

CADAC: IN PERFORMANCE

Mike Lethby

In the increasingly hard-fought world of theatre sound, few names today have the cachet of Cadac. With installations in countless big-league theatres and studios and numerous major show runs including *Aspects of Love*, *Phantom of the Opera*, *Cats*, *Les Miserables*, *Chess* and *Little Shop of Horrors*, they're virtually synonymous with theatre sound mixing.

Cadac is manufactured in Luton, England by Clive Green & Company, formed in 1978, and Clive himself has been involved in producing Cadac hardware since the late '60s.

The company's interest in technological progress is reflected by a £100,000 R&D investment in the past year alone, including a brand new CAD system to automate their circuit board design and production procedures - instigated by production director Chris Hall and technical manager Tony Waldron. Further expansion of their premises (opened in 1988) is already planned.

The current product line-up is headed by

the flagship E Type console, a sophisticated desk which is frequently supplied in customised configurations to suit clients' particular requirements. *Starlight Express* and the National Theatre are two such recent customers.

The newest Cadac E Type installation is at the Barbican Theatre, London home of the Royal Shakespeare Company - for whose latest production (*A Clockwork Orange*) the desk is being put through its paces with a vengeance.

I talked to the Barbican Theatre's house sound engineer Steff Langley about the development of sound production there, and how the Cadac is being used.

Sound At The Barbican

Steff Langley started his career at fine art school as a part-time lighting technician, followed by a spell of theatre work which convinced him that a technician's lot was "a damn sight better than being on stage!"

Moving on to become a jack-of-all-trades in

provincial theatres, working with miniscule budgets and equally basic equipment, he decided to specialise in sound and (to cut a long story short) arrived at London's Barbican Theatre.

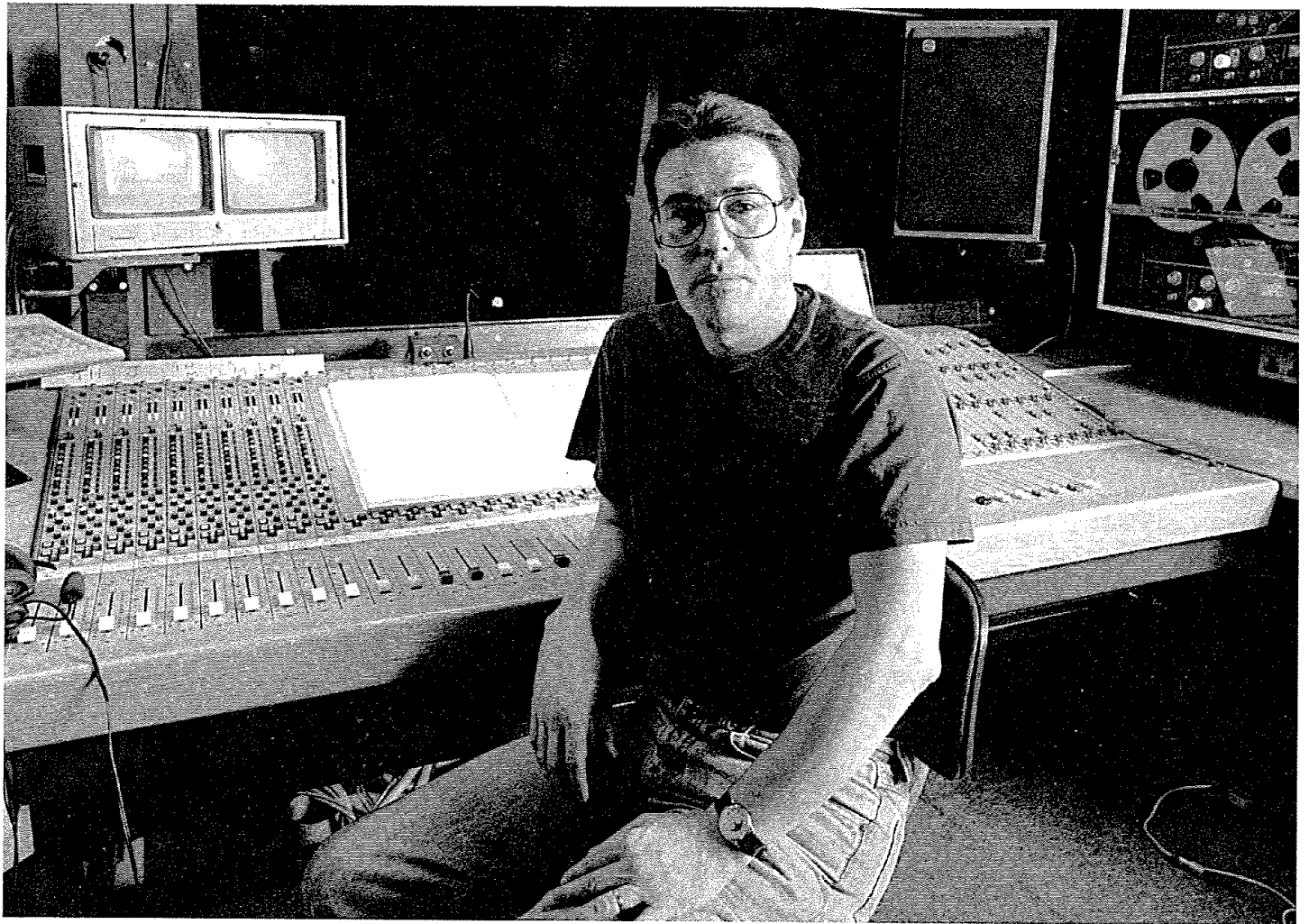
Steff explains how productions are created at the Barbican. "There are two types of tours. One is the regional tour, called the 'small scale tour', why, I don't know, because it uses three 40-foot artics! We take seating, a truss and our own sound system with a DDA 16 into 4, HH B500 amps, eight Tannoy Reds, 40 Pro-AC Tablets and cart machines which run off clicks from the Revoxes.

"For the main tours, the 'Royal Insurance Tours', which can go to the large venues, we hire a rig from Autograph. It can involve almost anything depending on the scale of the production: 4-tracks, amp racks, and normally Meyer and Tannoy Red speakers.

"Both tours go out together; and they change their nature every year. Although I'm not into touring myself I do feel responsible for them in a way, so when they're out I try



The Cadac console in situ at the Barbican.



Steff Langley, head of sound at the RSC based at the Barbican Theatre.

to go and see them, and say hello to the British Forces posted abroad! It's more civilised than rock and roll touring, you have a good time but there's no one night stands.

"In rehearsals we usually get a three hour band call to balance all the cues, but you can bet your bottom dollar that as soon as the band plays someone will start up a power saw on stage. The band are expensive, so you can't have them in for lengthy sound checks. So I need very simple, high quality equipment which I can just set up and turn on - there's no time to fiddle around.

"Each level is plotted for each cue, and on the night the operator changes those levels from the cue sheet. The cue sheets are just shorthand, you can't write everything down for the entire play. And after press night it's all locked in place.

"Tape levels have to be spot on every time, but the band can change dramatically each night because of this wonderful 'depping' system where a French horn player has a night off and another one comes in - and no two French horns are the same level or quality. So we're continually mixing the band.

"We get a standby on one side of 'phones from the DSM; the other ear has PFL and TV sound if you want it. We use infra-red cameras to monitor the stage and the conductor, even in pitch black.

"For *Clockwork Orange*, which is pretty complex, we have four days technical rehearsals and a fortnight's previews, and after each show we analyse what needs to change, different cues and sound levels here and there.

"Recorded music is out, due to union rules - if the script calls for a gramophone record, the band plays it and we EQ them to sound like a '78 or whatever.

"For recordings or broadcasts, we have a

separate dubbing room which overlooks the band area. It's only got a Revox B77 and a TEAC 8 into 4 mixer, and we hire in a multitrack for big productions."

Today's System

Steff runs through the story of how the present sound system was specified, and why.

"It's come after five years of hassle with the management, saying the desk we had was inadequate, unreliable, and was causing a lot of grief on shows - for which the operators were getting blamed. Cues didn't happen and they were spending more time during shows fixing the desk than doing the job they were paid for.

"The jackfields had been very badly put in years and years ago, wired by electricians, not audio engineers; it was appalling. The control gear had only been added to in very small amounts over the years, so we wanted to reconsolidate the whole thing.

"The minimum requirement was 40 channels because Stratford had 40 channels - most shows are produced there before transferring here, often via Newcastle.

"In theory we get the same size production; but after Stratford the director might decide to change it and there's often a few cast changes. Plus our auditorium, stage and band area are so different that the set and production usually have to be modified.

"As regards equipment, the artistic director is the ultimate boss, if he says 'no' we don't get it. I'm not sure if an artistic director should decide those areas - he's not a technical guy, he's a theatre director. I advise him on these things, but the way the RSC works is long and ponderous and it's very difficult to get decisions made.

"The biggest problem is getting money, because funding decisions go right down the

line. I'm always arguing that the sound department doesn't get a fair slice of the money; we're the poorest section of the RSC, partly because we're the youngest technical department in theatre, whereas there's been lighting since the '20s.

"For example, a costume can cost £2,000 - and it might end up in the bin. That would buy four amplifiers for five years! I don't want to build an empire of fantastic equipment, I just want the stuff to do my job - to entertain, and to fulfil the director's wishes. If you think about the cables alone, which always get a hammering, replacing the entire cable stock every three years isn't cheap with 20m of Belden costing £25.

"We did persuade them to buy a store of equipment for the regional tours, to improve reliability. The touring manager realised that if somebody rings up saying 'help!' from a little town in Yorkshire how can you help them? So every year we've upgraded something and retired the old stuff to the rehearsal rooms.

"When the RSC were negotiating a new lease from the Barbican Centre, they included a sum to replace the desk. They asked for £30,000, which I said was just not enough. It was hard to explain to an artistic director why we wanted a particular desk when all he's interested in is quality of sound come the green light; not how it's achieved.

"They couldn't give me a precise budget so I called Clive Green at Cadac and told him exactly what we wanted - a copy of the National Theatre's desk with our own modifications. He came back with a realistic quote which the RSC just laughed at; but at least it got the ball rolling.

"They came back and said: 'You've got £100,000', which had to include £5,000 to put the desk in - new jack fields, new wiring

and control gear.

"So by Clive Green's goodwill and a lot of negotiation we trimmed our cloth accordingly. Clive came in with an excellent price; that's a lot to do with his wanting to help, he gave us an extremely good package in every respect.

"We didn't look at other desks because there's nothing comparable around. We could have bought a Tascam flagship or an enormous Soundcraft for much less, but they wouldn't have done what we wanted.

"The only drawback is that the Cadac's so quiet, we're now listening to noisy microphones - you can't win! It's a constant process."

Cadac In Action

The new desk is based on the standard Cadac E Type with some special customisation - most obviously, its L-shaped layout to fit the small control room. It provides the standard 40 inputs and 16 subgroups (nine with VCA control) into a 24-way output matrix, each output driving an individual speaker send.

Langley continued: "We saved money by modifying an E Type input channel instead of starting from scratch. The rest is basically standard E Type, which is very comprehensive: the same superb sweepable equalisation as the A series, which you can't better."

The onboard computer controls automated subgroup-to-matrix routing and the aforementioned nine VCA subgroups. "We can assign any input to those groups, so we can group parts of the band. Often they start under the text at the end of a scene and we bring them up during the scene change, then down again under the text and out.

"The computer handles the VCAs, you simply dial up a number alongside the fader and it remembers that group level for each

cue. It also stores all the matrix settings and triggers tape machines and MIDI outboard like our REV-5 programs. And we've got two sets of output mutes - computer and manual mutes - which are essential because as soon as the band's finished they've got to be out. Everything else is still live so we can interrogate the desk, PFL it and listen to it.

"To re-route the desk you just press a button for a different cue number and the title will come up and say wind, interval, scene change, desk muted or whatever."

Customisation also includes a Tape Control panel, running an adjacent bank of Revoxes in soundproofed racks. And Langley enthuses over the desk's modular construction:

"That's the beauty of it, you can pull a channel out by undoing one screw. It's beautifully constructed. Essentially, it gives us much higher quality and far less worry. We can handle bigger bands, and it's much more reliable."

Speakers

The Cadac's matrix outputs drive a speaker system that dates back a good while, though Langley is generally satisfied with it. "We have large left and right proscenium units with Tannoy 12" and 15" drivers, using their internal crossovers to split the bass and mid/highs. The centre cluster is split left and right, and there are four speakers round the stage on individual sends for effects like dogs barking, cannons etc.

"There's also a 'fly floor' which runs round the back of the auditorium with four more speakers - Tannoys and old Lockwoods - for quad effects. They're driven from a pair of quad panpots on the desk so we're not adverse to flying helicopters around and landing them!

"But the width of our auditorium means we

have to cross the speakers to get an even coverage, so there's a hot spot in the middle. One of us sits there when we're in production and liaises with the director in plotting the show. Basically, a balance has to be maintained between the band's volume, effects and the level of a trained actors voice.

"The system sounds very clean and normally we don't drive it hard. But for Clockwork Orange (featuring music written by The Edge, U2's guitarist) we've built two compression horns with JBL components to boost the low sub bass. 'Monk' - a Barbican chap with rock PA experience - designed them and the London School of Furniture Design built them to fit our proscenium rig."

Effects and signal processing are fairly basic. The band are generally close-mic'ed, with a Yamaha REV-5 on hand for digital reverb and delay enhancements; a Drawmer noise gate counters spillage from click tracks and tapes.

Changing Times

In conclusion I asked Steff Langley for his views on changing attitudes to theatre sound production.

"It IS evolving. A lot of directors realise what's possible with new technology. For example, our sound effect library is now on CD which speeds the process of making up a sound tape and finding the right sounds tremendously. We've got four hours of wind in three-minute sections, and the director can be very specific - 'I want South Africa, the wind coming off the veldt'; she's been there, she LIVES it, and she wants it in her show.

"Mind you, although we don't have a pair of coconut shells anymore! We still try to use live sounds wherever possible. There's always a real door slammer with a variety of door knockers, bolts and hammers and we end up mic'ing it live!"

WE LEAD. OTHERS FOLLOW

Adda Super Cases are market leaders in professional, top quality, fibre cases. Tough and practical Adda Super Cases can take everything you throw at them.

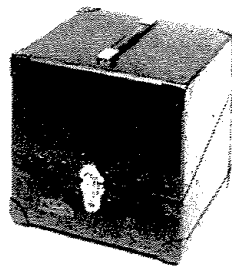
And with over 10 years experience Adda Super Cases have become the professional's favourite for quality and choice.

A choice ranging from singles and LP cases to smoke machines, Technics SL1200, Scanner and custom built cases too.

Send for a free brochure and discover why we call our cases supercases.

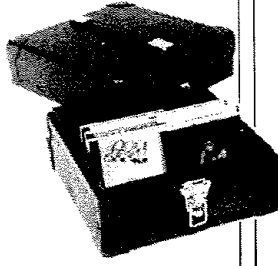
12" LP(90)
Lockable with extra strength handle and internal plywood base
Size 14½" x 13½" x 13¾"

ONLY £31.50



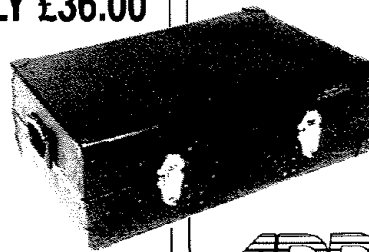
CD(40)
With valance, butt fitting lid and toggle catches.
Divided into two compartments
Size 12" x 12" x 8"

ONLY £25.50



7" (501)
Lockable with three compartments, two strong handles and detachable lid
Size 24½" x 16½" x 8"

ONLY £36.00



7" Singles (501) Case	only £36.00
7" Singles (500) Case	only £38.00
7" Singles (400) Case	only £34.00
7" Singles (401) Case	only £34.00
7" Singles (300) Case	only £32.00
7" Singles (301) Case	only £32.00
7" Singles (200) Case	only £24.50
12" LP (90) Case	only £31.50
12" LP (70) Case	only £27.50
Projector Case	only £30.50
Odd Job Case	only £30.00
Compact disc (40) Case	only £25.50
Compact disc (100) Case	only £31.50
Compact disc mix Case	only £30.00
Compact disc (150) Case	only £34.50

Compact disc (200) Case	only £37.50
Cassette (100) case	only £40.00
Compact disc Case 3" (50)	only £ 6.80
Video Case	only £28.00
Cassette (50) Case	only £27.00
48" U.V. Case	only £28.50
Scanner/Pinpoint Case	only £42.00
ZR 20 Case (Smoke Machine)	only £44.50
Mini Mist Turbo Case (Smoke Machine)	only £34.50
Rosco 1500 Case (Smoke Machine)	only £40.50
Le Fog Case (Smoke Machine)	only £34.50
Technics SL1200 Case	only £45.00

Double Technics Includes 19" Mixer Case	only £96.00
Lead box	only £18.00
SM58 Microphone Case	only £20.50
Slip mats pr.	only £ 7.50

Also cases to house:

Citronic Avon II
Citronic Thames II
Arkinic Tubes
Par Cans
Mirror Cans
Mirror Balls
Exhibition Equipment

ADDA
SUPER CASES £

Adda Super Cases Ltd,
P.O. BOX 366,
Cambridge,
CB4 5AX.
Tel: (0223) 233101
Fax: (0223) 233080

All prices include VAT and p&p

LIGHTING+*Sound*

International



THE ROXY, BURY (SEE DISCO AND CLUB SCENE)

- City Theatre Reykjavik
- Restoring Historic Canadian Theatres
- Paul McCartney and Simply Red on tour
- Smoke Without Fire: the latest on smoke and fog
- CADAC in Performance
- MAC and Wharfedale featured

FEBRUARY 1990