers) price, provided staged indent orders are placed. This opens up the possibility of case makers designing their own JBL powered speaker cabinets.

MR SERIES - JBL for you & I

Decent affordable name brand loudspeaker systems - this sentence could be looked on as a contradiction of terms. Let me cut to the chase - JBL hold the top end of the loudspeaker market by a comfortable margin. E.V. follow. This is the way it is. Mark IV's Colin Formston might disagree, but that is his right. Until now, E.V. have had the professional sub \$1500 (a box) market more or less to themselves.

JBL have now released the MR Series, which are made up, ready to go, packed in a carton performance loudspeaker systems. There is a 12" & horn trapezoidal box, likewise a 15" & horn trapezoidal, two wedges - 12" & horn and 15" & horn, and a pair of instrument cabinets - a 12" and a 15" that doubles as a sub bass box.

This completes a range of loudspeaker systems that was all things to all people, except those people like you and me. JBL's Sound-power range is quite rightly what you would probably specify into a professional venue where an active, high power cabinet is expected to work 8 hours a night, 7 nights a week. Sound-power has an extensive range that makes it right for people who specify audio, consultants & contractors.

Then there is the Concert Series, which are bullet proof, ready to fly speaker systems to satisfy the international touring commu-

nity. A bunch of people who will only use what they alone specify.

Here at home, Jands have developed the SYSTEM range of passive, high powered speaker systems based on JBL's Vented Gap Cooling range of 600 watt transducers. Sys-

tem caters to professional P.A. operators and driveway hire companies alike.

The MR series completes the picture as a range of cabinets for P.A. owner/operators, driveway hire companies, and musicians. This is the bottom of the professional market, beneath which lurk the the USA assembled, Taiwan origin systems.

MR prices start at \$799 retail including tax, and run to \$1499 for the MR-825, the 15" woofer with a Bi-Radial™ JBL horn trapezoidal system. All MR cabinets are fully finished with corners (JBL have devised a trapezoidal corner!),

stand mounts for the trap boxes, handles, recessed connectors and 3 stage high frequency level switches.

Foldback wedges have two angles, 30 or 60 degrees, and the little red JBL badge can even be rotated if the box is up-ended - which in foldback world often happens.

Jands have loosely organised JBL into three groups, MR Series, SYSTEM, and Soundpower. Along the way a couple of the popular 'A' Series cabinets remain, and there is of course the Concert Series. But now it all makes great sense. Contact Jands on (02) 516-3622 for the name of your nearest JBL dealer.



TOP 10 SELLING MICROPHONES IN THE U.S.A.

June 1991 U.S.\$ PRICE

1. Shure SM 58	176
2. Shure SM 57	137
3. Peavey PVM 38	200
4. E.V. N/D 357A	206
5. Peavey PVM580 TM	220
6. Shure Beta 58	258

7. Peavey PVM380 N	200
8. E.V. N/D 457A	256
9. E.V. N/D 257A	152
10. Audio Technica ATM41HE	198

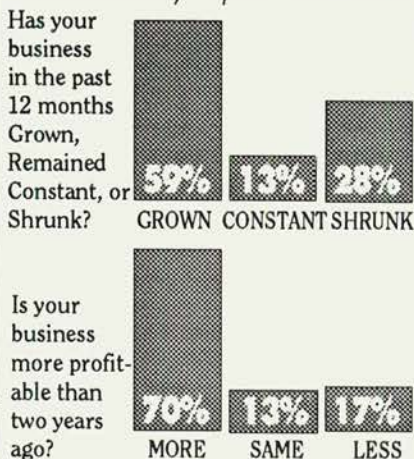
*Source- Music & Sound Retailer Magazine.
Prices USA Retail, Australian prices different.

Theatre tour

Sydney's State Theatre - the ultimate 'palace of dreams', a decorative fantasy, is open for guided tours. Owners Greater Union have teamed up with Sydney Tower, and offer a guided tour of the theatre and the catacombs beneath. It's worth a look, the organ alone is a world wonder, and a World War 2 U Boat engine drives the emergency generator!

PROFITABILITY CONSTANT

Dealer survey rejects recession



-SOURCE:

Jands surveyed 87 Sound & Lighting Dealers during August 1991, the survey dealt with issues relating to Jands, and as a prelude, contained questions about the individual dealers businesses.

Karaoke- this summer's BIG fad

Like a cancer the Karaoke craze grows, Queensland Pioneer Agent Walter Soudakoff (pictured) is crunching serious business. "I've got a major customer who packages the Steinlager Starmaker Show in venues around the Gold Coast."

Soudakoff sells systems to resorts, hotels and clubs everywhere, and thinks Sound Hire companies are next to get on the wagon. "I think a system could rent to a venue or a party for \$300 a night, with the cost to the vendor of less than \$10,000".

Pioneer offers a variety of players and amplifiers, and avoids a trap by working to any PAL T.V. set or Video monitor.

Soudakoff reckons other Karaoke machines are around that are cheaper than Pioneer, but they won't send to PAL, rather requiring the U.S. standard, NTSC (which might mean never twice the same colour!). Just try buying a monitor that isn't PAL, Pall Pioneer have variable pitch control too.

In the U.S.A. meanwhile, home Karaoke is

next, you sing along to your CD and the infernal machine cancels the original vocal.

Soudakoff's phone number is (075) 764-697,



he'd love to hear from Sound Hire Companies anywhere. Just don't ask him to sing.

*Pioneer recently ordered a batch of Jands 107-K amplifiers for those higher powered installations, the 107k amplifier is modified for -20dB input and has genuine DBX limiter chips on board. Available from Jands (02) 516-3622



THIS is the MIDI-GATE, 16 noise gates in a single rack unit of space. It is also 16 Duckers, 16 Midi-Mutes or 8 Auto Panners. L.A. Audio have released this unit, which is designed by Guy Martin, and it is available in

London from LA Distribution Limited - Fax 046 2421171. Quite interesting, the only hangup with this unit might be the channel status window, a 2 line, 32 character LCD which must indicate signal status of each

gate. From experience it is desirable that you observe signal status approaching threshold, which is why the Valley People Gatex is neat, with a LED ramp. If we discover a local distributor for the Midi Gate we'll tell you.

Speaker Repair Venture

Jeff Tait has launched Speakafix Australia, which does just that. Jeff was an intern at the Speaker Hospital, and has enough experience accumulated over the years. Speakafix repair, exchange and sell all types, including JBL. Contact them on (02) 873-1426 or after hours on (02) 655-1722.

New Regime at Pro Shop

After 12 years, the Musicians Pro Shop in Brisbane & on the Gold Coast has new ownership in Gary Barr. The Brisbane store has been renovated and re-stocked with JBL, Jands, EV, Carver, Mesa Boogie, Warwick Basses, Rickenbacker, Blade, Ibanez and Peavey to name a few lines.

In house service and a professional installation division which also handle lighting equipment make up the company's activities. They promise 'plenty of action!'

Call them on (07)854-1577 or (075) 75-3955

Caption Contest

Caption this photo, which depicts several college coeds on spring break, partaking in a little Aural Assaultation at Daytona Beach Florida. (Pic courtesy M.&S.R.)

Prize: JBL T Shirt!
Mail- P.O. Box 171 St.
Peters 2044 NSW, or
Fax (02)517-1045

LATEST WINNER:

Our Mark Brown (Daryl Braithwaite's monitor engineer) photo caption winner is Shane Curl of Petersham (N.S.W.), whose caption is-
"Wow, what an intense headroom potential I've just discovered - where do I plug in?" Ta, Shanel



Massive Auction SALE

**\$1 million
Renovation
clearance!**

**Ex Demo,
Superceded &
Factory 2nd's**

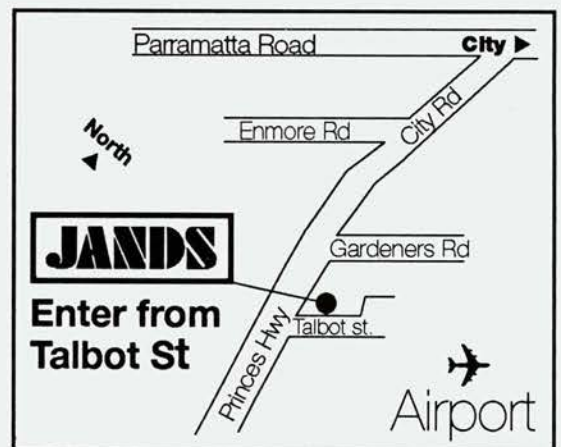
**Almost totally
unreserved!**



- ◆ \$125,000 worth of Soundcraft Mixing Consoles
- ◆ \$100,000 worth JBL HiFi
- ◆ \$100,000 worth JBL Soundpower loud-speaker cabinets
- ◆ JBL Loudspeakers and components
- ◆ Entire CCT Lighting stock to be quit-\$150,000 worth due to cessation of agency
- ◆ DeSisti Studio Lighting - lanterns and accessories
- ◆ \$150,000 Jands amps, dimmers & lighting desks
- ◆ \$200,000 Effects - Rane, JBL, Urei
- ◆ Studio Monitors - Urei, JBL
- ◆ Mode effects lighting, Clearcom
- ◆ Loudspeaker systems & roadcases
- ◆ Electronic components
- ◆ Shelving, Racking & Factory surplus
.... and hundreds more items!

INSPECTION: Saturday 30th November 9-12,
Monday 2nd December 8.30-4,
and immediatly prior to sale.

SALE: Tues. 3rd December 1991, 10.30am
at the companies premises, 578 Princes
Highway, St. Peters N.S.W. - enter
through TALBOT STREET. Phone (02)
516-3622 for further information.



Julius,

Had my photo been taken with Mel Gibson, Tom Cruise, Charles Bronson or even you I could understand the confusion.

But Peter Twartz!!!..... the prospect defies imagination!

I am consoled by the fact Twartz is the one that has that "lean & hungry" look which together with that really laid back hair style makes him nationally known.

Your correction in the next issue is only necessary to educate the bareest minority and for that I thank you.

Keep up the good work with Channels.

-Ian Woodhouse, Rebel International.

Ian Woodhouse & Peter Twartz were pictured together with the caption reversed. So also were Sven Langebeck & Adrian Smith.

Attention: Julius Grafton.

I couldn't believe it when I read your review of AES Melbourne in the latest issue of Channels. In particular, your statement that Shure was not represented at AES. The truth is that Shure was represented by us as dealers in Australia and as distributors in New Zealand. The Shure display was predominant at the front of our stand number 50 and was one of our busiest product lines.

We know you couldn't have missed it.

We were showing a full compliment of the Shure range - all of which we have available in both Australia and New Zealand, including the new Beta 58 and Beta 57 hypercardiod mics with the great feedback controlling polar pattern and extended frequency response.

Also shown for the first time at an AES show were: OWI - high performance water resistant speaker systems, QUAM - Commercial and Industrial loudspeakers for fixed installations, PROCO - Multicores, DI Boxes and mic splitters, DIC DIGITAL - DAT and CBU Metal Particle Tapes, PIGGYBACK - Power leads with piggybacks that are legal and available!

Just because Terry Goodhew is no longer working for Jands it doesn't mean he isn't in the industry but he is in fact working hard for Audio & Video Wholesalers.

If you want us to advertise in your magazine we would appreciate a bit more unbiased journalism.

-Murray D. Hunt, Managing Director, Audio & Video Wholesalers.

Dear Sir,

A correction is required. Shure were represented at the A.E.S. Show and quite a reasonable display. Some 30 odd microphones were on display on the Audio Video Wholesalers Stand 54, right next to Syncrotech and directly opposite GUVT, and we did have wireless microphones there, and yes, enquiries for all our products, including Shure were high.

We would like to point out this glaring mistake in your summary of the AES.

-Terry Goodhew, National Sales Manager, Audio & Video Wholesalers (AUS) Ltd.

Sorry! The A.E.S. exhibitors listing and product profile for your company had no mention of Shure. I screwed up, nothing personal!

Dear Sir,

We have read, for the first time, the AES edition of Channels with interest and find its style refreshing, to say the least.

We are interested in participating in the magazine both in stories and advertisements however, it would be greatly appreciated if you could provide us with the basic policies of the magazine as it is produced by Jands and, obviously covers a predominance of Jands information. This is accepted and we do note stories and ads from other companies however, it may be that we are sensitive, but following the sequence of the report on the AES trade exhibition, the reporter must surely have passed the Arcom stand.

It may be that he found little to interest him in our range, luckily the market does, although many other similar products displayed on our stand were mentioned in the article or, again, being sensitive, is it that, since we are in opposition to Jands in a few areas, we do not rate a mention? We do not really see this as a factor as other companies also in opposition to Jands, appear in the publication.



1. The Cheques in the mail
2. Of course I remember you
3. It sounds great out front
4. I'll fix it in the mix
5. They're pre paid at the airport
6. I'll call you Monday
7. I only use a third of a bottle
8. Only one more line, we'll go to bed early
9. Don't worry, there'll be bonuses at the end of the tour
10. Ask me
11. I won't get drunk on stage tonight
12. I don't do this with most girls (or boys)
13. Your name's on the list
14. I'm all packed
15. I'll turn down tonight
16. We'll have a sound check tomorrow
17. Don't worry, there's a t-shirt for everyone
18. I'll be down in five minutes
19. I've got some in my room
20. Yes, I turned you up
21. I'll get up early and do it in the morning
22. Can you hold for just a second?

(Courtesy of ICM, Los Angeles)

We look forward to your thoughts so that we may introduce the magazine into our advertising budget.

-Bert Reedy, Managing Director, Arcom Systems, Victoria.

-In fairness to Bert, Arcom handle QSC Amplifiers, Neotek, Optiview, Auditel, Brainstorm, Optifile, Oxmoor, Rolls Corp, Soundmaster, Swintek and Waveframe products. Arcom's phone number is (03) 720-6559.

Dear Sir,

Re the fact that all my staff have had their picture in Channels before me, and are now demanding appearance money before coming to work - enough is enough!

Mr Steve Nano of this office has now issued a rider to be complied with prior to his appearance at work.

This situation sucks! Unless you pander to my ego instead of Steve Nano's, I shall get even more unreasonable than I currently am.

-Steve Devine.

PS- I still own Topstage and I pay for the advertising in Channels!

and now that the
abuse has abated....

Dear Sir,

RE- Your article, issue #8, 'Finance your next console'.

Firstly, congratulations on the success of Channels. It is the only publication I have seen exclusively designed to assist and broaden the knowledge of Audio & Visual professionals and businesses.

I have noticed of late that each time I visit my Sound & Lighting clients and friends, invariably after setup is completed and there is time to kill before the show begins, they and the crew can be found relaxing backstage reading their latest copy of Channels. I know of no better indication of market acceptance than that! Keep it coming and keep it free!

The reason I write though, is, in the abovementioned article you indicate that Comprehensive Insurance to cover equipment in a parked motor vehicle on a public street is difficult to obtain. Not so any more!

I provide this exact same Insurance coverage for hundreds of my clients for between 2 - 4% of the value of the equipment. This year alone to date I have handed over claim cheques totalling almost a million dollars to my grateful clients.

And yes, you are right, the majority of claims do arise from theft from parked vehicles. The second most common claim is theft from venues and surprisingly the third most common is burglary from my clients' homes or usual place of storage.

-Ken Killen, MGA Bates Insurance Brokers.

WRITE TO CHANNELS-

Express your opinions, vent your spleen - *it's open season!* PO Box 171, St. Peters 2044 N.S.W., or Fax (02) 517-1045.

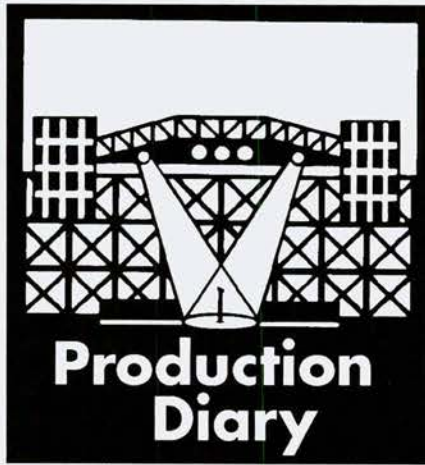
World Snippets

Touring overseas recently, **Brittania Row** has the new Turbosound Flashlight system on the road with Dire Straights, in the northern Autumn they serviced Whitney Houston, Cliff Richard and Marillion. **dB Sound** of Illinois, Chicago, joined with SSE to create the largest E.V. Manifold system yet, for the Monsters of Rock tour, which took in 19 dates. (See our AC/DC story this issue). 140 MT-4 pairs made up 500,000 watts, for 118dB at the desk. **Electrotec** have Rod Stewart on the road, and the Gunner's, who without doubt are causing the company some stress, what with rioting punters trashing gear. Capital Sound Hire has the new Martin F2 system out with Simple Minds, Clair Bros. has Roxette and our Kylie in Europe, with Sting, Paul Simon, Yes, prince, Don Henley, Stevie Nicks and Lynyrd Skynyrd all touring the U.S.A.

Jands Production Services are extra busy this summer - in fact, if you own a production company, and you're not busy right now, you must be dead!

JOE JACKSON went out with the evergreen Concord System, which is Phase 700 powered, PM 3000/40 FOH and Ramsa 40/18 send Monitor console. LX saw 150 P/64 & 7 Leko's driven by AVO QM500 90ch console via 3x 48way racks. **VANILLA ICE** used S4's with sub-lows, Jands 920 amplification, PM3000/40 FOH and PM3000/32 for 10 monitor sends. 164 P/64 & Celco 60, and 16 Vari*Lite VL2B's made up the LX. **ELVIS COSTELLO** went Turbo, with 24 TMS-3 and 12 sublow's, all Jands 920 amplified, PM3000 of course, 212 P/64, 5 x 6/lite, 6 x 4 cyc, 10 x Leko and AVO 90ch console. 4 HTI 400 followspots were used. This ensemble came to grief just outside Adelaide, when a semi fell over, just when JPS had 10 systems out. Much rearranging of trucks, people and equipment saved the day as always, a whole dollyload of Par 64's were trashed along with other damage. **TRANSVISION VAMP** took much the same P.A., for a concert/pub run, with 60 Par 64's into the pubs, followspots, smoke and Celco 60 channel drive. Other engagements of late have seen JPS lighting the **SLEEZE BALL** with an awesome inventory - like 24 x Vari*Lite VL2b's, 22 motors, hundreds of Pin spots, 48 x ACL's, 22 Coda 1's, 8 x Iris 1's, 24 x 500w frensels, 24 Par 64 & scrollers, 32 Par 64's, 4x MR 16 groundrows, 8 Lekos, 57 x 1.2k P.C.'s, 48 Rays, 100 Jet-strobes, 6 Solar 250 and a five foot mirrorball. JPS also lit the amazing triple bill of Choir Boys, **HALL & OATES**, and Noiseworks, made all the more amazing due to Hall & Oates doing an acoustic set between these two home grown hard rock bands, causing some more-than-mild punter reaction. 244 Par 64, 24 Leko, 5 x 6 lite, 10 x 8 lite and a 6 x 4 cell cyc were Avo QM500-90 driven into 4 x 48 way racks by Andrew Cartright and Sean 'Motley' Hackett.

P.A. People have built the first new complete international arena touring system for some time in Aus, it had its first showing at the



Blackstump Music and Arts Festival, just before presstime.

The system used 32 x Turbosound TMS-3 (they own 48), with 8 TSW-124 subs, *16 Australian Monitor AM2200 tri-amps, 4 AM 1600, Klark and BSS drive. Consoles- PM 3000/40 FOH, PM 2800/40 Mon, TMS 3 sidefill, CA3831 active wedges x 12, 2 drumfills, Klark EQ's, AM & HH amps. FOH was under the control of Chris Dodds, George Gorga handled Monitors, and system engineers were Jeff MacKenzie and Ken Dodds.

Lighting for this show was driven by a Jands Instinct 60 and an ETC Vision, with 170 Par 64, 5 8/lights, 16 CCT Profiles, 3 foggers, 3 truss mount & 2 FOH follow spots, all motorised on 12 chain motors. Scrollers, cys and sets all made LD Steve Leiter and Sys. engineer Philby Lewis' gig more interesting.

PAP have, with the addition of this Turbo system, probably assumed the honour of being the 2nd largest production company in the land, which would place Troy/Balance in 3rd spot. Am I wrong? Watch for flack! PAP next use the TMS-3 rig with Gloria Estafan.

**Australian Monitor's Tri-Amp is an interesting device, providing 1300 watts at 2 ohms for bass, 610 watts at 4 ohms for mid, and 331 watts for highs, from a 3 rack unit amplifier. One amp thus powers a pair of TMS-3's, with 2 EP-8 connectors on the rear.*

To the West and **Audex Concert Sound** provided Meyer systems at the Perth Concert Hall for Joe Jackson, Hall & Oates, Kronos Quartet and the WA Youth Jazz Orchestra. Outside Curtin Uni with Monica & The Moochers & Vince Jones- 6 MSL & 8 Subs. In the pubs with Transvision Vamp, Quadrophonia, DeLaSoul, Chantoozies, Oils Aint Oils and Roxus- various Meyer or Nova systems.

In the far North-West a show at Karratha (1800km north) outdoors with the WA Symphony Orchestra, using Meyer. Also a flown Meyer cluster for a Monster Truck Show at Burswood Casino Superdome. James Morrison, various restaurant shows, Festival Club PA for

annual artrage arts festival, the annual WA folk festival, and the official opening of a refurbished boat jetty, for which the JBL System 1400's were used.

Audex finished off a reasonably busy period by supplying extra TMS-3's & amps for Jimmy Barnes, and Meyers and amps for the King & I.

CHOIR BOYS, THE F* DANCE, WE CAN ROCK** tour. Production by Bandanna.

FOH- 8 x ARX 118 subs, 6 x ARX 212, ARX ss1200vc amplifiers, Yamaha 1532 console, engineer Mark Gibson. Foldback 24 x 8 Peavey console, ARX 8 x 3rd octave EQ's, 8 x ARX 306 wedges, 2 x Renkus Heinz B1 sidefill, 1 x B1 drumfill, engineer Brett Gibson. LX- 30 x Par 64, 40 x Ray, 4 x Blinders, 4 x Minuette profiles. Jands ESP 48 console, 4 x Dynalight racks. Operator: Ziggy.

...and in FNQ veteran soundman John (The Swiney's 43rd birthday coincided with the central Qld Rock awards at former bomb site Pinnochios in Rockhampton, where Tim Buchholz of **Stage & Audio** supplied his new "A" rig. This has 6 x 4770 boxes (JBL 2445 & 2 x 2226), which sit atop 8 x JBL 2225 'J' bins, driven by A.M. and Tim's own amps. Engineer Jason Buchholz reports 125dB SPL (pain!) at the console, and comments the management didn't mind. Swiney operated monitors from a Yamaha 2408. CQ Concert Lighting cobbled together 32 Par 64's and 40 Rays, driven by a Theatrelight 36 thru Jands dimmer racks. Stage & Audio had another 2 systems out at the time, leapfrogging dates for the Cockroaches through West Qld.

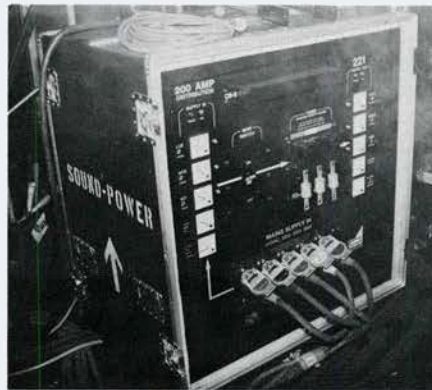
Until you've tried to tour West Qld, you won't appreciate it takes 12 hours in a truck between towns- leapfrogging makes sense.

Troy Balance has been busy as usual, supplying a complete Meyer Concert System to the Old Man River Band and Venetta Fields at the National Tennis Centre, Melbourne, for an AMWAY/I.D.A. Convention.

A Meyer System was supplied for the Sydney Sleaze Ball, a very big dance party indeed..

Then there was the A.F.L. Grandfinal at V.F.L. Park, Waverley, which was done with E.V. Deltamax 1152 cabinets (Troy own 40 odd), and featuring Daryl Braithwaite and Angry Anderson. The Royal Melbourne Show had a music to fireworks display, (which must have an interesting Midi-interface thermo-nuclear butaine powered wick-lighter - Ed) for which Troy provided a Quad Meyer System for Radio Station 3TT-FM.

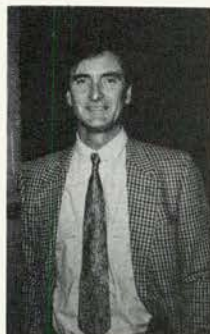
In the clubs, and the Palais National Final of the Battle of the Bands for the AIDS education campaign, along with a Richard Marx album launch and live performance at "The Club" were Troy projects.



Jands P.A. System power disto rack 200 amps

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Phantom the sound



John Scandrett

We visit the most ambitious stage show yet, in terms of audio.

System Sound boss John Scandrett explains where the \$2 million went!

Phantom of the Opera is of course the big budget musical that's going to be around for a few more years yet. A show like this evolves into an exact science by the time it comes to Australia, and the audio for the Melbourne production is very intricate indeed.

Melbourne based production company System Sound handle Phantom, the Audio was specified by Martin Levan of the U.K., who is a designer with independent ideas. The specification called for a Cadac Console, built by Clive Green & Co, which was virtually purpose built for the show. This is the Rolls Royce of consoles, very much the universal West End theatre desk. Features - 58 channels, 12 groups, 12 matrix outputs, 12 auxiliary direct outputs, and 9 VCA masters.

This Cadac is semi-automated, in-so far as a pair of Epsom P.C.'s running Cadac's 6450 console automation software provide auto-routing and external control of a pair of Otari 8 track tape decks, as well as Midi control over the various Yamaha processing - DDL-3 delays and SPX 1000 reverbs - of which there are literally dozens. There is so much hardware packed into the mix position that an air conditioner was installed under the floor, ducted through the effects racks!

Effects racks occupy the entire under console area, 48 sub mix inputs are handled by Yamaha MLA7/MV802 mixers, 19 x SPX 1000, 9 x DDL 3, 32 x equalisers, DBX units for the tape machines and the odd cartridge machine- without the air conditioner the console operator would expire. Needless to say, digital devices prefer 'ordinary' ambient air temperatures, a bit like pilots prefer ISA.

F.O.H. for Phantom is very different indeed, built into the huge false proscenium arch are 14 Tannoy 15" (3859R) coaxial loudspeakers, operating at 300Hz and above with the high frequency crossed at 1200Hz courtesy of BSS FDS360 crossovers, and then 10 x Bose 303 subwoofers, crossed by Yamaha 1030's. A pair of Bose Acoustic Wave Cannons lurk in the proscenium for very low projection during the eerie Phantom Organ overture.

Along the front of the stage are 8 pairs of Bose 802 drivers, installed in the actual stage front, providing projection for the front rows. This whole array is fed a startling number of mixes - 17 to be exact. Furthermore, every mix is slightly

delayed by a Yamaha DDL-3. Why so many mixes? Here is System chief John Scandrett's

"Everything is split into two separate systems - the A system, and the B system."

explanation: "Everything is split into two separate systems - the A system, and the B system. Reason? The possible proximity of 2 people

singing a duet up close to each other, and both spilling into each others microphone."

"In that case a time difference between sound arriving in one mic vs. the other may be 1 or 2 ms, that creates a nasty phasing effect especially if they're moving at the time. In the normal world, we usually correct that by deft control at the console, ie: when 2 people do come close together you pull the gain back significantly."

"In this case with the A/B speaker system, the 14 Tannoys are 2 x systems of 7 speakers, with Bose subwoofers - A set, B set. In those few situations where we get two people together in the show, the automation in the mixing console will route one of the performers mics through system A, the other through system B."

"What you get if anything is only acoustic interaction of the final signal once it comes out of the speakers, which is much less critical than the electronic mixing of the 2 delayed signals that produces such a vicious combing effect, with this system duets, quartets, quintets sound more natural."

"It's a very lavish idea, the whole system is stereo, then doubled. Twice as many amps, delays and crossovers- all up the system cost \$2,000,000."

The main system is supplemented with delay and effects speakers, 32 x Bose Acoustimas AM-5's in 9 locations, 15 x JBL Pro-3's, 10 Tannoy NFM-8, and 3 Meyer UPA-1.

At the Cadac, a joystick sends 12 mixes to 12 SPX 1000 reverbs, which in turn provide 24 discrete feeds to 28 reverb speakers, which are flat Planer BESC60D units, painted to match the decor and hung on piano wire, which also carries the signal. These look like paintings hung on the wall, except they're devoid of painting, just blank. They generate spot effects, and the Phantom's voice, heavily reverbed, pans around the theatre.

Now you start to see the picture - Phantom is unique audio, built to order! Would you believe this: the major characters have DDL-3 delays inserted into their audio channels, to bias their delay to their position on stage. As each person moves forward or rearward, the software sends a new Midi control to the delay, which in turn adjusts delay - 12ms, 15ms, 18ms- so the speaker



Cadac Console, sitting atop Yamaha DDL 3, SPX 1000's, and various submixers, with one of two Otari 8 track machines in foreground.



Part of the amp room- 61 Yamaha amplifiers drive this system.

Continued over

Phantom

-continued from previous page.

system 'holds back' until that persons natural voice sound passes the proscenium datum.

The software is written for the show- the computer simply waits for the operator to punch up the next cue, which might trigger the Midi-switching of the delays as above, or start an Otari 8 track tape machine, or route a different channel to VCA fader 4. The idea is, the operator works from the VCA section of the console, addresses the computer cue by cue, and uses his/her ears to decide the actual mix level of the show.

The mix originates from the largest radio mic system built yet in Australia, 21 channels of Sennhieser EM1036 UHF, which itself is monitored by a computer running software unique to the show. This shows the radio mic technician the broadcast status of each transmitter in the system.

Each microphone (an MKE-2 omni directional electret) is hidden just on the actor's hairline, in the case of the Phantom, two are used - one on the body, one on the face, because of troubles with the latex mask. Makeup and surgical tape cover the cable that connects the mic to the trasmitter, which is hidden somewhere on each body. Little wonder the radio mic system has two technicians looking after it!

Down in the orchestra pit, a full orchestra in a traditional theatre sense, is reinforced heavily with an array of high quality condenser microphones. 9 x Neumann U89 for brass & chorus, 14 x Sennheiser MKH 40 for strings & woodwind, 6 x AKG CK3/451 for percussion, and 2 Crown PZM 30GP for the upright piano. 4 x Shure SM 91's are used for stage reinforcement. A pair of SPX 1000's are dedicated to orchestra reverb, and like everything else in the system, commanded via the software and Midi.

The sound crew have been with Scandrett for a while, mostly veterans of Cats & Les Mis. System supervisor is Peter Grubb, the chief engineer is Kelvin Gedye, assisted by Stuart Kirby and Nick Reich. The radio mic technicians are Amanda Stead and Shelly Lee.

-Julius Grafton.

Tech Note

V.C.A. Faders explained

Many sound engineers developed their skills on multiple sub group consoles. Then the VCA fader appeared.

Mixing 32 or even 40 input channels is made a lot easier by sub-groups, which let you assign all the drum channels - say - to one (or a pair if stereo) sub group masters. Then, having arranged the various inputs to subgroups, the eight sub masters allow simple 'group' adjustments to level.

The VCA fader is an extension of this idea, but with a major difference. Because VCA stands for Voltage Controlled Amplifier, understand that a VCA fader is controlling raw voltage, not audio!

The actual VCA is located on every input channel circuit, after the EQ stage, and before the auxiliary sends. If you assign a channel - any channel - to a VCA fader (or VCA Group) then the VCA fader will take control of that channel's gain. Not just the gain running from the channel's fader, but also the *POST FADE* auxiliary gain.

It's this ability to 'grab' a channels gain from a remote fader that makes VCA faders such a must-have. Imagine you have your console established with all 40 inputs occupied. Your subgroups are loaded as follows: Drum Kit; left & right, Kick and Bass Guitar; left & right, Instruments; left & right, and Vocals; left & right.

During your mix you adjust these groups for overall balance, going to the individual channels for balance within each group, and every time something needs to be changed - lifted in a solo, for example.

Now assign your eight most important channels to a VCA fader each- this might be an assortment of individual channels, or even a group of channels on each VCA fader. Now when required, you can adjust those channels at source, with your (post fade) auxiliary send gain following along automatically.

Soundcraft's new Europa console takes VCA grouping a step further, with an assignable VCA Grand Master, and the ability to SOLO each VCA group. Remember VCA faders operate voltage, not audio, which means you cannot normally SOLO (or listen to) VCA fader programme in isolation. (Unless you have a Europa in front of you.)

Of greater potential value is the ability to operate the VCA faders from external software. A company in England called Outboard Electronics produce software for console manufacturers, which once linked to your console, provides auto routing and even moving fader automation.

Cadac produce the Rolls Royce of mixing consoles for the live theatre market, with their own software. A very good example of how useful it is can be seen at the Princess Theatre in Melbourne, where System Sound's Cadac console operates audio for Phantom Of The Opera.

In this case, the software 'auto routes' channels to the VCA faders, cue by cue. This effectively 'moves' the channel fader from wherever it may be on the board to just under the operators fingertip.

Even more startling is the ability of the software to drive 'moving faders', allowing full automation. In the case of Phantom Of The Opera, System Sound boss John Scandrett opted to retain manual control, on the premise that actual gain control is the job of the engineer, and his ears determine what you hear.

Soundcraft Europa has a similar software option, with optional automated VCA faders and indeed if desired, automated channel faders available.

Question:

What is the most important part of any lighting or sound system?

1. The latest effects
2. The most flashing lights
3. Stereo PA stacks
4. Digital lighting systems

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Answer:

None of these. It's the expertise to select the right equipment for the job and turn the components into working systems.

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Power Amplifiers	\$	Dynamix 24-8-2 fully serviced in r/c	3,600	Rane ME30 31 EQ like new	795	EV TL 606 bins 2xDXL 15 in each. pair-	1600
PERREAUX 8000C	2300			Yamaha 2031	850	JBL Control 10 2 way pair	1650
PERREAUX 6200	1600	Powered mixers	\$	Yamaha 1031	450		
PTM 1200 (600w per ch)	1600	Tapco Entertainer 8 ch new	2600	Klark Teknik 3060	2600	Drum machines	\$
PTM 700 (350w per ch.)	1000	LEM 512SE 12ch nr new	2200	Ross 31 band new	350	Rol TR 505	250
Jands 516 (800w per ch.)	2500	LEM 310 SDE 10ch nr new	2000	Ross 2C15 new	350	Rol TR 707	300
Jands 510 (500w per ch.)	2100	Roland EM150 8 ch	1000	Furman RB1 reverb unit	100	Alesis HR 16	350
A. Monitor AM1600 (800w ch) 2700		Dynacord Eminent II 4ch 80w	300	YES- we have pedal effects, too many to mention!		Alesis FR 16 MKII	275
Clair Bros. Phase 700 II (600w/ch) no backing plate	900	NB- large stock turnover. All major brands new, 2nd hand stocks change daily.		Guitar, Bass, Keyboard amps	\$	DR Rythm	275
Jands M 600	1200			Marshall JCM 800 MV Head	300	Yamaha RX7	350
Tapco CP500	600	Crossovers	\$	Marshall JCM 800 MV 2x12 combo	1200	Microphones	\$
A. Monitor AM 400	650	Jands JX5 4 way	300	Marsha I Quadbox	800	Eleko Radio mics good stock complete from	500
ZPE 500	1000	ARX EC1 4 way	500	Marsha I 200w bass head tran	600	Shure SM 57	145
Yamaha P2201	1400	Yamaha F1040 4 way	1000	Quad box Celecion spkrs	450	Shure SM 58	165
Jands J600	600	Yamaha F 1030 3 way	750	JBL 4 x 10 bass quad new box 800		Sennhieser 421	250
Roland SPA 250 (125w/ch)	450	SCV stereo 3 way	650	Quad 4 x 10 600w new	800	Sennhieser 441	300
Jands M 600	1000	BSS 340 4 way	900	Wasp 200w slave	150	AKG CK451-CK1 cap	250
Jands M 400	650	DDA stereo 4 way	1000	Roland JC120 2x12 st combo	1000	Beyer M88	300
ZPE 600 (450w/ch)	1200	Sound Development 4 way	400	Roland JC77 combo	700	more from	50
BGW 750c	1000	Jands JX4 4 way	400	Roland Cube 60 bass combo	600	Lighting desks, racks etc.	\$
PTM 750 MKIII (500w/ch)	1200	PTM MLX4 4 way lim:cover	500	Peavey Bandit 65w	700	Jands ESP 48 digital lighting desk like new	4295
PTM 350 MKI	700	Jands JX7 3 way stereo new	500	Roland Cube 60 guitar combo	600	Jands Instinct 48 lighting desk latest software	6500
Jands 920 (450w/ch)	1400			Fender 'The Twin' like new	1200	Jands Digital racks like new	1600
A. Monitor Quad 1200	2300	Processors, Delays, Reverbs	\$	Fender Duel Showman head	800	Par 64 with bulbs s/h	100
Jands J 700	850	Yamaha Rev 7	900	Dean Markley 400w bass head 650		Raylights s/h	100
HH M-900	1100	Yamaha Rev 5	1800	Carven 100w head	850	Par 56 s/h	70
NB- varying qty's each amp.		Yamaha Rev 1	3000	Fender Concert amp orig.	1000	Par 56 new	100
YES- NEW amps, most types available.		Yamaha SPX 90 MKII	800	Carlsbro Cobra90 bass combo 700		T Stands new	150
		Yamaha SPX 90 MK I	750	EV TL 150 black	300	Jands 48 way digital converter like new	750
MIXING DESKS	\$	Quadverb	700	Gallien Kruger 250ML guitar combo	1100	12' winchups	250
SOUNDCRAFT 800B 32-8-2	17,500	Midverb II	450	Gallien Kruger 800RB bass head	1700	18' winchups	400
SOUNDCRAFT 400B 16-4-2	6,000	Roland SDE 3000 delay	800	Gallien Kruger 800RB bass head	1700	Jands 12 ch like new	700
SOUNDCRAFT 400B 24-8 foldback, in roadcase	10,000	Roland SDE 1000 delay	450	VOX AC30 '60's fully serv	1000	Helicopter 16 way	300
SOUNDCRAFT 400B 24-4-2 in roadcase	10,000	Valley People Gatex 4 gates	1100	EV TL Bin 200w	450	Solar 250	300
SOUNDCRAFT 200B 24-4-2 in roadcase	8,000	Yamaha D1500 delay	800	VOX Venue 100w combo	495		
SOUNDCRAFT 200 SR 24-4-2 in roadcase	5,500	Lexicon 224XL Vers. 3	10,000	Peavey TKO 65w bass combo	650	T Shirts & Sloppy Joes LIMITED EDITION	
SECK 12-8-2 rec.dsk likenew 2,300		Rane DC 24 controller new	1200	Ross 30w keyboard amps new in carton	300	Robert Johnson S-JO: \$30 Tshirt 25	
SOUNDCRAFT 200SR 16-4-2 in roadcase	3,200	Rane SM82 mixer new demo	1100	Boogie 400w bass head, the best NEW	1200	Gatemoth Brown	30/25
Yamaha PM2000 32-8-2 r/c	21,000	Rane AC 23 crossover new	1100	Ampeg SVT bass head	2000	Jimi Hendrix	30/25
Yamaha PM2000 24-8-2 r/c	12,000	DBX 160X compressor	700	Ampeg SVT road case	200	Frank Zappa	30/25
Yamaha PM180 6 ch rack	300	Urei 7110 compressor new	800	Kustom 35w bass combo	250	Hank Williams	30/25
Yamaha PM 1800/40	20,000	Audio Logic Quad gates	500	Roland Spirit 50 combo amp	400		
Yamaha 2408 f/b r/c	4,800	EV X602 crossover	500	N.B.- amp stocks change DAILY, so if what you want ISN'T here, we can find it for you.		Assorted sizes	
Yamaha 2404 in r/c	5,500	Digitec DSP 256	700	Speaker Enclosures	\$		
Soundtracs 32-8-2	14,000	Aphex Aural Exciter Type C	500	Cerwin Vega 3 way bins pair	1500		
Peavey MK IV 24-4-2 r/c		Yamaha SPX 900	1100	JBL AP 25 3way boxes pair	3600		
Peavey MKIII 24 ch	3,000	DeltaLab Effectron I	350	JBL AD44 2 way pair	3300		
Peavey 16-6 f/b r/c	2,000	Jands 8 gate	750	JBL AP35 3 way	4500		
Peavey MK III 16 ch	2,000	ARX 6 gate	695	Aust. Mon F600 2x15" 2"hf pr 4000			
Jands JM 10 12 ch	1,500	Eventide 949 Harmoniser	3000	Aust. Mon F500 pair	3000		
Jands JM 10 20 ch r/c	3,000	Graphics	\$	Etone 1507 pair	2000		
Yamaha DMP-7 digital 8 ch	2,250	Yamaha 1027	1200	Beymer co-ax 15+horn in box. new pair	3000		
Allen & Heath System 8		Urei 31 band new de mo	1600				
16-4-2 in r/c	2,500	Tapco 2230	600				
Allen & Heath SR Series		ARX stereo 31 near new	1500				
24-4-2 in r/c	3,000	Roland 31 band	500				
		PTM 28 band like new	690				
		NEI 2711	495				
		Rane GE30 31 EQ like new	795				

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10	Etone Carpeted Wedges	\$600 ea
4	Court GE-60 dual 31 band EQ's	\$1,750 ea
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24	Countryman Isomax II bug mics	\$325 ea
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2	Deltalab ADM 1024 delays	\$350 ea
4	Ross 31 band graphics	\$250 ea
2	Phonics 31 band graphics	\$200 ea
4	ARX crossovers (stereo 2 way/3 way)	\$350 ea
32	Martin RS 1200 composite cabinets in as-new condition	\$4,000 ea

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1	Avolites 72-way dimmer rack (60 x 2.4k, 12 x 5k) c/w matrix pin patch	\$12,000
1	Jands Instinct 60 way lighting console c/w case	\$7,000
2	Genie Superlifters (24' lift, 600lbs)	\$3,000 pr
8	12 lamp (6 lamp bar) cases	\$250 ea
4	Coda 4 Cyc Lights c/w case	\$2,200 lot
1	Alderham 72 way dimmer rack	\$3,500
6	Leko 6 x 16	\$250 ea
1	Strand Patt 793 followspot (c/w colour mag & stand)	\$500
2	Pani HMV followspots, c/w case, colourmag & stand	\$3,500 ea
10	section alloy tri-truss	\$250 ea

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AUDIO EQUIPMENT			
Shure Speakers, SR112, 1pr, Good cond	500 pr	Elmo 35mm slide projector Perspective Control lens 50mm PC f:2.8, qty 2, good cond	300 ea
JBL Column spkr, 4680A, 2pr. Fair cond, cabinets need re-cond, one req. new cone	800 pr	BUHL 35mm slide projector zoom lens 2.4" - 3.6" Ektagaphic. Qty 1. Cond: fair	150
Canton Satellite/subwoofer speaker system; GL260 (satellites) Plus 'C' woofer 1pr. Fair cond, cabinets painted black, 1 x tweeter req.	500 the lot	BUHL 35mm slide projector zoom lens 2.4" - 3.6" Ektagaphic. Qty 10. Cond: good	200 ea
MacKenzie Cartridge tape player Minimac MM-4M, Qty 11. Fair cond, 1 req. repair	150 each	BUHL 35mm slide projector 90 degree RP lens 1.8" - EFL Ektagaphic. Qty 2. Cond: fair	300 ea
Toa mic mixer/amp 500 series, qty1, Fair, power switch missing cover	400	BUHL 35mm slide projector 90 degree RP lens 2" f:2.8- Ektagaphic. Qty 1. Cond: good	300
Shure 8ch auto mic mixing system. AMS 8000 Qty1 system, mixer & 8 mics. Fair cond	2000	Kodak Carousel 35mm slide projector S-AV 2050 QTY 80. Good cond	300 ea
D & R 16ch mixer Series 900, qty1, Needs repairs	2500	Elmo Carousel 35mm slide projector ALC-252 QTY 80. Good cond	350 ea
TEAC 4 track reel-to-reel A-3440, qty1, Req. repair & re-assembly	500	TELEPROMPTING EQUIPMENT	
Audio & Design Ambisonic Decoder, Qty1, good	500	QTY Telesync 14" reverse scan mono video monitor VPS-M14, qty 4 cond. fair, need service	200 pair
Sansui cassette deck SC-1330 qty 2 (1 modified with XLR's) Fair	150 ea	QTY Telesync Paper transporter (VPS 100-4R) & camera, (CTC 4710, Ikegami camera) Qty 2, good cond	3000 ea
Crest Audio Power amplifier 3001 qty1, cond fair, Ch. B not working	400	LIGHTING EQUIPMENT	
Yamaha power amplifier, 150w P2075, qty1, good	300	Electrosonic Lighting Dimmer ES10AH2M, qty2 good cond	400 ea
Yamaha power amplifier, 150w P2075-C (switchable to 100v line) qty 1, good cond but 1 ch no go	200	Coemar Disco Light BELLO, good cond	1000
Crest Audio power amp 2001, qty 3 good cond	550 ea	Rank Aldis effects projector Tutor 2E good cond	150
Sony Electret Condensor mic ECM 270, qty2, fair cond	60 ea	Electrosonic lighting dimmer ES10T4M qty 15, varies, gen. good	600 ea
Micron Lavalier mic- 202.2mHz, MR-1 (reciever), 101 (transmitter) not working, fixable	200	Amptown Motorised Lighting System, Posispot, 1 system (8 lamps & controller) good cond.	10,000 complete
Tapco 10ch Self powered mixer 100M, qty 1, fair cond	1000	VIDEO EQUIPMENT	
Yamaha 24ch mixer & power supply model 1524, very good condition, needs minor repair	3000	Sony Betamax VCR SL-C6AS qty 1 no go, may need heads	200
Tascam 8 track reel to reel & meter unit, ATR 60-8 very good cond	4000	Sony 3/4" Lo-band Umatic Multi-standard VTR, VO 7630 g/cond	2000
TOA Outdoor Public Address speakers TU-25MI (driver) TH-40L (flair), qty 4. good cond, 1 req. repair	150 ea (will not separate)	RCV Vision mixer/effects Generator, model 747 2req. rep	300 ea
Bose speakers with processors & stands, 802 (spkr) - 2 pairs 802C (proc) - 1 per pair. Good cond, cases marked	1800 pr	Sony Video Projector VPH 1040QM, qty 4 fair cond	4000 ea
AUDIO VISUAL EQUIPMENT			
AVL portable A/V Control PC Genesis. qty 2, fair cond. in need of minor repairs	1200 ea	16MM FILM EQUIPMENT	
AVL Portable A/V Control P.C., Eagle II In need of repair	700	Eiki 16mm endless loop projector NT-1, qty 2, 1 needs rep. (NB- capable standard 16mm projection upon removal of endless loop mechanism)	300 ea
AVL Tape Replay/Dissolve ur it, Stereo traveller III, good cond	800	Bell & Howell 16mm 300w gas discharge Arc film projector. Model 1568, qty 2, cond Good, both need new globes, 1 minor repairs	800 ea
Tamron S-AV type 35mm slide proj. lens 05G, 1" foc. length, f:2.8 qty 18 as new some missing lens caps	400 ea	NB- price includes roadcase, transformer, remote control, various lenses & accessories.	
Chief Selectra - set 2 proj. stacker, SL-2, qty 2, good cond	300 ea	Various other 16mm lenses for Buhl, Bell & Howell, Eiki & Elmo are also available.	
WTI 3 projector stacker, good cond	100	MISCELLANEOUS EQUIPMENT	
Electrosonic A/V control equipment, comprising: ES 2001 projector control units x 4 ES 1857 Digital multiplex clock x 1 ES 1856 Multiplex encoder/decoder x 1 Projector/tape remote-switcher x 1 -in need of rep.	200 the lot	Prolec Portable Lectum, qty 2, good cond	200 ea
AVL A/V Control Equipment, comprising: Eagle Control computer x 1 K69 Keyboard x 1 VM-9 9" mono mcnitor x 1 FD1 floppy disc drive x 1 cond- fair, unknown if working	150 the lot	Kodak Hand-held Laser Pointer. Model QLP-05B, qty1, good cond	80
Kodak 35mm slide projector lens 2 1/2" f/3.5 Ektanar. Qty 4, Good cond.	100 ea	Easytalk RF headsets, qty 4, fair cond, 1 needs parts	160 will not sep.
		Icom Walkie-Talkies, qty 2, inc 1 spare batt. pack, 1 needs re-assembly & rep.	80 will not sep



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-see page 6 for details-

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Production Spotlight

AC/DC

-from Page 1

Mother Russia certainly left an impression on Robbie, "total culture shock". The sequence of events is probably the most telling. "We did Monsters of Rock in Barcelona (Spain), then packed up the next day, with a 2am call for our charter flight to Moscow. This assumed the gear would already be loaded into an AN-124 freighter, the world's 2nd largest aircraft, with a capacity of 150 tonnes. The hourly charter rate for these aircraft is about A\$12,000.

Problem was, loading took longer than anticipated, and eventually a second trip was made by the AN-124, as the band took EVERYTHING-stage, generators, security team-even the food was airlifted in by the catering firm! The Spanish authorities would only allow one truck onto the tarmac at a time, and a huge rainstorm forced loading to a standstill.

Meantime the chartered Iberia jet sat waiting for the crew, and eventually - some time the NEXT AFTERNOON, had to leave on another mission. That night the 70 odd crew and security team finally made it to Moscow, where after a night's sleep, a bus shuttle to the gig was supposed to operate hourly. Four hourly was more accurate.

At the gig, chaos reigned. Truckloads of gear from the Antonov arrived in no order, progress was painfully slow, the crew did not sleep.

In true showbusiness style problems were overcome, the gig ran to schedule. "Soldiers were crowd control, I saw beatings, it was vicious". The show finished at 10pm, then 15 minutes later there was a huge downpour. "Of course the 100 Russian loaders all bugged off, leaving 9 stage hands faced with an impossible task. Everyone had left, the phone lines had even been disconnected! The busses stopped running, we found ourselves in the middle of a huge airfield with no-one around and a huge SHITPILE of gear!"

"We battened down the hatches and came back the next day, it was basically the load out from hell! The Hotel was really bad, cockroaches, threadbare towels"

Departing Moscow there were more delays, the 7pm flight didn't take off until 3am - necessitating a visit to the 'International Restaurant' at the airport- "all I can say is, if thats what they feed you there, what do they feed you in prison? I could NOT believe it! When that plane lifted off, there was a cheer from all 70 on board!"

Back in the more salubrious Entertainment Centre, Robbie went through how he gets his sound. "I mix at about 100 - 112dB at the desk, and it's mostly full range signal without 2k hi-mid rip. The band are well sussed in terms of stage balance, the guitars hit the front mic line



Robbie McGraph

at about 109dB. I add my sound to what's coming off the stage."

"Malcolm's guitar I mic with an EV N/Dym 408, I like that on his guitar because it's got great attack at around 5k. I compress it fairly heavily with a slow attack, so I get the hit."

"Angus's guitar amps I mic with Sennheiser 409's. I like these because there is no high mid rip in them, it's a more softer sound. The bass cabinet has an AKG D12, and a D.I."

"In the kick I have a pair of Beyer M88's, I use one and the other one is a spare because they break. EQ is a bit of 5k, 300 - 400Hz pulled out, and a bit of

boost anywhere from 20Hz upwards depending on the hall. Then I have 3 snare mics- Shure SM 57's, one is underneath without a gate, then two 57's coming in at one another from under the high hats. The pickup area is more of a figure 8, both mics are gated and one is Aphexed (Processed through an Aural Exciter). They are both phased the same, and sit together about 45 degrees apart. I EQ them the same, fairly narrow bandwidth for high end, boosted at 6k, pull back on 2.5 - 3kHz, 300 - 400Hz I keep out- the Q is about an octave wide, then I leave 200Hz in flat. I heard about it from a guy that mic's up orchestras!"

All the tom's are miked with Sennheiser MD 421's, except the big side toms, which each have an M88.

"I had a bit of trouble at first with the two big

toms (at each side of the kit), trying to place them in the mix, and I said, 'well, we could SAMPLE them....' and the whole place went quiet! We could WHAT? I picked up the vibe pretty quick on that one! They almost said, 'do you want a window seat - looking IN?'"

"Chris Slade is a very solid drummer as well, Malcolm doesn't want the bass drum too 'clicky' - it's AC/DC!" I asked Robbie about the first days of rehearsal at the start of the tour - "They didn't fuss about the guitar sound, they know what they like. They said - 'it's a rock & roll band, don't try and make us into something we're not!'. After the first night Angus said he could hear everything, which was a compliment" A song is a song, processing should be used for *placing* your sound, putting things behind things, spreading out the sound. Listen to the sound, get to know the song - listen to the verse, the chorus, the bridge - sit the reverb back in the mix. "Really nice people to work with!"

-Julius Grafton

F.O.H. EQUIPMENT LIST

Jands Production Services supplied 60 x S4's and 32 sub-low cabinets, all powered by Jands 920 amplifiers. In Sydney 52 S4's only were flown (26 per side) on 4 x 4 wide bumpers picked up at 2 points on each bar by CM Lodestar 2 tonne chain hoists.

The ground stacks consist of 3 x S4's per side, stacked on 16 sub-low cabinets, each of which has a JBL Vented Gap Cooled 18" woofer.

The entire system runs with a 200 amp mains distribution system, splitting 6 ways to power PA, backline and 110v 3 phase transformer for the monitor system, which was flown in. Db Sound (Chicago) supplied a Ramsa WRS-840 monitor console, EV Deltamax and MT-2 monitor speakers, amplifiers, EQ's, mics, and the F.O.H. gear.

At F.O.H., Robbie was assisted by dB system engineer, Jimmy Iturrieta, and mixed on a TAC SR-9000 40 ch console with 24 ch. extender for the support band. AC/DC used just 23 inputs, with effects returns eating up the rest of the console.

Effects racks came with the console, so everything remained as it was in Moscow, the difference being the console outputs were fed to a Jands Production Services system drive rack, thence through the Jands system.

(-special thanks to Jands system engineer Matt Doherty.)

Forum, November 1 1991.

We asked 19 people involved in the business of installing audio equipment the following questions:

"At what level should an Acoustic Consultant be called into a project? How do you qualify your ability to specify an installation? Is there a need for an Association of Audio Installers?"

The reaction was 'dont quote me but...' with a litany of anecdotes that don't reflect too well on the Acoustic Consultant industry, the comments that follow still do not resolve the question we put, but

Michael White- Sound on Stage (Sydney)

In terms of qualifications, I'm a fully qualified Pipe Organ Builder by trade, I can voice the instrument to the building, adjust the balance, the tone and the timbre. I dont think I should comment on Consultants.

Steve Devine- Topstage Productions (Canberra)

The Australian Oxford Dictionary offers this definition-

"Consulatant (noun)

-Specialist consulted for professional advice."

Assuming that the Oxford Dictionary is not renowned for sarcasm, I could not let the opportunity pass without a satirical if not somewhat cynical viewpoint on the mysterious methods and modus operandi of this strange phenomena. It should be noted that the statements below are presented in the interests of satire, and not intended to offend.

Famous Moments in Consulting History.

- A. The Garden of Eden-
"The rotund fruit shall be detachable from the tree...."
- B. Berlin 1946-
"The wall shall be...."
- C. Chernobyl-
"The reactor shall be constructed from...."
- D. Jands 1982-
"The Aurora Lighting Console shall contain a computer...."

The Consultant.

The following traits are necessary before even considering entering into the mysterious world of consulting:

Appearance.

A beard is a must. The ultimate appearance is to look like a cross between Demos Roussos & The Pope (forcefulness & integrity). To portray the impression you are never wrong, and if so, it was intentional as you were breaking new ground in your concept.

Political Leanings.

A belief that Bob SantaMaria & Fred Nile should resurrect the CLP & run in the next Federal Election.

Intellectual Capability.

The ability to read countless brochures and incorporate a small piece of each one into a single brief, resulting in a specification or a concept that is either impossible to build, or does not exist. Aspirants unable to do so should consider writing crossword puzzles with no answers, or playing Charades with their hands tied behind their backs.

A good consultant expects everyone to be able to read his mind. The skill is to ask for a specific item in a specification without actually naming it.

Method of Transport.

All smart consultants ride pushbikes. After all, they have met the consultant who specified the motor car.

Responsibilities.

The ability to specify a 300 million dollar project from the bookshelf in your office without ever meeting the end user is the first step on the road to prestige and fortune. If it works, the ability to accept all the justly earned glory without guilt or shame.

Success.

The first sign is when the Consultants bill says: "Costs, exceeding, but say..." Once fame and fortune has been reached you can use the same specification on all your work. This can lead to interesting things, like Church Steeples

on Swimming Pools, but once you are famous this is not regarded as wrong.

Nirvana.

A consultant is regarded as having reached nirvana when he is asked to speak in front of his peers at one of the numerous conferences consultants travel to each year. The purpose of these gatherings is to enable those on top to look out for the ones coming up and to present awards for the best Swimming Pool Steeple and the like.

Conclusion.

Seriously, consultants do perform a valuable function in life. The thought of all those people being let loose in the real world is a concept that is too daunting to contemplate.

Brain Kirby, Kirby Productions (Sydney)-

When a project calls for accuracy in an unstable acoustic environment, the services of a competent acoustic consultant at the design stage would be most beneficial.

As to my ability to specify an installation, recommendations from previous clients, and the ability to exhibit empathy for the intended use of the equipment, and the end user, do more to qualify expertise than letters after your name.

An Association of Audio Installers, whereby information & ideas could be networked would be of interest, perhaps a yearly conference in a resort would be easy to take!

FORUM - Please participate! Let us hear YOUR views

A future Forum explores the preferences of the lighting community, who all have particular ideas regarding which lanterns they like. Drop us a line, explaining which lantern you prefer, and for which reason. For example, nominate your favorite 650w zoom profile, 1000w fresnel, HMI followspot, Par can, and why. Let's get a consensus on whose equipment is working best, and why. Send your comments by mail to: Channels, P.O. Box 171, St. Peters 2044 NSW, or by fax to (02) 517-1045.

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Jands introduce Hire Assist program

Jands have introduced Hire Assist, an innovation whereby Hire Companies and owner/operators of Lighting or Sound systems are offered equipment with time payment facilities. The program splits the cost of product into 10, with instant documentation handled at dealer level. Following payment of a 10% deposit, 10 equal payments are made monthly, whereafter the title of goods passes to the operator.

"Essentially every Jands dealer has access to Hire Assist, whereby if the dealer has a customer who operates an equipment hire facility, the dealer can take an application from the customer on the spot. Because each dealer accepts responsibility for the conduct of Hire Assist agreements, the dealer will naturally have the final say as to whether Hire Assist is extended to the customer. It'd be fair to say a dealer would need to have a good relationship with a customer in order to extend hire assist", said Jands Operations Manager, David Williams. He cautioned that a small number of Jands Dealers could possibly choose not to participate in Hire Assist, where a dealer serviced a different market, for example.

Sales Director Paul Mulholland explained Hire Assist came about after the company surveyed 86 key outlets around Australia. "We found our representation in peoples Hire

stock less than it was 5 years ago", he said. "Jands product, including Soundcraft, JBL, Rane and our own manufactured lighting consoles, dimmer racks and electronics products, is proven in terms of reliability and resale value. We will bend over backwards to help Hire operators into our products, that's why this program is called Hire Assist".

The company has products that suit Hire operators, Soundcraft Spirit, Jands JBL System cabinets, JBL's new MR series, the 107 amplifier and the new Event lighting console are already working around the country thanks to Hire Assist.

Hire Assist has been in operation since October, and is proving popular because dealers and operators can effect an agreement without an outside finance company becoming involved. "I think we'll still see operators engaging outside lease finance for larger transactions", said Mulholland, "because it seems the larger the capital cost of an individual item, the less the direct return from Hire revenue. Hire Assist probably will work best where an operator wants a new monitor system, FOH speaker stacks, amplifiers or a lighting desk and dimmers." The program is restricted to genuine Hire operators, P.A. or Lighting System owner/operators, or production outfits.

GLOSSARY

Biz talk **A B C**

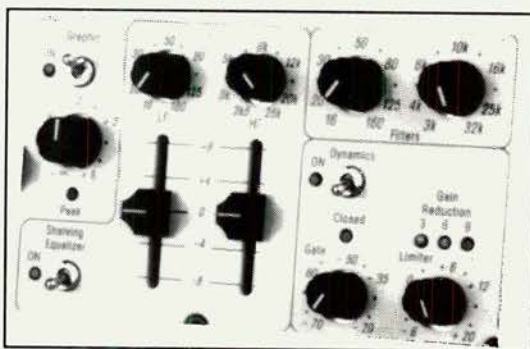
- I** **IM-** Intermodulation Distortion, caused by audio signal bits that bump into each other.
- Impedance-** Opposition to the flow of AC currents in an electrical circuit.
- Infinite Baffle-** loudspeaker baffle that prevents the loudspeakers rear radiation from entering the environment where the front radiation is being used.
- Input Level-** the level in units of dB, that a particular item of equipment receives at it's input.
- Insert-** terminology for a signal processor, compressor or noisegate, plugged into a mixing channel by means of an insert point.
- Idiot-** often seen performing on stage.

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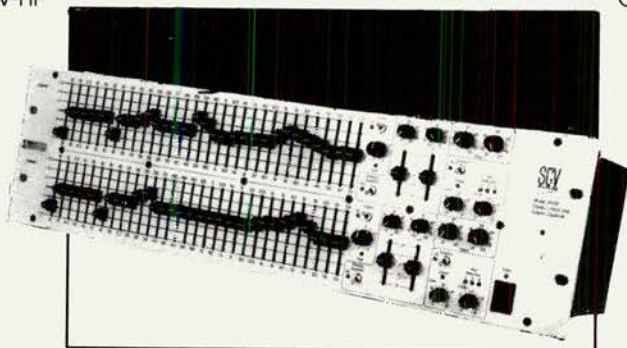


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Amplifiers -

Is Mosfet the answer?

Three years ago, the writer lost a pile quitting Australian Monitor - the company he established. After carefully avoiding anything remotely resembling a power amplifier, he puts his head on the block, and asks: "Is Mosfet the way forward"? In doing so, his knees tremble, because the Audio Community at large seems possessed with the concept of brute power. Read on...

The pursuit of power - amplifier design has reached the limit, when you examine the most powerful amplifiers available today. Why do we chase absolute brute power? This is a question the manufacturers of the next generation of amplifiers must grapple with today.

In 1986 I established Australian Monitor, and commissioned designer Stuart McLean to match the two high powered Mosfet power amplifiers - the Perreux 9000 and the ZPE 1000, by delivering 800 watts per channel into 4 ohms, both channels driven. To do so required a power supply that consumed 2500 watts (10 amps) at peak, a pair of massive fan cooled heatsinks, and an overall package that weighed 32kg. (Then we couldn't buy the actual Mosfets, because Hitachi are the sole manufacturers, and the local distribution was flawed.)

What is clear is that nobody can put four of the above amplifiers into a rack and expect the rack to survive - let alone the poor loaders that try to carry 140 "killer-grams" of amp rack up a flight of stairs. Likely the rack would be dropped - and hard. Larger P.A. system owners need to rack as many amps as possible together, in order to multipin much of the cabling.

At the other end of the spectrum, Carver use Class G output stages to reduce their amp weight to 5kg. This is an interesting example of marketing vs. design compromise. Let us look at the Carver PT1250, whose switch mode power supply, running at the relatively low frequency of 1kHz, drives an output stage with four pairs of supply rails. Although low-level distortion is commendably low, distortion at high levels and at high frequencies is extreme. The amp cannot reproduce high frequencies at high levels without the power supply limiting or blowing fuses. The power supply has a disconcerting tendency, on loud music, to protectively limit and mute the output briefly.

Clair Bros. use Carver in racks of 12, the overriding requirement was ease of air-transport, the company operating a branch in Japan and airlifting systems to Europe and South America on a regular basis. When you operate a very large arena concert PA system, considerations such as how the amplifiers are racked and how they fit into a 747 container transcend the smaller de-

tail. It follows that large system design is kind to amplifiers, with a typical concert system usually not run anywhere near full power.

Between the extremes of the brute metal Mosfet amplifier, and the built-light (and perhaps fragile?) Carver, is the middle ground of the future. This is where the pursuit of brute RMS power will become the pursuit of MUSIC power instead.

This is because that 800 watts of RMS power your Mosfet amplifier delivers is really about 200 watts of average music power, which is typical with a music signal compressed to 6dB peak/average ratio, and run near, or at, amp clipping. The peak-to-average ratio is even higher for most typical signals. Music signals, even when heavily compressed, have peaks which are consistently much larger than the average music power coming out of your amp. For instance, FM radio stations with extreme compression and peak-limiting appear to have peak-to-average ratios of only about 6dB.

What we really want is an amplifier that produces bucket-loads of MUSIC power, irrespective of the RMS power rating, with a minimum of heat - heat is, after all, inefficiency. Our amplifier needs to weigh in at less than 20kg, cope with Australian conditions, and in coping with our conditions, be reliable for years to come.

There is a way to achieve this, and it isn't with Mosfets or with switch mode power supplies. Somehow the tail has wagged the dog in amplifier design, and overlooked the obvious, which is that typical MUSIC programme NEEDS an amplifier that defers the point of clipping during peaks. Some amplifiers have soft clipping circuits, others simply have purposely slow clipping meters. At the end of the day the point of clip is the end of the road.

When we were kicking Australian Monitor off the ground, we were paranoid the rest of the industry would beat us around the head if our amp didn't achieve a solid 800 watts RMS. Marketing rules again, application follows. Power for the sake of continual RMS output with sine wave input is irrelevant, when the medium being amplified is music. Now it's time to watch for some solutions - time to think afresh.

-Julius Grafton

Attention DRUMMERS - do not read this!

At a MENSA banquet, at the head of the table are two guys with IQs over 200. They're wearing tuxedos and glasses that are as thick as the bottom of lemonade bottles. One says to the other: "I know, why don't we have a conversation about the relationship between metaphysics and sensuality and the impact of that relationship, with regards to the dominant moral ideology of the 19th century on the Reichian concept of the repressed orgasm as a national psychological disorder of the German nation state."

"Super", says his mate, but to make it interesting, why don't we do it in Swahili?"

Further down the table are two guys, sitting in front of a card that says "IQ of 130+." "Fancy a chat about nuclear physics?" says one. "Sure" says his mate, "but to make it interesting let's conduct the conversation in middle French!"

At the very end of the table behind a place card that declares: "IQ of MINUS 20" are two guys. They stare into space for a while. Finally one turns to the other. "What sticks do you use?"

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SPIRIT

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Then there's Spirit STUDIO, with in-line tape monitoring, available in **16:8:2** for \$6995 and **24:8:2** for \$9995, again these are RETAIL prices including sales tax.

All Spirit consoles come with Soundcraft's famous Equalisation, and most importantly, Soundcraft quality.

DELTA

Delta 200, available in frame sizes from **8:4:2**, up to **32:4:2** with mono or stereo input modules, versatile output options, and advanced EQ.

Delta MONITOR, 24, 32 or 40 input channels with 10 sends, including DIM facility and onboard AFL/AEQ (after EQ monitoring). It's built for monitor systems.

Delta EIGHT, the 8 bus recording console that works

for 8 or 16 track facilities, with 20, 28 or 36 inputs on



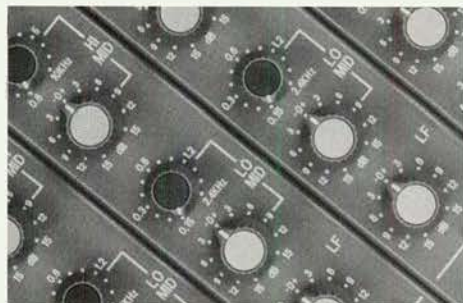
mono, stereo or dual line input modules. 16 monitor returns and 2 control room outputs, Delta 8 suits any recording environment.

DELTA AVE, offering audio/video editing links to broadcast and post production houses. From 8 input channels.

VENUE

8 bus 'house' mixing console, 6 aux. sends, full Soundcraft EQ, optional mute groups, mono and stereo input modules, stereo effects returns, optional meter bridge, optional matrix output module, stereo/wide facility, and available

with 16, 24, 32 or 40 inputs. The touring production console of the '90's.



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The Connector Bible

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SPEAKER CONNECTORS

OTHER "XL TYPE" WIRING CONFIGURATIONS:

EUROPEAN MANUFACTURERS:

Many European manufacturers have previously used:-

PIN 1 - COMMON

PIN 2 - HOT

PIN 3 - NO CONNECTION

Amplifier outputs are fitted with a chassis male connector, cables are made female to male and loudspeakers are fitted with a chassis female and a chassis male.

US MANUFACTURERS:

Many US Manufacturers have previously used:-

PIN 1 - COMMON

PIN 2 - HOT

PIN 3 - NO CONNECTION

Some manufacturers link pins 2 and 3. Amplifier outputs are fitted with a chassis male connector, cables are made female to male and loudspeakers are fitted with a chassis female and a chassis male.

BOSE CORPORATION:

Bose use yet another variation:-

PIN 1 - COMMON

PIN 2 - HOT

PIN 3 - HOT

Amplifier outputs are fitted with a chassis male connector, cables are made female to female and loudspeakers are fitted with two chassis males.

THE XL TYPE 4 PIN CONNECTOR:

This has been used in a variety of formats especially in the UK where it has been used both for 8 ohm applications and for 100V applications. One of the disadvantages for 8 ohm speaker use is the pins are smaller with a much reduced current carrying capacity and thus many users have commoned pins 1 & 2 and 3 & 4. This format was popular for a period of time with the ABTT (Association of British Theatre Technicians). However, with the same connector also being used for 100V line applications some confusion has occurred.

PIN 1 - COMMON

PIN 2 - COMMON

PIN 3 - HOT

PIN 4 - HOT

MICROPHONE LEVEL CONNECTORS- Burndy Multipin connector

THE BURNDY 48 PIN CONNECTOR:

In 1980 Jands introduced a multipin connector which has become an industry standard format for microphone multicores. The 48 pin "Burndy" connector is now in widespread use with only minor changes to the wiring standard.

The 48 pin format was designed for microphone use and is extensively used by Channel Seven and the ABC in addition to Jands Production Services and numerous other audio companies.

There are also two wiring standards for the 48 pin connector, however these are upwardly compatible. The original wiring standard introduced by Jands in 1980 used Hartland 20 pair cable and has subsequently been changed slightly over time to incorporate the addition of two service (intercom) lines.

The current format is now used by the ABC, AAV, and Jands Contracting have used this format for installations such as Melbourne's World Congress Centre. Jands Production Services and Channel 7 both still utilise a minor variation of the original format.

Later cables produced for Jands Production Services and all cables produced for Channel 7 use 19 pair Belden and pins "r" and "s" are not used.

Care should be taken when terminating from Burndy 48 to XL3 pin connectors. Jands Production Services connect the "A" Leg to pin 3 as the "Hot" pin, the ABC, however connect the "A" Leg to pin 2 as the "Hot" pin. Thus ABC tails connected to a Jands stage box will create a phase reversal on all pairs. This is of course not usually a problem if all mic lines are so reversed.



as the "Cold" Leg.

The "Burndy" connector is now available from a second source - Cannon under the name of "TRIDENT"; and the corresponding TRIDENT part numbers are also listed.

The colour code listed here is that currently used by Jands Contracting for all their installations and follows the international telecommunications practice of using the common colour for the "Hot" leg. Previously most users of this colour code used the common colour

WIRING CONFIGURATIONS FOR BURNDY 48 PIN CONNECTORS:

PIN	PAIR	SIGNAL	CONNECT
A	1	A LEG	BLACK
B	1	B LEG	RED
C	2	A LEG	BLACK
D	2	B LEG	WHITE
E	3	A LEG	BLACK
F	3	B LEG	GREEN
G	4	A LEG	BLACK
H	4	B LEG	BLUE
J	5	A LEG	BLACK
K	5	B LEG	YELLOW
L	6	A LEG	BLACK
M	6	B LEG	BROWN
N	7	A LEG	BLACK
P	7	B LEG	ORANGE
R	8	A LEG	RED
S	8	B LEG	WHITE
T	9	A LEG	RED
U	9	B LEG	GREEN
V	10	A LEG	RED
W	10	B LEG	BLUE
X	11	A LEG	RED
Y	11	B LEG	YELLOW
Z	12	A LEG	RED
a	12	B LEG	BROWN
b	13	A LEG	RED
c	13	B LEG	ORANGE
d	14	A LEG	GREEN
e	14	B LEG	WHITE
f	15	A LEG	GREEN
g	15	B LEG	BLUE
h	16	A LEG	GREEN
i	16	B LEG	YELLOW
j	17	A LEG	GREEN
k	17	B LEG	BROWN
m	18	A LEG	GREEN
n	18	B LEG	ORANGE
p	19	A LEG	WHITE
q	19	B LEG	BLUE
r	20	A LEG	WHITE
s	20	B LEG	YELLOW
SERVICE LINES			
t	1	A LEG	WHITE
u	1	B LEG	BROWN
v	2	A LEG	WHITE
w	2	B LEG	ORANGE
EARTH'S			
x	GROUP 1		SHIELDS
y	GROUP 2		SHIELDS
z	GROUP 3		SHIELDS
aa	SERVICE LINE	SHIELDS	

-Burndy Multipin continued next issue

Compiled by W. Peter Twartz
Audio Products Manager,
Jands Electronics Pty Ltd.
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JANDS

AUDIO CABLES AND ASSEMBLIES

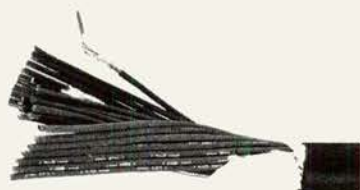
Neglex Quad Microphone Cable

Neglex quad cables have been developed for the highest quality recording applications where maximum audio definition is critical. The balanced quad structure delivers sonic accuracy and cancels electromagnetic induction. XLPE cross linked polyethylene insulation offers excellent electrical characteristics which remaining super flexible. Available in three diameters and nine colours.



Multicore Microphone Cable

Multicore microphone cables from 2 to 48 audio pairs, each pair individually shielded, with drain wire, insulated, and printed with channel number for easy identification. XLPE cross linked polyethylene insulation will not shrink back during soldering. Rugged yet flexible construction offers a compact and super flexible cable, even at temperatures down to -20 degrees C.



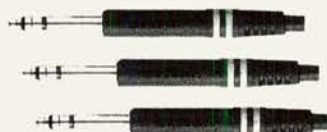
High Definition Studio Speaker Cable

Designed to deliver maximum performance from state-of-the-art tri-amp systems, this cable offers true audiophile performance for accurate sound transmission and transparent audio response. Each conductor features 224 strands of Neglex oxygen free copper with colour coded PVC insulation, with a tough overall matte black superflexible sheath. Available with 4, 6, or 8 conductors.



Bantam Patch Cords

Professional bantam patch cords, the first high definition audio cables designed specifically for recording studios and broadcasters. Superflexible quad balanced Neglex oxygen free cable moulded to a durable nickel plated tip/ring/sleeve connector. Interchangeable colour coding rings allow easy identification. Choice of four jacket colours and seven lengths from 30 cm to 180 cm.



MIDI Synchro Cables

Specially designed for use in MIDI communications systems, MIDI Synchro Cables feature one piece custom moulded 5 pin DIN connectors. A specially designed superflexible cable provides one twisted pair for data and two additional conductors for tape synchronisation signals. Interchangeable colour coded rings allow easy identification. Available in seven lengths from 45 cm to 9.1 m.



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TANNER

New or Old.

My very first purchase of lighting equipment was way back in the days when the viquitous (Wha...? -ed) Pattern 23 was on Strands price list! In fact, a Patt. 23N (the narrow angle version) was my first lantern. (Lighting people refer to 'their first lantern' like the rest of us refer to our very first horizontal folk dance - ed)

I was looking for a 500w followspot, and as every schoolboy back in 1970 knew, there was ONLY the Patt. 23N. Short of pocket money I scanned the Trading Post until bingo - a club was being liquidated, and a 23N was listed along with a mirrorball, several Patt. 123 fresnels, 2 colour wheels and a Minipak dimmer!

Historical note: back in 1970, this rig was one mirroball larger than Jands whole concert lighting rig!

So on the appointed Saturday I fronted the auction with Mum as my bidder, and my life savings of \$209. I was 16 at the time. (Refer back to the first paragraph! -ed)

The equipment was to be offered in two lots- the spots (Lot 71) and the colour wheels, mirrorball and dimmer (Lot 72). We had arrived early to check out the gear, however no power was available to test anything, so a

physical inspection was all I could do. The lanterns had a few scratches, blown lamps, and a thick coating of 'club grunge', which later analysis proved to consist of a mixture of nicotine, cooking fat and woolly fluff.

After a couple of hours, me and my roadie (mum) left, \$195 poorer, with the lanterns clutched to our chests. Back in my bedroom I set about cleaning and dusting off my purchases. To my horror, when plugged in with lamps known to work, some of the units did not produce light - or even sparks!

The following day, after school, I headed off to Strand's sales office with the recalcitrant spots in my school bag. I produced them at the service counter, where the kindly gentleman informed me that the lamp bases were dud, and quoted \$195 to replace them - exactly what I had paid to purchase the spotlights! My alternative was to buy the spare parts and fit them myself, 3 x P28 lamp bases, at \$45 each, which cost me \$135.

I was fortunate enough to secure a loan from the bank of mum, as an advance against my next 12 months worth of gigs, school socials etc. I purchased the lamp bases and repaired the equipment.

So you may ask, what is the moral of this

story?

Firstly, when purchasing at Auction, make sure you can test the equipment. Remember the famous slogan "Caviat Emptor" which means "Let the Buyer Beware" - goods purchased at Auction need not be covered by any warranty, nor for that matter fulfil the function for which they are originally designed.

Second, buying from a registered 2nd hand dealer would be safer, because most States have legislation covering the sale of 2nd hand goods, such that the goods sold must be capable of performing the function for which they were originally designed.

In closing let me say that in my years in the lighting sales business, one of the most common and frustrating enquires that I have received is the request for spare parts or service manuals for old items of equipment purchased privately or at auctions. So if you are considering buying 2nd hand, check the gear, and check the availability of spare parts. Although a reputable distributor should stock parts even for discontinued units, this isn't always the case.

Manufacturers have on occasion changed corporate structures, thus effectively abrogating any responsibility under the Trade Practices Act, to provide spare parts or ongoing service for items of equipment previously supplied.

Michael Tanner is Lighting Product Manager at Jands

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Auntie Frank



Hi Kids,

I've recently been talking to a few lighting people from "The Old School", the people who were lighting bands around the time when the "War and Peace" at Parramatta was king.

As all the memories of an era gone by, come flooding back. Way back when a three truss rig (flat of course), with 80 cans was a luxury only reserved for bands revered in a god like state.

I'd like to comment on a trend which seems to be increasing in all areas of lighting. Everybody seems to be obsessed with making some new shaped lighting grid. The main emphasis being placed on how many motor points the rigged is being suspended by. In recent conversation I overheard someone telling their mate; "the lighting should be fantastic the using 36 points for the lighting".

Visions of trussing assembled in the shape of a lobster which picks up the singer in one of its claws in the last song and eats him have been haunting me for months. It wasn't so many years which I was working amongst lighting who would look for new and interesting objects to use as set pieces. I still remember seeing Corrugated Iron roofing painted grey and used

as a cyc. I think it was "The Radiators", who had the big wheel of fortune with all the lights around it. What I am getting at is, the emphasis has gone from the actual lights themselves, to the actual structure that there suspended from. I've seen a lot of budgets where 90% of the budget has gone on rigging and left nothing for the lights.

My second bitch (whinger aren't I?) concerns automated lighting systems. It's amazing to see someone who has spent years learning to get the most out of an analogue lighting system suddenly regress many years. The forget all about the dynamics of lighting that exists without movement, ie; colour, intensity, beams and smooth operating. Instead there is this overwhelming fascination with movement. So many times I've seen someone jump on an automated system and forget that they are still operating lights. They don't have to look like a Pink Floyd clip for every song. You can still use one light on it's own. You can still crossfade between groups of lights slowly.

The same thing happened years ago when the first serious lighting desks were introduced.

Write to Frank
(Auntie) Calvi:
P.O. Box 171,
St. Peters 2044
Fax (063) 375-367

I can remember many a support band operator when he first sat down behind a beast. Something seems to happen to them when the were faced with more than 12 faders. If the desk had flash buttons, then you were in for a real treat. The previously meek and mild operator would turn into a crazed madman, determined to push every button, and use every facility on the desk, for every song. They would often look like a cross between Ray Charles and Rick Wakeman (a keyboard player of some notoriety, for our younger viewers).

So basically what I'm saying is that the lighting industry seems to have changed its priorities.

Instead of concentrating on the placement of lights, colour, focus and how the lights are going to be used, the emphasis has shifted to the building of "The Beast".

I'm sorry I didn't answer any letters this issue. Basically, I didn't get my shit together! But Hey, waddya want for nothing?

Aunties STAR GUIDE. The "Horror Scope".

I look into my magic mirror ball and help guide you through this mystery called life.

♈ Aquarius;

When the moon is in the seventh hour and Jupiter aligns with Mars then peace will guide the planets, and love will rule the stars. A time for contemplation.

♎ Capricorn;

A phone call from Elvis this week, confirms your beliefs that he is definitely dead. A time for reality.

♏ Libra;

You will be outraged to find that your star sign is named after a sanitary pad. And will be further upset when you discover that it doesn't have wings.

♋ Cancer;

What ever you do. DON'T SMOKE!

♊ Gemini;

A 6ft dwarf will visit your house demanding money for unpaid gambling debts. Patience and humour is advised.

♌ Leo;

Four wheel driving fleas go bush bashing in your pubic hair. A time of caution.

♐ Sagittarius;

You will ring a

friend and pretend to be Elvis. A joke that has serious repercussions, as you are booked to play Caesar's Palace and have nothing to wear.

♉ Pisces;

A recent journey enlightens you to the fact that your marriage certificate is not a receipt, and that you cannot take your wife back and change her.

♉ Taurus;

An exciting month which sees you winning a radio contest. First prize is 2 tickets to see Elvis at Caesar's Palace.

♈ Aries;

An inspiring Month which sees you working at a series of gigs at which no one asks "where's the gaff?"

♏ Scorpio;

A strange month in which you are visiting a department store and spot someone claiming to be Elvis, trying to buy a white jumpsuit to wear to a concert.

♍ Virgo;

Pluto is seen passing through the twelfth constellation on its way to become unified with a myriad of star patterns whilst concentrating its wholistic energies on a Solar system not unlike our own. A time to change chemists.

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Great Mistakes

...of Bastard lights and Theatrelight desks

I think almost enough time has passed for me to air my most embarrassing moment. But not enough for me to supply all the names!

A few years ago I was operating lights for a then up-and-coming band doing some warm up dates, this particular one being their first at the Sydney Cove Tavern. (Shudder! - Ed)

The Sydney Cove is not what you'd have called the easiest stage to rig. D.J. booth conveniently located in one corner, walls six inches either side of stage leaving very little for needless accessories such as winchup stands and dimmer racks. And the oh, so seventies disco lighting rig on miniature truss just in front of stage at about nose level. (Circa 1985, courtesy Lightmoves. -Ed)

Add to this years of unattended ash and beer, gaff and dust, and you've got one of those truly beautiful gigs that we all love. In fact I think the Sydney Cove may have been used as a model for most of the gigs around the country, past and present.

Anyway, I did my best. I put in a cyc which required lots of floor lighting (just to make sure that the stage and monitor guys could have a hard day as well!). I got it all up - I had bars of 64's hanging from nails in the wall, Rays suspended from old house electric cable hanging from God know's where. It was radical, dangerous, and beautiful!

The support band came on and I had a bit of a look. Yeah, well after all the hard work it scrubbed up OK. And after I patched all the Bastard lights back in (these being the ones that the Bastard L.D. for the headline band - ME - pulled out for the support band - THEM) it would look EVEN BETTER.

Finally it was half way through the last song for the support band - and that's when everything went black.....

I didn't panic. Obviously it must be the bloody 3 phase switch which is shared with the D.J. At the Sydney Cove, the D.J. switches the 3 phase from the band lighting to dancefloor lighting during the break. But I checked, and that wasn't it. In fact all the 3 phase connections were good, and there was power to the racks. In fact EVERYTHING checked out fine - it was just that NONE of the lights worked.

So then I panicked.

I opened up the desk. And while I did that, I got the FOH sound guy to chop and resolder the last 20' of the multicore (don't worry - it was Digital so it was only a mic lead), which was run across the floor. Maybe it had been stillettoed.

The band was running late, the crowd were in an abusive slow hand clap. It was hot. I was sweating. There was much pressure. But there were still no lights.

I had only one option. Hardwire two carefully chosen 64's into a power point and get the band on stage.

So I'm standing at my desk. The band is playing and there are two 64's on, and THAT'S IT. And I'm staring at this early model Theatrelight desk, looking at those horrible toggle switches that really piss you of, because you (or in this case, the support band L.D.) can't help but knock them.

And I'm looking at the last toggle, which is unmarked, trying to remember what that had to do with the Chaser.

And then I remembered four months earlier, when I last used that switch - to turn the desk on.

I flicked the toggle, the lights came on. I cried.

-Signed Kevin. (First name supplied because I'm brave. Second name withheld because I'm not stupid!) Par for the course?

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