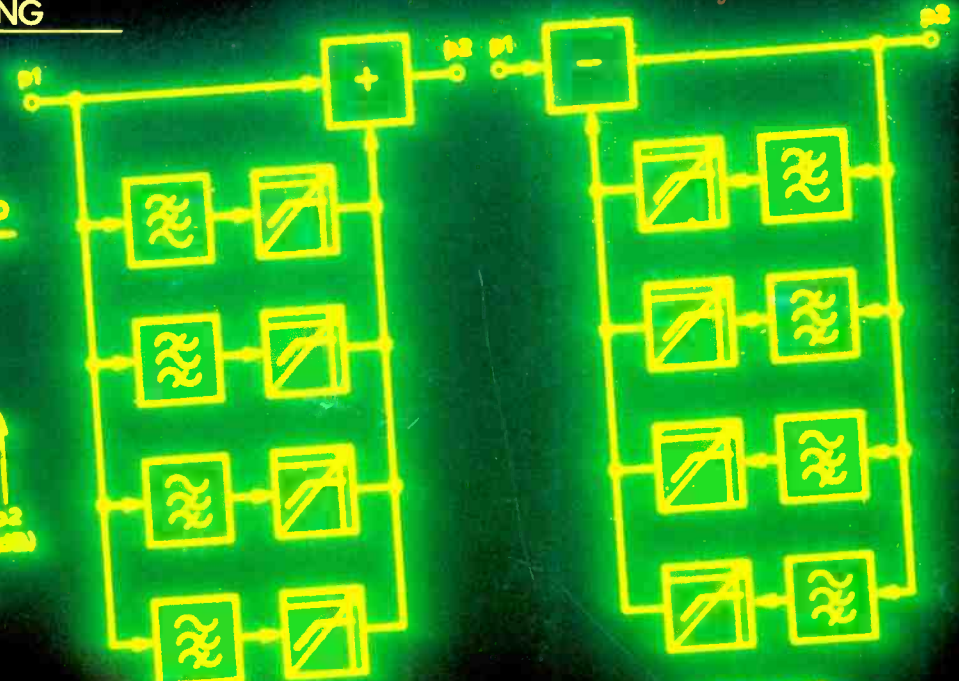


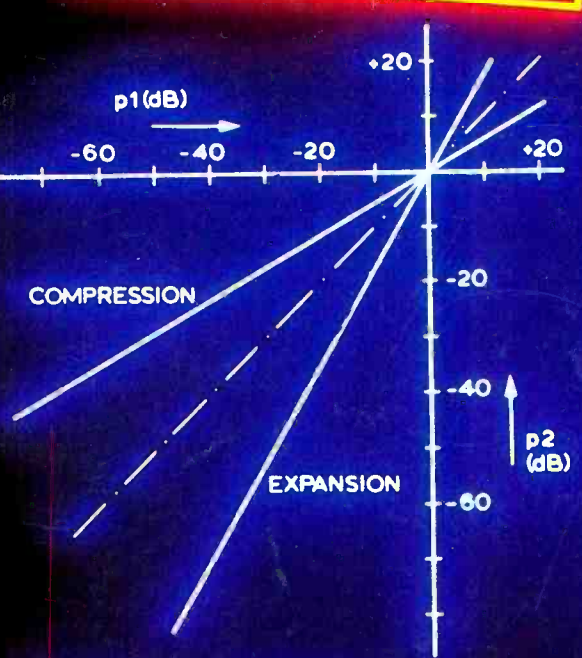
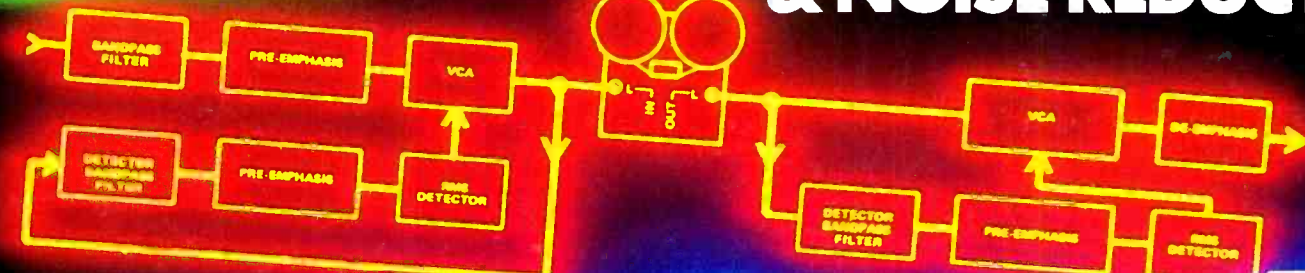
# STUDIO SOUND

AND BROADCAST ENGINEERING

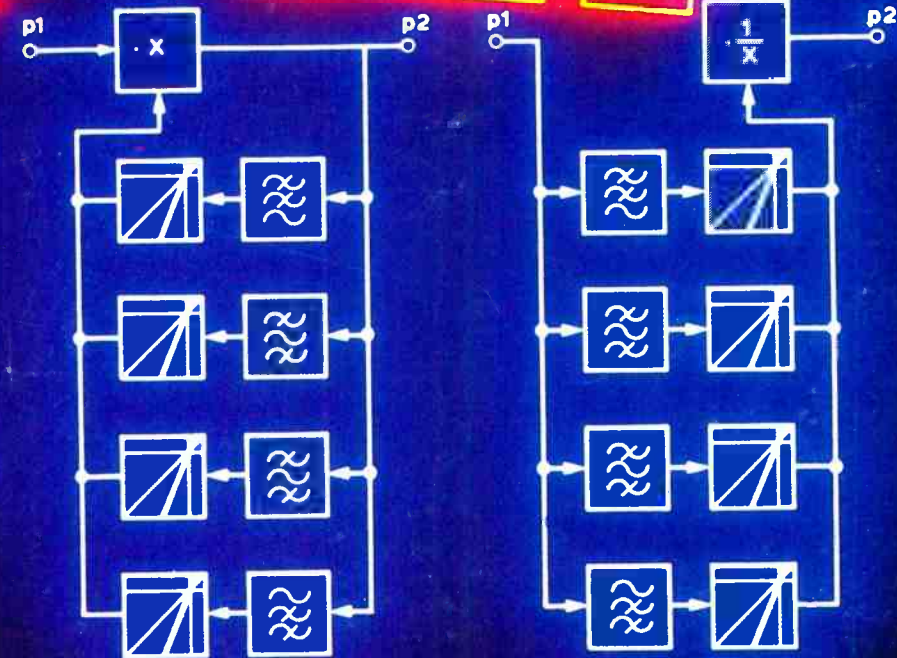


## COMPRESSORS, LIMITERS & NOISE REDUCTION

MODULATION CHARACTERISTICS



MODULATION CHARACTERISTICS



COMPRESSOR

EXPANDER

X

$\frac{1}{X}$

A LINK HOUSE PUBLICATION

A Saturn Multitrack audio recorder is the central focus, positioned on a black, tapered pedestal. The background is a gradient of blue, transitioning from a darker blue at the top to a lighter, cyan blue at the bottom. To the left, a portion of another piece of audio equipment is visible, showing several glowing orange indicator lights. In the foreground, the top of the Saturn Multitrack is visible, showing a control panel with various buttons and a display area. The overall aesthetic is clean and professional, emphasizing the technology's capabilities.

Total Remote has arrived.

The new SATURN Multitrack from Soundcraft.

# STUDIO SOUND

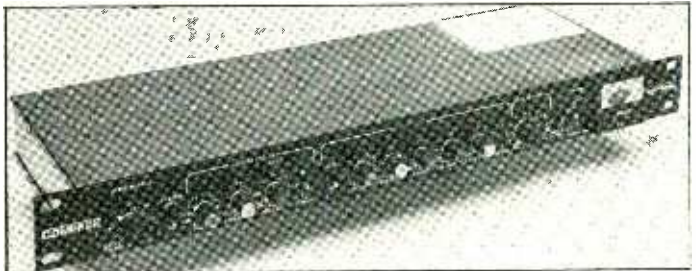
AND BROADCAST ENGINEERING

## REGULARS

- 5** Editorial: Keith Spencer-Allen on the subject of encoding discs to prevent copying
- 24** Diary: Location recording workshop—International writers—Agencies—Companding and noise reduction conference—Historic concert—DDA sold to Klark-Teknik—People—New book series—Literature received—Address changes—Forthcoming events—Contracts—Record evening—APRS 86 update—Multiway solution
- 32** New products: Soundtracs CMS2 interface—TAC new products—In brief—Quad 306 power amplifier—Electric Valve editing co-processor—Studer system controllers—Audio Logic MT66 and X324—Aphex Studio Dominator—ASC software—Cetec Gauss 7258 monitor—Troisi modules—Tascam ATR-60 series—ASC tube traps—Novotechnik joystick—CMX CASS 1 system—ART concert systems—C-Audio power amplifiers—Electrospace compressor—BBE 202 series
- 38** Music page: Mark Jenkins details some of the equipment on show at the Frankfurt Music Fair.
- 44** Studiofile: John Knight's, Cornwall—Soundpush, Holland—Glen, Stockholm
- 
- 52** Letters: Soundcraft SA1000 review—LF absorption—Alice's answer
- 64** Business: Broadcasting 78s—BBC staff cuts—BT efficiency. By Barry Fox

## REVIEW

- 87** Audio+Design Compex 2: Hugh Ford's technical evaluation of this signal processing unit



## SPECIAL FEATURES

- 56** Practical telcom c4: Keith Spencer-Allen talks to studios about their experiences with this noise reduction system
- 60** Noise reduction survey: A brief look at noise reduction systems available



## FEATURES

- 66** In perspective: US columnist Martin Polon is DASHing towards DIS and DAT
- 68** Inside The Alan Parsons Project: Recording engineer/producer/musician talks to Richard Elen about his techniques
- 72** CTEAP convention: This annual French event is growing. Terry Nelson describes some of the equipment on show
- 80** MIDI City—Unique Recording: Paul D Lehrman describes how a private studio in New York grew into a unique major facility

### EDITORIAL

**Editor:**  
Keith Spencer-Allen  
**Assistant Editor:**  
Carl Anthony Snape  
**Production Editor:**  
Ann Horan  
**Production Assistant:**  
Beverley Hudec  
**Consultant:**  
Hugh Ford  
**US Commentator:**  
Martin Polon  
**Contributing Editor:**  
Richard Elen  
**Secretary:**  
Carrie Love

### ADVERTISEMENTS

**Telephone Sales:**  
Adrian Tiffin  
**Secretary:**  
Mandy Paul  
**Production Manager:**  
Jacky Thompson  
**Japan and Far East Agent:**  
Media Sales Japan Inc. Tamuracho  
Bldg 3 3 14, Shimbashi Minato-Ku  
Tokyo, Japan



Editorial and advertising offices:  
LINK HOUSE, DINGWALL  
AVENUE, CROYDON CR9 2TA,  
GREAT BRITAIN  
Phone: 01-686 2599  
International: +44 1 686 2599  
Telex: 947709  
E-mail: 78:DGS1071  
IMC: STUDIOSOUND—UK  
© Link House Publications  
PLC 1986. All rights reserved.

 A LINK HOUSE  
PUBLICATION

Publisher and consultant to  
APRS for Studio Sound's  
Producer's Guide to APRS  
Members 1984/85

April 1986  
Volume 28

Number 4  
ISSN 0133-5944

Cover: Photo-collage by Roger  
Phillips

COMMERCIAL MANAGER  
Phil Guy

■  
**A new standard  
in digital recorders**  
**A new standard in  
pro audio rental**  
■

*Mitsubishi X-850*

---

**MUSIC**  
**LAB HIRE**  
*leading the way*



76 EVERS HOLT STREET, LONDON, NW1 1BY. TEL: 01-387 9356. TELEX 28159 MUSLAB G.

# EDITORIAL

# EDITORIAL

This month's comment from Keith Spencer-Allen

## Can't tell the bottom from the top

I have a great deal of sympathy for the record industry in its efforts to make money. Logically one could suggest that a wealthy record industry would lead to a healthy recording industry so our support is natural. It is really not that easy for record companies, though, as they find themselves in a continuously volatile and changing market with virtually no precedent to gauge their success or failure against, or even to look at for future guidance. Unfortunately, they do seem to have an innate knack of acting in what seems to us a most strange and self destructive manner, and quite frequently being sold on rather the wrong idea.

For instance, in the late '60s and early '70s the record business became big business and a natural opening was made for an influx of professional business people—accountants, lawyers, etc. It is of course not impossible for accountants to understand the music business but it is my experience that the music business survives very much on the intuitive feelings that a particular artist or song is right rather than by any form of rational logic. In other words a continuous gamble which is not a natural path for accountants to follow.

I would like to suggest—and I know that I am not the first—that many of the troubles the record industry found itself in a few years ago was largely of its own making: an inability to make records that people wanted to buy. Situations like this tend to correct themselves in time with the good and bad being sorted out, however, certain attitudes are still being carried over. One of these is that a tax/levy on blank cassette tape is a necessity for the record industry.

I am not going to dwell on the subject of any tax/levy with regard to blank tape as our magazine stance on this has been well documented and has not really been modified. Suffice it to say that I remain to be convinced that home copying is more negative than positive for the industry and that a tax/levy is really going to recompense any of the real 'losers' from any act of copying.

Last time we covered this topic a reader sent us a letter with a simple point to make. If we think there is something wrong with a tax/levy on blank tape and that the copyright owners should be compensated for possible infringements of their copyright, then the simple answer would be to place the tax levy on the discs themselves. This has the dual effect of solving the problems we see regarding the redistribution of tax/levy monies equitably and also shifts the emphasis to the record industry to do its own banking rather than putting a legal requirement on the tape

companies. We understood from a spokesperson at the BPI that this was not a new idea and had been dismissed as being impractical. I do not know why this should be the case.

On a slightly different tack, we have seen Barry Fox reporting regularly on the vain attempts to produce a spoiler signal that would be encoded on the recording and somehow prevent the recording of a copy. Such an idea is obviously impractical from the start but it took a lot of research to prove this fact to the record companies. CBS have followed on from this direction with a slightly different approach. Accepting that a single ended approach would not work, they have developed a chip that would fit inside the record section of a cassette recorder and when attempts were made to record a disc with a special encoded signal in it the chip would detect this and prevent the recording in some manner. Reports in the US music trade press have covered this in quite some detail reporting that an informed panel of listeners was largely unable to detect which recordings had the spoiler signal encoded and which did not. So far so good. It is just the rest of the logic that falls down.

Unless it could be made a legal requirement that all new cassette recorders be fitted with this spoiler chip, there would be little effect. Even if the unlikely were to occur, there are so many ways around such a system that there seems little point in continuing. The real cruncher comes from the reported views of certain members of the RIAA that perhaps this could lead to a dual inventory system with encoded and non-encoded versions of the same discs with a premium being charged for the non-encoded disc. This shows a marked lack of understanding of human nature.

If the tax/levy were required because home taping was considered a major problem, ie people were copying either their own or their friends' records, then making it more difficult for people to copy their own discs may result in their not buying their own discs but copying other people's non-encoded records. There is reason to believe that a strong motivating force to buy a disc is that high quality home listening is possible and copying say for the car or *Walkman* is easy. Why buy an encoded disc? I see this dual inventory system idea as the easiest way of fully killing off the vinyl disc industry long before its natural demise. It does seem ironic that this 'new approach' combines all the aforementioned tax/levy approaches and gains no advantages. When will they ever learn?

**STUDIO SOUND**  
AND BROADCAST ENGINEERING

STUDIO SOUND is published on the second Friday of the preceding month. The magazine is available

on a rigidly controlled requested basis only to qualified personnel (see back page for terms) or for an annual cost of £18.00 UK, \$40 US surface mail, \$75 US airmail, £24.50 overseas surface mail or £46.50 overseas airmail to non-qualifying readers or where more than two copies are required in a studio or small organisation. New subscription enquiries should be sent to the Croydon address on page 3. All other enquiries should

be made to **Studio Sound Subscriptions, Link House Magazines Ltd, Central House, 27 Park Street, Croydon CR0 1YD. Tel: 01-760 0054.**

**US mailing agents:** Postmaster please send address corrections to Studio Sound, c/o Expeditors of the Printed Word Ltd, 515 Madison Avenue, New York, NY 10022.

Total average net circulation of 13,981 per issue during 1984. UK: 5,735. Overseas: 8,246. (ABC audited).

Studio Sound and Broadcast Engineering incorporates Sound International and Beat Instrumental. Printed in England.

ABC

# The most intelligent move yet!

**STEREO**  
version now available



The RA226 Sampler represents a price breakthrough in digital audio technology.

Using innovative techniques in software driven processing this new Rebis module gives you 5.25 seconds record/playback expandable to 21 seconds on board, maintaining 16kHz bandwidth.

Variable two octave pitch shift also lets you take advantage of a useful range of time/bandwidth settings through to 84 seconds at 4kHz

Auto trip makes recording simple. Start and end controls define the memory zone for record and playback to enable precise

editing and splicing of single or multiple samples.

Forward and reverse playback modes plus loop, one shot and step functions with momentary or latching action ensure full creative control.

External inputs are provided for CV keyboard, DC remote and audio trigger.

Delay mode for ADT and repeat echo can be used without erasing samples from memory.

The RA226 Digital Sampler is one megabyte

of pure processing power made so instantly accessible you may never read the manual!

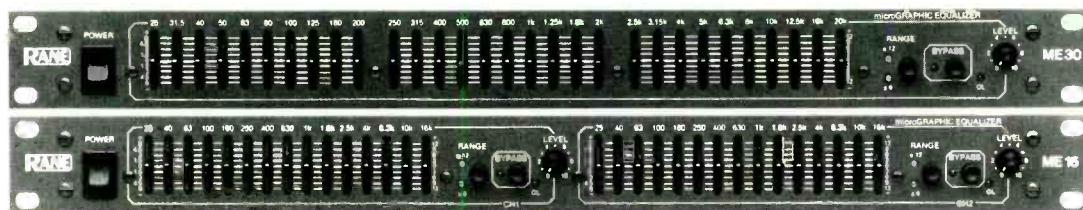
Give yourself the creative edge—get the full facts today!

**Rebis**  
*The Creative Edge*

**Rebis Audio Ltd. Kinver Street Stourbridge West Midlands DY8 5AB. ENGLAND.**  
**Telephone: (0384) 71865. Telex: 335494.**

Austria: Bauer Sound, Himberg 02235-89298. Belgium: S.F.D., Bruxelles 522 70 64. Canada: Heint Electronics Inc., Ontario 727-1951. Denmark: Kinovox A/S, Lyngø 02 18 76 17. Finland: Studiotec, Espoo 514 133. France: Lazare Electronics, Paris 878 6210. High Fidelity Services, Paris 285 0040. Germany: Thum & Mahr Audio, Leverkusen 2173-7806-0. Hausmann Concert Electronic, Berlin 4336097. Hausmann Electronic, Starnberg 8151 1031. Studioteknik Jürgen Klever, Hamburg 6901044. Hong Kong & China: Audio Consultants Co. Ltd., Kowloon 3-7125251. Italy: Startek, Bologna 32 10 63. Jamaica: Audioton Systems Ltd., Kingston 926-2569. Japan: Hibino Electro Sound Inc., Tokyo 442-4101. Netherlands: Special Audio Products B.V., Amsterdam 140035. New Zealand: Maser Broadcast Systems Ltd., Glenfield 444-3583. Saudi Arabia: Fadil Halwany & Sons, Dammam 8570848. South Africa: Tru-Fi Electronics, Johannesburg 786-7177. Spain: Singleton Productions, Barcelona 237 70 60. Sweden: Tal & Ton, Gothenburg 803620. Switzerland: E.M.M. Studio, Gempen 061 72 89 72.

# BORN TO RUN



Who says you have to walk before you run? Not Rane. We just produced a couple of brain children that deliver professional performances at entry-level prices.

Meet the ME30 TRUE 1/3 Octave and ME15 Dual TRUE 2/3 Octave microGRAPHIC Equalizers. Both incorporate Rane's unique constant-Q filter technology. They both offer precisely calibrated consistent frequency controls. And greater ease and accuracy than other conventional designs.

They also offer the same remarkable degree of feedback

and sonic control found on Rane's larger graphic equalizers.

There's more. Auto balanced/unbalanced floating inputs and outputs, range switch, hard-wire bypass, three-prong line cord and turn-on/off muting. And it's all tucked into a super compact, all steel chassis.

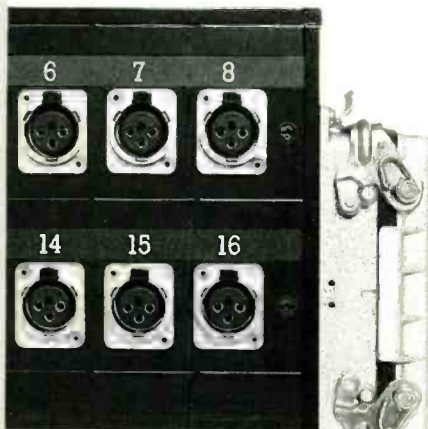
ME30 and ME15. They're the smartest technology you'll find. Best of all, both are priced to let you hit the road running.

Rane Corporation, 6510 216th Southwest,  
Mountlake Terrace, WA 98043. 206/774-7309.



**RIGHT  
AS  
RANE**

# WIRED FOR SOUND



STAGE SYSTEMS



KLOTZ BULK CABLE



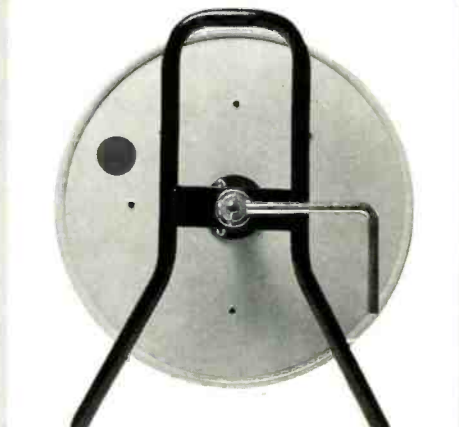
CABLE INTERFACE LOOMS



PRE MADE CABLE



CONNECTORS



CABLE DRUMS

A RANGE OF PROFESSIONAL AUDIO CABLE, CABLE SYSTEMS AND CONNECTORS FOR THE MOST DEMANDING USE IN RECORDING, BROADCAST, AUDIO VISUAL AND P.A.

Cables and Connectors used to be the last item on the list, that is until we came along. At Cable Technology we thought we'd make providing cable just as easy as choosing equipment.

We developed and introduced Klotz cable and made it a world standard, we promoted Neutrik Connectors and are now a main distributor, we manufacture two ranges of multicore

and stagebox systems using Harting Multipin connectors, and to help handle and store bulky cables, we market our own range of superb cable drum systems.

Our extensive knowledge of manufacturers and engineers specifications has enabled us to design specific interfaces for Soundcraft, SSL, Mitsubishi, Otari, Sony, Fostex and Tascam products etc., and we

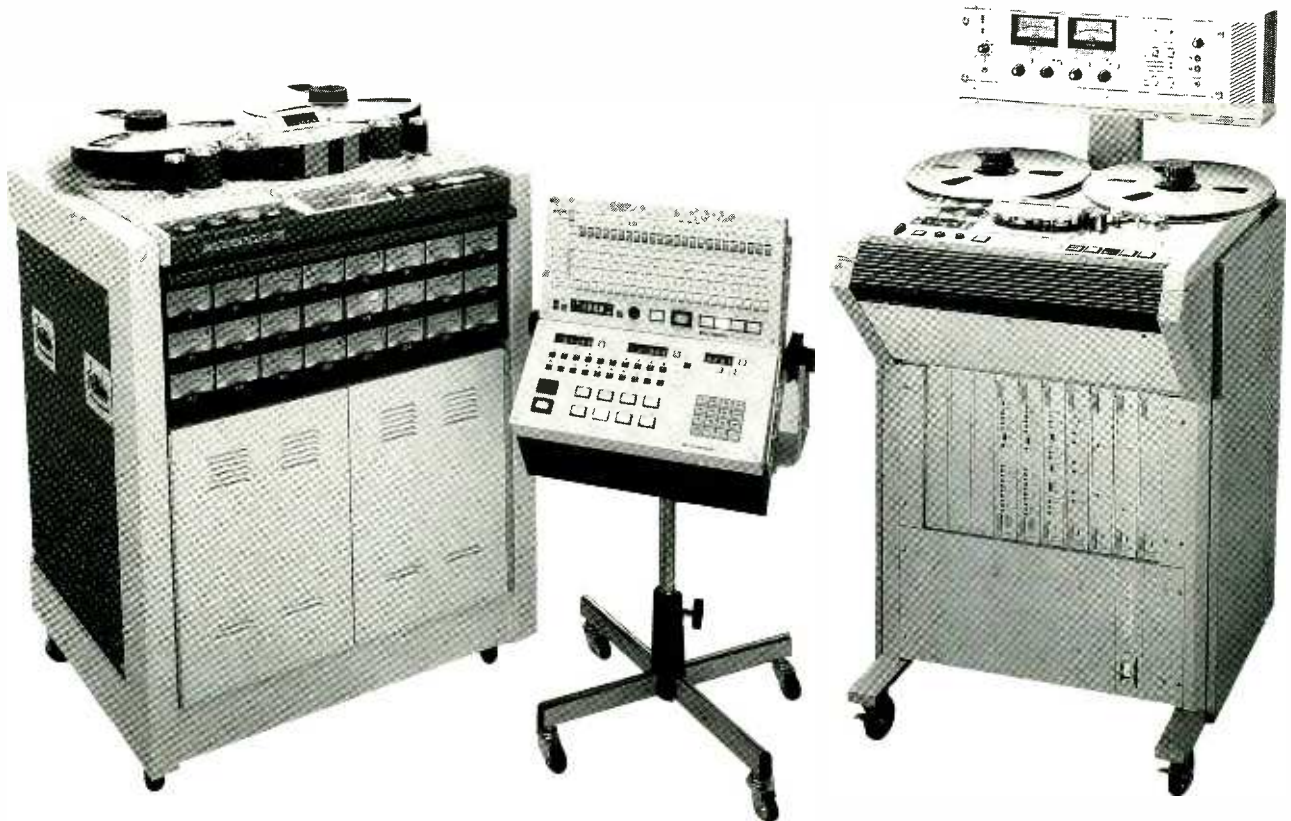
also manufacture a range of Microphone, Patch, Instrument and MIDI leads available directly from ourselves or leading Pro Audio dealers. Klotz Cable and Cable Technology Systems are now specified by the best and most prestigious studios and rental companies throughout the UK. For technical and delivery details and our new 1986 colour catalogue contact us now.

 **Cable Technology**  
PRO AUDIO CABLES & SYSTEMS

72-74 EVERS HOLT STREET, LONDON NW1 1BY TEL: 01-387 5783 TELEX: 28159 MUSLAB G



# Otari Rentals



## THE OTARI MTR 90 24 TRACK AND MTR 12 2 TRACK

The MTR 90's track record for outstanding reliability and performance and more recently the MTR 12 master recorder have proven Otari's long term commitment to producing state of the art analogue tape machines.

Similarly, our reputation at Music Lab Hire demands we rent only the finest and most reliable recording studio products available. When it came to investing in tape machines, our commitment had to be Otari.

When you rent Otari from Music Lab, be it for 24 track, 48 track lock-up, Mastering or Video post production, our technicians arrive with the correct cable systems and a fully commissioned machine.

When synchronisation is required, a Q-lock system including all correct interfaces is available as well as the new Otari EC101 Chase Synchroniser.

At Music Lab we not only recommend Otari – Otari recommend us.

**MUSIC  
LAB HIRE**

**01-387 9356**

**24 HOUR STUDIO EQUIPMENT RENTAL**

76 EVERS HOLT STREET, LONDON NW1 1BY. TELEX: 28159 MUSLAB G

**TRIDENT HOUSE, STANNES COURT,  
WARDOUR STREET, LONDON, W1.**  
**TEL. 01-734-8901/4**



4th April, 1968.

Mr. Malcom Toft,  
1, Wolverton Avenue,  
Kingston Hill,  
Surrey.

Dear Sir,

I am writing to confirm that the above Company  
is prepared to offer you a position as a Balance Engineer  
at a salary of £1250-0-0 per year, with a three months  
trial period and thereafter subject to a service contract  
to be agreed.

Yours faithfully,

  
**NORMAN SHEFFIELD.**

CENTREDISC LTD. DIRECTORS: M. JARDINE-PATERSON. N. J. SHEFFIELD. B. F. SHEFFIELD. R. E. IGGULDEN.

## 'The letter that led to a revolution.'

---

WHEN TRIDENT STUDIOS took on a new employee some eighteen years ago, they were unwittingly changing the history of sound recording.

For their young studio engineer, frustrated by his failure to find them a new console that satisfied their requirements, soon became a studio console designer. And Trident Audio was born.

Their first design, the Trident A Range, the first console to give EQ on monitor, is still being used in studios around the world and is still much sought-after on the second-hand market.

While its successors, including the Series 65, 75 and 80B and the TIL, have continued to break new ground.

Use of the monitor section as extra line inputs during mixdown; group assignment, allowing 16-track recording from an 8-track console; auto muting on inputs... they're just a few of the innovations pioneered by Trident.

But our new console makes all this seem like mere stepping stones.

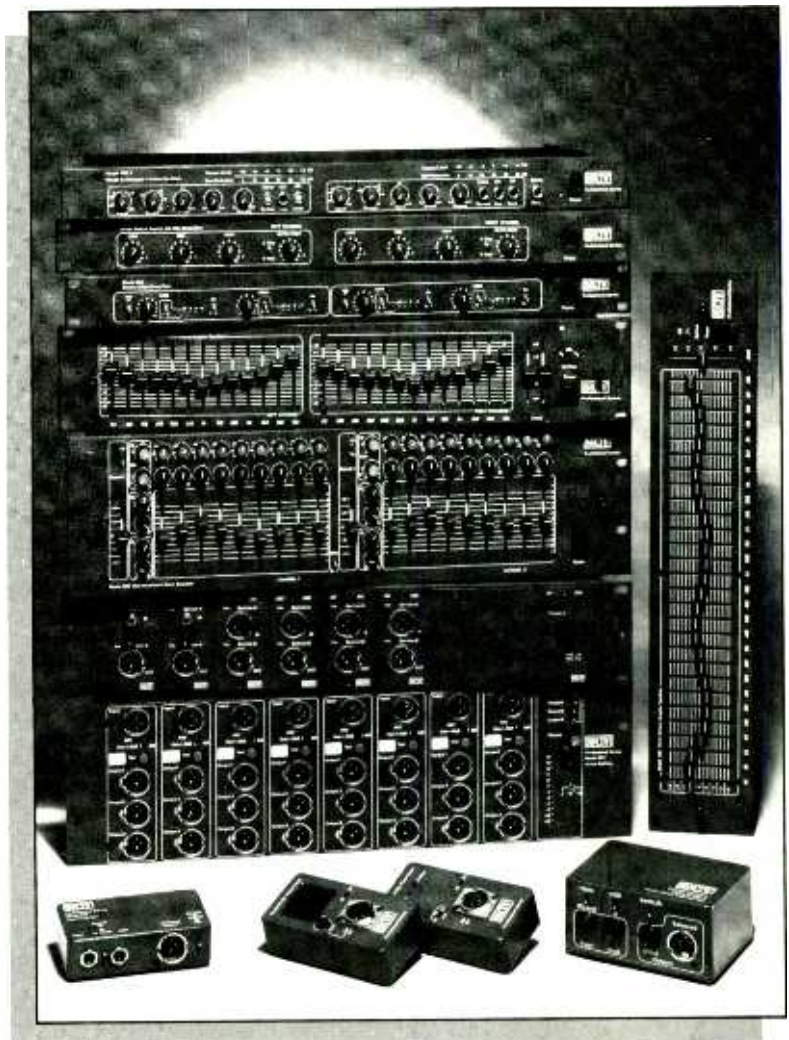
It's called the Trident DI-AN. It's like no mixing desk you've ever seen. And you'll be able to see it for the first time at the APRS show in June.



TRIDENT AUDIO DEVELOPMENTS LTD  
Trident House, Rodd Industrial Estate, Govett Avenue, Shepperton, Middx TW17 8AQ.  
(0932) 224665 Telex 8813982 TRIMIX G  
Trident USA Inc., 308 N Stanley Avenue, Los Angeles, 90036 USA.  
(213) 933 7555 Telex (255) 5106000019



# Our standards are even higher than yours



- |               |                                    |
|---------------|------------------------------------|
| DIBOX II      | Active direct box                  |
| DIP           | Passive direct box                 |
| PC80          | Phase checker system               |
| SRL2          | Dual compressor-limiter, de esser  |
| RBS2          | Stereo spring reverb               |
| NGS2          | Frequency selective noise gate     |
| EQ 213        | Dual 13 band, 2/3 octave EQ        |
| EQ 128        | 28 band 1/3 octave graphic EQ      |
| EQ 228        | Dual 28 band 1/3 octave graphic EQ |
| RE 209        | Stereo, parametric room EQ         |
| M 222         | Stereo, 2 way crossover            |
| FA4-2         | Stereo, 3-4 way crossover          |
| UB 280 series | Universal buffer                   |
| 824 series    | Active mic splitter                |

## DISTRIBUTORS

### AUSTRALIA

AR audio engineering  
59 Bristol rd, Hurstville 2220,  
Sydney — Australia  
Tél. : (02) 57.12.36  
Contact : Anthony Russo

### BELGIUM

Inelco  
Avenue des Croix de Guerre, 94  
1120 Brussel  
Tél. : 32.02.216.0160  
Tlx : 22 090  
Contact : Luc Vandeneynde

### CANADA

SF Marketing  
312 Benjamin Hudon, St-Laurent  
Québec H4N1J4  
Tél. : 514.337.6113  
Tlx : 826 765  
Contact : Sol Fleising

### GERMANY

BFE  
An der ochsenwiese 6  
6500 Mainz/Gosenheim  
Tél. : 06131/463  
Tlx : 187 300  
Contact : Bodo Feldmann

### ISRAEL

Sontronics electronic equipment Ltd  
103 Nordau BLVD P.O.B.  
21511 Tel Aviv  
61214 Israël  
Tél. : 03.44.22.33  
Tlx : 361 579  
Contact : Sonny Shmueli

### ITALY

Audio equipement S.R.L.  
20052 Monza Mi  
Via C.Rota, 37  
Tél. : 039.836767  
Tlx : 323668  
Contact : Giuseppe Porro

### NORWAY

Nortek  
Nydalsveien 15,  
0483 Oslo 4.  
Tél. : (02) 23.15.90  
Contact : Truls Berger

### SOUTH AFRICA

Tru-Fi electronics  
4 a Chadwick avenue,  
Wynberg, Sandton  
P.O. Box 84444  
Tél. : (011) 786.71778  
Tlx : 4 28708SA  
Contact : Flemming Ravn

### SWEDEN

Tal & Ton Ab  
Kampegatan 16 S ; 41104  
Goteborg  
Tél. : 031803620  
Tlx : 27492  
Contact : Jan Setterberg



## PROFESSIONAL SERIES

USA SCV Inc.

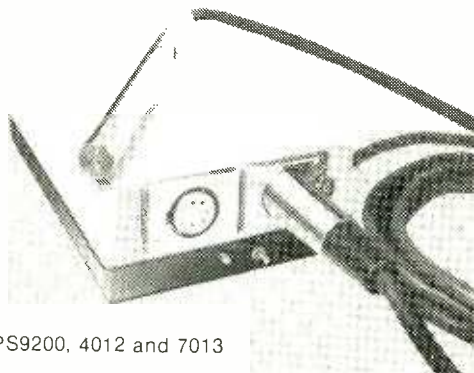
414 North Spark St.  
91506 Burbank USA  
Tél. : 818.8437567  
Contact : Ron Fuller

FRANCE S.C.V. Audio

186 Allée des Érables  
ZI Paris Nord II BP 50056  
95947 Roissy C.D.G. Cedex  
Tél. : (1) 863.22.11. Tlx : 212802  
Contact : Richard Garrido

# ACOUSTICAL INTERFACE™ SYSTEM

## PS9200 DUAL CHANNEL POWER SUPPLY



Shown PS9200, 4012 and 7013

**Precision Acoustical Measurements  
with FFT's, Scopes and Meters.**

**The system includes:**

- Type 1 Measurement Microphone(s), Companion Preamplifier(s) and Cables.
- Available in 1, 1/2 and 1/4 Inch Models.

**ACO Pacific, Inc.,** 2604 Read Avenue  
(415) 595-8588 Belmont, CA 94002

**ACOustics Begins with ACO**

# FFD Film & Broadcast Sound FFD

Showroom & trade  
counter open from:

MON-FRI  
9.30 to 17.30  
Saturdays  
10.00 to 16.00

Catalogues  
and further  
information  
available  
free of  
charge, on  
application.



**Beyer**  
Microphones &  
Headsets.

**Canare**  
Quad Mic  
Cable

**Panamic**  
Boom Arm.

**RTS**  
Communication  
Systems

**Shure**  
Microphones, Mixers  
& Accessories.

**Stellavox**  
Recorders &  
Mixers.

## FFD FUTURE FILM DEVELOPMENTS

P.O. Box 3DG, 114 Wardour Street, London W1A 3DG, England.  
Telephone: 01-434 3344 & 01-437 1892. Telex: 21624 ALOFFD G.  
Cables: Allotrope-London W1.

# APRS 86

## INTERNATIONAL PROFESSIONAL RECORDING EQUIPMENT

Armon Electronics Ltd  
Alice (Stancoil Limited)  
Audio Services  
Allen & Heath Brenell Ltd  
Audio Design Calrec Ltd  
Audio Systems Components Ltd  
Auxid Limited  
Armon Electronics Limited  
Amek Systems & Controls Limited  
Ampeg Great Britain Limited  
Autograph Sales Ltd  
Advanced Music Systems  
Audio Kinetics Limited  
Akai (UK) Limited  
AKG Akustische U. Kino-Gerate  
AKG Acoustics Limited  
Avcom Systems Limited  
Audio Developments  
Applied Microsystems  
Aces (UK) Limited  
Anders Electronics Limited  
Audio Music Marketing Limited  
Audio Video Marketing Limited  
Agfa Gevaert Limited

B.A.S.F. United Kingdom Limited  
F W O. Bauch Limited  
Britannia Row  
Branch & Appleby Limited  
Beyer Dynamic  
Brooke Siren Systems Limited  
Bell & Howell Limited  
Bruel & Kjaer (UK) Limited  
Connectronics  
Cadac Electronics Limited  
Cetec International Limited  
Canford Audio Limited  
Cunnings Recording Associates  
Crow Broadcast Systems Limited  
Philip Drake Electronics Limited  
D.D.A.  
Drawmer Marketing  
D W. Labs Limited  
Dolby Laboratories Inc  
Electromusic  
Elliott Bros (Audio Systems) Ltd  
Eardley Electronics Limited  
Ernest Turner  
E M O Systems

Film Tech Electronics Limited  
Fetver Limited  
Future Film Developments  
Formula Sound Limited  
G T.C. Limited  
Graff Electronic Machines Limited  
Harman Audio UK Limited  
H.W. International  
Hill Audio Limited  
H H. Electronics Limited  
Harrison Information Technology  
HHB Hire & Sales  
Hayden Laboratories Limited  
I.T.A.  
Industrial Acoustics Company  
Jackson Music Limited  
Klark-Teknik PLC  
Keith Monks Limited  
KEF Electronics Ltd  
K W. Electronics Limited  
Kemps Publishing Group Limited  
Kelsey Acoustics Limited  
Lennard Developments Limited  
Lindos Electronics

Lyrec (UK) Limited  
NEAL (Lee James Electronics Ltd)  
Mitsubishi Pro Audio Group  
Munro Associates  
Midas  
Minim Electronics Limited  
Mosses & Mitchell Limited  
Musimex  
Music Week  
Marquee Electronics  
MTR Limited  
Music Lab  
Neve Electronics Limited  
Otan Electric (UK) Limited  
Playback Studio  
Penny & Giles Limited  
Professional Recording Equipment  
Co Limited  
Quested Monitoring  
Quad Electroacoustics Limited  
Rebis Audio Limited  
Roland UK Limited  
Scenic Sounds Equipment  
Studiomaster  
Space Logic  
Solid State Logic  
Studio Sound

Sellmark  
Studio Spares  
Sound Engineer  
Strudwick Research Limited  
Sonifex  
Sony Broadcast Limited  
John Hornby Skewes & Co. Ltd  
Shuttlesound  
Surrey Electronics  
Stirling Audio Systems Limited  
Soundout Labs Limited  
Sifam Limited  
Soundcraft Electronics  
Sound Technology Limited  
Tape One  
Turbosound Sales Limited  
TracSystems  
Turnkey (Bandive Limited)  
Tandberg Limited  
Tannoy Limited  
TAM England  
Trident Audio Developments Ltd  
Trad Limited  
Tape Automation  
Technical Projects Limited  
Yamaha Kemble Music (UK) Ltd  
Zonal Limited

WED THURS FRI

**JUNE 25 26 & 27**

10.00 to 18.00 hours

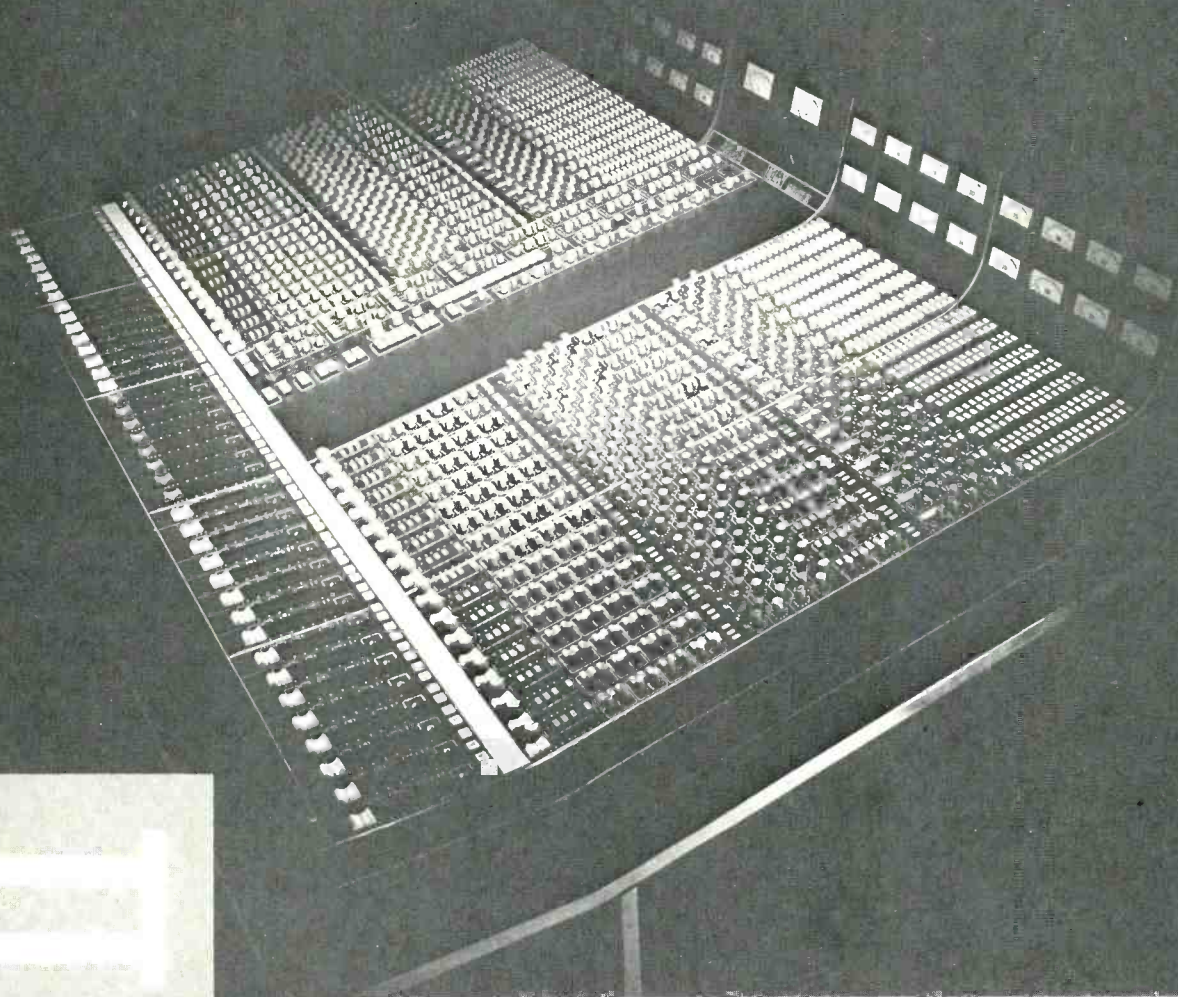
# EXHIBITION

OLYMPIA 2, KENSINGTON, LONDON

EXHIBITORS KNOWN AT TIME OF GOING TO PRESS

**Tickets: APRS, 23 CHESTNUT AVENUE, CHORLEYWOOD WD3 4HA, ENGLAND**

# SAJE



ULN II

The ULN II automatic mixing console for multitrack recording studios offers the following characteristics: up to 64 inputs, 32-track monitoring, 8 auxiliary outputs, 8 VCA-subgroups, compressor and channel noise gate, 3 different models of channel equalizer (baxencall, 9-band graphic, 4-band parametric), automation.

The logical structure of the ULN II console is truly automatic in 3 ways:

**TOTAL PROGRAM MODE:** The single keyboard permits instantaneous selection of 3 operation modes (recording, re-recording, mix-down).

**TOTAL RESET MODE:** The console status automatically returns to zero when changing mode ("recording" or "mix-down").

**TOTAL DISPLAY MODE:** The 16-function channel display permits continuous control of the status and functions in operation of each channel.

SAJE

Contact SAJE for full details!

3 Rue Verte 95100 Argenteuil France.

Telephone: (1) 39.61.15.62 Telex: 699672F SAJE.

# PA-VS 01-540 2164

Express studio equipment rental service

DIGITAL RECORDERS  
SYNCHRONISERS  
DRUM COMPUTERS  
KEYBOARDS

DIGITAL DELAY  
DIGITAL REVERB  
ANALOGUE EFFECTS  
VIDEO EQUIPMENT

### SALES AND TECHNICAL SERVICES

PA-VS offers a range of new and used studio equipment for sale at competitive prices plus a comprehensive studio and studio equipment design and installation service. Repairs and modifications carried out on most makes of equipment.

Palmer A-V Systems Ltd. 67 Mostyn Road, London SW19 3LL.

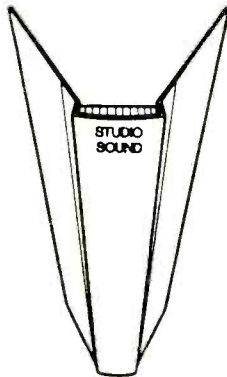
## NEW

A4 size STUDIO SOUND binders are now available (each holds 12 copies).

Keep your copies of STUDIO SOUND in smart black binders with the title in gold block letters on the spine.

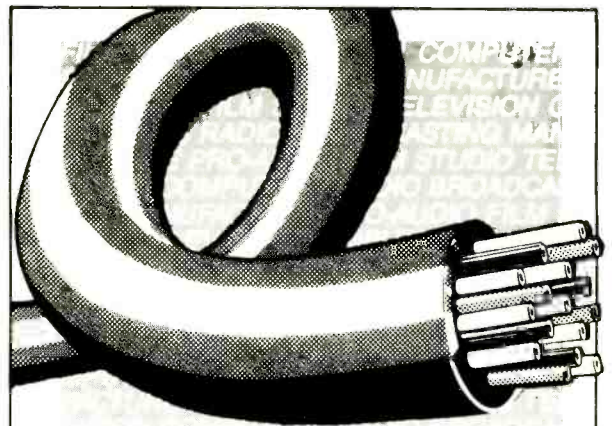
At only £3.50 each including inland and overseas postage and packing. Send your order with cheque or postal order to: Modern Bookbinders Ltd., Chadwick Street, Blackburn, Lancs BB2 4AG (state clearly your name and address and the relevant magazine title).

OVERSEAS READERS MUST SEND INTERNATIONAL MONEY ORDER



(Limited number of old size binders available).

LINK HOUSE GROUP



Cable...



CONNECTRONICS LIMITED CONNECTRONICS CORPORATION  
20 Victoria Road 652 Glenbrook Road  
New Barnet Hertfordshire Stamford  
EN4 9PF England CT 06906 U.S.A.  
Telephone 01-449 3663 Telephone (203) 324 2889  
Telex 8955127 SCAL G Telex 643678

# Dynamic Range Control at its best.



## Symetrix

SOUND TECHNOLOGY LTD  
6 Letchworth Business Centre  
Avenue One, Letchworth  
Herts SG6 2HR  
Telephone: 04626 75675

### 525 Dual Gated Compressor/Limiter

Simultaneous compress/limit and expand/gate.

### CL150 Fast RMS™ Compressor/Limiter

A highly cost-effective single channel automatic gain controller.

### 501 Peak-RMS Compressor/Limiter

Simultaneous peak and RMS detection. An indispensable tool for PA.

### 522 Compressor/Limiter/Expander/Gate/Ducker

Versatile multi-function processing for studio, stage, or production.

### 511 Noise Reduction System

Removes noise from any source, pre-recorded or live, mono or stereo.

Symetrix products are sold and supported world-wide. When you specify Symetrix you specify quality, performance, and reliability.



# Acoustic Headache? Nothing acts faster than Acoustitile

## ACOUSTIC TREATMENT

Too often we hear the expression "they can fix it during the mix." Regrettably it is not possible to remove reverberation, it colours everything. In today's quest for "tight sounds" reverberant acoustics are bad news. Complete control over everything hallmarks a successful recording session. Studio space considerations make natural concert hall RT60 reverberation times impossible unless the artist is recorded "dry" and controlled reverb is added during the mix.

The high cost of existing acoustic treatment panels had forced us to look elsewhere for comparable products. In fact that the Acoustitile surface was natural, not coated and more durable than competitive products convinced us that this was a better product. Hands on experience was the final factor. We needed fewer Acoustitiles than our competitors. Their energy conversion factor\* appeared high which indicated the chemist got the formula right when they formulated the foam. \*(conversion of acoustic energy to heat energy)

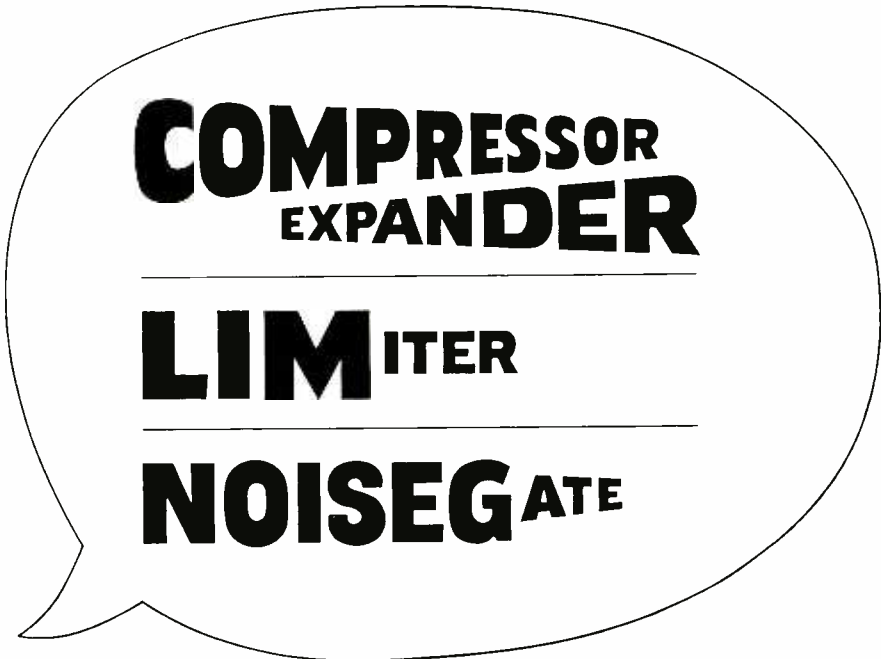
We treated 2000 sq. ft. of Studio ceiling and 60% of the ceiling. The treatment noticeably reduced reverbation. We had no objects on the floor or stand close to the room to be treated. We could not see the direct path of the sound to reflect off the walls. It was like a hand holding a tuning fork. The Acoustitile panels provided an isolation that was not possible with other materials. For the first time we could record a drum kit in a room and not have the sound like a bomb. The recent availability of a new product that form further confirms our choice. It is a product that will provide the recording industry with the means of controlling the acoustic environment in a way that is unheard of.

Chip Borko  
Studio Acoustics, Inc., Nashville, Tennessee

## STUDIO SPARES

16 STUCLEY PLACE, WIMBORNE, DORSET, ENGLAND, TOWN, LONDON NW1 6NS  
ORDERS 01-485 4908

## The combined . . .



original size 40 · 190 mm

### NTP has it!

Type 179-160 the combined unit with an excellent performance and intelligent features like:

Compression or expansion can be changed during operation by means of only one knob, while maintaining a constant output level . . . . .  
The same applies for ratio . . . . .

The variable hold level avoids pumping effects . . . . .

Includes programme dependant automatic recovery delay . . . . .



Also available in dual channel 19" version

For further information and full technical specifications.

## NTP ELEKTRONIK A/S

Theklavej 44 · DK-2400 Copenhagen NV · Denmark · Telephone +45-1101222  
Telex: 16378 ntp dk · Telegramme: Electrolab

# YOU CAN PAY LESS FOR A REVERB THAN THE RMX 16 BUT IT WON'T BE HALF AS GOOD

We would be the first to admit that the RMX 16 is not the only digital reverberator which benefits from AMS know-how. When our unit has been continually updated to maintain it as the world's number one digital device, a level of flattering imitation is inevitable. But nothing comes half as close to the sound quality, features, ease of use and updatability of the RMX 16. And at a price which represents such a modest proportion of your studiospend. Remember, choosing AMS means never doing things by halves.

## OR WILL IT?

**RMX 16**

**ams**  
SOUND  
+WITH+  
VISION



**Advanced Music Systems.**  
The Queen's Award for Export Achievement to Edendeca Ltd. In July 1985 Edendeca Ltd. became AMS Industries plc.



model rmx 16: digital r

For full details on the RMX16 contact us today.

AMS Industries plc, AMS Industries Park,  
Burnley, Lancs. BB11 5ES. England.  
Tel: (0282) 57011 Telex: 63108 AMS-G.

Harris Sound Inc. (Los Angeles)  
For nationwide sales, rental or  
service. Tel: (800) 233 1580

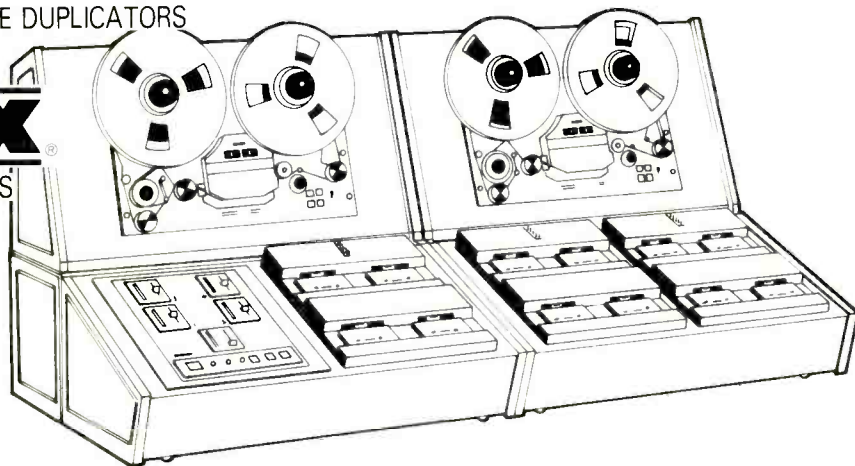
## the know-how, the back-up and the goods

# AVCOM

SPECIALISTS IN CASSETTE DUPLICATORS  
SUPPLIERS OF

## TELEX

HIGH SPEED DUPLICATORS



The TELEX 6120—just one of a wide range of cassette duplicators for the production of audio and data cassettes. Efficient and durable. TELEX equipment is backed up by 15 years of AVCOM experience and reliability.

**Tony Martin, AVCOM SYSTEMS LTD, Stanlake Mews, London W12 7HS Tel no 01-740 0051 Telex 892513**

# Digital

**Don't be unsound...hire Feldon**

Feldon Audio (Hire) Limited • 126 Great Portland Street • London W1N 5PH  
Telephone 01-580 4314 • Telex 28668 AUDIO G. Celnet 0836-211330.

# When you're in the studio you want the best.

- **Innovative products using the latest technologies**
- **Sophisticated, versatile equipment to create originality**

At Electrospace Developments Limited, we have an international reputation amongst engineers for meeting all these criteria—and more.

And, you won't need a small army of technicians to get the best from our products.

Products like our New Gate and Strate Gate, unique Audio Gates which have a level of precision and control that needs to be seen—and heard—to be believed.

Like the Spanner, the industry's first digital panning system which gives infinitesimal adjustment and variation for both mono and stereo inputs.

And like the next generation of technological engineering which we are today developing into tomorrow's products.

Distributed in the UK by Britannia Row Equipment Limited, on 01-226 3377.

# Electrospace

ELECTROSPACE DEVELOPMENTS LIMITED THE SOUND OF QUALITY

**Main UK dealer, Professional Audio Limited,**

**Professional Audio House, 53 Corsica Street, London N5 1JT. Tel: 01-226 1226**

Authorised dealers: **Turnkey**—London, Tel: 01-202 4366/01-637 1701/0782 24257 **Don Larking Audio Sales**—Luton, Tel: 0582 450066

**Carlsbro Sound Centre**—Nottingham, Tel: 0602 581888

## NORTHERN AUDIO

### PROFESSIONAL STUDIO EQUIPMENT SECONDHAND PRODUCTS

#### SECONDHAND CONSOLES

- MCI JH400 28/24/2 with fully wired patchbay and JH50 automation, 4 yrs old
- Soundcraft TS24 32/24, 12 mths old
- Neve 8108 32 input with Necam 96 computer
- Soundcraft 16/24
- Neve 8128 36/24, 2 yrs old
- Artek 2500, 15/16/8/2 PA console, 2 yrs old
- Soundcraft 1600 24/16/24 with patch and stand
- Helios 28/16/24 Straight console, built 75 updated 1980, nice desk
- Trident series 808 32/24/2, 2 yrs old
- Trident series 808 30/24/56 (new)
- Neve 8108 56 input with Necam 2, 4 yrs old
- SSL 4000E Frame 40, fitted with primary computer (no recall)
- SSL 4000E 40/32/4/2 with recall

#### SECONDHAND MACHINES

- MCI JH110 24-track machine, 4 yrs old £10,000  
 Otari MTR 10 1/2" Master Recorder (mint) £3,900  
 Studer A810 1/2" Master Recorder £4,000  
 Lyrec TRS 24-track with remote, 6 yrs old £8,950  
 Tascam 35/2 1/4" Master, ex-demo £650  
 Studer A80, Mk 2, 5 yrs old approx, nice one £14,500  
 JBL 4435 Monitors, 12 mths old £2,500  
 JBL 4430 Monitors, 18 mths old £2,003  
 Tannoy little red monitors (new) £690  
 Neumann U871 complete refurbish from Bauch Neumann U871, s/h £385  
 AKG C451 with various capsules £350  
 AMS 1580 dig/del with 2 408 milli sec cards £125  
 AMS 1580s with 1 x 4.08 card + 2 x 1.6 cards first pitch change and degitch (new) £2,650

- 1 NSF Plate stereo, 12 mths old £650  
 1 Stocktronics plate stereo, 2 yrs old £1,450  
 Neumann TLM 170 I 2 off the pair £900  
 Quad 405/2 amp (new) £225  
 1 Pair JBL 4401, s/h £180  
 Drawmer DS201 (ex-Demo) £245  
 Ursa Major 8 x 32 (2 yrs. old, mint condition) £1,950  
 EMT Gold foil plate TS stereo £1,950  
 1 pair JBL 4425 monitors (new) £1,323  
 3M M79 24-track recorder with remote £8,750  
 Klark Teknik DN60, best offers  
 Lexicon PCM 60 (new) £1,495  
 Tascam 38, 12 mths old £1,250  
 Trident 65, 24/16/16 with fully wired patchbay, new £5,000  
 Raindirk Concord console, 28/24, nice one £6,000  
 Drawmer 201/221/231 (new, best prices telephone)  
 EMT 252 Reverb unit, best offers  
 Lexicon 224 with 4.4, best offers

#### NOTICE

We also act for studios as selling agents, let us handle the hassle of getting rid of unwanted items, it does not matter where you are in the world, why not drop us a line listing your equipment or ring us on the numbers below for the best rates. We assure you of our best attention and service plus the utmost confidentiality of all times.

WANTED urgently SSL4040 consoles up to 2 years old with total recall. Customers waiting.

WE ARE CONSTANTLY ON THE LOOKOUT FOR USED EQUIPMENT. PLEASE GIVE US A RING.  
**RING TONY BAYLEY ON 061-483 9563/4299 anytime or WRITE TO US AT:**  
 4 CHEVIOT ROAD, HAZEL GROVE, STOCKPORT, CHESHIRE SK7 5BH

**TELEX 666597 NAUDIOG**

Tel: 061-483 9563/4299

# TRAD

FOR SALE	£	FOR SALE	£
Studer A800 Mk.III, 24T, 2,500 hours	26,000	Trident series 80, 32-24-24	12,500
Studer A80 Mk.III, 24T, remote and autolocate 1,500 hr	19,500	Neve 8128, 32-24	47,000
Studer A80 Mk.II, 24T, remote and autolocate	16,000	Cadac 36-24-24	14,000
Studer B67 stereo console mounted	2,000	Alice 18-8 production desk	1,500
Studer J37, 4T, valve, 1/2 inch	1,500	Dolby M16H	4,500
Lyrec 532 24T, 32 memory autolocate	11,500	Dolby M24H	6,250
M.C.I. JH110B, 8T, autolocate, as new	5,000	Tannoy SRMX 15	pair 1,000
Itam 1610, 16T on 1" with noise reduction	4,500	Tannoy Devons	pair 120
Proline 1000SC, stereo, portable	each 475	Eventide 910 harmonizer	800
M.C.I. JH110 stereo	1,800	Aphex aural exciter, Type C	P.O.A.
3M M56, 16T	4,000	Electrospace time matrix	1,200
Quad Eight 32-16-24 desk	6,500	Kepex cards, 8 in rack with P.S.U.	850

The new all-valve E.A.R. Pultec Type EQ's and E.A.R. all-valve Fairchild Type Comp/Lim. are available ex stock.

Details on application

Export inquiries welcome

World Distribution: Trad Electronics Sales Limited

The above prices do not include V.A.T.

## TRAD

## ELECTRONICS SALES LTD

149b. St. Albans Road, Watford, Herts, WD2 5BB, England

Tel: Watford (0923) 47988/9

Telex: 262741

## GETTING TO THE HEART . . .

C-ducer mikes capture the sound of acoustic instruments by direct contact. Superbly.

No fuss, no mike stands and no effect from neighbouring sounds. 12-string, banjo or tom-tom, piano, sax or big gong are all fair game for this remarkable mike.

Available in two lengths, the C-ducer is less than 1 mm thick, flexible enough to follow curved surfaces and has a frequency response surpassing that of the human ear. All of which make it perfect for no-hassle quality stagework and recording.

Less than the cost of an average conventional microphone, C-ducer can transform your live and recorded sound in an instant. Check it out on your instrument at a dealer near you and you'll become a lover.

C-Tape Developments Ltd, Unit 19 Holder Rd, Aldershot, Hants GU12 4RH  
Tel: (0252) 319171 Telex: 858393

Madness Grateful Dead  
Dire Straits UB40 Lin  
Wham Spandau Ballet  
Jose Feliciano Toto Willie  
Kris Kristofferson Pink Fl  
Jan Armitage Stevie  
Chick Corea Chas and Dave  
Fairport Convention Neil Sedaka  
Van Morrison Frank Sinatra



C-ducer

...for Lovers of Real Sounds



You'll be hearing a lot more from us.

Whether you're in a studio, on the stage or at a nightspot, you'll be hearing a lot more from Court Acoustics. We've now developed sound systems for the entire professional audio field, so our sound is turning up in all sorts of places. Keep listening to this space. You'll be hearing from us soon.

The art of being heard. **Court Acoustics.**

Court Acoustics Sales Ltd 29 Beethoven Street London W10 4LG. Tel. 01-960 8178 Easylink No 19018075 Telex 946240 CWEASY G Ref 19018075

# DIARY DIARY

People, events, services

## DDA sold to Klark-Teknik

Klark-Teknik plc enters the mixing console business with the purchase of manufacturer Dearden Davies Associates Ltd (DDA).

According to the agreement, DDA becomes a wholly owned subsidiary of Klark-Teknik. Philip Clarke feels the acquisition will increase Klark-Teknik's spread of product lines and allow them to use their technical expertise and distribution network to good effect.

DDA will continue to operate from Isleworth, Middlesex, under the DDA banner with all existing lines continuing production—apart from minor cosmetic touches no changes are planned for console products.

David Dearden and Gareth Davies will be working closely with the Klark-Teknik team on research and development and Dearden takes a seat on the Klark-Teknik board of directors.

## People

● Dr Roger Lagadec formerly product manager digital audio at Willi Studer AG has been appointed general manager, technical management, of Sony's Communication Products Group. Dr Lagadec will be initially based in Europe but in May of this year will relocate to Japan.

● George F Currie has been promoted to president of Sony Corporation of America's Professional Audio Division. Mr Currie will continue to direct the operations of the Professional Audio Division and will report to Mr Vander Dussen.

● Chris Gilbert previously with Shure/HW International for 21 years has joined Shuttlesound, the UK importers and distributors of Electro-Voice and other pro-audio products.

● Charles A Griffiths has been elected president and chief operating officer of J W Davis & Co Dallas, Texas. Mr Griffiths previously served as controller and since 1984, vice-president, finance. M H Earp continues as chairman and CEO.

● Stan Peters previously with Mollard Systems has joined dbx as vice president for marketing and sales. Peters will be responsible for worldwide marketing and sales for all divisions of dbx.

● Monster Cable has two new appointments. Paul Stubblebine has been promoted to sales manager for worldwide operations and Karen A O'Brien has been appointed marketing manager where she will be responsible for all new product literature, developing advertising and promotional campaigns and co-

ordinating trade shows.

● Walter Bachman has recently been appointed manager of purchasing at Crown International. Bachman was formerly director of purchasing at Brayton Chemicals.

● Herman Mack has joined Crown International as an engineer in their Prototype Engineering group. He was formerly chief engineer at Baltimore Electronics Associates. The company's chairman of the board and co-founder Mrs Ruby (Moore) Hunsberger has retired from the day to day running of the company although still involved in corporate level affairs as Chairman of the Board and a member of the executive committee.

● Charlie Day, formerly Soundcraft's International sales manager has been promoted to sales and marketing manager with responsibility for managing the development of the marketing strategy and promotional activities as well as retaining responsibility for international sales.

● Rod Thear has joined the team at Stirling Audio Systems as technical support manager, responsible for the servicing and maintenance of all equipment supplied by the company. Ruth Dalby joins to handle general administration of both sales and purchasing.

● Michael Goddard has been appointed national sales manager at Clear-Com where he will be responsible for domestic and Canadian sales and marketing. He was formerly national sales manager at Control Video Corporation.

## New book series

The 'Computer Music and Digital Audio Series' is a new book series edited by John Strawn of The Droid Works/Lucasfilm. The main aim of the series is to bring together in one place reliable and up-to-date information. The subject matter ranges through several disciplines, ie audio and electrical engineering, psychology, computer science, mathematics and, of course, music. Three titles form the initial launch—*Digital Audio Signal Processing: An Anthology*, *Digital Audio Engineering: An Anthology* and *Composers and the Computer*.

Future projects in the series will include books on the use of digital audio in film post-production, books for home computer users, handbooks on CD players, MIDI manuals, graduate and undergraduate textbooks and various 'how to' publications.

Potential authors are invited to submit proposals to John Strawn, The Droid Works, PO Box CS-8180, San Rafael, CA 94912, USA. Tel: (415) 485-5000. Book orders should be sent to William Kaufmann Inc, 95 First Street, Los Altos, CA 94022, USA. Tel: (415) 948-5810.

## Literature received

● A F Bulgin has produced a 12-page brochure illustrating its range of mains inlet filters. Copies are available from A F Bulgin & Co, Bypass Road, Barking, Essex IG11 0AZ, UK.

● Copies of the new 1986 Short Form Catalogue are now available from Bruel & Kjaer (UK) Ltd, 92 Uxbridge Road, Harrow, Middlesex HA3 6BZ, UK. The free 64-page catalogue describes instrumentation and equipment for the

measurement, analysis and recording of data relating to sound, noise, vibration, illumination, thermal environment and medical diagnostics.

● A 24-page colour brochure is available from Duratube & Wire. In addition to covering the range of cable products the booklet also provides details on test and inspection facilities. Duratube & Wire Ltd, Central Way, Feltham, Middlesex TW14 0XD, UK.

## Address changes

● The Record Plant has recently announced the move to new facilities at 1032 North Sycamore, Hollywood, CA 90038. The telephone number (213) 653-0240 remains the same.

● Specialist design consultants Space Logic are now operating from their new studio at 94-96 Eversholt Street, London NW1 1BP, UK. Tel: 01-388 3859.

● The following companies Audio International SRL, Audium, Roberto Beppato and Neumannacoustic Di Roberto Beppato have moved and are

now located at Via Santa Maria 100, San Maurizio Al Lambro, Milan, Italy. Tel: 0039-2-25390121. Telefax 25391008.

● Kelly Quan formerly software engineering manager has left Otari Corp to start his own company, Kelly Quan Research. The microcomputer consultancy service for the professional audio, broadcast and video industry is based at Kelly Quan Research, 55 White Street, San Francisco, CA 94109, USA. Tel: (415) 771-6716.

## Forthcoming events

**March 17 to 21** IERE 6th International Conference on Video, Audio and Data Recording, University of Sussex, Brighton, UK.

**April 13 to 16** NAB, Dallas, USA.

**April 23** IERE lecture 'Developments in audio

companding and noise reduction techniques', Royal Institute, Albermarle St, London.

**May 13 to 15** ShowTech 86, Berlin, West Germany.

**June 25 to 27** APRS 86, Olympia 2, London, UK.



# Digital Mastering Rentals.

HHB are pleased to announce that they've re-equipped their digital rental service with the new Sony PCM 1630 processor and the purpose-built DMR 2000 recorders.

The PCM 1630 is the successor to the PCM 1610 and maintains the CD format compatibility which has made Sony the undisputed digital masters.

The PCM 1630 employs a superior 'oversampling' technique, resulting in even greater sonic accuracy, and the metering has been improved now giving essential 'over' and 'peak-hold' indication.

The DMR 2000 is the first U-matic recorder specifically designed for digital audio. Among other advantages of this machine are an integral fast-reading time-code generator/reader, which allows assembly of a continuous stripe, and self-cleaning heads.



Another new service – often free of charge – is the use of Sony's tape analyser DTA 2000. This employs the status port of the PCM 1630 to provide a print-out of errors vs. time, thereby removing one of

the uncertainties of the older systems.

These new machines, with the DAE 1100, form the heart of the digital mastering service that has made HHB leaders in the field.

Economic access to all this is afforded by a variety of interfaces that allow two-way digital communication between



the 1630 and the lower-cost PCM F1 and 701ES, thus significantly reducing post-production costs.

Not only do we supply and install mastering and editing systems where you want them, but we also provide full editing and copy facilities in-house, with skilled operators if required. Of course, this is backed up by HHB's trusted support service, with experienced Sony-trained engineers on 24 hour call-out.

By the way, it is not just our rental service that has expanded – we are now authorised Sony Broadcast dealers, handling their full range of digital and analogue products, as well as the lower cost processors.

And don't forget that we can also supply full studio installations, multitracks, consoles, video systems, signal processors, amplifiers, monitors..... in fact anything you need

For digital rentals, contact Richard Kershaw on 01-961 3295.

**SONY®**

FROM



# DIARY DIARY

People, events, services

The workshop on Location Recording held during the 79th AES Convention in New York was spread over three sessions, the first area being earthing and hum. Practical points that arose were the more twists per inch in the microphone cable, the greater the immunity from hum. This also applied to connector wiring in stage boxes, etc. The effectiveness of this was demonstrated by a defluxer being held close to different cables and connectors with dramatic changes in hum level. Another rule of thumb was that buzz generally indicated a shielding problem whereas hum showed a magnetic induction problem or—move the cable!

The importance of good planning for a location recording—whether in a mobile or a control room of fortune—was stressed 'even down to the last connector, especially if it is an oddball one' the best idea being to draw a complete block diagram of the system. Power requirements are vital and it is important that the studio be on a clean feed that is free of lights, refrigerators, electric tills, etc. Also make sure that you can get to the

## Location recording workshop

fusebox for your supply during the performance.

Where possible, a site survey is of the utmost importance as it enables you to decide microphone techniques to be used and how the environment will affect them, where cable runs can be made, etc. Get the venue management to cooperate by having all machinery and lighting turned on so you can check for noise and interference and avoid last minute panics such as a juicy buzz when the entrance neons come on! (If this happens, invite the manager for a drink and arrange to have them turned off during the recording.) At this point a comment from the floor was 'and be sure to bring your own fuses!'

A good deal of time was spent on microphone techniques but this should be familiar to most studio people and it is also often a matter of preference. However, remote recording is different from being in a fixed studio and common sense rules such as clear numbering of cables and keeping a tidy stage with

spare microphones on stands with cables ready can often be overlooked.

The importance of a fixed routine 'before the music starts' was stressed beginning with the powering up of the monitor system, 'then check each component by ear'. Microphones should be checked individually and any outboard gear such as reverb. You should decide on whether you want a performer or audience perspective and then panpot accordingly, making sure that spot microphones fit in with the imaging on stereo mics. This also forces you to pre-conceive the sound to a certain extent and identify sound sources so you are already starting to get familiar with the set-up. 'Take one on a remote is *the* take!' Other rules of thumb were if the mix is too high on the meters then the monitoring is too low, with the converse being true for low meter indications. One comment was 'get the monitor volume so you can mix by ear!'

Since one could write a book on location recording this

report will finish with a pot-pourri of comments from both the workshop panel and the floor on live mixing.

"Take your hands off the console. I don't know why but you hear better."

"Listen. Analyse what you hear and if you don't like it, decide why and *then* do something about it."

"If you move a knob, do it for a reason and don't just tiddle."

"If the faders are moving up and down all the time, either your mix is wrong or the musicians stink!"

"If you adjust for a solo remember to bring the fader back down."

"Avoid the creeping mix (up, up and awaaay...)"

"In live recording never close a microphone off completely."

"Make all adjustments minor ones, sudden changes will be too noticeable."

"Good communications among everyone are essential. However, don't work with people you don't like."

"Live production is controlling chaos."

"Learn to work with Murphy's Law!"

Terry Nelson

## International writers

*Studio Sound* is interested in hearing from journalists, writers and professional people in the recording industry who feel they would like to contribute to our international coverage of the professional recording scene. If you would like to write for *Studio Sound*,

are resident outside the UK and have a wide knowledge of your country's professional recording industry please contact the Editor.

Studio Sound, Link House, Dingwall Avenue, Croydon CR9 2TA, UK.

## Agencies

● Soundcraft Electronics Ltd of Borehamwood, Herts, has appointed JBL Professional as their exclusive distributor in the US and Mexico. Soundcraft USA, a new division of JBL Professional will operate from the old Soundcraft offices in Santa Monica, California under the direction of Ron Means. Wayne Freeman will continue to head the sales and marketing team.

● Harman (Audio) UK Ltd has been appointed exclusive UK distributor for all Rauch Precision power audio products.

● Uni-Tubes Ltd manufacturers of Kopex electrical conduit systems has

appointed Coburn & McKnight of 32 Lower Windsor Avenue, Lisburn Road, Belfast BT9 7DX as the company's sole agent.

● RPG Diffusor Systems Inc has announced a worldwide distribution network for its complete range of modular diffusors. Gerr Electro-Acoustics of Toronto has been appointed Canadian agents. RPG Europe has been formed in Wembley, Middx, which will serve Europe, the Middle East and North Africa. Far Eastern distribution will be handled by Solid State Logic (Far East) Ltd in Hong Kong. Australian distribution is to be announced shortly.

## Comanding and noise reduction conference

Developments in Comanding and Noise Reduction Techniques in Professional and Domestic Audio Systems will be the subject of a one-day conference currently being organised by the Institution of Electronic and Radio Engineers.

The conference will be held at the Royal Institution in London on April 23rd and papers will be presented by

Sony, Dolby Labs, dbx, Telefunken, Audio & Design, Electrosonic, the BBC Research Dept and the Home Office.

Further details can be obtained from The Conference Secretariat, Institution of Electronic and Radio Engineers, 99 Gower Street, London WC1E 6AZ, UK. Tel: 01-388 3071.

## Historic concert

We recently received an interesting letter from Dr J Krajc of Ceskoslovensky Rozhlas (Czechoslovak Radio) informing us of what they believe is the first ever live digital stereo satellite transmission. The event took place last year on the 24 November between Japan and Czechoslovakia.

The live classical concert was transmitted from the House of Artists, Prague using a digital signal derived from a

Sony 1610 processor. The video output of the 1610 was then linked to the Raisting earth station and beamed to the Intelsat satellite. In Japan a second 1610 was used to convert the digital signal to analogue which was then broadcast on FM Tokyo (80 MHz) to the Japanese listeners. The concert was performed at 11.00am Czech local time and heard live at 8.00pm in Tokyo.

# Low-cost digital audio comes of age.

The Sony PCM series has now been available for several years. In this time recording and broadcast organisations, government, educational and industrial establishments, as well as individual users have all acknowledged the unique value of these units, and made them a new standard. It is the superlative quality of Sony PCM digital, coupled with extremely low cost that has brought about this professional acceptance of the range. This is borne out by the number of new ancillary products from other manufacturers, that have further increased the flexibility and versatility of the range. Examples of these products are the 'CLUE' logging and editing system from HHB, as well as various interfaces which allow digital communication with the PCM 1610.

Sony has acknowledged that this acceptance by professional users necessitates a change of

policy towards these products. Accordingly they have upgraded them from the domestic catalogue, and, realising the need for professional support and all that that entails, have appointed HHB as specialist dealers to represent them in the pro-audio market.

We are proud to announce this appointment, and happy to assure our customers of continued availability of the PCM range. The re-instatement of the PCM production line has been very largely due to pressure from end-users, who are after all the motivating force in the audio world. So if you are involved with audio recording and are still unfamiliar with Sony digital, then you owe it to yourself to call HHB – the No. 1 name in Digital Audio.

**SONY** FROM 

HHB HIRE & SALES, UNIT F NEW CRESCENT WORKS, NICOLL ROAD, LONDON NW10 9AX. TELEPHONE: 01-961 3295. TELEX: 923393.



THE SONY PCM1 AND PCM701ES DIGITAL AUDIO PROCESSORS.

# DIARY DIARY

People, events, services

## Contracts

• Recent projects undertaken by Munro Associates and scheduled for completion in 1986 include, in the UK, Roundhouse Studios Three and Four, Power Plant Studio 1, Handle Music (4 studios), Ransome's Dock and Peter Gabriel studios. Other products include Puk Studio 2 (Denmark), Bermuda Sound (Bermuda), Halawani (Saudi Arabia) and Werner Studios (Copenhagen).

• Soundcraft are to install a 32-channel (fitted 26) inline console at the BBC Engineering Training Department in Wood Norton. The BBC has also confirmed an order for a second series 2400 for use in the Radiophonic Workshop in London. BBC Radio London has placed an order for a series 200B.

Further afield, five series 800B, two series 400B, one 500 and one 600 consoles have been ordered for various installations in USSR.

The Muziektheater, a brand new theatre for opera, music and ballet in Amsterdam has installed a computer-controlled Soundcraft series 2400 24-input console in the 1,700 seat venue. The 2400 is fitted with scene setting automation—a world first in the theatre according to Soundcraft. Concept and sale was by local dealers

Selectronic BV, 3 Pletterij, 1185 ZK Amstelveen, Holland. • DDA of Isleworth, Middlesex, is to supply the UK National Theatre with a 16/8/2 D series Matrix console. The console will be used in the Cottesloe Theatre. Turnkey has recently supplied Lillie Yard Studios in Fulham, London, with a DDA AMR24 36/24/2 console.

• In addition to the new remix facility at Swanyard Studios, studio design consultant, Discrete Research is currently working on the design and rebuilding of Studio Two at Red Bus Studios, the redesign of Studio One at Baby Records in Milan and acting as consultants to Valley Audio in connection with the construction of new studios for the Welks Music Group.

• The Opus recording complex in Bratislava, Czechoslovakia

has taken delivery of an SSL console and a Sony PCM-3324. According to Sony this is the first delivery of any digital stationary head recorder behind the Iron Curtain. A second PCM-3324 for a new remix room to be completed later this year has also been ordered. Other studios purchasing the PCM-3324 include Werner Studios (Copenhagen) and Studio +30 (Paris, France) which has purchased two machines.

• Audio Systems Components (ASC) has supplied Thames Valley Broadcasting (Radio 210) with four Sony PCM-701 digital processors as part of a substantial PCM/VCR package ordered by the radio station.

• Alice (Stancoil Ltd) has recently designed and installed a fully operational radio training suite at the London City University. The facilities include a newsroom, talk studio and self-op studio which includes an Alice 3000 series console, Technics SP 10, three Sonifex micro HS cartridge players and two Revox PR99 tape recorders.

• The National Video Center/Recording Studio Inc in New York has recently completed renovation on the Edison Hall Studio and Solid State Logic is supplying its new console. Tom Hidley was responsible for the acoustic design and Sierra Audio Acoustics the construction. The update includes a new 56 mic/112 line input SSL SL 6000 E console with Total Recall.

One of London's leading independent radio stations, Capital Radio is re-equipping Studio Seven with SSL. The studio, formerly owned by Scorpio Sound is being refitted with a 6000 series console and KEF KM1 monitors. This will be the first SSL console to be purchased by a UK independent radio company and the first 6000 series to go into a UK radio studio. It is understood that the studio will continue to be available for outside hire.

• ACT Jands Pty Ltd one of Australia's largest sound reinforcement hire companies has recently taken delivery of 48 Turbosound TMS-3 enclosures. This brings their total number to 72.

## Record evening

Last year's DEAF Dinner held at the London Hilton just before Christmas raised £20,000 which according to organiser Rodger Bain of CBS

Studios is an all time record. The annual event is organised to raise money to benefit deaf children and is variously distributed each year.

## APRS 86 update

The forthcoming APRS 86 exhibition has already proved a sell out according to APRS secretary Edward Masek. This year's exhibition, which will be held at Olympia 2, is already 35% larger than last year's show at the Kensington Exhibition Centre. So far 120 companies have booked space and more are expected. Many exhibitors will have larger stands and a new development this year is the 'sound village'.

The 'sound village' is a group of substantially built 3x5 m demonstration suites with spring closed doors. These are being purchased by the APRS and will be used for future shows. Among the initial exhibitors to book sound demo booths are Dolby Laboratories, Solid State Logic, Turbosound, Scenic Sounds Equipment and Yamaha Kemble.

Elsewhere, for the benefit of

90% of exhibitors who want it that way, the show remains 'silent' (apart from headphone listening) thus allowing exhibitors and visitors to discuss business without distractions.

During the exhibition the new BBC Transcription Service mobile will be on show inside Olympia 2 and there is ample space outside for other mobiles should anyone be interested.

Amongst the new participants for this year are Armon Electronics, MTR, Strudwick Research, Mitsubishi, Munro Associates, Akai, DW Labs, Turbosound, Tracsystems and Anders Electronics.

Klark-Teknik will also be exhibiting and Don Larking's 'over the road show' moves back into the main exhibition, sharing stand space with Soundtracs.

## Multiway solution

Consultant, Stephen Jones of BJ Auditorium Design has embarked on a private campaign to standardise certain connectors for audio equipment.

Having recognised various ambiguities and anomalies he suggests, 'in order to get the ball rolling', a number of new standards which manufacturers, members of the industry and official bodies may like to comment on. Mic lines including multiway connections (mic and line) and headsets would remain the same as now. For line levels and ring intercoms the 3-pin XLR system should have a facility for being able to change the biasing of the plug rib so that there are the (more expensive) universal connectors and fixed bias type. The biasing configurations should be colour coded such that the type can be easily identified.

Loudspeakers rated above 50 WRMS should have special 4-pin connectors with two

round pins suitable for 100 V working and two flat pins capable of carrying at least 16 A. Below 50 WRMS, DIN L/S connectors should be standard. Access and data should be based on 7-pin DIN connectors with Mic+access based on 5-pin DIN.

Jones is not suggesting that people should throw away all their existing connectors, or stockpile in order to undercut on prices and destroy the chance of unification, but it is being suggested that over a few years the standards will be self-motivating because the increased use of certain types will mean longer production runs and the lowest prices will bias towards those with greater economy of scale.

Anyone wishing to comment on the proposals either to support them or provide alternative points of view can contact Steve Jones at BJ Auditorium Design, PO Box 20, Herne Bay, Kent CT6 5XE, UK. Tel: 0227 364759. □



# This much power in this much amp.



The Amcron tradition of peerless performance was established with the introduction of the legendary DC300 series in 1967. Now, in 1985, on the back of modern technology and two decades of experience, Amcron bring you the Micro-Tech 1000 amplifier.

The Micro-Tech 1000 is the amp we've all been waiting for - lightweight, compact, and with more than enough punch to suit the increased power requirements of the digital age. These are the facts:

- 400 watts RMS per channel into 4 ohms.
- 500 watts RMS per channel into 2 ohms.
- 1000 watts RMS into 4 ohms - bridged mono.
- Safe operation at high power to 1 ohm.

- Reversible forced-air cooling.
- Amcron performance in 3 1/2" rack space.

We believe that these facts, coupled with Amcron's reputation speak for themselves. But if you wish to know more about the Micro-Tech 1000 and how it can solve your headroom problems, call HHB Hire & Sales at: Unit F, New Crescent Works, Nicoll Rd, London NW10 9AX. Tel: 01-961 3295. Telex: 923393.





*Sycu. The madding crowd. Far from it*



Gyco

20 CONDUIT PLACE, LONDON W2 TEL 01-724 2451  
TELEX 22278 SYCO G. FAX 01-262 6081

# NEW PRODUCTS

# NEW PRODUCTS

Equipment, modifications, options, software



## Soundtracs CMS2 interface

The Soundtracs CMS2 automated muting and video synchronisation package is now available for the CM4400 mixing console. Connected between a standard Commodore 64 and the RS232 communication port on the CM4400, the CMS2 is capable of storing mutes or whole patch changes against SMPTE or EBU timecode actively in the Commodore memory or on floppy disk.

The package features eight events controllers and the whole system, including the Commodore, sits on a small

trolley similar to an autolocator. Used with the CM4400 console the system offers a complete video synchronisation package with 24-track monitoring and 32 inputs.

**Soundout Laboratories Ltd, 91 Ewell Road, Surbiton, Surrey KT6 6AH, UK. Tel: 01-399 3392. Telex: 8951073. UK: Don Larking Audio Sales, 29 Guildford Street, Luton, Beds LU1 2NQ. Tel: 0582 450066. Telex: 825488. USA: MCI-Intertek Inc, 745 109th Street, Arlington TX 76011. Tel: (817) 640-6447.**

## TAC new products

The Scorpion FB console has been specifically designed as a cost effective, sound reinforcement console and features two standard chassis sizes, a small frame 18/8 and a larger, up to 30/12, version. Each frame size feature various combinations of input modules (SFB1000), output modules (SFB2000) and master monitor/communications modules (SFB3000). The latter provides a talkback mic XLR socket, headphone level control and via a bank of switches enables the engineer to talk to any or all the output mixes in any combination.

The output modules retain the earlier TAC 1682 equalisers and feature illuminated AFL and Mute switches, individual send and return controls, and VU/PPM meter switching and trim. Input modules feature the same mic amp and equaliser as the S100 console, eight independent sends and illuminated PFL and Mute switches. LED metering is standard and the console

comes with 100 mm faders and a lamp on a flexible stem.

The TAC TX10 is a new modular crossover network with the addition of 180° of phase adjustment and individual channel limiters. Housed in a 3U rack the centre frequency is set according to customer specification with alternative plug-in modules also available. Filter slopes of 6, 12, 18 or 24 dB/Octave can be supplied, the standard slope being 24 dB with the crossover points being either -3 dB or -6 dB below midband level.

Channel gain is adjustable ( $\pm 6$  dB), distortion is claimed to be typically less than 0.02% and noise better than -80 dBm (20 Hz to 20 kHz) any output. **Total Audio Concepts Ltd, Unit 12, Bar Lane Industrial Park, Bar Lane, Basford, Nottingham NG6 0HU, UK. Tel: 0602 701002/783306. USA: Amek Consoles Inc, 10815 Burbank Boulevard, North Hollywood, CA 91601. Tel: (818) 508-9788.**

## In brief

**HM Electronics Inc (HME):** has recently introduced a 700 series compatible, 2-channel rack mounted loudspeaker intercom station. The RL742 features simultaneous talk/listen via hand or headset, automatic loudspeaker mute and a phantom power supply for electret mics. The unit is compatible with other popular 3-wire intercom systems. Further details can be obtained from HM Electronics Inc, 9675 Business Park Avenue, San Diego, CA 92131, USA. Tel: (619) 578-8300. . . **Sifam** has released details of a new dual movement PPM indicator. Complying with the latest BBC spec (ED1542) the Type 74 meter is available with one white and one yellow pointer (type A) or with red and green pointers (type B). Various alternative scales can be supplied which can be illuminated, by the customer, through a window in the top of the case. Sifam Ltd, Woodland Road, Torquay, Devon TQ2 7AY, UK. Tel: 0803 63822. . . **Anchor Audio** has developed a small MOSFET-powered loudspeaker which can be used free standing or mounted into the Tektronix half-rack meeting all AN-1000 specifications. The AN-1000T is rated at 50 W and can provide a maximum SPL at 1 m of 100 dB. The speaker contains a single 4½ in drive unit, weighs 10½ lb (4.8 kg) and measures 5¼ x 8 x 8½ in (HWD). Anchor Audio Inc, 913 West 223rd Street, Torrance, CA 90502, USA. Tel: (213) 533-5984. . . **Ampex** has introduced a new music grade professional audio cassette, Ampex 672. The gamma ferric oxide cassettes are available in 25 cassette bulk trays and are primarily aimed at the spoken word market. . . **Lenco** has introduced the PPA-100 power amplifier. Rated at 100 W into 8  $\Omega$  the amplifier features separate and interchangeable left and right channels, forced air cooling and comprehensive electronic protection. Further details: Lenco Electronics Division, 300 North Maryland Street, PO Box 348, Jackson, MO 63755, USA. Tel: (314) 243-3147.

**Agfa-Gevaert:** Digital mastering tape PEM 297D currently available in ¼ in widths (4600 ft on 10½ in reels) is to be made available in both ½ in and 1 in sizes. Also new is a 2 in version of Agfa-Gevaert PEM 469. This will be available in 5000 ft lengths on a 14 in reel. . . **Anytronics:** has announced details of the SA 500 stereo power amplifier. Output is 255 WRMS into 8  $\Omega$  or 760 WRMS in bridged mono mode. Balanced connections are available as an option. Further details from ACT Sound & Light, UK. Tel: 0483 275808. . . **Dynamix:** has updated the series 11 stereo mixer with a re-styled fascia, lower noise circuitry, headphone socket and improved mic balancing. . . **Techworks:** of San Francisco has designed a stainless steel device to store tape reels during editing. Known as The Hook it simply attaches to the side of a machine or effects rack with adhesive-backed fabric fasteners thus removing the need to drill holes. Tel: (415) 285-6071. . . **Nakamichi:** has introduced its second professional cassette deck—the MR-2. The machine is designed for the duplicating and semi professional market and features unbalanced -10 dBV inputs and variable (up to +4 dBm) unbalanced outputs. . . **ANT:** has introduced a new telcom c4 compander card. The c4E is intended for applications where compact size and low current consumption is essential. The new card has a dynamic range of 115 dB and provides the standard c4 system 30 dB of noise reduction. . . **Otari** has introduced the model CB-120 autolocator for use with the MX-70 multitrack, the MTR-10/12 series II and the new MTR-20 2- and 4-track mastering machines. Features include drop-in rehearse mode, optional RS-422 serial interface, 99 memories, adjustable pre-roll and review, three user defined functions, two event relays, foot-switch drop-in, search start, review, cue shuttle, built-in hr/min/sec/frame calculator and a non-volatile memory.



# Who wants a stereo digital reverb with Midi for under £400?



## The MIDIVERB from Alesis

At £395 including VAT, you may not believe it, but the MIDIVERB is a top-class device. So *good*, it will impress even the most difficult A&R man. So *quiet*, it will put the average mixing console to shame. So *powerful*, that you will wonder why people even *consider* anything else!

The flexibility is remarkable – 63 programmes in full stereo, everything from plates to massive halls, decay time from 0.2 secs to 20 secs, and nine gated and four reverse room programmes, so *clear*, they will astound you.

Easily interfaced with most mixing desks, instruments and home recording studios, the MIDIVERB can be used stereo in/stereo out or mono in/stereo out. The reverb programmes in the MIDIVERB can be changed rapidly either manually on the unit, or from another MIDI device through any of 16 selectable MIDI channels.

### Specifications

Frequency response	20Hz to 10kHz
Dynamic range	80dB Typical
Programmes	63, Preset
Inputs	Stereo & Mono, Phono Jack, 50 Ohms
Outputs	Stereo, Phono Jack, 600 Ohms
Controls	Increment Prog/Midi Decrement Prog/Midi Midi channel select By-pass Mix (on rear)
Midi Connections	Midi In, Midi Through

## New Digital Reverb Design

All this has been made possible by a new design approach, borrowed from the most recent trends in computer hardware: RISC Architecture (Reduced Instruction Set Computer). RISC designs provide the programmer with a very small set of possible instructions that execute very quickly as opposed to more complex machines that offer more apparent power but operate slowly. RISC machines are simpler and less expensive and even though at first glance seem to have limited power, they often out-perform their bulkier counterparts.

The MIDIVERB uses an extremely specialised instruction set that runs at 3 million instructions per second, much faster than most systems on the market today.

Contact Sound Technology for your nearest dealer, or send £1 for a demonstration cassette.



sound  
technology

Sound Technology Limited,  
6, Letchworth Business Centre,  
Avenue One, Letchworth,  
Hertfordshire SG6 2HR.

Telephone: 0462 675675  
Telex: 826967

# ALESIS

# NEW PRODUCTS

# NEW PRODUCTS

Equipment, modifications, options, software

## Quad 306 power amplifier

Quad Electroacoustics Ltd, celebrate their 50th anniversary year with the introduction of a new power amplifier. The Quad 306 is rated at 70 W into 8  $\Omega$  and uses a highly developed version of feed forward error correction (current dumping) which was originally patented by Quad in 1975. The unit features separate power supplies for each channel, derived from separate secondaries on a common toroidal transformer (110 V versions require a different

transformer), no fuses or relays in the signal path and a signal to noise ratio of 110 dB.

Quad are also moving away from their traditional colour schemes, and whilst other Quad products can also be obtained in charcoal the 306 will only be available in the new metallic grey finish. **Quad Electroacoustics Ltd, Huntingdon, Cambs PE18 7DB, UK. Tel: 0480 52561. USA: Quad USA, 695 Oak Grove Avenue, Suite 3a, Menlo Park, CA 94025. Tel: (800) 227-9985.**

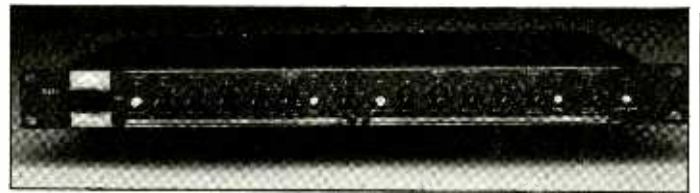
## Audio Logic MT66 and X324

Audio Logic has recently introduced a new stereo crossover (X324) and a stereo compressor limiter (MT66). The X324 has been designed for maximum simplicity in setting up and can be used either as a stereo, 3-way or mono, 4-way crossover. The unit features balanced inputs and outputs and phase inversion on six outputs with a seventh output for driving a mono sub woofer system in a stereo installation. Filters are state variable, 18 dB/octave Butterworth and a front panel 40 Hz high pass filter is provided. Mono operation is via a front panel switch: no external patching being necessary.

The MT66 compressor/limiter features both balanced and unbalanced connections, built-in noise gate, side chain access and a compression range of 1:1 to  $\infty$ :1. Each channel can be used separately or 'linked' via a front panel switch. A five segment LED indicator shows gain reduction and there are controls for gate, threshold, master ratio, attack, release, input and output level.

**Audio Logic, 5639 So Riley Lane, Salt Lake City, UT 84107, USA. Tel: (801) 268-8400.**

**UK: Sound Technology, 6 Letchworth Business Centre, Avenue One, Letchworth, Herts SG6 2HR. Tel: 04626 75675.**



## Aphex Studio Dominator

Aphex Systems has developed the *Studio Dominator*, a 3-band limiter with a proprietary circuit which adjusts the threshold for limiting, and can be used to create various sounds and effects with the tuneable crossover frequencies and high/low frequency drive controls. For maximum signal to noise performance the limiting characteristics can be specifically shaped to match a particular medium's saturation characteristics.

The *Studio Dominator* also includes a Transient Enhancement Circuit which is claimed to improve the

perception of transients whilst still maintaining absolute peak limit levels. Designed for any area where signal clipping is a problem, ie digital audio, disc mastering, video post production and optical film, the *Studio Dominator* can be used in conjunction with the *Aphex Compellor* for flexible dynamics control.

**Aphex Systems Limited, 13340 Saticoy Street, North Hollywood, CA 91605, USA. Tel: (818) 765-2212.**

**UK: Sound Technology Ltd, 6 Letchworth Business Centre, Avenue One, Letchworth, Herts SG6 2HR. Tel: 04626 75675.**

## ASC software

ASC has developed a range of audio test software for use with the Hewlett-Packard series 200 computers and HP3561A or B&K spectrum analysers. The system also operates and controls IEC/IEEE/GPIB instruments such as the Wavetek, Tektronix, Fluke and Nicolet, etc. The software is available in separate modules 12 of which are currently available. These include frequency

response, phase response, microphone frequency response, signal to noise, multitone distortion, swept THD and individual harmonic, gating and toneburst, 3-D response, TIM, wow and flutter, time and impulse response and balanced distortion.

**Audio Services Corporation, 4210 Lankershim Boulevard, North Hollywood, CA 91602, USA. Tel: (818) 980-9891.**

## Electric Valve Editing Co-Processor

Electric Valve Communication Corp have released details of the digital crossfade editing unit designed to be used in conjunction with the Sony F-1/701/501, Nakamichi DMP-100 or Sansui X-1 digital processors. Machine control and edit points are determined by the original machine with the co-processor executing glitch-free inaudible digital crossfades at each edit on to a new, F-1 format, digital audio master.

Dealer modifications are necessary although the final connections between units is via a single cable. Crossfade time is given as 8 ms with an editing accuracy of 16 or 33 ms (machine dependent). Compatibility is claimed with all editing systems designed to handle video tape.

**Electric Valve Communication Corp, Suite 604B, 250 Mercer Street, New York, NY 10012, USA. Tel: (212) 777-0498.**

## Studer system controllers

The SC 4016 and the SC 4008 Studer system controllers are now available. Described as 'the ultimate system controller' the SC 4016 is an intelligent control system using SMPTE/EBU in a multipoint arrangement. The controller itself provides a CPU with two RS232 data ports, SMPTE/EBU bus controller and interface, VME bus interface and timecode. There are also six free slots for use as a dual floppy controller, micro floppy drive, videomonitor interface, SMPTE/EBU timecode generator and an event relay card. Individual tape machine status or a locked group is indicated on a 4x40 display and the control panel provides full tape transport control (including Cue and Shuttle) for any one of 16 machines. Easy operation is provided by a 'Softkey' arrangement whereby the function of the keypad is automatically varied (and labelled accordingly by

means of a 8-character LED display) with varying operations. By using different software this menu driven system provides great flexibility for future system extensions.'

The SC 4008 is designed to work in conjunction with up to eight TLS 4000 synchronisers using a SMPTE/EBU bus in point to point configuration. It has provision for two communications cards each one providing four RS232/422 data ports. The SC 4008 can automatically switch between two master machines and has an optional Dump/Load Data facility which allows session data to be stored on floppy disc or be printed via a personal computer system.

**Studer International AG, Althardstrasse 10, CH-8105 Regensdorf, Switzerland. UK: FWO Bauch Ltd, 49 Theobald Street, Boreham Wood, Herts WD6 4RZ. USA: Studer Revox America Inc, 1425 Elm Hillpike, Nashville, TN37210.**

## Cetec Gauss 7258 monitor

Cetec Gauss has introduced a new monitor loudspeaker using the 200 W coaxial drive unit introduced last year. The model 7258 has a metric sensitivity of 95 dB and a conservative power handling of 200 W. Frequency response is 35 Hz to 18 kHz with a 30 H×30 V pattern at 2 kHz. The built-in crossover provides a high frequency balance control with a range of +3 dB to Off. High frequency roll-off can be adjusted between 0 and -12 dB from 6 to 15 kHz. The crossover is at 1.2 kHz, 12 dB/octave.

The enclosure, which is

walnut, features a symmetrical design with the drive unit in the centre between left and right ducted ports. According to the manufacturers this provides superior stereo imaging at the listening position without the need to purchase specially matched pairs. The model 7258 measures 24×19½×29 in. **Cetec Gauss, 9130 Glenoaks Boulevard, Sun Valley, CA 91352, USA. Tel: (213) 875-1900**

**UK: HHB Hire & Sales, Unit F, New Crescent Works, Nicoll Road, London NW10 9AX. Tel: 01-961 3295. Telex: 923393.**

## Troisi modules

Troisi edc has recently introduced an interesting equaliser module, the *DQ 520*. Essentially the unit is based on the *EQ518* parametric equaliser with the addition of a dynamic processor thus introducing the equalisation at a user-determined level. The equaliser covers the audio band in two overlapping sections, 31 Hz to 4 kHz and 125 Hz to 16 kHz, 6 dB to 24 dB/octave, +15 to -∞ gain control and shelf/peak select switch.

The dynamic section has a user-adjustable threshold control (-40 to +20 dB) which defines the point of smooth transition from no equalisation to the range selected. Additionally a Direction switch selects whether the EQ

comes in above or below the threshold. The dynamics can be triggered internally or can be driven from a broadband external source via a side chain input. Noise is quoted at -95 dBV EIN (20 Hz to 20 kHz) with THD less than .008%. The *DQ 520* measures 1½×5¼×6½ in.

Other items from Troisi include the *XCOM 636* compressor/expander, *FLTR 510* dual parametric filter, *EQ 517* and *518* parametric equalisers, *K1a* signal processing rack and retro fit EQs for the MCI series 600 consoles.

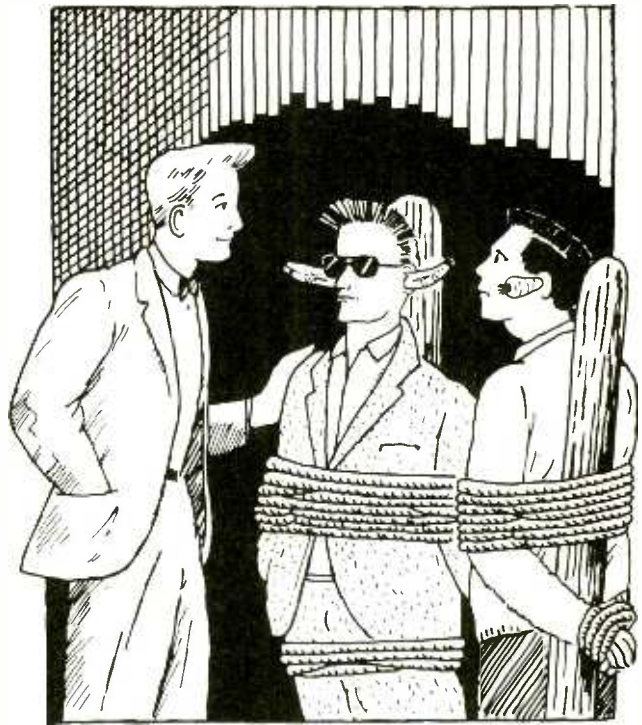
**Troisi Engineering & Design Co, 27 River Street, Westford, MA 01886, USA. Tel: (617) 692-7768.**

## In brief

**Rycote:** the *WindJAMMER* microphone windshield is made from a material designed by Rycote and wind tunnel testing has shown to give 6 to 8 dB better windkeeping than the usual form of high wind cover, it has been location tested on everything from full rigged ships at sea to tornadoes...

**Loctite UK:** has introduced the *PCB Assembly Line* range of adhesives and chemicals specifically developed for the assembly, repair and protection of PCBs, their components and sub-assemblies. **Loctite Holdings Ltd, Watchmead, Welwyn Garden City, Herts AL7 1JB. Tel: (07073) 31277...**

**Monolith Electronics:** a 4-channel downstream monitor audio cassette magnetic tape head (*C44R44PI*) designed and built by Phi Magnetronics, enabling the user to monitor the signal being recorded on to tape on each of the four independent tracks simultaneously. The mechanical dimensions conform with EIAJ standards and therefore it can be interchanged with existing heads on the majority of magnetic tape transports for compact cassettes... **Sifam:** has introduced a custom printing service for control knobs with high definition fine detail work to customer specifications.



**"IF YOU LISTEN CAREFULLY, YOU'LL BE ABLE TO HEAR ABSOLUTELY NOTHING" CONFIDED ARCHIE.**

Everyone who gives the Telcom C4D a fair hearing is as impressed as we are by this most effective noise reduction system.

It's advantages over other systems are it's greater noise reduction and simplicity of alignment. It is in fact the noise reduction system you don't hear!

Telcom C4D interfaces with all standard rack systems to produce a result we think is comparable with the vastly more expensive digital systems, yet produces a more detailed musical quality of sound. Enjoy hearing less of what you don't want, and more of what you do.

We can supply all your audio needs from a noise gate to a complete multi-pack recording package.

35 BRITANNIA ROW LONDON N1 8QH

**BRITANNIA  
ROW** 01 226 3377

**COMPLETE SERVICE AUDIO HIRE**

Tel: Day 01-226 3377 Night 01-223 1901 Black 281

TELEX: 268279 BRITRO G

# NEW PRODUCTS

# NEW PRODUCTS

Equipment, modifications, options, software

## Tascam ATR-60 series

A new series of ¼ and ½ in tape machines has been announced by Tascam. The ATR-60 series, which represents their top of the range models includes 2-track, ¼ in, 15/7½ in/s machines with NAB stereo heads (ATR-60-2N version), DIN stereo heads (-2D) or centre-track timecode (-2T). Also available is a ½ in, 30/15 in/s stereo machine (-2HS), a 4-track NAB version (-4HS) and an 8-track, IEC head, ½ in 15/7½ in/s multitrack machine (-8).

Each model has separate transport and electronics which can be rack-mounted in standard 19 in EIA racks. The transport system is designed to cope with a busy workload particularly when synchronised to other audio

machines and/or video systems.

The ATR-60 series features electronically balanced inputs/outputs, switchable 250/320 nWb/m flux level, headphone monitoring capability (2- and 4-track models) and low frequency compensation. A wide range of optional accessories are also available.

**Teac Corporation, 15-30 Shimorenjaku 4-chome, Mitaka, Tokyo, Japan. Tel: (0422) 45-7741.**

**UK: Harman (Audio) UK Ltd, Mill Street, Slough, Berks SL2 5DD. Tel: 0753 76911. Telex 849069.**

**USA: Teac Corporation of America, 7733 Telegraph Road, Montebello, CA 90640. Tel: (213) 726-0303.**



## CMX CASS 1 system

The CMX CASS 1 system is claimed to be the first integrated timecode-based audio editing and audio console automation system of its kind. The computer-aided system controls up to six audio tape machines and 15 additional sources. The CASS 1 system is referenced to timecode so it is possible to adjust fader levels during the mix to within 1/100 of a frame accuracy. The system itself is claimed to interface with most audio consoles with VCA-controlled faders and features recall and modify as well as mono and stereo recording.

In addition to integrating with the CMX Edit Decision List (EDL) the CASS 1 offers comprehensive list

management, as well as storage and retrieval of the entire edit list or sub list to and from a standard CMX floppy disk.

The console automation provides a fader memory system which can 'learn' a mix using up to 16 faders, in preview or record. Graphics on the CRT monitor show current fader levels at all times. Mixes, typically up to half an hour, can be replayed and modified and over 100 different mixes can be stored on the integral hard disk then subsequently copied to floppy disk for long term storage.

**CMX Corporation, 2230 Martin Avenue, Santa Clara, CA 95050, USA. Tel: (408) 988-2000.**

## ASC tube traps

Acoustic Sciences Corporation has developed a lightweight, portable acoustic treatment which they describe as a broadband passive device for use in control rooms and listening environments. The 1-800-ASC-TUBE units are 3 ft high and are available as Corner Loaded tube traps or Half Round wall units. According to the manufacture they are effective between 40 and 400 Hz (absorption to 10 Hz available on request) and will reduce corner-related amplitude and phase distortion, side wall

reflections, flutter echo and low frequency boom. Wall units are available in 9 in diameter units and the tube units in 9 and 11 in versions, the latter two of which can be stacked, one on the other to be used as a corner silencer behind free standing loudspeakers. Other fittings include eyelets for hanging the units vertically and end rods for suspending the units horizontally.

**Acoustic Sciences Corporation, PO Box 11156, Eugene, OR 97440, USA. Tel: (503) 343-9727.**

## Novotechnik joystick

A new conductive plastic joystick has been developed by Novotechnik of Stuttgart, Germany. The unit offers a two axis output in a heavy duty waterproof housing and is self centering and thus on its release will automatically revert to the centre position of both axis. Each potentiometer is fabricated using co-moulded technology which provides according to the manufacturer long life, high reliability, extremely good resolution and resistance to corrosion.

**Novotechnik KG, 7302 Ostfildern, Stuttgart, Germany. Tel: (0) 711 412921.**  
**UK: Variohm Components, The Cattle Market, Watling Street, Towcester, Northants NN12 7HN. Tel: 0327 51004.**



## ART concert systems

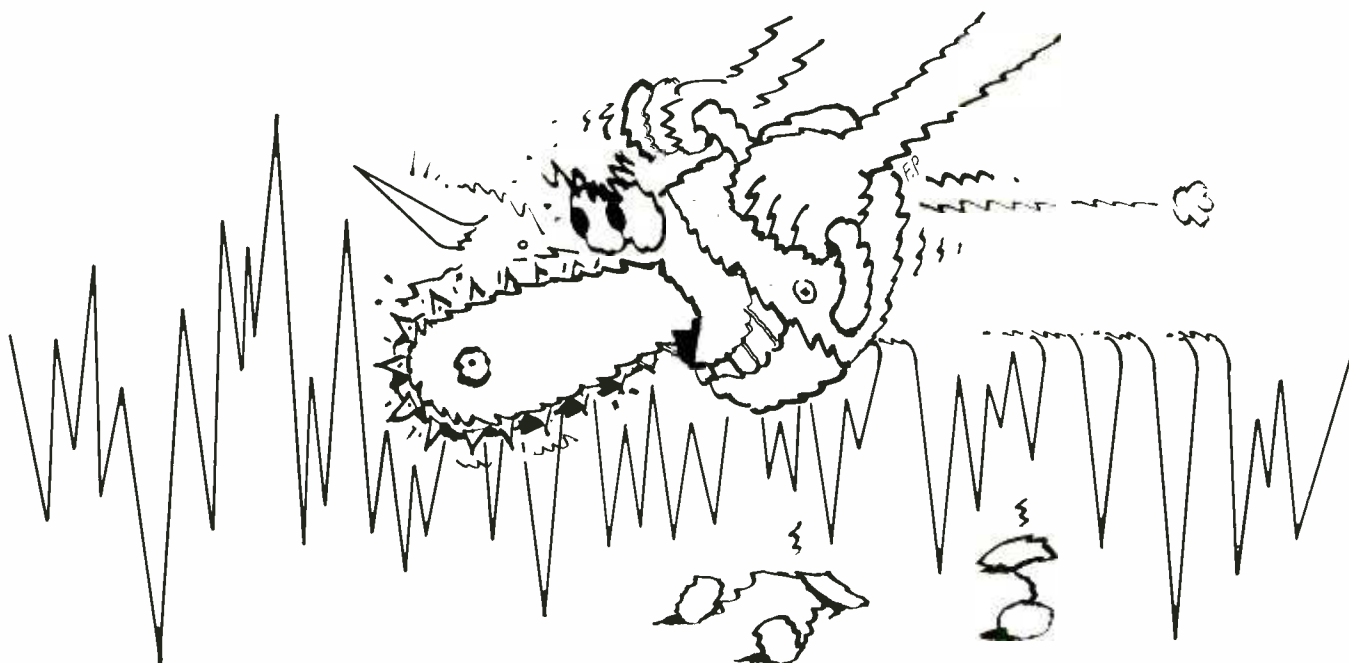
Australian company ART has released details of their Roadshow ART 1812 series 2 and 906 speaker system. The 1812 series 2 is a compact, full range, horn loaded system using an 18 in low frequency driver, 12 in midrange (horn loaded with phase plug) and a 1 in throat HF unit.

Frequency response is claimed to be 50 Hz to 15 kHz ±3 dB with coverage 40 V×60 H ±4 dB. Max SPL is quoted as 130 dB at 1 m. The cabinet is constructed of 17 mm ply with the front of the loudspeaker covered in acoustically transparent foam and protected with a steel mesh grille. A phase aligned rack mounted CU 1812 electronic crossover unit with 5-segment LED displays for level matching forms part of the

recommended system. The unit includes a subsonic filter, a 47 Ω balanced input and three unbalanced 60 Ω outputs capable of driving a 600 Ω load to 20 dBV. Balanced outputs are optional.

The smaller 906 system is a 2-way design using a 15 in bass driver and the 1 in HF horn. Frequency response is claimed to be 70 Hz to 15 kHz ±4 dB with a max SPL of 123 dB at 1 m. Coverage and construction is the same as quoted for the larger 1812 system. A 2-way electronic crossover (CU 906S), similar in specification to the CU 1812, is also available.

**Audio Research & Technology, Factory 6, 364 Reserve Road, Cheltenham, 3192 Victoria, Australia. Tel: (03) 583 6173.**



# DOES YOUR LIMITER MASSACRE YOUR SOUND?

Most limiters are far from perfect... literally chopping up your sound. The new Apex Dominator™ is the perfect solution.

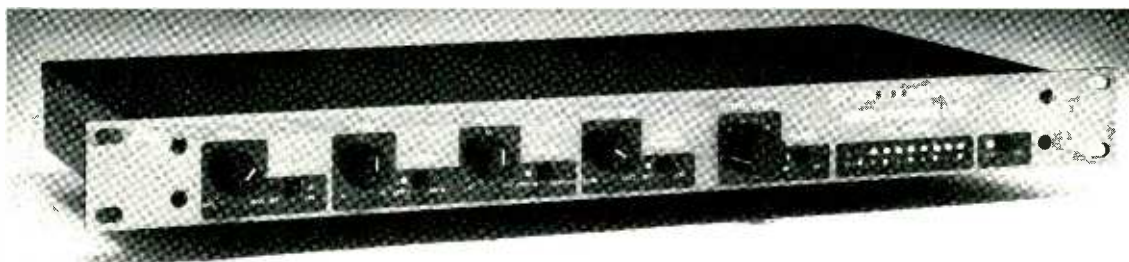
Unlike dumb, over-threshold devices, the Dominator is an intelligent 3-band limiter with a proprietary circuit which varies the threshold for limiting. The result is an *absolute* peak ceiling while maintaining a transparent sound. Selectable crossover frequencies, plus high and low frequency drive controls allow creative flexibility.

You can run hotter levels to maximize signal-to-noise levels without fear of overloading your recording or transfer mediums.

The Dominator is ideal for *any* situation

where clipping is a problem, such as digital audio, disc mastering, video post production and film. Stop massacring your sound. Ask your audio professional for a free trial of the Apex Dominator. Once you've heard it, you'll never be satisfied with your old limiters.

- Provides Absolute Peak Ceiling.
- Total transparency below processing threshold.
- Increased loudness
- Freedom from spectral gain intermodulation
- Minimal loss of transient feel
- High density capability
- Flexible—easy to use
- Multiple applications
- Made in U.S.A.



ApheX Systems Ltd.

13340 Saticoy Street • North Hollywood, Ca 91605 • (818) 765-2212 • TWX: 910-321-5762

Dominator is a trademark of ApheX Systems Ltd.

# NEW PRODUCTS

# NEW PRODUCTS

Equipment, modifications, options, software

## Electrospace compressor

An unusual new compressor has just been announced by Electrospace Developments. Based on the company's VCA technology the new product features a large 2-colour LED matrix display indicating either signal level or gain reduction or both simultaneously using bargraph level meters. A sample and hold circuit (which can be bypassed if desired) is also provided on the side chain, the frequency of which can be controlled from the front panel. Variable threshold, ratio, attack, release and gain controls are provided in addition to a separate limit

switch, VCA controlled link switch.

The compressor knee itself is continuously variable from 'hard' to 'soft' and then on to an extremely soft knee where the compressor becomes non linear.

The unit includes balanced input/outputs; input, output and side chain monitoring and is enclosed in a 1U high 19 in rack-mounting steel chassis.

**Electrospace Developments Ltd, Suite 3, 39/41 Newnham St, Ely, Cambs CB7 4PG, UK. Tel: 0353 61251/2.**

**USA: Peak Marketing, 2407 Ocean Ave, Venice, CA 90291.**

## BBE 202 series

The Barcus-Berry Electronics *BBE 202* is described as a differential load reactance compensator. It is a multiband, programme controlled signal processor designed to improve the overall sonic clarity of virtually any reproduced sound. This is achieved by using high-speed dynamic gain control circuitry to audibly improve the reproduction of programme transients. The unit is 2U high and 7 in deep and is simply inserted between programme source and amplifier, tape machine or signal transmission line. Normal set-up consists of simply adjusting each individual channel control (available either as a rotary control model *202R*; stepped rotary control model *202SR* or slide control model *202SL*)

whilst monitoring the programme, adjustment can also be carried out visually by using the sensitivity threshold display (three coloured LEDs) on the front panel. Once installed all processing is purely automatic.

Power on, operating mode, channel feed and peak clipping indicators are located on the front panel along with the rotary gain-change-limit controls and recessed line and low frequency level presets. At the rear are *XLR*-type connectors for balanced/unbalanced inputs and outputs in addition to unbalanced high-Z ¼ in jacks.

**Barcus-Berry Electronics, 5381 Production Drive, Huntington Beach, CA 92649, USA. Tel: (800) 854-6481. □**

## C-Audio power amplifiers

C-Audio has developed a range of professional power amplifiers incorporating what they describe as Active Headroom Synthesis, a system for reducing premature clipping. The *SR* series is available with four alternative power outputs—the *SR 202* (200 W), *SR 404* (400 W), *SR 606* (600 W) and *SR 808*

(800 W). Double the quoted output is available in the bridged mono mode (8 Ω). All the amplifiers are rack-mountable and feature fan cooling, and high grade components.

**C-Audio Ltd, Barnwell Road Business Park, Cambridge CB5 8UY, UK. Tel: 0223 211333.**



# MUSIC PAGE

# MUSIC PAGE

Mark Jenkins on the Frankfurt Music Fair

Frankfurt saw the launch of several synthesisers, expanders and MIDI processors from Akai plus a new rack-mounting multi-sampler, an 8/2 fully programmable MIDI mixer, and a range of professional recording products. Technics had a new PCM sampled grand piano, the *SX-PX1*, and Greengate a 30 s monophonic sampling option and harmonic synthesis/ADSR software for their Apple-based *DS:3* system. Crumar/Bit, like Akai, showed a new Mother keyboard.

## Ensoniq

Ensoniq launched the Digital Multi Sampler, a keyboardless 19 in mounting version of the Mirage sampler.

Output quality is improved over that of the Mirage and the Version 3 operating software now responds to after touch, breath control, patch change and other MIDI functions which suggest the Yamaha *DX-7* as the ideal controller.

There are several excellent new sound disks now available including church organs, Eastern instruments and effects.

Ensoniq also launched the Digital Sound Studio, an eight-voice poly-timbral digital synthesiser with a built-in 8-track MIDI recorder. It features three digital oscillators per voice, 2400 note sequence storage, multi-timbral split and layering, velocity keyboard with weighted action, 15 routable modulation sources per voice, 32 sampled and synthetic waveforms, three LFO's with random 'humanise' functions, four velocity controlled envelope generators, programmable panning and chorus.

The sequencer can be expanded to 10,000 notes using eight tracks with separate MIDI channels. Up to eight voices can be assigned to each track with auto-correct, mixdown, 30 sequences chainable into 10 songs and disk storage of sequences.

The keyboard is a 61-key velocity sensitive weighted design with variable

split and layering and the synth has 40 internal programs plus 80 external programs on cartridge.

Also on show was a 10-voice polyphonic multi-sampled piano with a total of 12 sounds including Grand Piano, Bright and Honky Tonk piano, Electric and Chorused Electric Piano, Marimba and Chorused Marimba, Electric and Upright Bass, Vibes, Percussive Keyboard and Mallet Keyboard. The keyboard has 76 weighted keys with touch sensitivity, sustain and sostenuto pedals, stereo chorus, separate bass sound output, headphone jack, MIDI In Out and Thru and separate MIDI channel for the bass.

The bass split point can be programmed and the keyboard can be transposed to any key or shifted down an octave. MIDI channel is programmable and all switches are LED indicated. **Ensoniq Corp, 263 Great Valley Parkway, Malvern, PA 19355, USA. UK: Ensoniq UK, 35 Piccadilly, London W1.**

*Just when you thought the future  
couldn't shock you any more.*

Introducing the Lexicon PCM 70, our extraordinary new digital effects processor with dynamic MIDI. Designed, creatively speaking, to thrust you into the future.

To begin with, the PCM 70 gives you access to the same astonishing Lexicon digital effects used by the world's top artists and studios. With complete, variable parameter control, and registers that let you create and store your own programs.

Now, about dynamic MIDI. With this pioneering Lexicon development, you can vary any PCM 70 parameter through a MIDI keyboard while you're actually playing. Just imagine being able to vary the wet-dry mix, for example, through finger pressure on the keys. Or by your choice of other controls, like the modulation wheel. Or even by a computer.

There's more. The Lexicon PCM 70 digital effects processor is also a full-fledged digital reverb, with a complete selection of Lexicon reverb programs. And the price? Shockingly reasonable.



You'll want our detailed PCM 70 brochure. At your Lexicon dealer, or contact us. Lexicon Inc., 60 Turner Street, Waltham, MA 02154, USA. (617) 891-6790. Telex: 923468. Lexicon International, P.O. Box 122, 8105 Regensdorf, Switzerland. Telex: 59222.

Come to the future.



SCENIC SOUNDS EQUIPMENT LIMITED  
Unit 2, 12 William Road, London NW1 3EN.  
Tel: 01-387 1262, 01-734 2812  
Telex: 27939 SCENIC G



AUDIO EXPORT,  
Badstr 14, 7100 Heilbronn,  
Germany,  
Tel: 07131 82275

**lexicon**

# MUSIC PAGE

# MUSIC PAGE

Mark Jenkins on the Frankfurt Music Fair

## Steinberg

New computer/MIDI releases for Frankfurt included an Apple II sequencer package; an EPROM version of the *Pro 16* sequencer and *Scorewriter* software packages built into a MIDI interface; an Ensoniq *Mirage* Editor for the Commodore 64; a two In/four Out MIDI Mixer package; an audio to MIDI Pitch Tracker; and a 24-track MIDI Recording Studio package for the Atari 510 ST computer.

**OSC, Flat 5, Gladstone Court, Gladstone Road, Headington, Oxford, UK. Tel: 0865 5277.**

## Roland

Roland's *MSQ-700* MIDI sequencer has been updated. The *MC500* MIDI recorder has powerful 4-track MIDI compositional functions, full editing with a keypad, Alpha dial access of editing parameters and built-in 3½ in disk drive. Storage is around 10,000 notes on board and 100,000 notes on disk.

The Alpha *Juno 2* is a 61-key polyphonic synthesiser with velocity and after-touch sensitivity, Alpha Dial patch editing and optional *PG300* programmer. The *JX-10* is Roland's new flagship synthesiser. It's a 12-voice design with 76 keys, velocity and after-touch response, split and layer facilities and built-in sequencer.

Roland launched four new piano units using SAS (Structured Adaptive Synthesis), their new sampled sound format. The *MKS-20* is a 19 in rack-mounting piano module, the *HP5500* is an 88 key unit in rosewood, the *HP5600* is similar but in walnut. The *RD1000* Combo Digital Piano is a 16-voice instrument with 88 keys.

A new Mother Keyboard, the *MKB-200*, has 61 weighted keys and velocity/after touch sensitivity. Also new are a budget digital drum machine, the *TR505*, and a fretless bass guitar synth controller, the *G77FL*.

For preview only two sampling keyboards were on show, the *S-10* and the *S-50*. Facilities are as follows:  
**S-10:** four octaves, eight voices, eight

EGs, eight LFOs, 15 kHz response, 4 s sampling, up to 4-way split, 128k 12-bit, quick disk, fluorescent display, real-time sequencer.

**S-50:** five octaves, 16 voices, 48 EGs, 16 LFOs, 15 kHz response, 17.2 s sampling, up to 61-way split, 512k 12-bit, 3½ in disk, fluorescent display+RGB out, real time sequencer.

The *S-50* has built-in software for screen editing without an external computer and both units use an Alpha Dial for parameter selection.

**UK:** Roland UK, 983 Great West Road, Brentford, Middlesex TW8 9DN. Tel: 01-580 4578.

**USA:** Roland Corp, 7200 Downsview Crescent, Los Angeles, CA 90040-3647.

## Sequential

The Prophet *2002* duplicates all the facilities of the Prophet *2000* sampler in a 19 in rack-mounting unit. It has as standard a double-sided disk drive and memory expansion to 512k now available as a retrofit for the *2000*, giving a maximum sample time of 32 s. Complex sample editing functions such as reverse, mix and truncate are easily accessible, and synthetic waveforms can be mixed with sampled sounds.

The *2002* can respond to velocity control of volume, modulation depth, timbre, sample start point and crossfading, presets can be split or layered, and up to 12 keyboard combinations and 16 sound variations can be instantly accessed. A complex arpeggiator is included as are full synthesiser facilities for modification of sampled sounds. A large library of factory samples is also available.

Sequential have also announced the Prophet *VS*, an 8-voice Vector Synthesis keyboard enabling complex sounds to be created and manipulated in real-time using a 32-digit LCD display. The Prophet *VS* has four oscillators per voice combinable using a joystick, oscillator frequency control from any one of 128 complex waveforms including white noise, and internal or external (cartridge) waveform storage.

Five-stage envelopes allow the user to manipulate filters, amplitude and

relative oscillator mix, and looping and repeat functions are available to help in patch programming. Real-time control is available over stereo panning of voices, chorus, recall of 200 patches via ROM and RAM cartridges, key velocity, polyphonic arpeggiation and bi-timbral MIDI response.

**Sequential Circuits Inc, 3051 North First Street, San Jose, CA 95134-2093, USA. Tel: (408) 946-5240.**

**UK:** Sequential Circuits, 11 Forth Wynd, Links View Estate, Port Seton, East Lothian, Scotland.

**Europe:** Sequential Circuits, Nijverheidsweg 11c, 3641Rp Mijdrecht, Netherlands.

## Yamaha

Yamaha had several new launches in addition to the compact *DX-100* and *DX-27* FM synthesisers.

The *QX-21* sequencer is an updated *QX-7* with the addition of MIDI Track Erase and improved sync functions at a lower price. The *RX-21L* is a Latin Percussion version of the budget *RX-21* PCM sampled drum machine.

The *PF80* and *PF70* pianos are MIDI versions of the *PF15* and *PF10* FM pianos featuring 10 FM sounds, weighted action, tremolo and chorus, 3-band EQ, integral speakers and function modes for use as MIDI mother keyboards; the *PF70* has 76 keys and the *PF80* has 88 keys.

The *MEP4* MIDI Event Processor can reverse keyboard scales, produce arpeggios on a single note, transpose MIDI input information and so on. It has four processor sections including a Channel Filter which can be used in combination.

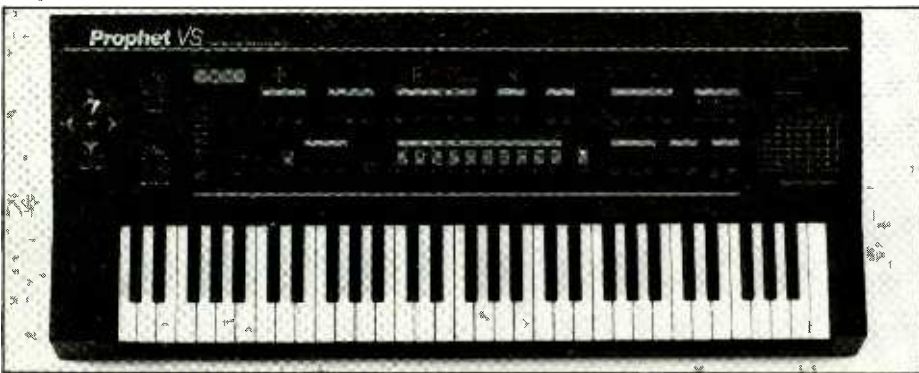
The *MCS2* MIDI Control Station has pitch bend, modulation and patch select controls and increases the ability of piano-type MIDI keyboards to act as versatile mother keyboards for expressive control and programming.

For the *DX-7* there is a new ROM cartridge including many touch-responsive sounds programmed by Dave Bristow, and an illuminated LCD option, the *LCD7*.

Possibly the most exciting release is the *SPX90*, a Multi Effects Processor offering reverb, delay, chorus, flanging, harmonising, gate, sampling, stereo phasing, pitch change, tremolo, 'symphonic' flange, freeze, compression, auto pan, triggered pan, delay vibrato and parametric EQ! It features 60 user and 30 read only memories which can be named and called up via MIDI, a footswitch or the front panel. Output is stereo, frequency response is 12k and there will be an optional remote control.

**UK:** Yamaha-Kemble Music Ltd, Mount Avenue, Bletchley, Milton Keynes MK1 1JE. Tel: 0908 71771.  
**USA:** Yamaha International Corp, PO Box 6600, Buena Park, CA 90620. Tel: (714) 522-9105. □

Prophet VS





# Pick-n-Mix

MODULES FOR THE MXP-2000

## The choice is yours

# MXP-2000 FRAMES



## MXP-2000

The MXP-2000 is unique. It is unique because you can choose and mix your own configuration of modules to suit your own personal requirements – in minutes.

A customised console for a standard console price...

# Sony Pro-Audio

Find out more about the MXP-2000 versatility by completing the coupon.

Name \_\_\_\_\_

Company \_\_\_\_\_

Position \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

SS 4/86

**SONY**   
Broadcast

**Sony Broadcast Ltd.**

Belgrave House  
Basing View, Basingstoke  
Hampshire RG21 2LA  
United Kingdom

Telephone (0256) 55 0 11  
International +44 256 55 0 11  
Telex 85 84 24  
Fax G2/G3 (0256) 47 45 85

**A**t Syco, we never stop searching. Our quest for advanced musical instruments has taken us around the world to the most unlikely people and places. Take Sydney, Australia 1979. In a basement we found two young men experimenting with electronic circuitry. They were Fairlight Instruments.

Of the large number of inventions we discovered, few needed closer inspection. Amongst them were E-Mu's Ell, the Kurzweil Expander and the Linn 9000.

E-Mu, pioneers in the real sound revolution, unveiled the E1 in 1980. The Ell, launched in 1984, has set new standards for sampling keyboards. 17 seconds of sampling time, an eight track SMPTE-based MIDI recorder, eight individual outputs, an optional hard disc, and the Sound Designer software for the Macintosh represent the requests of professional users.

Kurzweil, concerned from the outset with performance based sampling systems, have recently announced the Expander – identical in function to the 250 but without a keyboard, resulting in considerable savings in size and weight. The sampling rate for the Expander/250 has now been increased to 50 kHz





*allowing to reproduce high frequency with superb clarity.*

*Linn, inventors of the digital drum machine, released the LM-1 in 1980. This was superseded by the Linndrum, still available and in demand as ever. The 9000 is regarded as one of the ultimate composers tools – an integrated 32 track, SMPTE-based MIDI recorder and digital drum system. Both sequences and drum patterns may be saved on the optional 3.5" disc. Transport-type controls, similar to those found on tape recorders, make operation of the instrument familiar and simplistic. The sampling option enables the user to create a library of unique and personal sounds.*

*Individually, these three instruments have unique qualities which are suited to varying applications. Together, as a system, they embrace the scope of sampling technology and form the major part of a modern composer's studio.*

*Syco*

20 CONDUIT PLACE, LONDON W2 TEL 01-724 2451  
TELEX 22278 SYCO G, FAX 01-262 6081

# STUDIO FILE

# STUDIO FILE

Looking not unlike an overgrown prehistoric barrow or 'mini' pyramid with its top sliced off, and being formerly a 'bunker' in which pioneering experiments on radar were conducted during World War II, it seems fitting that John Knight's Recording Studio should be within a stone's throw (well almost) of the Goonhilly Downs Earth Station where gigantic saucer-shaped aerials form the 'interstellar' link in British Telecom's plans to crash the west coast of Britain into North America (if their current TV campaign is to be believed). If they did then Knight's Studio would almost certainly survive the crunch: for it is built of solid concrete, probably thick enough to withstand a nuclear explosion. What better place to install a 'rock' studio?

From outside appearances, the unsuspecting passer-by would never imagine the place to be anything other than a novel farm building, let alone the birthplace of music. As was the plight of a local farmer who, covered from head to foot in mud and cow dung, stumbled through the iron studio doors straight into a sax overdub session. Staggering past a transfixed saxophonist he pushed his face up against the control room window, boggle eyed at all the equipment and flashing LEDs of a modern recording studio in 'GO' condition, and muttered in broad local accent the immortal words, "Me tractor's on fire!!!" Needless to say, the whole episode went down on tape but was unfortunately, just as quickly erased in attempts to normalise the situation.

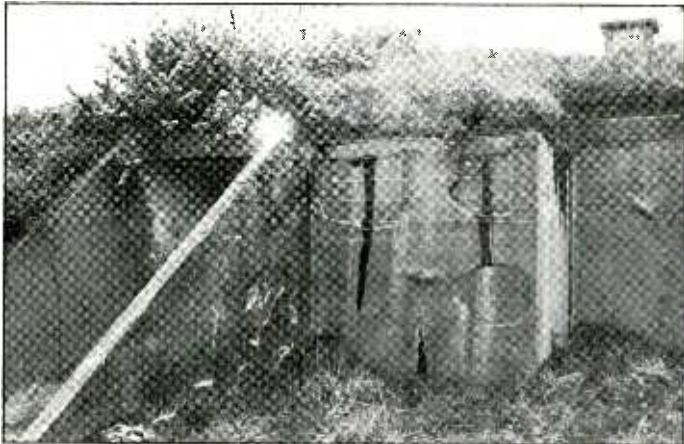
"It was like a mediaeval serf suddenly discovering the Starship Enterprise," says John.

John decided to set up the recording facility 10 years ago, shortly after moving from London to Cornwall to start an advertising and design studio. Having formerly worked as a session jazz guitarist he immediately recognised the potential of the building when he discovered it a short distance from his home and offices. Being well aware of the need for a professional recording studio in the area for production of jingles, ads

## John Knight's Recording Studio, Cornwall



John Knight at his custom built PEP console



Outside local cows have learnt to moo at unobtrusive levels

and voiceovers for nearby radio and television stations he saw it as a natural expansion of his business.

Consisting of a large 25x19 ft central area with two smaller rooms either side, the interior layout was ideal. With the main studio area in the centre, the largest of the side rooms, 15x12 ft became the control room and those remaining a drum/vocal booth, kitchen and utility area and an acoustic echo chamber. Being constructed of solid concrete, 8 ft thick in places, sound leakage problems in or out are virtually non-existent, whatever the level. Not that it would be a major problem for the studio is surrounded only by fields full of cows often bemused by the sudden appearance of handclapping musicians exploiting the unusual 'slapback' effect

achievable in the slightly unparallel surfaces of the concrete entrance alleys. In such instances, on seeing a 'live' mic protruding from the building the cows have learned to 'moo' at an unobtrusive level well below noise gate threshold.

'Drying out' the very 'wet' acoustical properties inherent in a solid concrete building presented some problems. Particularly in the control room for, as is the case with smaller rooms, the main problems were with the low frequency resonances which may reach well into the mid-frequency range. Trapping and panelling solved most of the problems. Higher frequencies, tending to 'sum-up' and 'flatten' out, were scattered using irregularly faced hardwood and stone surfaces. The resulting sound, with

Tannoy *Red* monitors is very solid and tight. In the studio and drum/vocal booth the acoustic panels may be folded back to reveal the concrete surfaces for 'live' sounds.

Once the studio was 'operational' John began to use it for an initial workload from his advertising clients. Contrary to popular belief, Cornwall is the abode of many professional musicians, actors and other media personalities, and before long musicians famous and not so famous were dropping in to record their albums and demos. Ian Dunlop (formerly of the Byrds and the Flying Burrito Brothers) is currently working on his second album for the American market and a previous venture of his with Gram Parsons, when they formed the Submarine band, was recently re-released and met with rave reviews. Cornish and Celtic folk song singer Brenda Wooton also uses the studio regularly and is currently working on her third album. With a popularity that extends into Europe her previous album, also recorded and produced by John Knight, held a number four spot in the French charts for eight weeks. Knight's studio has seen productions released through RCA, Karova/Warner Brothers, United Artists, BBC TV, Television South West and Musicdisc (France).

Although in a fairly isolated position being the only 16-track studio for 30 miles either way has probably contributed to its popularity. In contrast to the surrounding countryside inside one is met with a relaxing 'homely' comfortableness achieved through the use of subtly patterned fabrics and carpets. Musical instruments, amongst them Roland *GR700* guitar synthesiser, fretless and Yamaha *BB1200* bass guitars, Fender *Stratocaster* with *Gizmo*, acoustic guitars and piano, Yamaha string synths, and a drum kit and other percussion, line the perimeter of the studio within easy reach of creative inspiration. A large control room window does not dominate the area and this, together with the relaxed atmosphere, helps musicians to quickly 'break the ice'.

The homely theme is carried through into the control room



# Westar

by **quad eight**

Designed and built in U.S.A.

*“It outperforms that well-known console, for much less money.”*

Compare features, specifications, sonic performance and dynamic automation options, and you'll agree. Key features: Fully parametric EQ on *all* 4 bands. *Eight* echo/cue sends. *Dual* stereo mix buses. 60 segment LED meters with *spectrum analyzer*. 24 track monitor, from 20 to 60 inputs. *Field expandable* frame. *Three* levels of automation options.

Typical performance: Transformerless +28 dB outputs. EIN at -129 dB. Output noise at -86 dB. IM distortion at 0.02% with VCAs. Crosstalk at -80 dB. Wide band frequency response. Excellent RF immunity.

With prices starting at less than £35,000, it all adds up to a professional studio console system offering an unequalled performance/price ratio. Call or write for our comprehensive brochure.



Optional IDF Faders



## MITSUBISHI PRO AUDIO GROUP

DIGITAL ENTERTAINMENT CORPORATION

Headquarters: 225 Parkside Drive, San Fernando, CA 91340 • Phone (818) 898-2341 • Telex 311786

New York: Suite 1530, 555 W. 57th Street, New York, NY 10019 • Phone (212) 713-1600 • Telex 703547

Nashville: 2200 Hillsboro Road, Nashville, TN 37212 • Phone (615) 298-6613

Canada: 363 Adelaide Street E., Toronto, ONT. M5A 1N3 • Phone (416) 865-1899

United Kingdom: 1 Fairway Drive, Greenford, MIDDX UB6 8PW • Phone (01) 578-0957 • Telex 923003

# STUDIO FILE

# STUDIO FILE

where plush seating along the front of the slightly raised mixing console allows clients to relax and listen between takes. This arrangement is very workable in that it discourages those not directly involved in the engineering from congregating behind the desk. It may be argued that having people between the monitoring and the desk, even though they are not on the axis line, will affect the monitoring equalisation such that when the engineer is working alone he is hearing a completely different sound from when the room is full of absorbent people. But the seating is backed with material and cushioning of a similar absorption co-efficient to the human body, in a similar way to the seating at the Royal Festival Hall, where the sound is the same whether

## John Knight's continued

the auditorium is full or half empty.

The layout of the control room was dictated by the fact that little else can be done with a solid concrete wall other than leave it where it is. Fortunately, the dimensions were ideal and no great structural changes were needed. The mixing console is a custom built Progressive Electronic Products 16/8/16 with 24 channels of remix. Tape machine remotes are at the right-hand end close to the Otari stereo mastering machine. This is an ergonomic arrangement particularly when tape copying; every tape machine may be operated without moving from one's seat thus creating a practical editing and post-production area. At the left-hand end of

the desk is the Tascam 8516B 16-track 1 in multitrack with dbx noise reduction and next to this the effects and signal processing rack containing Ashley comp/limiters, Ashley parametrics, Raindirk parametrics, Roland DDL SDF 2000 and Dimension D, Drawmer and Accessit noise gates and MXR flanger/doubler. Above the rack is a smaller mixing console for sub-mixing and Revox B77. Mics are the usual AKG, Neumann, Beyer, etc.

Next door to the control room is a room of virtually the same size left completely unclad. This is not a dungeon or torture chamber although if you'd sat in there and beat hell out of a snare drum while attempting to get the most gigantic snare drum sound in

the world you'd certainly think so. The sound of this room is incredible to say the least and certainly makes one realise the problems to be overcome with acoustical cladding. As solid reinforced concrete walls have a habit of remaining solid the reverberation time is not altered, just gated, nor is the distance between return mic and send speaker varied. But there is a certain richness to the sound of an acoustic echo chamber which sometimes makes it preferable to a plate or digital equipment—lending a natural quality to vocals, guitars and harmonica for instance. □

David Hastilow

**John Knight's Recording Studio, Ponsongath, Coverack, Nr Helston, Cornwall, UK.**

Blaricum is a small village in a part of Holland known as 't Gooi. This is one of the greenest and most residential parts of the country and is situated around Hilversum, which is Radio and TV City to the Dutch. Most of the country's major recording studios are located in this area and this means a fair amount of work from broadcasting organisations as well as excellent availability of top session players.

Soundpush Studio is built in a villa which had also seen service as the community cinema at some point in its history. This gives the premises a distinct architectural advantage as we shall see. The Studio was founded in 1968 by Frans Mijts, a noted session trumpet player and arranger/composer. The facility was called Soundpush CMS, which stands for Commercial Music Services, and offered a complete jingle package together with a cassette copying plant.

It was decided to go 8-track shortly thereafter and Frans went to Tokyo to order a Sony console—the only one of its type every built, and apparently still doing sterling service in a demo studio in the wilds of North Holland. Most of the microphones chosen were also from the Sony range, which included C37s, C38s and C500s. Together

## Soundpush Studio, Holland

with an 8-track 3M M23 this set up comprised the first multitrack studio in the country.

In 1973 the studio was re-equipped with an Ampex MM1000 16-track and a Cadac console, while the original equipment went to the newly created Studio Two which became the place for smaller productions and demos. Several other studios followed this lead and Cadac enjoyed a period of popularity in Holland for about 10 years. Two-tracks were Studer A80s with Dolby 361s and these machines are in daily use up to the present.

In 1978 the studio again

upgraded its facilities with the purchase of an Ampex MM1200 24-track and Dolby. In 1979 Studio Two was totally gutted and redesigned by Eddie Veale. Equipment included a second MM1200 with Dolby and a pair of ATR 100s also with Dolby. The studio was conceived primarily for block bookings, notably by one Jaap Eggermond who was and is one of the Netherlands' most successful producers, of which more later. Jaap, who engineers his own sessions obviously had considerable influence over the choice of console and his preference at that time was for an MCI 600

series with JH50 automation.

Studio Two featured monitoring designed by Eddie Veale based around the JBL 4355 which is basically a 4350 in a smaller cabinet. Eddie also modified the passive 3-band crossover for bi-amping with a BGW 750 for the LF and a BGW 250 for the HF with crossover frequencies at 250 Hz, 1.2 kHz and 9 kHz. The control room uses a minimum of monitor EQ with Whites being the choice.

The area of Studio Two is compact, 5.4 x 2.5 m, with totally mirrored walls with curtains. The only permanent fixture is the Kawai grand piano. The studio has been a great favourite of Golden Earring but perhaps its biggest claim to fame is that the whole series of 'Stars on 45' smash hits worldwide was recorded in this room, produced by Jaap Eggermond himself. The first one of the series was number one in the USA and UK as well as practically every other country around the world for weeks on end. This success enabled Jaap to buy the studio from Frans Mijts, who has been retained as financial director.

In 1981 Eddie Veale rebuilt Studio One with the control room along very similar lines to Studio Two and using identical monitoring. The Cadac was replaced with a Neve 8078 32-channel console with Necam. This console was

Control Room One



**pd**  
**PRODIGI**

## a few quiet words from Hilton Sound..

Some people are fighting a rearguard action to save analog recording systems. They talk about cost and convenience. About the sonic characteristics of analog. Its trouble free use. They even say that it's a good idea to record on analog and mix down on digital. They'll say anything, in fact, to avoid the inevitable conclusion that digital is the way the industry is going. The ostrich and his reaction to danger is far sighted by comparison.

We at Hilton Sound lead the field in the new era of digital recording. We were the first with the Mitsubishi X850 that has been such a revelation to the industry. If you've ever witnessed the X850's ability to decode a mangled tape and reconstruct missing passages, you'll know why the new PD format dashes the hopes of all it's rivals.

Mitsubishi philosophy is to design a system not just to do this year's job, but to be capable of handling the demands of the year 2000 and beyond. Can anybody else say that? Watch this space for Mitsubishi's X86 which will do for 2-track recorders what the X850 did for multitrack.

**Hilton Sound, the first for Mitsubishi.**

# HILTON SOUND

10 Steedman Street, London SE17  
EMAIL REF:  
HILTON-SOUND-UK. DGS1311

## 01-708 0483



X86



X850

# STUDIO FILE

# STUDIO FILE

replaced in 1984 with an SSL 4048-40 with Primary Studio Computer and *Total Recall*.

The studio area of Studio One has been extensively rebuilt over the last six years by a freelance handyman called Jaques who is a real craftsman and fashions everything from real wood and stone by hand to in-house designs. The results are stunning and virtually unobtainable anywhere else in the world. The effect is 100% original as well as acoustically very sound.

The studio, which measures 20×9.6 m, features a large drum booth which is often used for isolation of other instruments when a live drum sound is required. In this case full use is made of the original stage from the cinema days. This has been lowered to the level of a dais in three steps and features moveable curtains for changing the acoustics and a marble floor with optional carpet. Again, the décor is startling with stone statues built in. The studio has inherited a maximum height of around 4 m from its cinema days and has a warm spacious sound which is flattering to strings and brass as well as beefing up electric guitars.

There is a broad staircase leading to a balcony running the width of the studio above the control room sliding doors. This balcony also has a vocalists isolation booth for in studio vocals—guide or for real. The studio also has a

## Soundpush continued

beautiful Steinway grand and assorted instruments including Hammond *M102* and Leslie.

Foldback in both studios is provided by individual 4-channel mixers with inbuilt stereo amp modules. These are built by local studio consultant Jules Stevenhagen, whose company JTM of Baarn manufactures just about anything to do with audio or control that an enterprising engineer can dream up as well as undertaking wiring and installation work. The units include footswitch operated reverse talkback which is great for bass and Rhodes players on DI. Cans are Beyer *DT100* and Sennheiser *414* to which Fostex and Beyer *DT880* have been recently added.

As well as the collection of Sony mics mentioned earlier, Soundpush boasts several Neumann valve mics including *U67*, *U47* and a *U48* (like a *U47* only with figure-of-eight and cardioid instead of omni and cardioid). There are also FET *U47*, *U87*, Sennheiser *421*, AKG *C414* and *C451* and lots more besides. The Sony *38* has always been popular for brass and overheads.

There are also facilities for syncing a pair of 24-tracks using a third floating *MM 1200*. The *Q.Lock 3-10* also syncs a Sony *5850* U-Matic for video posting. Soundpush also has *F1* with a *5630*. This is used for a novel technique, often in preference to 48-track

This consists of making a timecoded premix to U-matic which, in turn, is dubbed onto a new reel of 24-track tape on the same machine as the master. New dubs are made on to this slave reel. As many premixes of this material as desired are dubbed again to a new U-matic via the *F1* with timecode and these are dubbed back on to the master reel. Jaap Eggermond in particular is keen on decision making throughout the overdubbing process and this technique suits his style beautifully.

Apart from a Lexicon *224X* with *LARC* in each studio, both rooms have three UREI *1176s*, a pair of Klark-Teknik 30-band and one 27-band graphic equalisers, Audio+Design stereo *Compex* limiter/expanders, dbx *162* compressor, Aphex, Orban parametric EQ and de-esser, and Yamaha *NS10M* nearfield monitoring.

There is also a room full of floating outboard gear consisting of two AMS DDLs with 1.6 s capacity, pitch changer with de-glitch card, four EMT *140* stereo plates with remotes, four Roland *SDE-3000*, two Yamaha *Rev 7* digital reverbs, *SRC* code converter, Roland *Dimension D* and flanger, eight channels of Valley People *Dyna-mite*, Brooke Siren Systems *DPR-402* compressor/limiter/de-esser, Marshall *Time-Modulator*, Ursa Major *Space Station*, another stereo *Compex*

and *Vocal Stressor*, Aphex *Compellor*. There is also a Sony DASH format 2-track on order.

In the unlikely event of a producer or engineer not finding the effects units they need, gear can be hired in quickly and conveniently. There are also plenty of tie lines between the rooms for 24-track copies, etc.

Soundpush has complete in-house maintenance and measuring facilities with full time staff; the facility has always had a stringent policy on equipment and tape machine alignment. Also the Netherland's SSL service agent is only 15 minutes away so downtime is very rare.

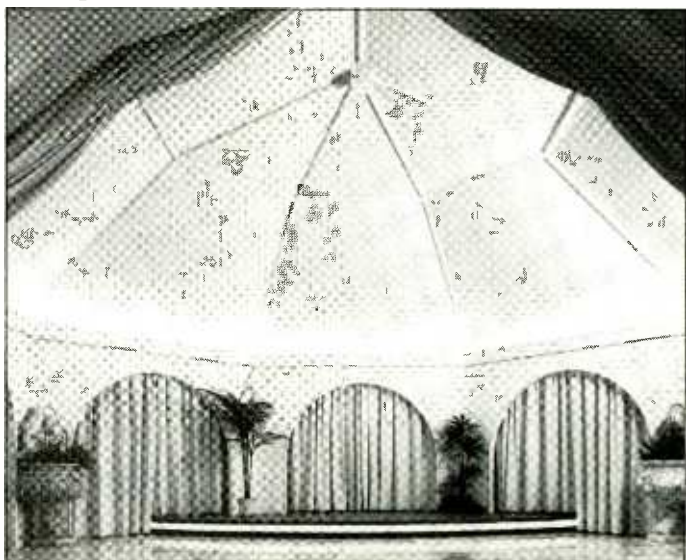
The studio is opposite a large field which serves as a municipal car park. Excellent outside catering is delivered to the very comfortable canteen and recreation area, and there are many restaurants in the area with the nearest being only 100 yards away. There are excellent hotels within a 15 minute drive and the studio has acquired an adjacent property in which accommodation is planned for visiting artists.

Soundpush is hoping to attract a more international clientele. Certainly the effort they have put into achieving their own very high standards is deserving of patronage by any of the world's top producers and freelance engineers. **Jay Denson**  
**Soundpush CMS BV,**  
**Huizerweg 13, 1261 AS,**  
**Blaricum, The Netherlands.**

The studio's staircase leads to a vocal booth



The original stage has been lowered to dais level





# STUDIO FILE

# STUDIO FILE

Sweden—home of the hits, at least for Abba. The success story of that particular band has probably ensconced the Swedish recording industry in a deceptive glory. Behind the scenes are smaller, more typical struggling studios and record companies. Sweden is, after all, just another smallish Scandinavian country with the same problems the others have. A population of just over 8 million means there are not many people to buy records therefore record companies make miniscule profits and not many artists get to try it in the first place. Studios do not get an over abundance of work restricting the numbers of studios. There is not much money around at all, especially for studios to buy the ancillary equipment which they do not have the facility to hire.

As you can imagine the recording industry in this country is pretty competitive. The number of major studios which are able to survive is necessarily quite low. Glen Studio is what the estate agents would call a well established property. Originally serving as the corner shop in a quiet residential part of the city, the studio's musician owner Bruno Glenmark took it over in 1976 to accommodate his studio. A trumpeter with music academy training and band leader of some repute, Bruno had had a series of studios in his basement just round the corner and when the shop went on the market he snapped it up.

The resultant facility was designed to be as homely and comfortable as possible, Bruno's philosophy being that it should feel as much like being at home as possible. The acoustic design is by Keith Slaughter incorporating Bruno's requirements which he had formulated after visiting several studios in the USA and UK. By no means a small facility, the whole thing was completed in a mere 2½ months because Bruno, impatient to get started, preferred to pay many people to finish quickly than a few to take a long time.

The main recording area is L-shaped and very large with drum and isolation rooms opening off the central area.

## Glen Studio, Stockholm

The carpeted areas are covered in a rather startling tartan material which, once you have adjusted your eyes, makes a nice change! This is the area directly in front of the main control room window. Looking beyond this you come to what was originally the drum booth but which now houses the Bosendorfer grand piano. "The piano sounds good in there and the drums sound much better on the floor," explained house engineer Classe Persson.

Adjoining the drum booth is a leader area for percussion of which there was plenty of evidence—three drum kits, congas, marimbas, a vibraphone, and I could have sworn there were some timps but they are not listed as permanent fixtures in the studio literature. There is a fairly spacious isolation room to the right hand side, and to the left, coming down the side of the control room is a large live area with wooden floor and trapped sloping wooden ceiling.

The walls are covered with textured plaster.

Above the carpeted area the ceiling is covered in angled wooden boxes which break any possible standing waves and remove boominess by way of their absorbent fillings. The

ceiling finish above the isolation area consists of alternating plaster and hessian panels which are trapped behind. All around there are several curtains which may be opened or closed at will. Daylight is achieved at the live area by means of very large sectioned pebble glass which lets the light in but keeps prying eyes out—essential on this wall as it actually faces the road. Excellent visual communication from the live area is provided by a smaller second control room window. Because of Bruno's big band background it is not surprising that one of the things he specifically wanted to be able to record, live, was big bands and this is reflected in the size and design of the recording areas.

The control room is really what you would imagine of a room designed and built at that date. The monitors are set in wood with rock completing the rest of the wall around the windows. Under the engineer's chair the floor surface is wood, the remainder carpeted. The back wall is trapped and every available surface is covered in equipment of one description or another.

Lighting in the control room is recessed and dispersed through a metal work grille. There is access from this point into all the facility's rooms including the rest areas which are through to the other side and down to the basement. More of that later. Air conditioning is dealt with by two separate systems for control room and studio.

Centrepiece of the oblong control room is a Neve 8048 32/16 automated console with *Necam* which was installed in 1978, the *Necam II* system being added in 1983. Bruno says he chose the console originally for the high quality which he felt the product offered and in fact in the subsequent years it has suffered very little breakdown and he describes it as a very stable console. As, inevitably, pressure is brought to bear on all recording facilities to consider upgrading in this area Bruno concludes that this would be futile since he is more than happy with what he has got and anyway he has a better plan. The first part has been thought of a few times before: spend more money on outboard gear. The second part is that it is better to invest in 10 new songwriters than a new console! Himself a writer, Bruno can view these things from a slightly different angle. ▶

Recording areas



# STUDIO FILE

# STUDIO FILE

It would fit in with the Glenmark group of companies nicely since they have their own label, production and managements companies.

The Neve is complemented with several Ampex recorders: *ATR124* 24-track, two *ATR102* (½ and ¼ in) 2-tracks and an *AG440* 2-track along with a Technics *1800* 2-track, Nagra portable stereo machine, two Revox 2-tracks and cassette machines from Technics and Studer. The main monitoring system is JBL/Westlake supplemented with JBL *4310s* and Auratones. The machines take up all available space along the left hand wall in a recess and all along the back wall. The remaining side wall is covered in effects racks containing the following: two NTP compressors, Orban Dynamic Sibilance Controller, four UREI *LA3A* levelling amps, two MXR auto flangers, Audio+Design expander/gate and *E560-RS* selective limiter, dbx *118* dynamic range enhancer and *160* compressor/limiter, Lexicon *Super Prime Time DDL* and *224X* digital reverb, Eventide *H910*, *FL201 Instant Flanger*, *1745A DDL* and *H949*, Drawmer *DS201* dual gate, Symetrix phase filter, Marshall *Time Modulator* model *5002*, Sony *PCM DRE2000* digital reverb, EXR

## Glen continued

Exciter, Klark-Teknik *DN60* real-time spectrum analyser and a JVC *DD5* cassette player and Sony *F1*. There are also 24 channels of Dolby A noise reduction.

As for instruments you can take your pick from the Bosendorfer grand, Korg *Poly 800*, *Prophet 5*, *Prophet 10*, Roland *Jupiter 6*, *Super Jupiter*, *JX8P*, Yamaha *DX7*, Fender *Rhodes* Wurlitzer electric piano. Hammond *C3* with Leslies, Höhner *Clavinet*, Harpsichord, ARP *Odyssey* and *Omni 2* and a *Mini Moog* on the keyboard front; Martin, Ovation and Levin acoustic guitars; Acoustic, Ampeg and Music Man amps, three drum kits (one of them Tama), congas, marimba, vibraphone and myriad assorted percussion. Or as Bruno put it: "We don't hire that much, in Sweden if you want something you buy it."

The microphone collection includes AKG *C414*, *D12*, *C452*, *C422* and *Tube*, Neumann *U47* and *U87*, *84*, *89* and *85*, Sennheiser *Profi Power*, Electro-Voice *RE20*, *CS15* and *DS35*, Sony, *C37*, *C47* and *C48*, RCA *77*, Pearl *PML DC63* and Shure *53* and *54*.

The choice of Ampex tape recorders was made after a

good look at the other top of the range machines and Bruno says he preferred these for the warmer, fatter sound which he perceives them to have. Originally they bought a *1200* which they upgraded to the model *124* when it was introduced. "We have been very satisfied with it even though it was one of the first machines."

The studio foldback system was custom built by Lars Johansson in Stockholm. It consists of one overall stereo mix to which the musicians may add from six channels plus an echo switch. Bruno feels that it is better for the musicians to have the possibility to effect their own mixes than not, although he did admit this can get out of hand in which instance the engineer is in a position to override the system.

In the first instance Bruno's engineer was his ex-home studio partner Michael Tretow who went on to Abba's Polar Studios. This was when Classe moved in. Classe's background is rather a novelty: his father is also a recording engineer and as a child he spent a great deal of his time in studios, learning the trade. Could he be the first of a new breed? He started out doing live work,

then went into the studio world as tape op at another Stockholm facility and finally to Glen Studio 3½ years ago. Routine maintenance is down to him and there is a freelance back-up for any major problem.

The company's associated businesses are relatively small time compared with the majors but the record label has landed fair and squarely on its feet. Bruno decided to go into management last year with 17 year old Pernilla Wahlgren; sales of her first record had just gone over the 100,000 mark at the time of our visit which, in a country where 15,000 is a very good number one, is absolutely staggering. Bruno decided to do the management himself because he was worried about the arguments which so often seem to develop between management and record companies over shared artists. The responsibility of looking after a naïve 17 year old brings troubles of its own, however, and there were surely a few grey hairs developing! It is almost as if he can't believe their luck—"It is one of the most successful records and yet we are one of the smallest record companies." It just goes to show.

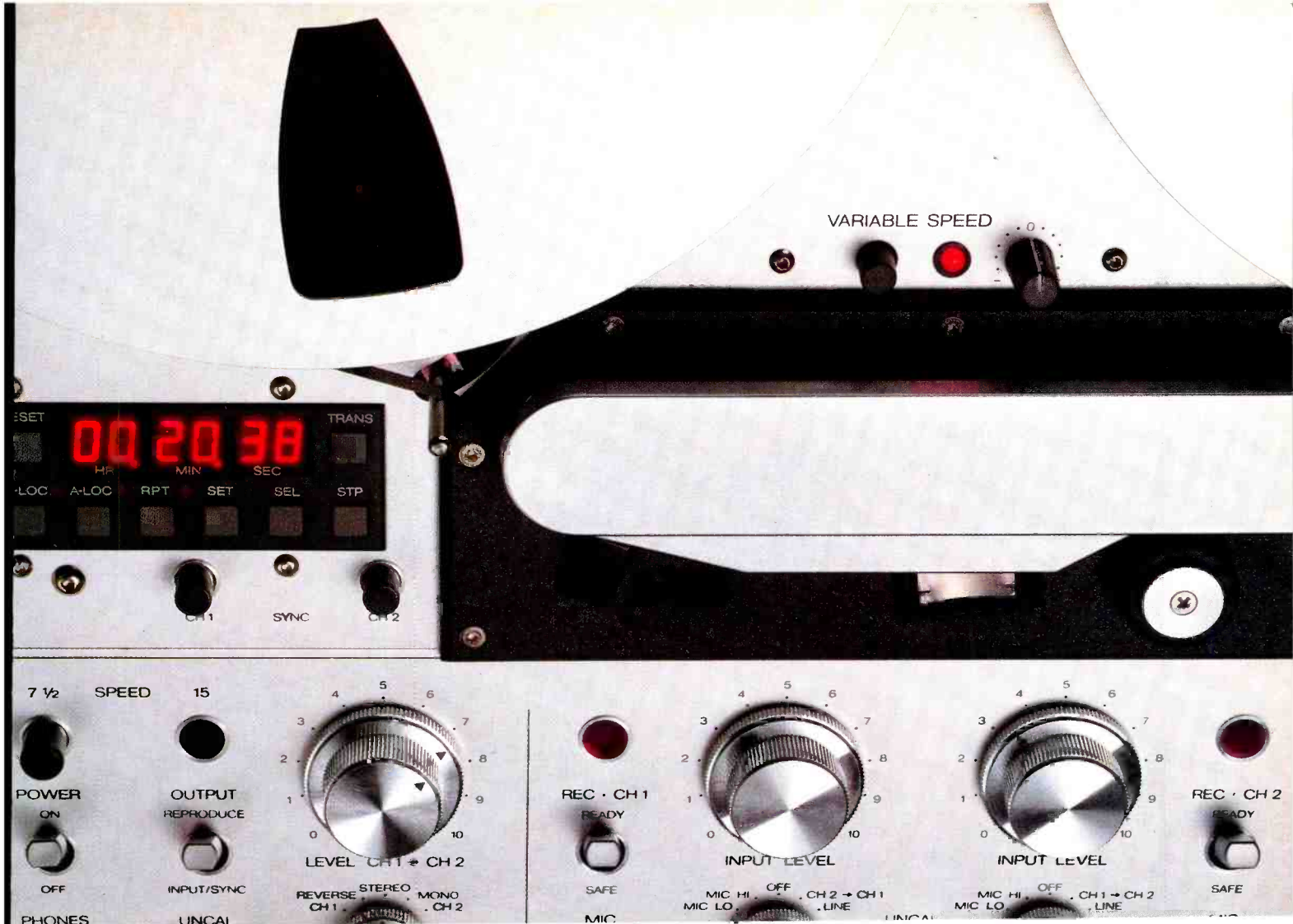
The record company also has Bruno's wife Ann-Louise Hanson who has been recording since 1959 and who continues to have a steady stream of success in Sweden.

Ancillary facilities at the studio are located downstairs and include kitchen, shower and lounge.

The studio is situated in an area called Stocksund, about one mile from the city centre, yet it is very quiet with plenty of parking space and hotels available. Most of the work is native bands, a lot of them based in Stockholm itself which has a very active live music network. Every evening on the radio there is a one hour programme in English for tourists detailing all the various things going on and although the city's population is only around one million, there is a tremendous amount of live music. Janet Angus Glen Studio, Johan Baners Vag 19, S-182 75, Stocksund, Sweden. Tel: (08) 85 68 00/85 74 00. □

View of the control room





## *The music mastering machine by Revox.*

*The Revox PR99 MK II now offers features like an LED real-time counter for exact elapsed tape time in hours, minutes and seconds. An Address Locate button to automatically search for any pre-selected address point. A Zero Locate feature to bring the tape back to the zero counter reading. Auto Repeat to continuously replay a tape segment of any length. And built-in variable speed control to raise or lower pitch up to 7 semitones. Options include monitor panel, remote control, steel roll-around console, and carry case.*

*If you're serious about music recording, you'll want to make your master tapes on a professional open reel. And if you want the best sounding tapes, you'll use a tape deck from the world's most respected name in audio recording: Studer Revox. Audition the PR99 MK II today at your Revox Professional Dealer.*

**REVOX**  
*Dedicated to excellence.*

**F.W.O. Bauch Limited**

49 Theobald Street, Boreham Wood, Hertfordshire WD6 4RZ  
Telephone 01-953 0091, Telex 27502 Fax 01-2075970

# LETTERS LETTERS

Letters should be marked 'For Publication' and sent to the Editor at the Croydon address on page 3

## Soundcraft SA1000

Dear Sir, I feel some clarification may be necessary concerning Hugh Ford's review of the SA1000 power amplifier.

Firstly, we do not, as the article suggests, use MOSFET devices in the output stage; for some very good reasons. In this model 12x250 W bipolar transistors are biased and signal sourced by two power MOSFETS. The opposite temperature coefficients of these devices coupled with intimate thermal contact eliminates the possibility of thermal runaway. Perhaps the most often quoted 'disadvantage' of the bipolar versus the MOSFET is the appearance of the secondary breakdown curve, which is absent in MOSFETS. No MOSFET device is made which matches the current voltage product (linear operation) of our bipolar device—secondary breakdown curve included in Bipolar SOA characteristic.

The noted crossover distortion can easily be explained. At the time the review sample was manufactured the bias current for the output stage was set not to minimise distortion but to limit dissipation under quiescent conditions. This policy has, however, been changed and all units are biased to optimise the distortion figures.

The cooling fan has been chosen to provide as much airflow as possible for PA applications. However, in properly ventilated fixed installations it should be possible to disable it. Alternatively, a quieter lower efficiency fan could be used of course.

Lastly the manufacturer's correct name is Adyton Nor A/S, Postboks 30, 7584 Selbu, Norway, and it should be stressed that the amplifiers are made exclusively for Soundcraft.

Yours faithfully, Martin Hutton,  
Technical Services, Soundcraft  
Electronics Ltd, Unit 2,  
Borehamwood Industrial Park,  
Rowley Lane, Borehamwood, Herts  
WD6 5PZ, UK.

## Hugh Ford replies

Thanks to Mr Hutton for his clarification of a number of points. In view of lack of detailed information I had assumed from the reference in the provisional instruction manual to measuring voltage '... between the power MOSFET cases...' to mean that the power output stages used MOSFETS. My apologies for this error.

There was also some confusion caused by the two company names given: 'Adyton Trading as Trondheim Norway' and 'Adyton Nor as Norway' with different addresses.

## LF absorption

Dear Sir, We read with interest the feature on Puk Studios (November 1985).

It looks and sounds as if Andy Munro, with his various collaborators, has produced an interesting addition to the world's recording studios. However, I write in particular to express our relief that another British studio designer (Andy Munro) is now appreciating the virtues of low frequency membrane absorbers.

The 'bass-trap' is and always was a very inefficient way of absorbing bass. However, Andy should not think that he is the first or only one to use damped membrane absorbers as an alternative—they have been in use since the 1950s, and there probably isn't a BBC studio without them.

Sandy Brown Associates have been using and developing highly efficient membrane absorbers for over 15 years. They were an important part of the acoustic treatment of the 12 independent local radio stations we have designed which meet the stringent criteria laid down by the IBA with the minimum of lost space.

With the exception of the occasional Puk in which money and space are not restrictions, most studios, particularly city centre studios, do have to look critically at the usable area left inside. The acoustic treatment on the walls reduces space and any design feature which minimises this loss is valuable. Yours faithfully, Alex Burd, Sandy Brown Associates, 1 Coleridge Gardens, London NW6 3QH, UK.

## Alice's answer

Dear Sir, I am writing in response to the letter from Keith Armstrong (Studio Sound, February).

The 'revelation' that there is a high proportion of analogue hardware in the DSP is hardly surprising, nor is the information that it contains many innovative features—by definition it has to be good to interface with the amplitude and dynamic response constraints of digital processing; however, I share Keith's 'love affair' thinking.

The honest reason that Alice have stuck

to the analogue domain is twofold: firstly it was our opinion that digital technology was not sufficiently advanced to make a truly digital mixer a cost effective reality, and secondly, our own research and development work in analogue circuitry removed the possibility of any performance advantage; indeed it reinforced our opinion that the best analogue remains superior to digital. Nothing has happened in the last three years to modify this thinking. I find it surprising that Neve let it be known that 40 man years of development was required for the DSP project—it could easily be taken as a massive indictment of the early design directives. The comment about leading the world brings to mind mischievous pictures of a company that designs and markets a computer-controlled 8 litre supercar—just before the world's oil runs out.

Keith's points about the transformerless microphone amplifier are well taken. At Alice we also have designs for such a beast with superb performance but at high cost. On balance (!) I stick to my guns and will continue to advocate the use of those funny wire things with iron in the middle—I would be delighted to debate it further!

Yours sincerely, Ted Fletcher,  
Stancoil Ltd, 38 Alexandra Road,  
Windsor SL4 1HU, UK. □

## Glossary of terms

**AB testing:** Born Wantu Tes Ting, he was the legendary Chinese PA and recording guru of the '60s. Roadies can be heard chanting his name mantra-like before gigs to this day. Adopted American name on retiring to San Francisco in 1971.

**Balanced line:** Half for the engineer, half for the producer.

**Drop-in:** When half a dozen drunken friends of the act arrive at 4am to help spill drinks on the console.

**Drop-out:** Someone who leaves school at 16 to work in a recording studio instead of getting a proper job. □



## TWIN PPM BOX

High quality Ernest Turner TWIN movement in a mains-powered unit. The illuminated coaxially-mounted pointers of the TWIN offer an unrivalled method of monitoring stereo left and right or sum and difference controlled by a front panel switch. Meets IEC65-2, BS415 safety.

Ring or write for full specification of this or:

- ★ PPM2 and PPM3 drive circuits
- ★ PPM5 20-pin DIL hybrid
- ★ Ernest Turner movements 640, 642, 643 and TWIN with flush-mounting adaptors and illumination kits
- ★ Peak Deviation Meter
- ★ Programme and Deviation Chart Recorders
- ★ Stereo Disc Amplifier 3 and 5
- ★ Moving Coil Pre-amplifier
- ★ 10 Outlet Distribution Amplifier
- ★ Stabilizer
- ★ Fixed Shift Circuit Boards
- ★ Broadcast Monitor Receiver 150kHz-30MHz
- ★ Stereo Microphone Amplifier
- ★ Advanced Active Aerial.

## SURREY ELECTRONICS LTD.

The Forge, Lucks Green,  
Cranleigh, Surrey GU6 7BG.  
Tel. 0483 275997

# TWO DEFINITIONS OF THE PERFECT ECLIPSE



## A SOLAR ECLIPSE

A natural phenomenon occurring when the moon passes between the earth and the sun, resulting in total darkness. This unique event is the result of a complex chain of events culminating in the perfect alignment of their orbital trajectories.

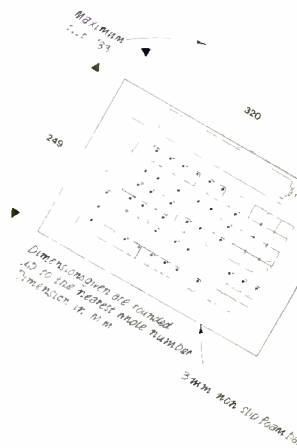
Its cause was for centuries beyond the comprehension of man, who's imagination and superstition associated it with the supernatural and religious ritual. Magicians and alchemists made the most of the awesome spectacle to assert control over their bewildered followers, until astronomers were able to disprove the mystical theories by offering a scientific explanation.



## THE ECLIPSE EDITOR

A technological phenomenon in the form of an Intelligent Audio Edit Controller which puts rival products in the shade. Having a capacity to control a large number of events, firing complex user-programmable sequences in perfect alignment from a single Q-key, The Eclipse is capable of supporting 32 machines.

Many of The Eclipse's unique functions were beyond the wildest imagination of Audio engineers until Audio Kinetics applied their advanced research technology to create an electronic edit controller which will, when interfaced with Q-LOCK Synchronisers, add a little magic to modern post production facilities.



AUDIO KINETICS ECLIPSE

AUDIO KINETICS LIMITED

Kinetic Centre, Theobald Street, Borehamwood, Herts. WD6 4JP, England. Tel: 01-953 8118 Telex: 299951 Fax: 01-953 1118

AUDIO KINETICS INC

1650 Highway 35, Suite 5, Middletown, New Jersey 07748, U.S.A. 201-671 8668 Fax: 201 671 6902

AUDIO KINETICS INC

4721 Laurel Canyon Blvd, Suite 209, No. Hollywood, Cal 91607, U.S.A 818-980-5717 Fax: 818 761 3916



Fourman Television



Swan Yard



Saunders and Gordon



Billy Curries studio



# SUPPLY & DEMAND

# YOU DEMAND — WE SUPPLY

Our customers made quite varied demands of us in 1985. Between them, they're a pretty representative cross-section of the industry. Whatever the nature of their business, ITA met their needs – smoothly and effectively.

Here you see just four of the systems we supplied last year.

Fountain Television, in New Malden, Surrey, is a new TV production and post-production facility. We were chosen as the main contractor for their extensive sound facilities. We supplied Otari MTR90 and MTR12 recorders as well as all the outboard and ancillary equipment. We also installed everything, and did the fairly mammoth wiring job!

Swan Yard is one of London's newest and most prestigious music studios. They chose us to supply their two Otari MTR90 24-tracks and their two MTR12 mastering machines.

Saunders and Gordon is a highly successful new company in Central London providing the ultimate in sound production facilities for radio and TV commercials. We

supplied all the equipment in the two studios: custom Amek Angela consoles, Otari MTR90 multitracks, six MTR12 2-tracks, and everything else besides.

Billy Currie of Ultravox also chose the popular MTR90/Angela combination for his private studio. Besides supplying much of the outboard equipment, we did the entire installation which included several special provisions for computer and MIDI control of instruments.

ITA's experience with all kinds of studio applications is well illustrated by the four examples here.

If it involves sound recording, ITA can help. We are one of the longest-established suppliers in the country, and besides being main U.K. agents for Amek and Otari, we can supply equipment from virtually every major manufacturer.

If you're planning a new project or a major upgrade – it makes sense to talk to ITA.

INDUSTRIAL TAPE APPLICATIONS  
PROFESSIONAL PRODUCTS DIVISION

The logo for Industrial Tape Applications (ITA) features the letters 'ITA' in a large, bold, stylized font. The letters are composed of horizontal bars of varying lengths, creating a sense of depth and movement. The 'I' and 'T' are solid, while the 'A' has a more complex, layered structure.

1 Felgate Mews, Studland St, London W6 9JT. Tel: 01-748 9009 Telex: 21897

**T**elcom noise reduction was developed by that part of the AEG Telefunken group of companies that later became known as ANT Nachrichtentechnik GmbH. It suffered initially from having to compete in an already established market place with Dolby and dbx—Dolby A had found worldwide acceptance and dbx *Type I* was heavily used in popular music multitrack recording in certain areas. As with any noise reduction system, there are a number of stages that lead to acceptance of the system. The first area is performance, ie how much noise reduction does it achieve, and this must be balanced against the damage that the encode/decode process does to the processed signal. If this stage is passed then the next question for the commercial facility is the degree of acceptance—simply the numbers of units in the field. Understandably inter-studio compatability is a much valued asset. On the performance side, *telcom* had been developed with the hindsight of Dolby and dbx experience and was able to include the aspects of both systems that were operationally proven to be most satisfactory. It is therefore particularly interesting to follow the acceptance of the *telcom* noise reduction system particularly at a time when noise reduction systems for analogue tape machines are not really such hot topics.

Before entering the practical aspects of this article it is worth comparing the numbers of noise reduction channels claimed in operation: Dolby currently has around 100,000 units of Dolby A, compared to *telcom*'s 8,000.

There are now two recording studios within the UK who have full *telcom* noise reduction complements for multitrack work. They have both had their systems long enough to make meaningful comments on the practical aspects of this relative newcomer.

The first UK studio with full 24-track *telcom* was The Angel in Islington, North London. This is a two-room (third under construction) complex owned by the de Wolfe music publishing company. The studio is located in an old United Reform church which allowed recording areas with high ceilings—Studio One will hold up to 75 musicians with large dedicated booth areas and a very flexible acoustic. The room is also dominated at one end by the restored

# PRACTICAL TELCOM C4

**We covered the technical aspects of the telcom noise reduction system in February 1985. There are now a couple of UK studios who have selected telcom for their noise reduction requirements and in this article Keith Spencer-Allen talks to them about their experiences with the system so far**

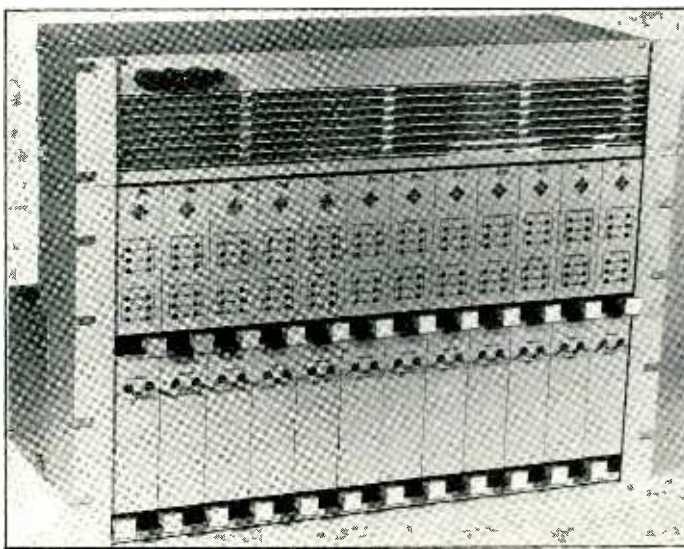
original church pipe organ. Work is split between in-company sessions and full commercial outside business. The third room under construction will also be large and will handle a similar mix of rock, classical, film and MOR-type work as the other rooms. Under the direction of studio manager John Timperley, Angel have always made their own equipment decisions rather than opt for obvious choices. In this way, the rooms were designed by Tom Hidley to John Timperley's very specific specifications; the consoles are all Neve; they had some of the first Ampex *ATR124s* in the UK; and about two years ago they started looking at *telcom* noise reduction.

John Timperley: "We first used *telcom* when the UK distributor lent us three or

four cards to try. We used them to record monitor mixes that were cut live. We also did all the cruel tests that we could do with audio—water being poured from one glass to the next, jangling keys, watch ticking—all awkward stuff. We could not get it to exhibit any problems. We then borrowed 16 channels and tried the system on our own recordings and it was instantly liked by everybody."

The studio has a complete set of Dolby in the form of *M* series multitrack frames and *361s* for the mastering machines. *telcom* is used on all noise reduction equipped machines in the facility in the form of *cADM* cards that are pin compatible with the Dolby *Cat 22* cards and so just slip into the racks. *telcom* has now been adopted as standard for all Angel's own company work

24-channel unit



and mastering.

John: "It is also used on a considerable amount of outside work where the client is prepared to trust our opinion about how we can make the best recording for him. We also lend them cards for disc cutting sessions should they be needed. We do also have customers who request to use Dolby—usually if the tapes may be going to the States for a possible later remix. We have no resistance to that at all. Quite often we are asked for non noise reduction recording then we don't even talk about Dolby let alone *telcom*."

The other studio using *telcom* for multitrack work is Castle Sound in Edinburgh, Scotland. Castle has been open for 11 years and is now in its second premises which was an old school. It has one 24-track control room with three different recording rooms off it—one with stone floor and high ceiling, one that is timber and glass and the third being much drier. The desk is an Amek *M2500* with Audio Kinetics *MasterMix* automation and the multitrack is an Otari *MTR90 Mk II*. Work is mainly rock and pop sessions. Calum Malcolm is studio manager and is also intimately concerned with equipment choice.

Castle has a 24-channel *telcom* system using *telcom* frame and power supplies and they have been using the system for about 10 months at the time of writing.

## Why telcom?

Calum Malcolm: "We tried Dolby and dbx and we just didn't like them. I felt that it was far too easy to hear them working. We also looked at digital recording systems as well and didn't feel that any of them were good enough yet. So we chose *telcom*."

Castle only use *telcom* on their multitrack machine and no noise reduction on mastering machines.

"We did try *telcom* on the mastering machines and although it worked quite well, I think that any noise reduction system is at a disadvantage when it comes to putting the whole programme through the unit. There invariably tends to be a wide frequency range present—you have everything on the programme not just the snare drum or the bass drum. This means that the dynamics of the track are appearing at different intervals. You may have the bass drum and bass perhaps peaking at four to the bar or whatever and the



system has to cope with that at the same time as everything else going on during the mix. I know that with *telcom* the signal is split into four bands but it does still create problems and I think that this is true with any system. I can still hear it working while it tries to follow a complex waveform. So we opted to use the system just for the 24-track. Mastering is usually 1/2 in at 30 in/s and occasionally Sony F1.

"We don't use *telcom* on everything but most people who we demonstrate the system to, and look like they might be completing the project at Castle, decided to use it."

At The Angel *telcom* is sometimes used on projects that are non noise reduction: "We also use *telcom* for bouncing tracks around within the multitrack such as when backing vocals are being stacked and then mixed to a couple of tracks, the stacked tracks will be *telcom* encoded and decoded when bounced down."

Compatibility of recordings between studios was an unknown factor for Castle and The Angel as neither has so far received a multitrack tape from another *telcom* studio for work. The Angel have sent several of their encoded multitracks to other continental studios and so far they have heard no negative reports about them. On the 2-track master side, de Wolfe has a library and copying bay at another premises in London and they are equipped with *telcom* and have not had any compatibility problems. Also when taking *telcom* tapes for cutting at a non *telcom*-equipped facility John has found that apart from just pulling out the *Cat 22s*, pushing in the *c4DMs* and aligning the *telcom* tone to the Dolby level point on the Dolby frame meter there are no problems. One tip for emergencies only when cutting is that it is possible to get away with using *telcom* cards for the programme signal only and decoding the preview signal with Dolby A—not recommended but possible.

## Recording levels and standards

With a noise reduction system that allows 30 dB of noise reduction there are several ways of using the available lower noise floor. John Timperley at The Angel was keen on making the most of the low noise floor although this is not always his criterion.

"In this studio we review the level of what we record on to tape on a considered view of what the programme material is going to be and therefore we align the multitrack for every session a particular way. We have line-up sheets that we give to the workshop asking for '+7 at 30 with Dolby' or '185 nWb/m with *telcom*'. *telcom* is usually 185 nWb/m (USA) on everything at 30 in/s although with 16-track we run the multitrack at 15 in/s. With *telcom* the noise floor is so low that the speed choice is largely academic.

"We master our mixes at 185 nWb/m, 15 in/s, 1/2 in tape, NAB, again because the difference between noise at the two speeds is very small. There is a slightly better noise figure at 30 in/s but long before you get to that point you are fighting other sources of noise and so there seems little point. There are a number of advantages in the choice of 15 in/s—tape storage space is important for our own work and 15 in/s also reduces the number of reel changes when we are doing multiple format work such as a session done 24-track, a live triple mag system and a 4-track mag back up all running at the same time."

What about the levels of signals that are recorded on tape with this alignment system? For instance the compression characteristics of the Dolby system generally mean that you have to watch your recording levels only slightly less than if you were using no noise reduction. With dbx you can more or less forget recording levels as the compression characteristic allows all but the most extreme levels to be recorded cleanly. How is it with *telcom*?

"With *telcom* I simply don't have to pay too much attention to the 24-track meters: I can pay much more attention to the mix PPMs. Tape noise is just not really a problem anymore."

Calum Malcolm at Castle has a different approach. They have a preference for extended headroom.

"We use PPMs on the desk. Our '0 VU' is 320 nWb/m (Euro) but of course using PPMs we are really modulating at low level. In VU terms we do not record drums or percussion above -15 dB. So we are really going on quite quietly. We would record a steady state-type signal higher than with drums as the peaks are lower. Instead of following the old rules where you would modulate different tracks at different levels—bass on a high



# Tannoy Define the New Points of Reference.

The new DTM-8 from Tannoy meets the need for phase-coherent point source desktop monitoring and generates very stable stereo images with smooth frequency characteristics.

The monitors use the recently-designed 8" dual concentric drive unit, which offers all the features of axially aligned acoustic source, phase coherence, smooth well-balanced frequency response and low colouration.

The system is supplied in black texture finish, and a special feature is the inclusion of self adhesive rubber pads. When fitted to the side or bottom of the cabinet, these create a non-slip surface which holds the cabinet firmly in position on the narrow top ledge of a mixing desk. For full details, just contact F.W.O. Bauch Limited.

**TANNOY**<sup>®</sup>  
The Name for Loudspeakers

**F.W.O. Bauch Limited**

49 Theobald Street, Boreham Wood, Hertfordshire WD6 4RZ  
Telephone 01-953 0091, Telex 27502 Fax 01-2075970

## PRACTICAL TELCOM C4

level but cut back on drums—with *telcom* everything goes on at the same peak level so you know very well what your peak level is. Of course the levels read on VUs may look very different but on PPMs it is the same. You know that you are not in any trouble at all. We always work this way—it is easy and the result is always very airy. The real beauty of such a large amount of noise reduction and being able to record at a lower level is the lack of distortion. I know that *telcom* is yet another step in a chain of signal processing and I am always against putting more things in the chain but the honest truth is that it does get rid of so many ills that it sounds infinitely better than 30 in/s without *telcom*. Although the hiss is lower the important thing to me is being able to record at a lower level and have that much more headroom."

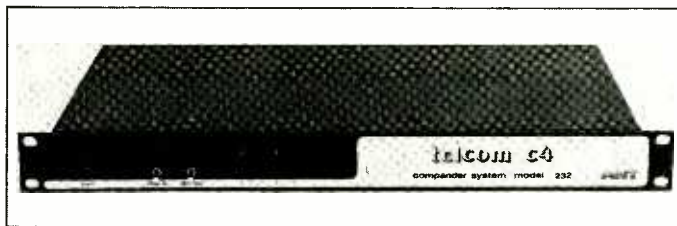
### Sound problems

It used to be considered that the more noise reduction one achieved the greater the possible damage to the integrity of the signal. How does *telcom* fare on that respect. Are there any instruments that upset it terribly?

Callum Malcolm: "I think I can still hear it on piano and perhaps on some bass things. But I would still rather have that than all the bubbling, grunch, crosstalk and other general nasty business. For me the slight audible effect is the lesser of the two evils. For me it still sounds better than digital audio."

For John Timperley, at The Angel the use of *telcom* has led to problems but not significantly with modifications to signal. The noise reduction systems at the studio are wired so that it is possible to patch out all or any track should you wish to bypass the complete noise reduction chain and so if any sound becomes a problem on recording then it is simple to remove noise reduction from that channel completely. If there is a 'problem' with *telcom* it is in the way that the noise floor is lowered to a level similar to that of digital tape machines and therefore all the audio garbage becomes audible.

John Timperley: "I think



Model 232 2-channel compander system



telcom c4 DM

that with *telcom* and digital—I have just done a large recording project with a 32-track Mitsubishi—we have problems with microphone noise and room noise. If you have a desk that is quiet with good headroom, a tape machine running at 185 nWb/m (USA) (which with an *ATR124* is hardly anything at all) and *telcom*, your problem is that you are moving faders up and down with noise on the end of them—mic and room noise. There is nothing to mask it. There is very little to choose between digital recording and *telcom* from a noise point of view. We have occasionally made up masters that we have taken from Sony digital multitrack mixdowns and 30 in/s *telcom* analogue mixdowns and it has been difficult to tell the difference.

Noise becomes a problem at the end of a track particularly if the mix is for compact disc. Whether it is symphonic, rock and roll or whatever, all music has to stop. The players have stopped, the room has stopped reverberating, the artificial reverb has stopped, the desk is hanging there with its 12 to 40 mics and suddenly there you are with your fader and you have to decide how you close the console, or partly close it. Or even cut an ambient tape" (John is referring here to compiling masters for cutting or CD preparation when what happens between tracks—unnatural silence or room noise is a matter of some debate) "or wiped *telcom* tape. We have tried everything and have found that with *telcom* noise reduction you have to close the console; pull that fader right down. We often find that you have to do the tricky manoeuvre of pulling the fader down over 'die-away' to prevent the noise of the electronics becoming a major problem.

"We have found that noise on *telcom* ½ in 15 in/s measured broadband is 2 dB noisier than our Sony *PCM1610* but most of that noise is below 400 Hz so it is really not so much of a problem. If anything has changed over the last few years it is that you now see people like me standing at the console wearing headphones on die-aways."

Callum Malcolm: "Tape noise is really not a problem any more. The noise comes from EMT plates and digital reverbs and mics. We now have to be very careful on our choice of mics and find ourselves using a lot of line level output B&K mics such as the 4003 and 4004. You really have to watch those little noises because of this low noise floor. This is particularly true when recording anything that is quiet such as vocals or low level percussion. The worst offenders are still the outboard gear though."

### Alignment or tracking problems

All noise reduction systems depend on certain aspects of the transmission or recording medium remaining constant between encode and decode. What upsets *telcom*?

John Timperley: "We have found that it is insensitive to level differences though it will be affected if it is too far out. With frequency response errors—it does exaggerate them but not to the extent that dbx would do under the same conditions. We find it about as tolerant as Dolby in this respect."

Callum Malcolm: "We have found it to be totally level independent. The only thing that I have noticed is that you have to try and get the machine as flat as possible at the bottom end as frequent errors at that end may cause

more problems, particularly as the low end at 30 in/s is not very good on most machines anyway—you are probably talking about + or - 2 dB and you have to boost it by a few dB at 130 Hz in order for it to be reasonably flat down to 35 Hz and of course that does get accentuated. I have probably begun to tailor the low frequency a little as I go to tape."

### Any other points?

John Timperley commented that the system seemed to react very well to being varispeeded, even massive speed changes. They are apparently not any more fault prone than other similar equipment just different faults. In the case of The Angel there was initially a problem with interfacing the switching action with the Ampex *ATR124s* but this has now been overcome. Early *telcom* cards also gave problems at initial switch on when in Dolby racks as they drew more current than Dolbys and used to lock up the power supplies although the current *c4DM* cards with the low power ICs do not suffer from this problem. They have found that current draw is now about the same as for Dolby.

The Angel have also found another type of work. John Timperley: "We have found ourselves doing a lot of work for clients where we record, mix and then play with edits, changing of running order and all the normal aspects of compiling masters. This is then transferred to *1610*—not perhaps the preferred digital way of working but certainly easy and economic and with a good recording the results are such that no one could complain. We have a *PCM 1610* although I suppose most of the time we use it for collecting an hour's worth of material from *telcom* ½ inch recording. In the fullness of time we will probably commit ourselves to a full digital investment but not yet. □

### Postscript

Readers may wish to listen to some recordings made with *telcom* and both studios made the following recommendations. The Angel suggests the Clannad album *Legend* which was fully *telcom* and includes a considerable number of tricky crossfades. Castle recommended the new Blue Nile album which is *telcom* multitrack and ½ in 30 in/s master. This will be released in about two months time.

WORLDWIDE AGENTS

- USA  
Klark Teknik Inc.  
New York 249 3660
- Australia  
Syntec  
Sydney 406 4700
- Belgium  
TEM  
Dilbeek 569 1823
- France  
Regiscene  
Paris 4374 5836
- Canada  
Gerr  
Toronto 868 0528
- Germany  
Audio Vertrieb  
Quickborn 41 066 9999
- Japan  
MTC  
Tokyo 295 4731
- South Africa  
Colosseum Acoustics  
Johannesburg 234541
- Spain  
Lexan  
Barcelona 203 4804
- Switzerland  
WA Gunther  
Zurich 391 3939
- New Zealand  
Moser  
Auckland 479 5304
- Israel  
Mar Productions  
Tel Aviv 454 003
- Denmark  
SC Sounds  
Tastrup 99 88 77
- Sweden  
Intersonic  
Stockholm 744 5850
- Austria  
Sound and Light  
Wels 42 7147
- Norway  
Lyd Rommet  
Oslo 11 4085
- Hong Kong & PRC  
Tom Lee  
Hong Kong 722 1098
- Korea  
Young Nak  
Seoul 267 8697
- Italy  
Audio Link  
Parma 598 723
- Greece  
Ban Studio  
Athens 6449 345
- Holland  
Ampco  
Utrecht 433 134
- Finland  
Audiatron  
Helsinki 0566 4644



# DPR402

## THE SIGNAL SHAPER

The BSS DPR402 uses novel high spec double-side-chain architecture to give total flexibility on two channels. This new approach also makes dynamic equalisation, LF only compression and level dependent signal mixing possible. It features:

- Active knee** – a variable contour compression knee for varied situations.
- Active window** – Manual control of frequency band range.
- Active metering** – Expressive LED metering for total creative control.

**Compresses De-esses Expands Limits**

The image shows a detailed view of the BSS DPR402 compressor control panel. It features several sections:

- DE-ESS:** Includes a 'BELOW' section with a knob for frequencies below 12 kHz and a 'DE-ESS' knob with 'max' and 'out' positions.
- FREQ:** A knob for frequency response with settings for 1k, 1k.5, 2k, 4k, 8k, and 15k Hz.
- THRESHOLD:** A large knob for setting the threshold level in dBv, ranging from -30 to 0.
- RATIO:** A knob for setting the compression ratio, with settings from 1.5 to 10.
- ATTACK:** A knob for setting the attack time, with settings for 1ms, 5ms, 20ms, 50ms, 100ms, and auto.
- RELEASE:** A knob for setting the release time, with settings for 10ms, 25ms, 50ms, 100ms, and auto.
- GAIN:** A knob for setting the output gain in dB, ranging from -20 to +20.
- PEAK-LIM:** A section with a 'PEAK LIM' knob and a 'CH. 1 IN-CH' input selector.

Labels at the bottom of the panel include: DE-ESS, FREQ., THRESHOLD, RATIO, ATTACK, RELEASE, GAIN, PEAK-LIM.

**BSS LIMITED**  
213 Sydney Road, London N10 2NL, England.  
Telephone 01-444 7892  
Telex 946240 CWEASY G Quoting 19018310  
Easylink 19018310

# NOISE REDUCTION

In this brief survey, we have looked at noise reduction systems suitable for use with analogue audio tape machines and work by encoding and decoding the programme material, ie not single-ended systems or dynamic filters. All information given is correct at time of compilation. Any manufacturers which have been omitted are welcome to submit information for later coverage.

## Aces

**Aces (UK) Ltd, Featherbed Lane, Shrewsbury, Shropshire SY1 4NJ, UK. Tel: 0743 66671. Telex: 35188.**  
**USA: Aces (USA), 244 Lyell Avenue, Rochester, NY. Tel: (716) 458-5610.**  
*NR series:* available in modular 19 in 3 U rack-mount frame containing 12 or 16 channels. Twelve-channel pre-wired for 16 with retrofit channels available by

the module. Simultaneous encode/decode with 2:1 compression/expansion ratio.

## Bel

**Bel Marketing, 29 Guildford Street, Luton, Beds LU1 2NQ, UK. Tel: 0582 452495. Telex: 825488.**  
**USA: MCI Intertek Inc, 745 109th Street, Arlington, TX 76011. Tel: (817) 640-6447. Telex: 910-8845171.**  
*BC3:* simultaneous encode/decode system available in 19 in 3 U rack-mount system containing 8, 16-channels or 8 pre-wired for 16 channels.

## dbx

**dbx, PO Box 100C, 71 Chapel St, Newton, MA 02195, USA. Tel: (617) 964-3210. Telex: 92-2522.**  
**UK: Scenic Sounds Equipment Ltd, Unit 2, Comtech, 12 William Road, London NW1 3EN. Tel: 01-387 1262. Telex: 27939.**  
dbx have two types of noise reduction—*Type I* and *Type II*. *Type I* was developed as the fully professional standard for recording. *Type II* added at a slightly later date to cover less than perfect recording and transmission media such as cassette recording, broadcasting, cartridge machines and studio-transmitter links.  
*140:* 2-channel *Type II* simultaneous encode/decode noise reduction system in 1 U 19 in rack-mount format. Full professional interface standard.  
*150:* 2-channel 1 U 19 in rack-mount, *Type I* simultaneous encode/decode system. Designed for narrow track, low level, high impedance tape machines.  
*180:* similar to *150* but designed for use with machines operating at high levels (nominally +4 dB) and low impedance.  
*911:* single-channel *Type I* simultaneous encode/decode noise reduction module to fit 900 series mainframe. Full high level specification.  
*941:* 2-channel *Type II* module otherwise similar to *911*.  
*942:* 2-channel decode only system similar to *941* but for decoding encoded vinyl discs.

In addition dbx has a number of specialised cards for other uses including *221E/D Type II* cards for broadcasting use; *321* series compander cards for satellite, microwave and cable links; and the *525* series of cards for dbx-TV noise reduction systems. These cards are normally supplied for other equipment manufacturers' use.

## Dolby

**Dolby Laboratories Inc, 731 Sansome St, San Francisco, CA 94111, USA. Tel: (415) 392-0300. Telex: 34409.**  
**Dolby Laboratories Inc, 346 Clapham**

## TOM HIDLEY ON FM ACOUSTICS AMPLIFIERS

Tom Hidley's continuous strive for the ultimate in State of the Art design is documented all over the world. His wealth of experience allows him to accurately judge the performance of highest class equipment. We asked Tom if he could describe his thoughts on power amplifiers. Here are his words:

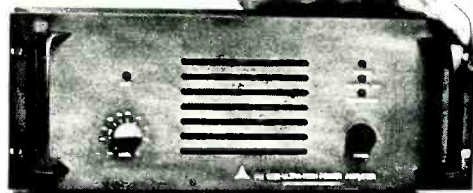
"The FM ACOUSTICS amplifier is a 'take charge' device. The amplifier's ability to deal with extreme high power low frequency signals without faltering is absolutely amazing. Transient response, definition and reserve power for the most exacting of monitoring requirements whilst retaining the pure character of music, makes FM ACOUSTICS amplification an absolute necessity in all quality music environments."

"In my opinion FM ACOUSTICS is not a choice, it is a must."

Tom Hidley

FM ACOUSTICS LTD, Tiefenholstr. 17, CH-8820 Wädenswil/Switzerland  
Telephone: 01/780 6444, Telex: 875414 FMAC

Britannia Row Equipment Ltd  
35 Britannia Row, London N1 8QH



# SURVEY

Road, London SW9 9AP, UK. Tel: 01-720 1111. Telex: 919109.

Three ranges of noise reduction—A, B and C, A is the accepted professional recording standard with B and C being principally for domestic cassette use. The A system is available in a number of different models.

**XP Series:** 5 U 19 in rack-mount frame containing 8, 16 or 24 noise reduction channels in an integrated form rather than *Cat 22* modules allowing lower cost. Separate rack-mount power supply. Individual or global channel control.

**Model 361:** single channel with built-in record/playback changeover facilities using *Cat 22* module. 19 in 1 U rack-mount format.

**Model 362:** 19 in 1 U rack-mount unit containing two channels of *Cat 22* whose operation may be selected individually from the front panel.

**Model 372:** portable unit containing two channels of Dolby A in a compact form. Channels may be operated independently.

**Model 330:** 1 U 19 in rack-mount unit intended for use in preparation of master tapes for high speed cassette duplication. With *Cat 66*, unit becomes two channels of B-type and with *Cat 219B* two channels of C-type.

Dolby also manufactures a wide range of Dolby A modules for video tape recorders. These include *Cat 221B* for Sony *BVH 1000, 1100/1100A, 1180* and the *RCA TH 200*; *Cat 226* for Ampex *VPR-2, VPR-2B* and the Marconi *MR-2, MR-2B*; *Cat 234* for the Sony *BVH 2000* series; and a 1 U 19 in rack-mount unit containing two channels of Dolby A for Ampex *VPR-3, VPR-6, VPR-80* and the *RCA TH-400* and *TH-900*.

## Rebis

Rebis Audio Ltd, Kinver St, Stourbridge, West Midlands DY8 5AB, UK. Tel: 0384 71865.

**RA220:** simultaneous encode/decode module using the *High-Com* noise reduction system and compatible with the other *RA200* series modules. Frames available for up to 8 or 17 modules. Option relay modification for conversion to 2-channel use.

## telcom

ANT Nachrichtentechnik GmbH, Lindener Strasse 15, D-3340 Wolfenbüttel, West Germany. Tel: 05331 830. Telex: 95651.

UK: Audio+Design Calrec Ltd, Unit 3, Horseshoe Park, Pangbourne, Reading RG8 7JW. Tel: 0734 861088.

USA: ANT Telecommunications PO Box 7647, Hollywood FL 33081 Tel: (305) 962-8650.

telcom products are all based around the

same *c4* noise reduction system in three groups of formats—complete multitrack system with frame, single or two channel rack mounts of card systems.

***c4ESA* with *c4F2H*:** available as a 2- or 4-channel system in 19 in rack-mount format with local or remote control.

***c4ESF* with *c4F2V*:** frame with *c4* cards available as 8-, 16- and 24-channel rack-mount units.

**Model 112:** 2-channel noise reduction system in 19 in rack-mount frame

electronically balanced inputs/outputs.

**Model 122:** As model 112 but with transformer balancing.

**Model 232:** 2-channel unit designed for working with tape recorder. Transformer balanced inputs, electronically balanced outputs.

**Model 233:** 3-channel unit for use with Type C VTRs.

*c4* cards: there are now a range of cards such as the *c4DM* which are designed as a retrofit for the Dolby frame. □

# multimix

16:2:1 12:4:2:1 16:4:2:1

All from one 19" rack mount console

- 3 band Equalisation
- 2 auxiliary sends
- 90mm smooth action faders
- Mic and Line inputs
- Subgroup direct outputs
- RIAA equalised inputs
- Peak LED on inputs
- 12 way LED displays on masters
- Phantom power on every input
- 5532 Op-amps throughout



Hill Audio, Inc.  
231 Marquis Court  
Lilburn, GA 30247 USA  
(404) 923-3193  
TLX 293827 HLAD

Headwater Industries  
635 Caron Avenue  
Windsor, Ontario N9E 5B8, Canada  
(519) 256-2454

Hill Audio, Ltd.  
Hollingbourne House  
Hollingbourne, Kent ME17 1QJ, England  
(062 780) 555  
TLX 966641 HILL





**Our consoles have  
always been quiet.  
Have we been too quiet  
about our consoles?**



Perhaps we have. Thanks to the success of STUDER recorders, we're often thought of as strictly a tape recorder company. But, STUDER has also been making audio consoles for over 16 years, and hundreds of our 169/269 compact mixers are now at work in broadcast and video production facilities all around the world. Recently, with the introduction of the Series 900, STUDER has become a major supplier of studio production consoles.

So we're not keeping quiet about this any longer.

**Name your frame.** Series 900 frame sizes from 12 to 50-plus inputs are available for any application, from remote recording and OB vans to sophisticated broadcast production and multi-track recording. Within these frame sizes, we configure the console to fit your requirements. The secret is our wide array of module options.

**Mix and Match Your Modules.** The 900 is a true system console offering custom configurability at standard prices. Choose from 10 different metering modules, 3 multi-track monitor options (including separate monitor EQ), mono or stereo faders,

audio subgroups, automation compatible VCA groups, video switcher interfaces, subgroup reassignment modules, up to 3 solo systems, multi-function test generator, input selectors, limiters, compressors, patchbays with bantam or 1/4" systems, and up to 10 auxiliary busses.

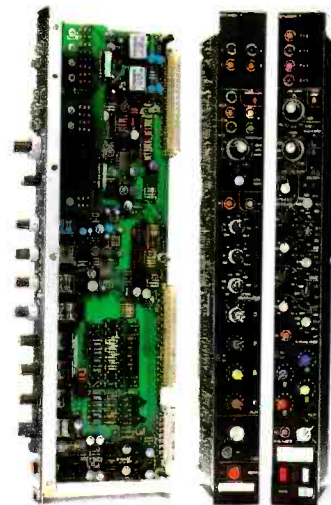
Basic input modules feature 3 or 4 band EQ, microphone/line inputs, 5 pre/post-fade auxiliary sends, and channel overload indicators. Options include transformerless mic pre amps on a subcard, separate transformerless TAPE input for remix, stereo input modules, stereo EQ, internal stereo XY/MS active matrix, stereo blend control, dual line inputs, variable HP and LP filters, user defined panel switches, and the list goes on.

**Listen to the quiet.** The entire 900 console frame design is consistent with the advanced module design. A completely independent signal reference ground system assures preservation of individual circuit CMRR figures. The result is overall noise performance compatible with digital recording.

**As time goes by.** All 900 consoles adhere to strict STUDER standards for precision and reliability. The frame is built on a rigid channel and brace structure, and each module uses pin-and-socket Eurocard connectors.

Frame connectors are mounted on longitudinal master boards with solid support from horizontal and vertical frame members. All components, switches and pots are commercial/industrial grade from the best US and European manufacturers. In sum, a 900 is built to last as long as a STUDER recorder.

For quality, flexibility, and the reliability, it ranks among the world's finest, and you may find the pricing surprisingly competitive.



For more information on STUDER consoles please contact:

**STUDER**  
INTERNATIONAL AG  
CH-8105 Regensdorf Telephone (01) 840 29 60

STUDER REVOX AMERICA INC Nashville Telephone (615) 254-5651  
STUDER REVOX S A R L Paris Telephone 533 5858  
STUDER REVOX CANADA LTD Toronto Telephone (416) 423-2831

## F.W.O. Bauch Limited

49 Theobald Street, Boreham Wood, Hertfordshire WD6 4RZ  
Telephone 01-953 0091, Telex 27502 Fax 01-2075970

www.americanradiohistory.com

# BUSINESS BUSINESS



Barry Fox investigates the facts behind the industry news

## Broadcasting 78s

Well done Radio 2 for buying 26 half hour programmes on classic jazz—currently being broadcast every Sunday afternoon. It could re-shape thinking inside the BBC about broadcasting music available only from old shellac 78s.

The programmes are special because presenter Robert Parker is sourcing them from 78s. The sound is surprisingly good but despite what the publicity people would have us believe, there is no magic technology involved. Parker has made use of available technology but with loving care and attention. There is one extra ingredient: *no* analogue tape.

Parker was born in Sydney, Australia but in the '60s and '70s worked with the Rank film group and Molinare Sound in London. In the late '70s he made some broadcasts on jazz from LBC but in the early '80s packed up his collection of 10,000 shellac jazz records and went back to Australia. There he picked up a commission from ABC to restore old recordings. The radio station issued three LPs of the result (which BBC Enterprises will release in the UK) and Parker produced a series of 26 radio programmes covering jazz on record from 1917 to 1947.

Parker takes the best available shellac and feeds the sound through a Packburn dynamic noise suppressor to remove clicks and filter out some of the hiss. The signal also goes through an equaliser mainly to compensate for deficiencies and resonances in the original recording and cutting chain. The mono feed is then split and comb-filtered by an Orban synthesiser to give a pseudo stereo spread. "The whole process is highly subjective and empirical—rather than scientific," says Parker. The only trick, if you can call it a trick, is to go straight from the shellac disc to the Sony *PCM F1*, without any intermediate analogue tape stage.

"In effect," says Parker, "the final result is only a single generation away from the original 78 disc and on a virtually transparent recording medium. This way I am able to avoid the degradations of analogue tape which seem particularly obnoxious in material of limited top end frequency response." The three LPs are cut direct from digital tape. The BBC broadcasts direct from *PCM F1* PAL Beta cassettes.

The reason why many record company releases sourced from old discs have sounded so poor is that a busy engineer is left with just enough time to squirt the sound through a string of toys. Often the engineer has no feel for the music.

Only a very few BBC studios now have the facility to broadcast direct from a 78 disc. In most cases the disc is dubbed on to analogue tape by the library, and the tape sent to the studio. So it suffers from just the problem which Parker identifies and avoids by using digital tape. This

doesn't matter if the programme is a run-of-the-mill request show. But Parker has shown that it does matter when the programme is aimed at a specialist audience. The good news is that the BBC does still have all the original shellacs. There is no reason, other than cost, why the Corporation shouldn't now start dubbing on to *F1* cassette instead of analogue reels. At the moment the analogue tapes often have to be wiped after use because of space shortage. A 3 hr Beta cassette takes up no more space than a paperback book and will hold a shelf full of discs.

Certainly for any station or studio with discs to dub for preservation, the moral is clear. Go the digital route.

## BBC staff cuts

News is now coming through on the first round of BBC engineering cuts. Initially 291 jobs will go. All are in the manufacture of electronic equipment for use in radio and TV studios. The BBC says there will be no compulsory redundancies, all the jobs lost will be on voluntary or early retirement, probably at 45 and over. We shall see.

Of those who will go, 189 work on making equipment, 92 designing it and 10 in basic research and development. The next round of job cuts will be amongst engineers who work on installing and refurbishing studios. The British Broadcasting Corporation will now buy hardware off-the-shelf. Often it will be non-British, usually Japanese.

Engineers now fear that the BBC may try to combine the Kingswood Warren research department with the Independent Broadcasting Authority's similar facility near Winchester. Morale among BBC engineers is at an all time low. Some of the best are now looking for jobs in private industry. They have only stayed with the BBC, and its low wages, because of the security offered.

## BT efficiency

Crown International of Esher, has already been promised the £300,000 contract for next year's British Telecom Annual General Meeting. They earned it.

BT had no idea how many of the 1.7 million shareholders would exercise their right to attend. But BT did know that, given half the chance, a lot of people would heckle and argue in public about wrong numbers and crossed lines. BT thought big and booked the National Exhibition Centre in Birmingham, Britain's largest hall. Crown was booked to produce an audio-visual presentation and put together the most elaborate 2-way coms network ever provided for a conference meeting.

TV cameras in the main Arena Hall 7 could have sent pictures of Chairman Sir George Jefferson and his directors to the overflow halls. In the event they were

not needed. When Sir George appeared GE light valve video projectors blew him on to two 6×4.5 m screens mounted high above the podium. Like an Eidophor, the GE creates an image on screen by beaming light through a film of oil. This is modulated with the video signal to create a transparent video image, like a film frame.

The throw was so long that no lens could keep the picture small enough. Crown got round the problem with a Quantel video special effects unit. With this they artificially reduced the size of the picture by 30% before feeding it to the projector. It's a useful tip for pop crews in large halls.

Paul Ellis of Crown describes the NEC Arena as "a giant bathroom". He used 34 750 W BGWs and mainly JBLs. There were no big stacks at the front. The signal was split (with delays) between 60 tails around the hall.

To control hecklers, Crown evolved a master plan. They built eight sound-proof phone booths out of transparent plastics, and dotted them around the arena. Although apparently normal BT *Slimtels*, each had its normal mouthpiece microphone replaced by a Sony electret. Sound signals from all the booths were fed to a Soundcraft desk at the rear of the hall. As Sir George took questions from one of the numbered booths, the crew faded up a spotlight on the booth, brought up its mic and fed the audio through the PA. When a questioner failed gracefully to stop talking, Sir George just said, "Next question." Down went the mic and the booth sunk into darkness.

Anyone with a moan about telephone service cock-ups was simply told to fill in a form and faded out. The cleverest move by BT was to insist that every questioner also had to fill in a form before going into the booth. These were continually couriered to a hidden mission control centre where BT minions had 200 prompt sheets with vital facts on every question likely to be asked. These could be placed in front of a closed circuit TV camera, and the image routed to a video monitor hidden out of sight on Sir George's lectern. So by the time a questioner had reached the booth and started talking, Sir George already had the vital facts for answering the question. When someone slipped in a sneaky question (like why is BT selling its address list to a pop publisher) another team of minions typed emergency aid into a video text generator. Most shareholders left the hall firmly convinced that their chairman had an astonishingly broad knowledge of all BT's facts, figures and statistics. I can't wait for next year, when perhaps someone says in advance that they are going to ask about pension funds, and then when they get into the booth enquires about the noise levels on BT broadcast land lines. □



# FLEXIBLE

System One offers FLEXIBLE audio test capability. Broadband and selective level and noise, thd + n, intermodulation distortion by SMPTE/DIN, CCIF, and DIM/TIM methods, quantization noise and distortion, frequency, and phase; wow and flutter soon. Measures common-mode rejection ratio without changing cable connections.

Four detectors, four high and four low frequency band limits, four sockets for optional filters.

## Audio precision

P.O. Box 2209, Beaverton, Oregon 97075  
503/297-4837, 1-800/231-7350  
TELEX: 283957 AUDIO UR

Now, that's the way to test audio !



SCENIC SOUNDS EQUIPMENT LIMITED  
Unit 2, 12 William Road, London NW1 3EN.  
Tel: 01-387 1262, 01-734 2812  
Telex: 27939 SCENIC G



# IN PERSPECTIVE

# IN PERSPECTIVE

Comment from Martin Polon, our US columnist

CD Hardware, a lad just entering his early teens goes to visit old Doc Consumer for a physical. Doc pokes around a lot. Then Doc looks worried. He tells CD about his distant cousin Quad who fell heir to a fatal illness back at the turn of the '70s. The illness? Too many systems=consumer confusion. This parable may not touch on the direction of future progress in audio but it is causing some industry observers to worry about the long-term prognosis for digitised audio in the home. The threats to consumer digital audio come from competing digital audio formats either in the marketplace or implied to consumers by the mass media, coupled with consumer confusion and/or financial disinterest, plus potentially serious shortages of digital software.

The consumer has currently validated CD as the digital technology of choice; although not in the quantities that the consumer audio industry had initially hoped for. Some audio industry wish lists had called for a million players to be in use in the US alone at the beginning of 1985. The potential for difficulty posed to CD by newer digital technologies is much more real than many in the audio/video and companion record industries want to admit. The incredible speed at which new technology can enter the market place is confusing the consumer; who has become very comfortable with relatively long time frames to digest new development. In the past, advances such as colour television, stereo LP records or VCRs achieved consumer acceptance over five to 10 year time frames with at least double that time frame to mature in the life cycle of the product.

All of which brings us to the question of how much is enough. Consumer confusion comes in several sizes and shapes. Aside from the diverse directions for audio-only digital, the broader trend in audio/video devices would confuse an electronics engineer. The output of VCRs in the US currently encompasses more than 60 brand names from more than two dozen plants worldwide. Each unit has different advantages and cosmetics—especially from the viewpoint of the consumer who lacks the technical sophistication to see the commonality of features. The advent of the CD in the world audio marketplace has provided virtually as many hardware labels in the stores to choose from the distracting 'bells and whistles' as now exist for the VCRs. Add to that today's real confusion between VHS or BETA with Dolby sound, VHS Hi-Fi, BETA Hi-Fi, Super BETA and the new 8 mm digital audio/analogue video machines, plus CD and forthcoming digital audio cassette (stationary head and the more likely format of rotating head systems) and recording optical discs and other systems yet to come and you have a challenging potpourri of audio technology and

## DASHing towards DIS and DAT

statistics to wade through. All these systems offer superb audio recording and reproduction; in many cases superior to today's existing analogue studio technology. These audio/video formats do or will offer variously noise reduction, FM recording, PCM-like recording interleaved with video signals and digital audio with video on 8 mm video cartridge—on compact disc—on audio cassette—on recordable optical discs, etc. 8mm appears to be on a non-stop track with its push from Sony and Kodak following on from the winter Consumer Electronics Show in Las Vegas.

In short, what we have is not a bad thing but potentially too much of a good thing. One issue that could be raised is that some of these units are not or will not be compatible in important areas such as sampling rates. That rules out the use of a direct digital output on a CD player to allow for the use of digital audio recording. That means we could see the forced need and expense of a digital standards converter for the home audio system. The alternative is even less attractive although it is less expensive. Incompatible digital audio units would require digital/analogue conversion from the CD and then analogue/digital conversion to the record unit; followed up by digital/analogue to accomplish playback of the finished tape. Not a very appetising way to serve up the digital signal. It all reminds one of an American television commercial for cooked chicken. As the fellow says when referring to unidentified grey patties that have been re-constructed, "Pieces Is Pieces."

It seems very clear to the record industry today that the 'sales illness' that struck LP records and the recording business in general can be cured by CD but CD can have real staying power in the marketplace only if the record companies can supply enough titles and in sufficient quantity to meet burgeoning consumer demand. Unfortunately, the record industry has become a part of the 'go-no go' cycle by waiting until the last possible moment to commit to the new technology during CD's eight year gestation period. That lack of commitment has caused the current bottleneck in the CD pipeline. One large West Coast US dealer philosophised on the current crisis, "The record companies give us statistics. They tell us CD has a catalogue of 4,000 titles. They also tell us there are half a dozen plants pressing CDs full time and this time next year we should probably have seen another 45 million CDs in the marketplace. But none of that matters to me; I don't believe it. The philosopher Spinoza said that there is no such thing as lies—that

there are only crippled truths. From the record companies, there are no truths—only crippled lies. I know every big shot in the industry but I still can get only about 250 to 300 different titles and nothing is consistent. Dribbles and drabbles. I tell my lookie-loo customers if they see anything they even remotely want—buy it!! I can't guarantee if I'll have it next week or next month or even next year. And forget special orders. Now if the record companies had started to build plants two or three years ago, we wouldn't be having a problem now. But two or three years ago they were standing around saying 'Gee, we really don't know'."

In fact, the combined CD pressing capacity in Japan will consist of CBS-Sony at Shizuoka, Japan Columbia, JVC at Yokohama and Yamato, Panasonic, Sanyo, Toshiba, EMI and other new facilities coming on-line. The total capacity from Japan to be expected during 1986 will probably not exceed 50 million units according to heretofore reliable sources and that figure will hold only if plant expansions are completed on time. In the US the one known quantity is the former CBS/Sony CD pressing plant in Indiana—now fully owned by Sony. In addition 3M are beginning to look like they could be in the business as well. But the biggest question mark will be the capacity of the joint DuPont/Philips project which could push US production into the multi million unit levels by the end of the year. That's a lot of ifs in an industry that needs millions of units of product. For the rest of the world—even if you count MPO in France, Nimbus in England, the accelerated output PolyGram in Germany and ICM in Switzerland—the 1986 total does not seem to quite reach the 40 million unit level. It could provide in the range of 100 million units available in total during 1986 but many observers doubt that total capacity is available. If the record companies are currently restricting pressing to half the 400 hit LP albums released each year according to their press releases, that would indicate 200 titles to be released as CDs. Dividing hopefully 100 million units by 200 titles leaves 500,000 units of each title available worldwide. Fewer units available would mean less copies of each title and the often quoted 40 million range in 1985 left only 200,000 units per title. The end of 1985 finds one million CD players in the hands of consumers worldwide, with the potential for more than another million to be sold throughout 1986, 400,000 to 500,000 units of software seems inadequate for each title to sate the software appetites of more than one million CD player owners. On the other hand, whatever figures are used—45 million, 60 million, 80 million, 100 million—indicate adequate capacity as long as the CD

# IN PERSPECTIVE

# IN PERSPECTIVE

player owners who statistically should be expected to buy at least 4.5 discs per year (given unlimited availability) don't all want the same discs. Potentially, the CD catalogues offer over 3,000 discs but consider the effect of 3,000 titles (still small in comparison to the nearly 40,000 LP titles in catalogue) divided into the 1986 production. That would leave only 33,333 or less give or take a couple of copies for each particular title in worldwide distribution. While this is a little simplistic and the record companies are expected to make the best usage of their allocations, the CD shortage is therefore not imagined and poses problems to long term growth in available catalogue rather than just titles on paper as well as in overall capacity. For 1986 the record companies cannot build up their CD catalogues without trading off needed capacity and therefore availability of CD software and its potential for attraction of new buyers to the hardware as well.

On top of all of this, the consumer in the Western World has never been more over-extended financially. The purchase of new technology for the home requires either available credit or discretionary cash. In the United States, consumers have been extended more credit than ever before in history while saving deposits in banks are at a worrisome low. The implication is that the purchase of a CD player and its discs is an expensive consideration if one owns a perfectly good LP-based stereo system and in the US 87% of the population does (the remaining 13% cannot afford any kind of system). It becomes even more difficult to justify when the audio press bombards the consumer with glowing reports of newer technology that will make the CD obsolete and CD software is difficult to find.

In Great Britain, the above situations are confused further by higher per product cost to consumers. One British distributor harrumphed, "Take your US retail prices and change the dollar sign to pounds sterling. Products are more expensive here by at least the difference in exchange. So, even though the pound buys about one and a half times what the dollar does we are at the mercy of VAT (value added tax), the duties and a lessened competitive structure in terms of discounting. Add to that the fact that our salaries are about one third to one half of yours for comparable work but all the basics like food and housing price are to your scale—not ours. So all these audio video fancies heft quite a pretty price, my dears."

The bottom line may be that we as an industry cannot have our collective competitive cake and survive to eat it too. It may not be possible to afford the luxury of letting competitive digital systems confuse the consumer. True superiority in the marketplace is measured by consumer acceptance and

CD has that now. An acceptable parallel technology would be the arrival of a digital audio cassette scheme giving worldwide users the same digital options they have today with analogue audio: disc for playback and cassette for recording.

And what happens to the consumer will affect audio sales, rentals and studio time at the professional level as well as at retail; as it did at the end of the 1970s. The problem is that CD could get into trouble as much from a shortage of the software necessary to make the CD hardware universal as anything else.

And if CD fails to field an impressive catalogue by the end of 1986 or '87, then the arrival of an alternative technology with adequate software supplies could not be faulted. So the record companies have to take the 50 million dollar gamble that they can amortise their new CD plants before CD is supplanted by another technology in the same way that the LP is being nudged aside.

From here, the greater risk is to do nothing. CD needs to move forwards with no hesitation and an industry committed to its success without alternatives.



## Yes - An Audio Analyzer.

The RE201 Dual Channel Audio Analyzer looks and performs like no other Audio Analyzer. It has proven itself through a range of applications from testing CD players, to quality control in radio manufacturing, to helping broadcasters meet required standards.

### How can it do so much?

The RE201 uses a combination of analog and digital measurement technology. And an operating system allowing any of 100 complete test setups to be recalled with only a few keystrokes. Matching the RE201 to your individual application is easy through the use of available options.

This single instrument replaces the need for an entire configuration of audio test instruments. You can now have a savings in space and a considerable increase in measurement speed without a compromise in performance. Harmonic distortion below 0.001% and single harmonics down to 0.0006% are guaranteed specifications.

### The RE201 can measure:

- Level Average, DC, Peak, Quasi-peak, RMS and Selective RMS
- S/N, weighted and unweighted
- Harmonic distortion
- SINAD
- Difference Frequency distortion
- Intermodulation distortion
- Transient Intermodulation distortion
- Frequency and Drift
- Phase
- Separation and crosstalk
- Rumble
- Wow and Flutter

A complete audio test system in one instrument. Write or call us today for a full explanation. We'll show you why all audio analyzers should look like the RE201.

RE • INSTRUMENTS



Electronics for Test and Communication

RE INSTRUMENTS Limited  
Sherwood House, High Street, Crowthorne, Berkshire, U.K.  
(0344) 772369 Teletax (0344) 778809 Telex 817782 reukg

**A**lan Parsons joined EMI's Abbey Road Studios in St John's Wood in 1969. While at school he was proficient on guitar, flute and piano but his first job on leaving school involved video camera research at EMI's Hayes plant. He didn't feel it was exactly his vocation and moved into tape duplication. Virtually the first thing he heard there was the Beatles' *Sergeant Pepper* album, and it rekindled his interest in music. Within 18 months he was at Abbey Road.

His first task at the studios was in the tape library—an almost obligatory part of Abbey Road's extensive training—but he managed to escape within two weeks to become a tape operator, his first session being with a band called The Gods. As a tape-operator he worked with a number of artists: he was involved in the mixing of the *Abbey Road* album and with Glyn Johns on *Let It Be*. Then he encountered Pink Floyd, assisting on the *Atom Heart Mother* sessions. This led to his engineering *Dark Side Of The Moon* in 1973 and a period of live sound mixing either side of the recording as they took the project on tour.

His next major project was the second Cockney Rebel album, which included the hit single *Judy Teen*, which he co-produced. Then came *Pilot*—he produced their first two albums; their second hit single, *January*, reached No. 1 and was replaced by Cockney Rebel's *Come Up and See Me* giving Parsons two consecutive No. 1 hits. He went on to work with Al Stewart and John Miles.

Meanwhile, in 1974, he had met Eric Woolfson, who had come into the picture originally to help Alan out on the business side. He became Alan's manager, and soon after his musical partner: the Alan Parsons Project was born. Following the success of the Floyd album, Eric suggested that he should make his own 'Dark Side of the Moon'. The result was the release of *Tales of Mystery and Imagination*, a concept album inspired by the stories of Edgar Allan Poe. It did very well, and set a pattern for the albums that followed. Each had a concept behind it—although the concepts have become a little looser as time has gone by—and each was highly successful yielding hit singles, although Parsons doesn't regard the act as a singles band. There was a

**INSIDE**

# THE ALAN PARSONS PROJECT

**Recording engineer/producer Alan Parsons is best known today for his own albums, produced with Eric Woolfson. He spoke to Richard Elen about his techniques**

change of label, too, for the second and subsequent albums, to Arista. The current release, *Stereotomy* is the ninth—although there is another LP which was never released. Yet for some reason the Alan Parsons Project has never been overly successful in the UK, despite the fact that virtually every album reaches No. 1 everywhere else—notably in the United States and Europe.

From the sixth album—*Eye In The Sky* released in 1983—Parsons has been using digital recording techniques. Initially he mixed analogue multitrack recordings to Sony 1610 but on the latest album he has made use of digital multitrack—in this case a pair of synchronised Sony 3324 machines—at London's Mayfair Studios. The majority of previous albums have been recorded at Abbey Road but for *Stereotomy* only the orchestral overdubs were done there. There is also a lot of use of modern music technology on the current album. Has it changed the way he works?

"Everything's changed over the years," says Parsons. "A lot of people find it refreshing to hear a real kit of drums—and I'd be a bit lost without one when I was doing a track. I think drum machines are excellent when you're writing, or demo'ing a track but you can't beat the real thing. But recently I've been getting into sequencers and timecodes... and I'm up for that."

There is often very little worked out beforehand when the Project comes into the studio. Eric Woolfson is responsible for the majority of the musical ideas, and the team develops these ideas into

tracks. "There are tunes," says Alan, "and on my stuff I tend to do demos but I like to get people playing together. I'm quite traditional in that respect: I like the idea of the band out there and me in here."

**O**n the present album, that band consists of David Paton on bass, Stuart Elliott on drums and percussion, Ian Bairnson on guitars, Richard Cottle on synths and saxophone, and Eric on piano. Vocals on *Stereotomy* are provided by John Miles, Chris Rainbow, Gary Brooker, Graham and Steve Dye, and Eric Woolfson, while the orchestral arrangements, as always, were by Andrew Powell.

"You can only get an idea how a track's going by playing it start to finish with the whole band." Alan continues, "It's so hard just to have a bass line and a sequence, and imagine how the track's going to develop. It's the rhythm section that gives a track its feel."

All the timing from the tracks is taken from timecode, and all the tapes are pre-stripped. "We usually do a live click-track, driving the click from the timecode, and sequencers and so on are also driven from the code. That's one of the wonderful things about digital: you have a timecode track, and a 'real' 24 tracks." The Friend Chip SRC is used to develop synthesiser timing information from timecode. "Most people wouldn't dream of doing sequences live—they'd put

them down first and play to them—but we did exactly that, sending an SRC feed out to the studio, where 'Trix' (Richard Cottle) could introduce a sequence in the middle of a track simply by pressing a button, knowing that it would be in sync."

For many of the tracks, Richard Cottle had all his gear in the studio with the band, and provided a simple stereo feed, including echo to the control room from his own mixer. "An engineer's dream," says Parsons.

Apart from DI work, Parsons has tended to develop a standard approach to microphone technique. "On drums," he says, "it's a D20 on bass drum, KM84s on snare and toms, and a pair of 4038s on top, with no hi-hat mic. The hi-hat always appears when you put lots of top on the snare. Sometimes I'll go through three board equalisers to EQ a snare. Most of the mics I use are Neumann—all the condensers are. I place the 4038s quite high—about 4 ft above the cymbals."

Parsons has had good results with the Tandy (Radio Shack) PZMs on piano: they give him the bright sound he likes. "If I put a pair of 87s on piano, I'll put 6 on at 10 kHz before I even listen to it, automatically. There's a lot of things I put a certain amount of top on without even lifting a fader." Generally, he won't compress a piano sound, unless it's for effect.

On guitars, it's a couple of 86s on the amps, and an 84 on acoustic. He'll generally track an acoustic guitar with varispeed for a fuller, stereo sound. "Roy Wood taught me that—getting it nicely out of tune," he notes. "This advantage of using tracking with varispeed is that you don't get the delay." Bass guitar is always DI'd only.

**P**arsons is not a great believer in very finely-tuned mic technique. While he takes care with placement, he doesn't take it to extremes.

"American engineers in particular are very philosophical about exactly where the mic goes, and which mic to use, and so on—but very often I find that one notch on the EQ will compensate for any difference in placement. I'm almost cynical about mic placement—I virtually just stick a mic on it and the rest's done in the control room.

"In the old days it was different, when you had brass and strings and rhythm

section all going at once, then you had to think about what you were doing: you had to think about separation. When separation is not a problem—which it usually isn't these days... engineers these days never had it so good. They just don't know what bad separation is."

Parsons feels that modern studio design techniques—with deader rooms, and better overall separation—have enabled, or perhaps forced, engineers to worry less about mic technique and place more emphasis on getting it in the control room. "Occasionally you get a rogue studio... but maybe my mic technique is one that I know works—I do it automatically, and I don't think about it any more."

"Some people would say that was boring, not trying different mics, never trying different placings for mics but in fact I do. I'll experiment with using more than one mic on something, if I want to get more space out of it, for example. But more often than not it's a futile exercise these days: you can get so much more out of a Quantec or others in the new breed of digital echo devices. You get so much more to play with with those devices than you do by moving the mic around."

"I like the Quantec very much. Given the choice I'd have a bank of them but some of the other digital reverbs, I haven't got much that I like out of them. It's partly because I'm fairly ignorant, I suppose: I don't know how they work. But the Quantec is so easy."

That isn't to say that Parsons doesn't use ambience—there are quite a few sounds of that type on the new album for example—simply that he will generally prefer to manipulate the sound in the control room to obtain such effects. There is also a return to orchestral textures in the current album (the previous offering, *Vulture Culture*, was devoid of orchestral arrangements). He always uses Andrew Powell and the Philharmonia Orchestra. "They're wonderful," he says. "I've worked for years with session players, but it's so great working with an orchestra that you work with all the time. They're used to working with each other, and you know you'll get the same leader each time, for example."

When it comes to orchestral recording, Parsons likes to make his decisions at the time. "Nearly always, I'll record a string orchestra on two tracks," he says, "using

close mics—86s on violins and 84s on the others. On an overdub I used to put a pair up as well but the way Andrew writes you'll generally get, say, a funky cello thing that'll just get lost if you rely on that. And there's a time-delay problem as well. Generally I'll just get the balance—Andrew can hear it's right, I can hear it's right—we put it down, then it's another worry out of the way. That's perhaps one of the things that lead to us recording rather quicker than some people do."

**S**tereotomy took slightly longer than usual, mainly because of the 'newness' of the use of digital multitrack. "That's terrific," Parsons comments. "It's very creative. Having two machines, and being able to do unlimited copies, it's extremely creative. Not so much for taking options but for changing things. If you say, 'I wonder what it would sound like with another chorus in there' you can do it, without feeling guilty about having copied the chorus and slotting it in. It's totally transparent." Parsons has used two 24-track machines before but then, as now, it is mainly a case of transferring completed sections across to

one machine. "It's generally a 24-track mix in the end."

The availability of tracks means, however, not having to worry if, say, a vocal must be done line by line. "Singing is a difficult job," says Alan, "especially with cans on. To sing in tune is a real art. You're constantly fighting for tuning. A good singer is a good singer, and you can usually bring the required emotion through. It's just bringing the required emotion through and staying in tune that's the problem. There are very, very few singers who don't have tuning problems of some sort."

On vocals, Parsons is currently using an 84 with pop-screen. "It pops ferociously if you don't," he says, "but it just has the edge on the accepted vocal mics—47s and 87s—it just has a little brightness to it, and you don't have to EQ it so much." He goes for quite a lot of high top end—10 kHz and above—on vocals. As a result he often has to use de-essing. "With digital, you have to be very careful about recording problems—with noise and hums and so on. You have to be a lot more fussy."

Generally, Parsons puts the sound he's after on the multitrack—and with digital, he finds that what he puts

down comes back, unlike analogue. Sometimes he will put echo effects down as well but generally on separate tracks, if they're available. "It's another device available for the mix," he notes. "A lot of the drum tracks I've recorded echo on, on a separate track. You avoid going through all the rigmarole of setting it up each time, although often it'll be wiped at the end of the day and reproduced on the mix. But at least it's there each time you play it back. And a lot of the time we've been working on a slave, with a half-decent mix of everything else on it. It's really quite an easy way to work."

When it came to the final remix, Parsons continued using the two multitrack digital machines, laying mixes back on to the second 3324, unfaded, on different pairs of tracks, with overlaps where crossfades needed to be done. Then effects that needed to be added could also be assembled on multitrack at the right points. The final master was then assembled on the multitrack by digitally copying the other tracks across, going through Mayfair's 6000 series SSL desk only for the crossfade and effects section, using the impressive punch-in and out facilities of the 3324. The final result was then copied across to 1610. "I like to be able to assemble the master in the studio," says Parsons, "rather than spend time in some alien editing suite putting the album together. I like to keep it part of the studio process."

Parsons also utilised the British Ambisonic surround-sound system on the mix, using the Audio+Design Ambisonic Mastering Package. Although the system has been used for several years for classical releases, *Stereotomy* is only the second rock album mixed to 2-channel UHJ, as the gear for multitrack mixing to Ambisonics has only come on the market recently. Although the album reveals its full surround content through a decoder—like the Troy in-car Ambisonic system which is now widely available—Ambisonics also gives it a very impressive stereo on conventional equipment. All the tracks are encoded except for *In the Real World*, which is normal stereo. Parsons tried the Ambisonic system as an experiment and although he is pleased with the results, he is uncertain about the likelihood of surround-sound being a standard approach in the future. □

Nearly always, I'll record a string orchestra on two tracks using close mics... On an overdub I used to put a pair up as well...



Photo: Paul Spencer



## IT MAKES TAPE MORE FLEXIBLE

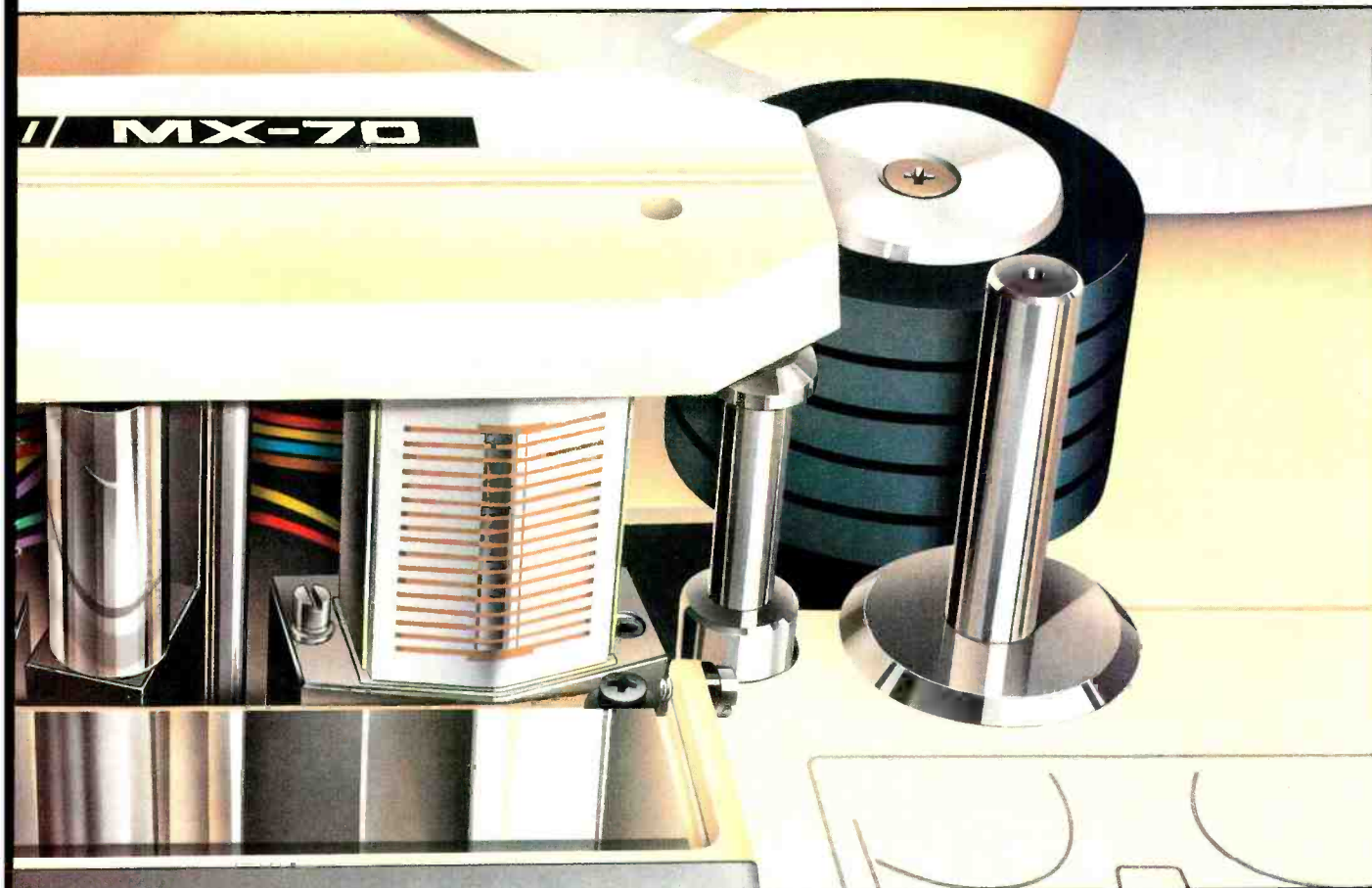
Otari Corporation  
 2 Davis Drive  
 Belmont, California 94002  
 Telephone: (415) 592-8311  
 Telefax: (415) 591-3377  
 Telex: 910-376-4890 OTARICORP BI MT

Otari Electric Co. Ltd.  
 4-29-18 Minami-Ogikubo,  
 Suginami-ku,  
 Tokyo 167  
 Telephone: (03) 333-9631  
 Telefax: (03) 331-5802  
 Telex: J26604 OTREDENKI

Otari Singapore Pte Ltd.,  
 625 Aljunied Road,  
 07-05 Aljunied Ind.,  
 Complex Singapore 1438  
 Telephone: 743-7711  
 Telefax: (743) 6430  
 Telex: RS36935 OTARI

Otari Electric Deutschland GmbH  
 Gielen Strasse 9,  
 4040 Neuss 1  
 Telephone: 02101-274011  
 Telefax: (02101) 222478  
 Telex: 8517691 OTEL D

Otari Electric (UK) Limited  
 22 Church Street,  
 Slough,  
 SL1 1PT  
 Berkshire  
 Telephone: (0753) 822381  
 Telefax: (0753) 823707  
 Telex: 849453 OTARI G



Otari would like to draw your attention to a remarkable new recorder. The MX70.

The MX70's microprocessor-controlled tape transport, closed-loop tension control and real-time tape counters give you instant, accurate tape control. And that gives you more time to do a better job.

The MX70 is designed for ease of use with machine controllers and synchronisers, meeting a variety of standards, including SMPTE. This makes it as valuable in video

post-production and broadcast studios as it is in audio recording.

Features like these, and many others, make the MX70 one of the most flexible tools any growing studio could wish for.

But there's one area where Otari's MX70 really does offer the kind of flexibility that no other machine can match. In formats.

The MX70's option list lets you choose between 1" 8-track and 1" 16-track formats. Convert to 1/2" 8-track. Or even switch between all three options on the same machine.

But while the MX70 sets new standards for flexibility, the men at Otari have stuck rigidly to tradition.

They haven't budged an inch on quality.



**OTARI**®

For more information on the MX70 or other Otari products, contact  
 Industrial Tape Applications, 1 Felgate Mews, Studland Street, London W6 9JT. Telephone: 01-748 9009  
 Stirling Audio Systems Ltd., 1 Cantfield Place, London NW6 3BF. Telephone: 01-625 4515

# CTEAP CONVENTION

**A** small console that created a lot of interest at the previous show was the Fidry *Étylla* console and this was shown again in an updated version which will go into production during the beginning of this year. The new features include an in-line monitor fader switchable pre-post tape with pan plus two auxiliary sends from the monitor path, an improved dynamics section which is either gate-compressor-expander with controls for threshold, release, attack and ratio, digital routing for 16 to 32 buses with LED display on each I/O module, eight VCA groups and four DCA master outputs. Fidry also make an interesting communications system with belt packs and a central control unit with either three or five separate channels.

Ateis showed the production version of the 2010 automated theatre console featuring what they call Computer Assisted Sound Diffusion. The software has now been updated for greater flexibility and ease of operation, and a full system has been installed in the Maison de la Culture in Genoble.

Ateis introduced the 1000 series mixer, which in reality is the fader section from the 2010 complete with the automation system. Maximum configuration is 32 inputs into 12 outputs. The 1000 is fitted with line inputs and allows for the economic updating of mixers where more flexibility is needed but the console is satisfactory in other respects.

Also new from Ateis was the *Triton* portable 3/2 mixer. This compact unit is powered by internal batteries or accumulators and has an external supply socket. Phantom is available on the microphone inputs. Other facilities include high pass filters on the inputs, -20 dB pad and output routing switches. Each output can be switched between -60 dB balanced or +4 dBm balanced output together with individual 1000 Hz oscillator signals and limiters. A single LED meter can be switched to each input and output plus sum. There is also a headphone amplifier that follows meter selection and a monitor return switch which connects a stereo tape monitor input into the headphone/meter circuit when it is switched to stereo listen.

NTP's 299 pre-mixer system consists of up to 16 remotely controlled mic amps with balanced floating inputs and phantom (switchable) together with two active, isolated distribution outputs per input. Designed for OB and mobile recording use, the 299 puts the mic amps where they should be—on stage with the microphones—and sends line level signals down a multicore into the studio. Sixteen inputs route into four stereo subgroups with remote controlled high resolution panpots so stereo/mono grouping is no problem. In addition the gain of each input can be remotely controlled through 10 to 70 dB in 1 dB steps together with a 20 dB pad. Each input has a remote controlled high pass filter with -3 dB points at 40 Hz, 80 Hz, 140 Hz and

**The eighth convention of the Techniques Electro-Acoustiques Electroniques et Video Professionnelles marked a change of venue last year and was held in the Palais des Congres, Paris, between the 17 and 19 December. The horseshow exhibition area was a vast improvement offering spacious layout on one floor. A greater international presence indicates the convention's growing importance and reflects an increasing desire on the part of French manufacturers to broaden their markets. Several non-French manufacturers used the show to launch new products.**

## **Terry Nelson reports**

200 Hz. Microprocessor control enables different microphone setups to be stored and recalled facilitating fast changeovers between acts. One control panel can control four stage racks for a total of 64 inputs and 16 stereo groups.

Yamaha presented several new releases including the MZ series of microphones. Primarily for stage use the 101, 102 and 103 are for vocal use and the 104 and 105 for instrument pickup. All are cardioid and the 102, 103 and 105 feature Berlingum domes in the capsules.

Several items of budget outboard equipment appeared including the GC2020 stereo compressor/limiter with gate, GQ1030 1/3-octave graphic equaliser and the Q2031 stereo 1/3-octave graphic. The GC2020 has separate controls for gate threshold, compressor threshold, ratio, attack, release and input/output gain controls. Gain reduction is indicated

by 5-segment LED meters. The units can be used in stereo or 2-channel and there is also access to the two side chains. The GC2020 comes in a handy 1 U rack chassis.

The two equalisers both feature 31 1/3-octave bands from 20 Hz to 20 kHz with a maximum of ±12 dB boost/cut per band. The single-channel GQ1031 is 1 U rack mount and is intended for 'cost effective' situations. The 2 U stereo Q2031 is more refined with switchable 6 or 12 dB boost/cut per band, balanced inputs and outputs on XLR connectors and parallel unbalanced jacks. A switchable high pass filter is continuously variable from 20 to 200 Hz.

The MC series of stage monitoring consoles are available in either 24 or 16 input frames mixing into an 8-way matrix. Facilities include 4-band EQ, phantom powering, comprehensive talkback and communications, balanced inputs and outputs and insert points on input channels and matrix masters. A useful feature rarely found on monitor consoles is auxiliary sends—the MC has two and two echo returns.

At the other end of the scale was the KS10 speaker. This is a small self-powered unit designed for keyboardists as a personal monitor and is ideal for studio and rehearsal situations where low power is required. The KS10 features a powerful 4 in speaker with low boost and volume controls and sits quite happily on most keyboards.

Amix from France presented three new products, the H 2700 amplifier, the FX24 stereo 4-way crossover and the Master Blaster sound reinforcement speaker system.

The H 2700 has a nominal rating of 700 W/channel into 4 Ω with a maximum power output of 1200 W/channel into 2 Ω or 2400 W into 4 Ω in bridge mode. The amplifier features seven types of protection including protection relays for the loudspeakers, status LEDs, balanced/unbalanced inputs (switchable) and provision for external gain control by VCA. The H 2700 is designed for use even under the most severe conditions.

The FX24 is a high quality 4-way crossover, with the turnover points selected by plug-in cards. Each output features gain controls and phase invert switches. Inputs are electronically balanced with unbalanced or transformer balanced outputs. Internal switching allows the crossover to be configured to 3- or 2-way stereo or multiband mono. Crossover slopes are 18 dB/octave.

The Master Blaster speaker system is intended for sound reinforcement in theatres, cinemas, concert venues and discotheques. A tuned bass cabinet houses two 15 in (380 mm) speakers and a second enclosure contains two 10 in (250 mm) direct radiators, constant directivity horn with 2 in driver and two optional slot tweeters. The complete system is rated at approximately 1 kW.

EAA showed the Square 1000 power amplifier which is now making inroads into its home market and abroad. The



# WHO NEEDS.....



## JUST ANOTHER AMPLIFIER ?

*If you want that rare combination of a superb performance, high reliability and extreme solid construction: **YOU DO !!***

**The SA 900C & 500C:** not "just amplifiers", they feature ultra fast, high voltage, full complementary output devices and the use of top-quality components all-over. They combine with very carefully designed circuitry to guarantee a superb performance and outstanding electronic stability.

**The application of individual power-supply modules** with high power, high efficiency custom designed toroidal transformers, reduces crosstalk and power-dumping to the almost immeasurable levels, necessary to accommodate the high dynamics of digital sound sources. It also creates the possibility for ideal wiring to further decrease crosstalk and harmonic distortion.

**Electronically balanced inputs** can be switched in and out and allow for bridged-mode operation. Long life 41-step potentiometers are

used as input level controls. To prevent earth-loops a ground-lift switch is also provided for each channel.

**An opto-coupler operated protection** works very efficiently against switching peaks, heavy overload, DC and short-circuit on output, whilst temperature sensors protect the amplifier against overheating. LEDs indicate clipping, signal present, overload/short circuit and overheating.

**The power and driver-transistors** are mounted on two heat sinks with "Sil-Pads" for superior long-life heat transmission. A two-speed, thermally controlled ultra low-noise fan is built-in for optimal cooling.

**Specially designed aluminium profiles** make the amplifier very solid and truly **Road** and **Roady-proof** for many years.

The SA 450C is a single channel, 100V line version of the SA 900C.



stage accompany

**Stage Accompany .....you need it !**

For more information contact: **Holland:** Stage Accompany, Anodeweg 4, 1627 LJ Hoorn, tel:(0)2290-12542, telex37989 Stage nl  
**Austria:** Kühnl & Wurzer, Waldeggstraße 68, 4020 Linz, tel: (0)732-688125 **Belgium:** Stage Accompany, Hendriklei 50, 2020 Antwerpen, tel: (0)3-2160352 **France:** Caw Sonoss, 3 Rue Vieille, 59160 Lomme, tel: (0)20-925091 **Germany:** Stage Accompany, Marienburger Straße 29, 4460 Nordhorn, tel: (0)59211-6196 **Hong Kong:** Studer Revox (far east) ltd, 25<sup>th</sup> floor Arion commercial centre, 2-12 Queens Road West, Hong Kong, tel: 5-412050 **Italy:** Kennel snc, 324 Corso Unione Sovietica, 10135 Torino, tel: (0)11-612148 **Japan:** Sakata engineering co ltd, 2-6-8 Ohjima Koto-Ku, Tokyo, tel: (0)3-682-8411 **Switzerland:** Stage Accompany, Spiseeggstraße 30, 9030 St. Josefen tel: (0)71-281696 **United Kingdom:** S.E.D., 27 Guildfordstreet, Luton LU1 2NQ, Beds, tel: (0)582-452495

# CTEAP CONVENTION



SAJE mixing consoles



Digital synthesising/processing system, note electronic palette

*Square 1000* features meticulous design and construction and packs a nominal 900 W/channel into 2  $\Omega$  or 2 kW into 4  $\Omega$  in bridge from a 3 U chassis. A VCA controlled protection circuit constantly monitors the operating conditions and takes the appropriate steps to keep the amplifier operating within safe limits.

Audio Concept Bourgogne are a new company which showed the *A.C.B.* modular power amplifier. Dubbed 'Power a la carte', the *A.C.B. M.1000* features a 2-channel power amplifier with removable power modules. Four modules are available with power outputs of 150, 220, 300 and 380 W into 8  $\Omega$ . This means that one chassis can be powered up as required and also makes field replacement easy. Maximum power output is 1200 W into 8  $\Omega$  in bridge. The amplifiers are designed to support all sorts of severe operating conditions such as 1  $\Omega$  loads, short circuit, capacitive loads, DC on the inputs. The inputs are electronically balanced with a patented circuit giving a noise performance of -128 dBA. Audio Concept will also be marketing a balancing unit, with or without variable gain.

The show saw considerable activity on the console front and several new models were launched by French companies. New to the industry was ALD.lab from Corsica with the *Automat* console. The console itself is already installed in a studio and visitors only saw modules, photographs and a video of the system but production will begin early this year.

Developed by recording engineers, the *Automat* features 32 input channels with direct outputs, eight subgroups, four master outputs, four aux sends and separate 32-track monitor section. The channel strip features separate electronically-balanced mic and line inputs, continuously variable phase control from 0° to 180° (this is unusual), 10-band equaliser on octave centres from 40 Hz to 20 kHz, routing switches to groups and masters with quad panning for the latter, four sends with pre/post switching, compressor/limiter with threshold fixed at -3 dB; 4:1 ratio and variable release from 0.5 ms to 2 s plus in/out switch and status LEDs, gain trim for postfade send, two solo buttons, automation function switch and MCB 120 mm fader. All functions of the

console are indicated with status LEDs and the main channel output is monitored by a 16-segment LED meter with VU or PPM characteristics.

The four auxiliary send masters feature compressor/limiters, variable phase correction, switching to master or monitor channels and rotary level controls. The auxiliary modules also contain echo returns (four in all) with switching and panning to monitors and/or masters. The master/communications modules feature flexible monitoring and talkback facilities.

The disk-based automation system stores real-time and snapshot gain changes and positions as well as equaliser settings. The VCA design is exclusive to ALD.lab and features completely silent switching and optimised response time for completely linear gain changes. The software of the automation system is also geared to aid smooth running of the studio and proposes three menus: repertoire, either tape, artist or title; recording session with tracksheet, hours worked, routing, parameters saved; mixdown with graphic representation of parameters used, hours worked and saving of new parameters.

Other special features are complete protection against micro interruptions of the power supply, ½ hour autonomy in case of mains failure allowing for the saving of the disk being used, separate powering of each channel strip by individual transformers resulting in optimal crosstalk performance and freedom from hum loops.

SAJE showed four consoles including the latest version of the *Odyssey* studio console, the *Racky* rack-mountable console, the *ULN 2* in a completely new form and a world first the *Memory* computer-controlled PA console.

The *ULN 2* represents SAJE's entry into the 'prestige' console market and differs radically from the *ULN 1* shown at the '84 CTEAP. Four standard frame sizes are available, 32, 40, 48 or 56 inputs and the console can be fitted with the disk-based automation system *Optifile*. This will be updated to the *Optifade* system in mid-1986 using special SAJE motorised faders. Three basic modes of operation can be had at the touch of a button, Record, Mix and Live (or broadcast), and the audio path is

such that the signal only passes through circuitry that is to be used. There is 30 dB headroom at all points in the input module plus superior crosstalk performance.

Functions of the console include microphone, line and group inputs (the latter permitting the creation of audio groups at any point within the console), variable high and low pass filters, 4-band EQ with a Q of 1 for the high and low bands and a Q of 2 for the mid bands, compressor/noise gate with dbx RMS sensing that acts in conjunction with the channel VCA and automatic release and attack, long-throw plastic conductive fader with routing to eight VCA groups, two mute buses independent of the VCAs, linear monitor fader, two stereo auxiliary sends and four mono sends, automatic headphone sends for the creation of instantaneous headphone mixes, record and peak status LEDs, 32-track routing and VU or PPM (BBC norm) metering. Other facilities including eight auxiliary send masters with EQ and eight echo returns with pan, full communications and monitoring. For further flexibility the equaliser and dynamics sections can be switched into three different signal paths, as can the insert point. Other refinements planned are a plug-in 4-band fully parametric equaliser and SMPTE-controlled automated 4-band sweep EQ and pan. The *ULN 2* on display has already been sold and at the time of printing will have been installed in the Voyager 48-track mobile recording studio operating out of Paris.

The *Memory* is a completely assignable console for PA or mobile recording applications. The desk on show featured 24 input channels and 16 outputs, however, maximum input capacity at present is 48. All functions of the input module are programmable and can be stored, recalled and modified at any time. Each input module features switchable A and B microphone inputs with 48 V phantom, line input, phase reverse switch, external effect on/off command switch, insert on/off, signal routing with pre/post switching for auxiliary sends, high and low pass filters, 4-band sweep EQ section and in/out switch, PFL switch, 10-segment LED VU meter (also reads PFL with

# The Dolby® XP Series Professional Cost-effective

NEW



XP Series Multi-track record or playback.

The Dolby XP Series contains up to 24 channels of Dolby A-type noise reduction in 12¼" of rack space, including power supply. The XP Series utilizes an on-board, integrated noise reduction circuit instead of the interchangeable Cat. No. 22 modules used in the SP Series, providing the same A-type noise reduction at a price over 20% lower.

Each XP noise reduction channel consists of a plug-in Cat. No. 331 module which contains the Dolby A-type noise reduction circuitry, precision input and output amplifiers with low distortion, controls, and an accurate LED calibration display. The separate, regulated PS3 power supply, designed for rack mounting directly above the noise reduction unit chassis,

contains fan cooling and electronically-controlled output protection.

The XP Series includes "uncal" controls, permitting convenient resetting of Dolby level for playback of and punch-in on tapes from studios with different Dolby level standards. The user can select the option of "hard-wired" or electronically-buffered bypass of individual channels or all channels simultaneously. The XP offers discrete FET switching for reliable, noise-free routing of audio signals. For convenience of wiring and for stability, a new detachable multi-channel connector plate is used, with tie bar for the cable form.

Dolby noise reduction is a mainstay of professional multi-track recording in studios throughout the world for

music, film, broadcast, television, and videotape production. Over 90,000 channels are now in use world-wide. The benefits of Dolby A-type — improved signal-to-noise ratio, lower distortion, and reduced cross-talk and print-through — are achieved with a minimum of signal processing and with resultant high signal integrity.

**Dolby®**

Dolby Laboratories Inc., 100 Potrero Avenue,  
San Francisco CA 94103.  
Telephone (415) 558 0200  
Telex 34409

346 Clapham Road, London SW9 9AP,  
Telephone (01) 720-1111, Telex 919109

"Dolby" and the double-D symbol are trademarks of  
Dolby Laboratories Licensing Corporation  
L85 300

# TEAP CONVENTION

status indication for the relevant channel), 4-figure alphanumeric display indicating type of signal present at the channel input and linear motorised fader.

The channel fader is multi-function and can be assigned to control channel output, to instant manual reset, trim control and panpot control of the channel to subgroups or main outputs.

The 16 output modules can be designated as auxiliary sends, subgroup outputs or main outputs. Subgroups can either be routed into other subgroups or into the main outputs. Possible configurations of the console could be eight auxiliaries, mix subgroups and two masters, 16 auxiliaries, four auxiliaries and eight stereo groups, etc. Each output module contains a manual output mute switch, PFL switch, linear fader with manual reset, insert on/off and metering and status displays as per input channels.

The computer is able to store 500 complete console set-ups and programming the parameters was found very easy. Graphic displays on a CRT clearly show which 'knob' is being turned or which 'switch' is being pushed as well as giving clear information on routing, console status, levels, etc. There are three basic commands, Write (for storing parameters), Read (recalls a previously stored console status in less than 30 ms) and Link which gives access to various other command functions.

Storage is on a fixed disk, which is the main operational device with floppy disk for backups. The floppy disk also enables mixes to be transferred to another

console of the same model thus further adding to its flexibility.

Nexo are a French company who are making a name for themselves in the field of sound reinforcement with their *Mini Integrated Systems*. These are the result of much research and feature the same mid and high frequency constant directivity horns as used in the larger *Integrated System* series. Three models make up the *Mini* range with two cabinets for general sound reinforcement use and the *MSIW* which is a large wedge speaker for stage monitoring or for use as a low-profile cabinet for wall and ceiling mounted applications. Each cabinet houses two 15 in (380 mm) bass drivers, mid range horn with two patented compression drivers for the 230 Hz to 3 kHz range and treble horn with wide range driver in order to avoid the use of supertweeters and their subsequent interference problems.

The *Integrated System* uses the same components with the mid and high frequency horns being mounted in one enclosure and the bass drivers in a separate wooden horn enclosure with a constant flare rate. The *Integrated System* can be used singly or built up into phase coherent building blocks for high power applications—not always possible with modular systems. Nexo also provide full polar diagrams together with on and off axis response of their products and this can be a great help when selecting and designing sound reinforcement systems.

Loudspeakers were also to the fore at the Palais des Congres and JBL showed their two latest additions to the *Cabaret*

range with the 4699B and 4698B enclosures, both housing 18 in and 10 in speakers and different high frequency units. Irelem showed the latest in the RCF range including the new *SCD 6000* studio monitors and their own *Espace* range of loudspeakers for sound reinforcement. SAS showed two new studio monitors, the *SAS one* and *SAS mini*. Both speakers are phase coherent and offer high quality medium and/or secondary monitoring facilities. Both units feature a very flat frequency response from 50 Hz to 20 kHz acoustic filtering being employed to achieve this result.

For studio engineers who have to run off five cassette copies for the band after the session at 5 am, Barthe showed the *Copicassette 3* stereo which permits three cassette copies to be made from a master or external signal. The *Pluscopie 5* stereo adds on five more slave recorders so you can do copies for the band in one job.

In the field of synthesis, Digitone showed the *Syter* digital synthesiser, which is the production version of a system developed by the Research Group (Musical) of the INA. In fact the term synthesiser can be a bit misleading as the system can be configured as an audio processor, analyser, sampler, synthesiser or whatever you want it to be. Control is by an electronic palette which immediately frees one from the limitations of a keyboard. However, external keyboard control is no problem and the *Syter* (system in real-time) is also fitted with the necessary interfaces for connection into a MIDI synthesiser system. □

SAS nearfield monitors



RCF 6000 monitor



ACB modular power amplifier





# THE FUTURE IS... SOUND

Sound is present everywhere we go, in everything we do. And the pacesetter for audio reproduction is Altec Lansing, a company whose strength has always been found in its ability to anticipate and meet customers needs. We're committed to sound systems designed and built exclusively for fixed installations. It is this commitment that's made us the choice of professional sound contractors who demand uncompromised quality and dependability coupled with the most extensive factory support available. Altec Lansing emerged as a company single-minded in its resolve to serve a specific industry by combining a reputation for innovation based on solid engineering and our unique total system concept. Not involved in consumer, portable or patchwork multiple vendor systems, we've molded 50 years of expertise into performance. This enables us to stand alone as the premier supplier for the fixed installation market. Our total dedication to this market and to our worldwide dealer network is now backed by Gulston Industries, our new parent company, and a mandate to continue building a sound future as the preeminent force in our field.



**Altec Lansing Takes The Words,  
The Emotions, The Music Of Man And  
Projects Them To Mankind.**



a **gulston** company

P.O. Box 26105 · Oklahoma City, Oklahoma 73126 USA · 405-324-5311 · Telex 160-396 · Europe · North America · Asia  
European Office: 6 Market Hill, Royston, Herts SG8 9JL · England

# DON SELLS SOUNDING

**Luton:** 29 Guildford Street, Luton, Beds.  
Telephone: Luton (0582) 450066  
Telex: 825488 DONLAR G

**Don Larking**  
audio sales



“...truly excellent for the price”

“Although I own the Good Earth Studios here in London equipped with all the latest high cost technology, I start many of my projects at my private studio in my home and transfer them to Good Earth for completion. So it is a bit more than just a home studio. When equipping this my fourth private studio, I purchased the Soundtracs desk with computer routing because it suited my needs and is truly excellent for the price.”

**Tony Visconti**

The CM4400 features:

Up to 44 inputs, 24 track monitor.

Internal computer allowing 30 different mixes to be pre-programmed.

Pre-programmed triggerable routing patches.

RS 232 interface for personal computer to display track sheet.

Using CMS2: Automated muting using SMPTE timebase.

Events controller & video synchronisation.



**THE CM4400 BY**



**affordable quality**

**SOUNDTRACS LTD**  
**91 Ewell Road, Surbiton, Surrey KT6 6AH**  
**Tel: 01-399 3392 Fax: 01-399 6821**  
**Telex: 8951073/SNDOUT/G**

U.K. Distributor

**Don Larking**  
**audio sales**

Luton: 29 Guildford Street, Luton, Beds.  
 Telephone Luton (0582) 450066  
 Telex 825488 DONLAR

America Soundtracs Inc., 745 One Hundred and Ninth Street, Arlington, Texas 76011 Tel (817) 460 5539 MCI Intertec Inc., 745 One Hundred and Ninth Street, Arlington, Texas, 76011 Tel (817) 640 4447  
 Australia Klarion Pty Limited, 16 Suakin Street, Pymble, N.S.W. 2073 Tel 2 449 5666 Tlx AA71289 Austria Audiosales, Postfach 168, A-2340 Modling Tel 2236 88 81 45 Tlx 79456 AUDIO A Belgium Prom Audio,  
 Av. de Stalingradiaan 63, 1000 Brussels Tel 02 231 7840 Canada Omnimedia Corporation Ltd., 9653 Côte de Liesse, Dorval, Quebec H9P 1A3 Tel 514 636 9971 Denmark Kinovox AS, Industrivej 9, 3540 Lyngbe Tel 02 187617 Finland MS Auditorion, Box 28, SF00421 Helsinki Tel 90 5664644 France Phase Acoustic, 163-165 Bd Boisson, 13004 Marseilles Tel 91 4987 28 Germany Amptown, Hamburg Tel 040 6460040 Session  
 Musik, Waldorf Tel 06 2272876 Sound & Drumland, Berlin Tel 030 8827911 Musik Shop, Munich Tel 089 341111 Professional Equipment, Vois-Weg 10, 4030 Ratingen Tel 02102 81049 Greece John Houli, T/A  
 Sound Centre, 22 Tosiata Street, Athens, Greece 10683 Hong Kong Tom Lee Music Co 15th Floor, World Shipping Centre, Harbour City, 7 Canton Road, Tsimshatsui, Kowloon, Hong Kong Tel (3) 7331098 Indonesia  
 P.T. Kirana Yudha Teknik, P.O. Box 71 JNG - Jakarta Tel 487235 Tlx 48120 HASKOIA Israel Barkai Ltd, P.O. Box 2263, Ramat Gan, Israel 52122 Tel 03-735178/732044 Italy Tecniche del Suono srl, 20149 Milano,  
 Piazza Crivellone 5 Tel (2) 4696105 Japan Tricord Corporation, Bunsei Building No 3 1FI B-8, 5 Chome Toranomon, Minato-Ku, Tokyo, Japan Tel 3 433 2941, Tlx 2524324 CMOSJL Korea Young Nak So Ri Sa Co.,  
 182 Jangsa-dong, Jongru-ku, Seoul, Tel 267-9697, Tlx K22756 YNTRADE Netherlands Pieter Bollen geluidstechniek bv/PAC, Hondsruglaan B3 A 5628 DB Eindhoven, Tel 040-424455 Norway BE Siv Ing Benum,  
 Haakon den Godsev 14, Postboks 145, Vinderen 0319 Oslo 3 Tel (2) 145460 New Zealand Audio & Video Wholesalers, P.O. Box 840 Hamilton, New Zealand Tel (071) 73414 Singapore Lingtec Pte. Ltd., 246  
 MacPherson Road 07-04, Betime Building, Singapore 1334 Tel 07-471951/07-471952 Spain Telco Electronics SA, Gravina 27, 28004 Madrid, Tel 231 7840-2210187 Switzerland SINEC, Reidbrunnenstr. 10, CH-5012  
 Schoenenwerd, Tel 064 413747 Taiwan Tai Sheng Trading Corporation, Wantai Building - 4th Floor, 24 Jilin Road, Taipei, Taiwan 104 R.O.C. Tlx 22275 TAI HIFI United Kingdom Don Larking Audio Sales Ltd, 29  
 Guildford Street, Luton, Beds Tel 0582 450066

AGENTS IN: South America, Dubai UAE, Sweden, Iceland, Thailand.

www.americanradiohistory.com

# MIDI CITY UNIQUE RECORDING

Paul D Lehrman describes how a private studio in New York grew into a unique major facility

To use the word 'unique' in the name of a recording studio might seem like the essence of hyperbole but in the case of this remarkable, yet unprepossessing, 3½ room facility in midtown Manhattan, it could even be considered something of an understatement. Growing in six and a half years from a private 8-track to a solidly-booked \$200-an-hour 46-track studio is no small feat but in addition Unique Recording has earned a reputation as one of the most respected facilities in New York, sought after not only by clients but also by manufacturers of outboard gear, synthesizers, and music-related computer software.

Like many successful studios, Unique Recording started out as a private facility to serve the needs of the owners. But rather than record demos, Bobby Nathan and Joanne Georgio set up their 8-track room in 1979 for a different purpose. They were touring musicians, in a Top-40 and show band—called 'Unique' as it happens—with Nathan on guitar and keys and Georgio on keys. As Nathan puts it, "We couldn't handle changing musicians all the time," so they recorded their backing tracks on a Teac 80-8 and took it, seven keyboard instruments and a drummer on the road with them. "We tried to record at night in hotel rooms," he recalls, "which was ridiculous. We had to have a studio." The answer was space on the eighth floor of a nondescript building on 47th Street, in the heart of Manhattan's music district.

At first, the room served as a rehearsal studio. "That lasted about two weeks," and they were soon recording other bands on their 8-track. "We started doing it only three days a week, leaving the rest of the time for us. But we realised if we added more days, we could buy some more equipment for ourselves. Well, it just kept getting bigger, and the rest is history."

As an 8-track, the studio was very successful. One of the first bands to record there,

Polyrock, received 10 offers from major record labels after completing their EP at Unique. "We happened to get a great sound on 8-track," says Nathan. "We were a specialty place. People would do their rhythm tracks here, their overdubs at home, and mix here. We also got a lot of people who did their tracks elsewhere and came here because they'd heard we could do a great mix."

"We admired the Power Station's sound but we didn't have that kind of room, so we had to do what we could. We had to have lots of outboard gear to compensate for the small size of the room."

So Nathan and Georgio became 'equipment junkies'—to the tune of six AMS units, two Publisons, over 30 digital reverbs, 24 digital delays, six Eventide *Harmonizers*, three Ursa Major *Space Stations*, a couple of Cooper *Time Cubes*, 32 outboard Neve EQ modules, 24 Pultecs and racks full of other devices, well-known and not so well-known.

There was also an emphasis on tricks and techniques to improve the ambience of the recorded tracks—like setting up permanent mics in the studio for catching sound from the monitors, or putting Auratones in the piano and letting the strings resonate, or feeding a drum track through a Mesa Boogie guitar amp, on top of which sat a snare drum.

"Having the gear in the room inspired the artists and the producers to use it," says Nathan. "And not only in the

mix—it didn't cost them anything extra to print the tracks with effects. I did drums George Martin-style, and recorded with all the effects. You have to make your decisions early and live with them but it makes the mixes more consistent. The way it's usually done today, if you've got five drum mics and two room mics, every time you mix from the 24-track, it comes out different."

In 1980, the studio put in 24-track equipment, and expanded its reverb capabilities as well. "Until then," says Nathan, "we were the world's best-equipped 8-track."

Overnight we went from being the king of one market to the basement of the other." The rates stayed the same for a while, in spite of the equipment investment: \$55 per hour. By 1982, business was good enough so a second room was opened for 8-track work. Not surprisingly, that only lasted three months before being upgraded to 24-track.

"We equipped the second room in the same style as the first," says Nathan, "which made it rough: every time we bought a new effect or keyboard, we had to buy two so that people wouldn't fight over it."

Today each room has eight DDLs and eight digital reverbs, including some rather expensive goodies—Yamaha *REV-1* and *REV-7*, Sony *DRE-2000*, a Quantec *QRS*, Klark-Teknik *DN-780*, Lexicon *224XL*, *Lexicon PCM-70* and

Ursa Major *Space Station*. Although the basic price for studio time has gone up substantially over what it was in the early days, there is still no extra cost to the client for all of this. There are some units floating around, however, that do carry a charge, like a second Quantec, a Publison *Infernal 90* and six other AMS units. "We found that people respect our stuff more than they do rented stuff," says Nathan. "They don't abuse it as much and it lasts longer. Besides, we never have to worry about who used it last, or whether the rental company is keeping it up to spec."

Studio A houses a new 48-channel Solid State Logic *4000E* console with *Total Recall*, two Otari *MTR-90* 24-tracks and a Studer *A80* ½ in and ¼ in decks, an 8 ft video projection monitor for sweetening and monitoring the *Total Recall*. Digital mastering is handled by an Audio+ Design-modified *PCM-701* feeding a Sony *BVU-800* ¾ in video deck. Monitoring is done mostly on Yamaha *NS10Ms*, with UREI *813s* for "that disco boom", as well as Auratones, E-V *Sentry 100s*, and JBL *4311s* and *4313s*. Studio B has a similar, 48-input SSL *4000E*, with *Total Recall*, installed in February, 1985. Each console has eight dedicated Neve *1077* mic-preamp modules and eight API EQ modules. Each studio also has 16 noise gates, including *KepeX*, IIs Valley People *DynaMites*, and dbx *160s* and *165s*.

There is also a respectable collection of tube microphones, which hang on stands in the studios. "The philosophy is to keep everything set up and ready to go," says Nathan. "I never liked waiting half an hour for the assistant to get mics from a closet. And this way, a vocalist can start working on a track, and the engineer can choose the best mic quickly." In keeping with the philosophy, a pair of Crown *PZMs* are permanently installed in the Yamaha grand pianos in Studios A and B.

The third and fourth rooms are being constructed as we write. They are completely different from the first two, and each is unique but we'll get to them a little later on.

Along with the forest of outboard equipment, Unique Recording is known for its collection of keyboard instruments. From the band's original seven, the studio's synthesiser catalogue has grown to number 80 (and that's just the ones with MIDI), and there are more on

48 channel SSL in Studio A





DPS 3

# THE REAL IMAGE OF YOUR SOUND

HIGH DYNAMIC MONITOR



Power Capacity: 400 W  
BI-AMP  
Frequency Resp.: 44 Hz / 20 KHz  
Impedance: 8 ohms  
Sensitivity: 90db/1W/1m  
Weight & dimensions:  
30 Kg / 39x67x34 cm

FOR MORE INFORMATION  
CALL OR WRITE :

## NEW PRODUCT

# POWER STATION

World Agent: STARTEK srl VIA G. BRINI, 34 - 40128 BOLOGNA ITALY  
TEL. 051/321063 - TELEX 214841 STARTK/I

the way. MIDI is a way of life here—and it's probably this, more than any other aspect of its operation, that makes Unique unique.

"We first saw the MIDI spec in January, 1983 (about five months before it was officially announced) but we already had it in the Yamaha *DX-7s*, which we got in December, 1982," says Nathan. "When it first came out, we knew immediately it was the way to go and we updated all our synths, like the *Prophet 5* modular Oberheim 8-voice, ARP *Chroma*, Yamaha *GS2*, ARP *2600*, and the *Minimoog*, for it. We did some of the mods ourselves and got some boxes from J L Cooper, and also got some manufacturers' 'trials'. We got some of the first MIDI synths out, like the *Voyetra 8*, and the Roland *Juno-106*, *Juno-60*, and *Jupiter-8*. Now we have 56 *DX-7* types, which includes four *TX-816s* (which the studio has mounted in flight cases along with dedicated Tascam 8-channel stereo mixers), a *DX1*, a *DX5*, four *DX7s* and a *GS-2*. People tire of sounds quickly," he shrugs, which partially accounts for the vast amounts of hardware.

**T**he full list of MIDI synths is too long for these pages, but it includes a Kurzweil *250*, a 16 bit PPG *Waveterm 2.3*, an Ensoniq *Mirage*, an Akai *S612* sampler, three *Emulator 2s*, and several sets of Simmons drums. The Yamaha *CP70* and *CP60* electric grand and the two Yamaha *C3* acoustic grand pianos have all been fitted with Forte Music's MIDI interface. "When we record acoustic pianists, like Neil Sedaka, Bob James or McCoy Tyner, even if what they play is going to be a synthesiser line, we have them play it on an acoustic piano," Nathan explains. "These are not synth people but we can patch the piano right to a *DX-7* with a Rhodes patch, if that's what they want to hear." Nathan is currently working with Dyno-My-Piano to develop a device that will attach to the Marantz *Pianocorder* system to play the piano from a MIDI source.

Hardware to link all of this together includes sequencers, timers and other devices from Roland, Garfield, Marc Electronics, Linn, Yamaha, Oberheim and J L Cooper. There are also a fair number of computers and a wide range of software for MIDI control. Nathan is a Beta-test site for many software developers and

## MIDI CITY UNIQUE RECORDING



Neve 8068 Mk II in MIDI City



Programming Room

has become the man to see for anyone planning to come out with new MIDI software. Therefore, he has a lot of stuff long before it hits the marketplace.

An Apple *II* runs Passport's *MIDI 8/Plus* and Roland's new *MUSE*. An IBM-AT, *XT*, and *PC*, along with a Compaq *Plus*, are used for business and technical chores (like printing out updates to the patch bays), and also to run the Octave-Plateau, Sight & Sound, Roland *MPS*, Jim Miller's *Personal Composer*, and Roger Powell's *Texture* MIDI sequencing programs. An Apple Macintosh interfaces with the Kurzweil, *Mirage* and the *Emulator*, and the studio owns serial number 1 of Southworth Music Systems' *Total Music* composition software for the Mac. "Those guys are on the right track," he says. "They're going to make a fortune."

With all that hardware and software controlling everything, the recording space might soon become redundant, and Unique's two new rooms reflect that trend. 'MIDI City' (which anywhere else would be called simply Studio C) opened in May 1985, after a construction period of about three weeks. It is simply a control room, outfitted with an Otari 24-track, the usual plethora of outboard gear (including Yamaha, Lexicon, Roland and ART MIDI reverbs and a vintage 32-input Neve *8068 MkII* plus 16 additional

Neve input EQ modules and eight API *550* and *560a* modules. It is also outfitted with 25 MIDI synthesisers (including a few upgraded pre-MIDI models) and three sets of MIDI drums. It has a small overdub booth, for those musicians who insist on using real vocals or guitars. MIDI City has already been a home to Stewart Copeland, Billy Idol, Stevie Winwood and Bob James to name a few.

Studio D takes this idea one step further. It is a 'pre-programming' room, set up to allow artists and producers to experiment, without running up huge bills, with various digital toys before committing sound to tape. Besides housing high-end synthesisers, sequencers, and computers, this room will also contain either (details were not final at press time) a Synclavier or a Fairlight *CMI*, or both. Says Nathan, "The power for us will be when people have computer systems they can use at home, and they can just come in here to finish."

Although Bobby Nathan is still chief engineer and Joanne Georgio (who, after 12 years together, became Joanne Georgio-Nathan a year or so ago) runs the studio's business end, Unique Recording has become far more than a family business. The studio employs some 45 full-time staff, the last seven of whom came on as the new rooms opened. "It's faster for clients to use our guys than to bring in their

own engineers," says Nathan. "They know the patchbay and all the equipment; how to use the samplers, and the rest of it. Everyone has to be fluent in programming, and we have monthly update sessions for the entire staff. Sometimes outside engineers come in but they always work with ours."

Even so, keeping that many hands busy is not easy, unless you're booked around the clock. Fortunately, Unique Recording is—seven days a week. "We don't book studio time on spec," Nathan says, "which a lot of people in the business don't understand, and they get mad at us. But we don't have to. We've been so busy in fact that it's been only recently that the whole look of Unique has been upgraded to reflect the studio's world class standing. Some of the walls and floors, until just a few months ago, were bare plywood.

"In the beginning cosmetics were a low priority," explains Nathan. "For the \$1000 it would take to put in a parquet floor, I'd rather buy a new box that makes useable sounds. Clients have always come here for the working environment, not because it's an entertainment showplace."

And the clients do come. Although the majority of the work at Unique is R&B ("We specialise in 12 in dance mixes") artists like the Rolling Stones, Diana Ross, Devo, Jeff Beck, and Billy Ocean have recorded and/or mixed here. "The mainstream rock and new wave acts now want those R&B sounds, too," Nathan says. Cheap Trick came in looking to re-create a favourite snare-drum sound from an old album of theirs. "We just pulled it out and sampled it. They loved it."

Although Unique Recording is no longer a cheap place to work, its no-frills high-tech approach can, for the right client, make it an inexpensive place to get work done. And it has things to offer by way of control and efficiency that few, if any, other studios do. Bobby Nathan looks at his 'Uniqueness' this way: "We don't try to do everything everybody else does. We specialise. We combine technology and economy—people can work faster here. Of course, if the record business were still as fat as it was in 1979, and anyone could go wherever they wanted and spend as much time as they liked, we wouldn't exist." □

**Unique Recording, 701 Seventh Avenue, New York, NY 10036, USA. Tel: (212) 921-1711.**



# AT PROFESSIONAL AUDIO WE GIVE YOU MORE THAN JUST THE TIME OF DAY.

Professional Audio is a new company, staffed by experts with years of industry experience who are dedicated to helping you achieve the very best sounds that money can buy. The end result is a company that offers a complete service to professional audio experts – staffed and run by acknowledged experts in the industry.

Already in just a few short months, our growing reputation has enabled us to secure dealerships from leading industry names including Electrospace, Westlake Audio, FM Acoustics, Marshall Electronics, SCV, Renkus-Heinz, NKA and JVC.

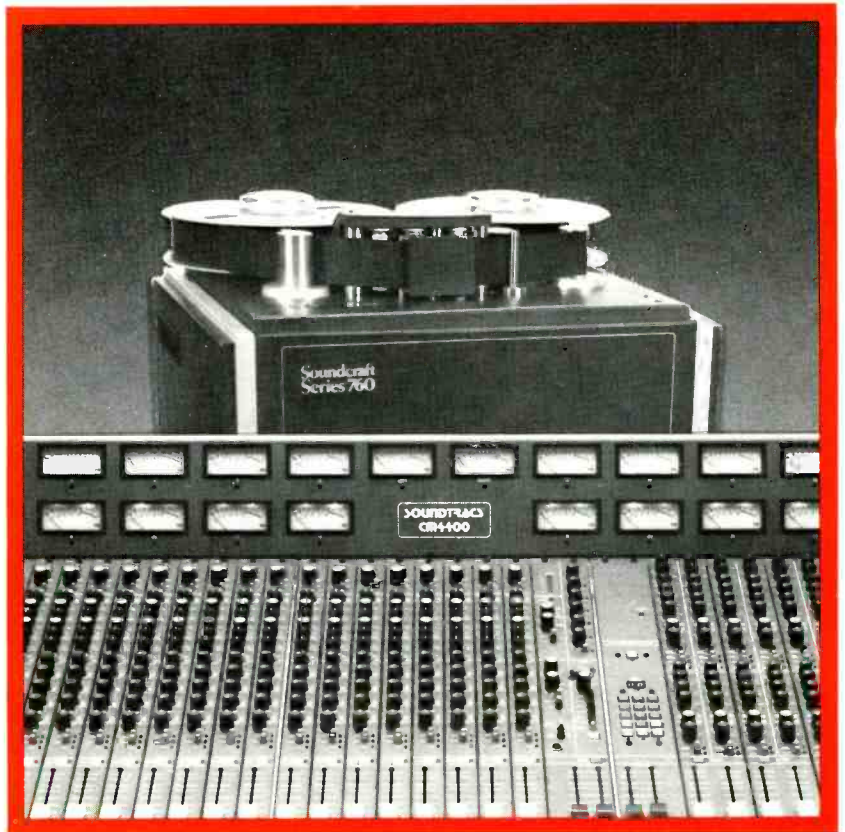
Call Richard Kelley or Simon Browne and experience a very special kind of service and expertise. **01-226 1 226**

**Professional Audio Ltd.**, Professional Audio House,  
53 Corsica Street, London N5 1JT.



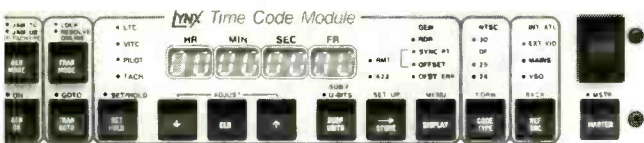
**YOU CAN COUNT ON US**

**PROFESSIONAL  
AUDIO LTD**



At Stirling Audio Systems you'll find everything from an effects unit, to a complete 48 track studio system.

Across the hardware spectrum, our exclusives include the new Lynx, which synchronises up to 32 different tape machines yet can be re-interfaced simply by picking a new memory patch.



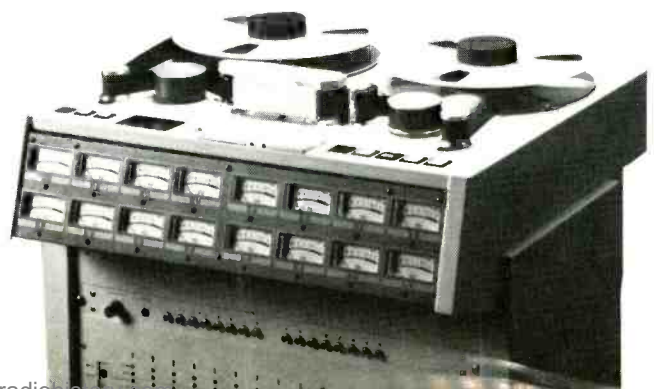
There's Westlake's complete monitor range, right up to the reference-standard BBSM-12. (With the excellent Yamaha P2002s to power them).

And Sankens' superb titanium diaphragm microphones – the ultimate in digital audio quality. (The CU-41 has a flat 20Hz-20kHz response, and zero phase distortion).

For systems, we might suggest you look at the Soundtracs CM 4400 console teamed with a Soundcraft 760 Series 3 recorder.

Or the Otari MX-70, a 16 track 1" machine that brings top quality to the smaller format – or, of course, the acclaimed MTR-90.

# FROM 1





While for broadcast use, the Otari MTR-12 includes Nagra compatibility and options such as 4 track, stereo, timecodes, and more.

Then there's the versatile Soundcraft Series 600 console, for smaller, quality-conscious facilities.

Our effects rack includes AMS, Aphex, BSS, Drawmer, Publison, Quad and Yamaha. And AKG and Neumann microphones, and ...

When you add our help with financial planning and our back-up service, that's quite a range.

To keep in touch with new developments, call us and get on our mailing list. And find out more about our exclusive service.



# 9 INCHES

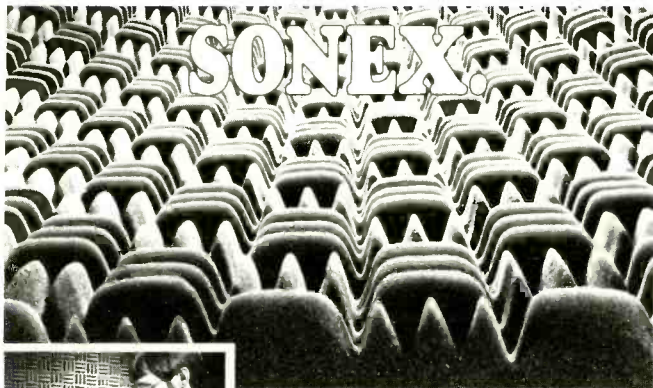


 **Stirling**  
AUDIO SYSTEMS LTD

UNIQUE SOLUTIONS FOR UNIQUE STUDIOS

1 Canfield Place London NW6 3BT Tel. 01-625 4515 Telex 946240 CWEASY G Ref No. 190 14280

# A SIGHT FOR SORE EARS.



If ears could talk, they'd scream for SONEX.

The only patented acoustic foam with a specially sculptured anechoic design can replace traditional studio materials for a fraction of the cost. SONEX absorbs sound,

controls reverb, eliminates stray reflections, and kills standing waves. What's left is true sound. Your ears know. Listen to them. Simple to apply and economical to buy, SONEX blends with almost any decor and looks clean, sharp, professional. Call or write us for all the facts and prices.

SONEX is manufactured by Illbruck and distributed exclusively to the pro sound industry by Alpha Audio.

**Alpha Audio**

2049 West Broad Street  
Richmond, Virginia 23220 USA (804) 358-3852  
Telex 469037 (ALPHAUD CI)

Acoustic Products for the Audio Industry

## The HARRISON MR4

-a new star performing in

**HOLLYWOOD**

*Studios*

We are pleased to announce that our new HARRISON MR4 MIXING CONSOLE

with MASTERMIX AUTOMATION

is now installed in our 24 TRACK EASTLAKE STUDIO

We can also offer you the latest in AMBISONIC SURROUND SOUND MIXING

and DIGITAL MASTERING if required

PRE-PROGRAMME in our CCTV/audio linked PRE-PRODUCTION SUITE which has LINN, SIMMONS, UMI SEQUENCER, DX7, DX9, PPG2.2, JUNO 106 and MIRAGE synths

For more information call Sue on 01-806 0071/4 or check the APRS Studio Link-up on Prestel page \*5335 # No.34.

**HOLLYWOOD**

*Studios*

38/40 Upper Clapton Road London E5 8BQ  
Telephone: 01-806 0071/4 Telex: 261697 HOLREC

An APRS Studio

**AUDIO  
JACKFIELDS &  
JACK SOCKETS**

Mosses & Mitchell are the largest manufacturer of Audio Jacks and Jackfields in the UK. We are approved suppliers to the BBC, British Telecom, Pye Telecommunications and many other major telecommunication companies throughout the world. We manufacture a complete range of Audio Jacks and Jackfields and offer a design and manufacturing service geared to meet your specific requirements. For further information and technical data on our products contact:

**MOSSSES & MITCHELL**

Mosses & Mitchell Limited  
Weydon Lane Farnham Surrey GU9 8QL Telephone: Farnham (0252) 721236 Telex: 858820

# REVIEW REVIEW

Hugh Ford reviews a signal processing unit

## AUDIO+DESIGN COMPLEX 2



**T**he Audio and Design *Complex 2* is a signal processing unit having three distinct sections, a compressor section, an expander section and a peak limiter section. The basic unit for a single channel is a rack mounting module 1U in height with a black front panel with clear white identifications and colour coded control knobs. From the input which is electronically balanced with a chassis link for isolating the ground (with the option of an input isolating transformer) the signal is buffered and fed via the bypass switch to a variable gain element from where it passes to the output circuitry with the variable gain element

being bypassed in the bypass mode.

This offers an electronically balanced output with the option of an output isolating transformer with an internal slide switch offering a balanced or unbalanced output.

The input to the variable gain element is also fed to the side chain access jack which allows the compressor/expander side chain to be driven from an external source with the limiter section after the variable gain element.

Linking for stereo operation is done by summing the side chain signals from the two units with the overall gain then being controlled by the make-up gain control on the master unit, the gain control effectively operating on the

compression/expansion sections.

To the left of the front panel two LEDs above the 0 to +30 dB make-up gain potentiometer show if the unit is set as a master or slave. Before the compressor section a toggle switch sets the processing section in/out of circuit leaving the input and output sections active.

Within the compressor section an internal slide switch sets a linear or log release law with this being shown by a front panel LED. The compression ratio, which may be set between 1.25:1 in ten switched increments to limiting, has fixed calibrations unlike the +12 dBm to -50 dBm threshold control which is a detented potentiometer.

The remaining controls within the compressor section are a release time potentiometer which has calibrations between 15 ms and 1.5 s and an anticlockwise switched AGC position plus the attack time switch which offers a fast, medium or slow release. The latter are nominally 0.25 ms, 2.5 ms or 20 ms.

Following the compressor section is the expander section which may be separately switched in/out by a miniature toggle switch. Next to this is the ratio potentiometer with calibrations at 1.2:1, 1.3:1, 2:1 and 4:1 after which the control is identified as GATE over about the last 90° of its travel.

A detented potentiometer sets the threshold of the expander section with calibrations at +12 dBm, -20 dBm and -50 dBm. A further detented potentiometer sets the expander range—that is the depth of gating or expander attenuation—the actual effect of this control is affected by the expansion ratio setting.

The expander release time potentiometer has calibrations between 25 ms and 4 s with a fully anticlockwise

### MANUFACTURER'S SPECIFICATION

**Input electronically balanced:** 20 kΩ each phase ground ref.  
**Output:** electronically balanced 68 Ω.  
**Clip level:** +22 dBm.  
**Frequency response:** +0, -1 dB 20 Hz to 20 kHz.  
**Signal to noise:** -90 dBm, -100 dB ref to +8 dBm.  
**Common mode rejection:** better than -70 dB at 1 kHz, better than -70 dB at 10 kHz.  
**Side chain type:** true RMS sensing.  
**Side chain control range:** 60 dB.  
**Metering:** VU or GR monitoring input or output.

### EXPANDER SECTION

**Distortion:** exp out/in at +10 dBm 0.05% THD. Measured at 100 Hz to 20 kHz.  
**Attack:** fast 100 μs, medium 5 ms, slow 40 ms.  
**Release:** infinitely variable between 25 ms to 4 s. Auto antilog type 1 s on 100 ms.  
**Ratios:** infinitely variable between 1:1.2 to 1:20 (gate).  
**Attenuation range:** 0-40 dB.  
**Threshold:** infinitely variable between -50 dBm to +12 dBm.  
**Gate hold:** infinitely variable between 2 s and Out. Operative between soft and hard gate mode only.  
**Side chain access:** jack socket on rear panel.  
**Stereo couple:** matching within ±0.5 dB channel to channel.

### COMPRESSOR SECTION

**Distortion:** system Out at +10 dBm 0.005% THD with 10 dB gain reduction slow release at 10 kHz 0.05%, at 1 kHz 0.05%, at 100 kHz 0.1%, at 40 Hz 0.25%.  
**Make-up gain:** 0 to 30 dB.  
**Master/slave facility:** switchable through rear panel with LED indication on front panel.  
**Attack:** fast 300 μs/10 dB, medium 2.5 ms, slow 25 ms.  
**Release:** infinitely variable between 15 ms to 1.5 s to 3 s (log).  
**Auto:** 500 ms on 3 s. Log/Lin board selectable with LED indication on front panel.  
**Ratios:** switched 1:1, 1.25:1, 1.5:1, 2:1, 2.5:1, 3:1, 4:1, 5:1, 8:1, 10:1, limit.  
**Threshold:** infinitely variable between -50 dBm to +12 dBm.  
**Stereo couple:** matching within ±0.5 dB channel to channel.  
**Peak limiter:** threshold variable between 0 dBm to +20 dBm.  
**Peak limiter attack:** 200 μs fixed.  
**Peak limiter release:** 15 ms fixed.  
**Indication:** red LED when in operation.  
**Side chain type:** peak sensing.  
**Side chain pre-emphasis:** selectable on board for 50 and 75 μs. Defeat switch on front panel.  
**Dimensions:** 19×1¼×6¼ in.  
**Weight:** 2.5 kg.  
**Manufacturer:** Audio & Design (Recording) Limited, Unit 3, Horseshoe Park, Pangbourne, Reading, Berkshire.

# REVIEW REVIEW

FIG. 1  
AUDIO+DESIGN COMPLEX 2  
COMMON MODE REJECTION  
MULTIPLY FREQUENCY SCALE BY 10

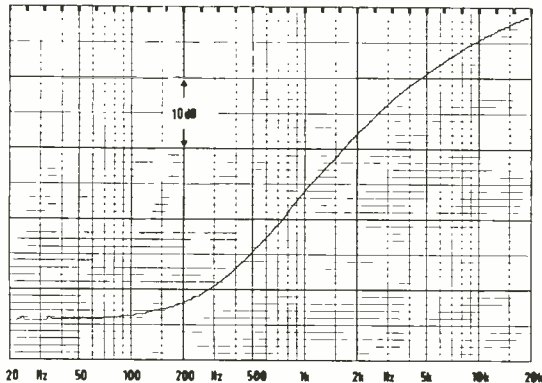


FIG. 3  
AUDIO+DESIGN COMPLEX 2  
COMPRESSOR

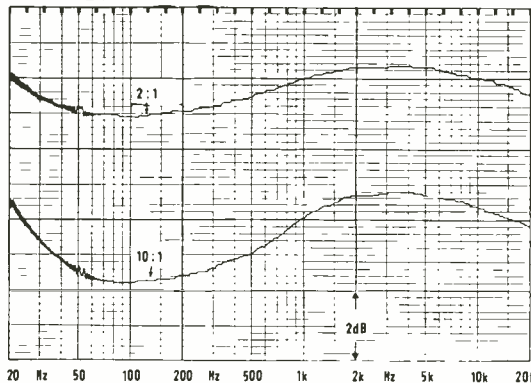
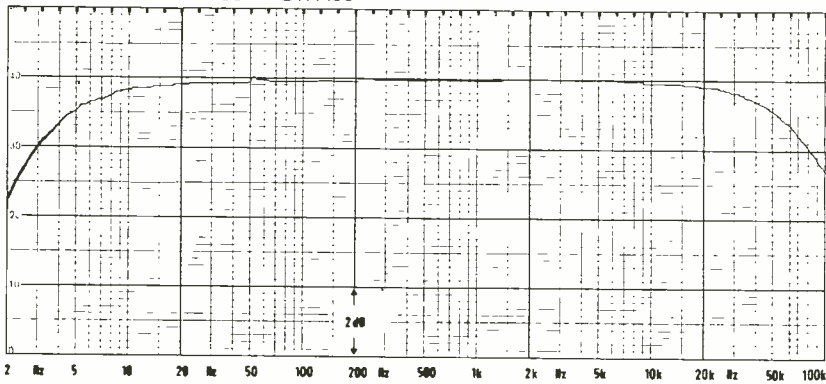


FIG. 2  
AUDIO+DESIGN COMPLEX 2  
FREQUENCY RESPONSE IN BYPASS



## Inputs and outputs

The electronically balanced audio input was found to have an impedance of 7.1 k $\Omega$  with an excellent common mode rejection performance as shown in Fig 1 with the CMR remaining constant at 94 dB below 200 Hz.

When used unbalanced, the sensitivity and input impedance were very similar to the balanced performance. In either case the input level for an indication of zero VU was +4.07 dBm with the maximum input at the onset of input clipping being 8.82 VRMS (+21.1 dBm).

With the system switch out the gain to the output was +0.07 dB. Switching the expander and compressor sections in without any gain reduction changed the gain to the output to +0.43 dB with the gain to the access point being +0.03 dB.

At the access point the output impedance was extremely low with the input impedance being adequately high at 17.2 k $\Omega$ . The input sensitivity so far as gain reduction is concerned is of course effectively the same as the main audio input.

The electronically balanced audio output could deliver 9.5 VRMS (+21.8 dB.7 V) at the onset of severe distortion from a source impedance of 42  $\Omega$  in either leg with an indication of zero VU corresponding to +4.31 dB.7 V. As the VU meter measures the input to the output amplifier it is unaffected by output loading with the 0.31 dB error being caused by tolerances in the output amplifier.

At the stereo link jack socket the compressor section output at the tip was +210 mV/dB with the expander output at the ring being -145 mV/dB both from low impedances with the inputs at the same connectors in the slave mode being into a high impedance.

## Frequency response

The frequency response from the input to the output in the bypass mode is shown in Fig 2 to be within +0/-0.2 dB from

switched Auto position, the final potentiometer in this section controlling the gate hold time between zero and 2 s. Finally a three position miniature toggle switch sets the attack time to slow, medium or fast nominally corresponding to 40 ms, 2.5 ms and 0.1 ms.

The peak limit section has only three controls. At the front panel a potentiometer sets the limiting level between 0 dBm and +20 dBm with a linear scale with a toggle switch selecting pre-emphasis in the limiter if desired. This may be either 75  $\mu$ s or 50  $\mu$ s, corresponding to European or USA FM transmitter pre-emphasis, according to the setting of an internal slide switch.

Finally at the right of the front panel is the monitoring section which includes the stereo link switch in addition to a VU meter, its selector switch and three LEDs. The latter coloured red, yellow and green indicate the onset of peak limiting, compression or expansion with the VU meter being switchable between the input, output or gain reduction.

In the latter position the meter effectively monitors the control input to the dbx 2150A gain control element and is arranged such that mid-scale corresponds to 10 dB gain reduction with

the lower half of the scale covering the next 30 dB, the scaling is linear either side of the mid point.

At the rear the power input is at a combined IEC connector and fuseholder the fuse values being identified. The audio input and output are at XLR connectors with  $\frac{1}{4}$  in jack sockets giving access to the side chain and the stereo mastering links. The latter includes separate connections for the compressor and expander links with a recessed locking pushbutton switch setting the unit to master or slave operation.

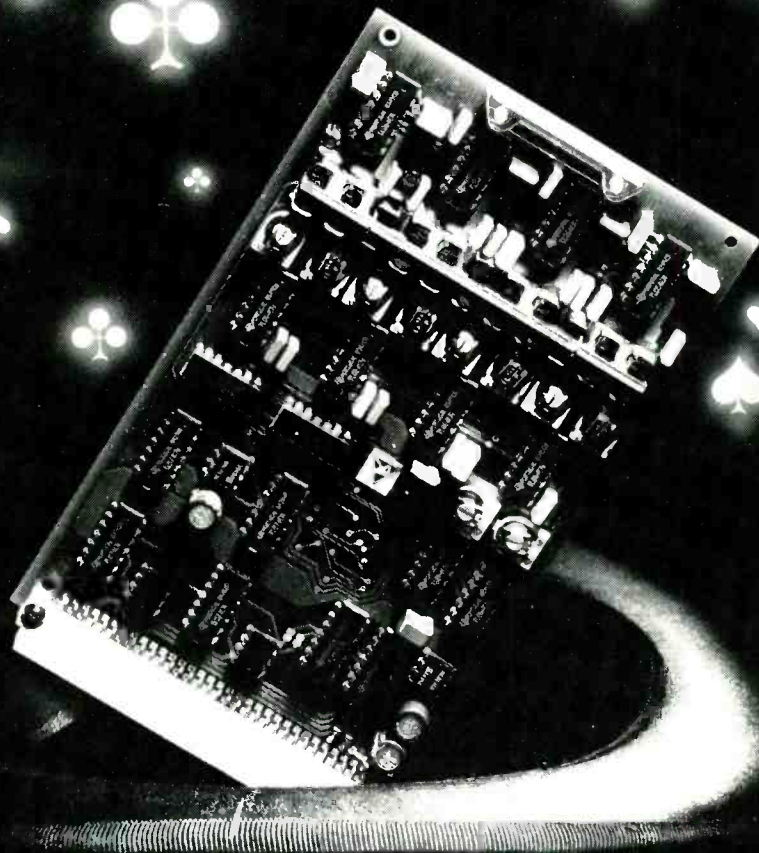
Within the unit a high quality printed circuit board covers the base with all controls soldered directly to the board. With the exception of two fuses in the  $\pm 15$  VDC lines which are not identified in value all components are very well identified with a clear board layout to a very high standard. Almost all integrated circuits are socketed to ease maintenance.

As with most signal processing devices there are a rather large number of preset potentiometers, 16 in all, the instruction manual does however include full adjustment procedures and circuit diagrams in addition to operational hints.



# The Card. Your ace in play.

telcom c4



To help you survive the times of growing quality demands on audio we have redesigned one of our well proven analog telcom c4 compander cards. The card wizard applied new tricks with SMDs and no less than 8 VCAs for a further reduction of space requirements and even stronger performance now offering a **115 dB** dynamic range. Just take 30 of these to improve your sound.

This ace will make you a winner with audio on ATRs, VTRs and line transmission. Check it out and challenge any digital tape recorder to outperform your analog machine equipped with the telcom c4 compander ace. With these cards up your sleeve, you'll beat the pants off the competition. There are 8000 telcom c4 channels already playing worldwide. Contact us for further information.

**ANT**  
Telecommunications

Audio & Design Calrec Ltd.  
Unit 3, Horseshoe Park, Pangbourne  
Reading, R. G 87 JW England  
Phone 0734 86 1088, Telex 848722 ADR UK

ANT Nachrichtentechnik GmbH  
Lindener Str. 15, D-3340 Wolfenbüttel  
Phone (05331) 83-0, Telex 95651 ant d

ANT WAK 6013 E

# REVIEW REVIEW

20 Hz to 20 kHz with a satisfactory high frequency roll-off. With the compressor or expander in circuit but inactive, there was a very slight shift in high frequency response which depended upon the setting of the make up gain control to the extent of  $-0.3/-0.5$  dB at 20 kHz.

The latter control had an available 30.0 dB of gain with the detents having 'slots' of between 1.5 and 2 dB with the calibrations at 5 dB intervals being sensibly accurate.

Using control and probe tones the frequency response when compressing and expanding was investigated and found to be identical to that with the compressor and expander in circuit but inactive. That is  $-0.2$  dB at 20 Hz,  $-0.1$  dB at 10 kHz falling to  $-0.4$  dB at 20 kHz.

The compressor's overall frequency response when compressing 10 dB with maximum attack and release time settings is shown in Fig 3 for 2:1 and 10:1 compression ratios and shows it to have a more than adequate flatness.

In the expansion mode a similar performance was obtained at low expansion ratios, but in the gate mode the frequency response has little meaning with the proviso that the performance with low expansion ratios was satisfactory.

Fig 4 shows the frequency response in the peak limiting mode with the pre-emphasis in use at the 75  $\mu$ s and 50  $\mu$ s settings. In both cases the  $-3$  dB points were slightly high in frequency—this may be easily rectified by replacing the 47 k $\Omega$  time constant resistor with 51 k $\Omega$ .

## Noise and distortion

Noise in the output is inherently controlled by the gain of the voltage controlled element in the unit, thus noise is independent of the insertion of the compressor, expander or limiter when inactive.

These three functions introduce loss in the system such that the worst case noise is solely controlled by the make up

gain control when the system is switched in. Table 1 shows noise in the balanced output in dBm for the system out and at minimum and maximum make up gain with the system switched in.

Relating the above to the maximum signal capability gives an excellent noise performance which was completely free from power line hum or other unwanted tones.

With any compressor/expander/limiter the distortion is very much affected by the attack and release times which are usually at the discretion of the user who must use his/her judgement to avoid 'silly' control settings.

Second and third harmonic distortion in the bypass mode was less than 0.01% at any level below clipping as was intermodulation distortion to the CCIF twin tone method using tones separated by 70 Hz.

Figs 5 and 6 show the second and third harmonic performance with 10 dB compression or 30 dB make up gain at +10 dBm output, the latter is the worst condition with the less subjectively objectionable second harmonic reaching about 0.05%. At lower levels the distortion fell such that both harmonic and CCIF intermodulation distortion were at their worst at high levels.

CCIF twin tone intermodulation distortion is shown in Figs 7 and 8

TABLE 1

Measurement method	system out	system in 0 dB	system in +30 dB
22 Hz to 22 kHz RMS	-107 dBm	-93 dBm	-76 dBm
A weighted RMS	-111 dBm	-100 dBm	-83 dBm
CCIR weighted RMS	-102 dBm	-96 dBm	-74 dBm
CCIR weighted quasi-peak	-98 dBm	-91 dBm	-76 dBm

FIG. 4  
AUDIO+DESIGN COMPLEX 2  
PEAK LIMITER

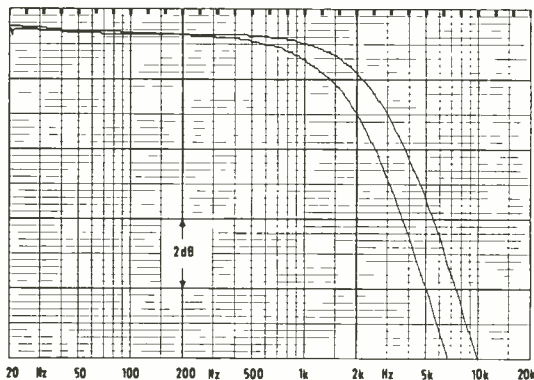


FIG 5  
AUDIO+DESIGN COMPLEX 2  
HARMONIC DISTORTION  
10dB COMPRESSION  
+10dBm OUTPUT

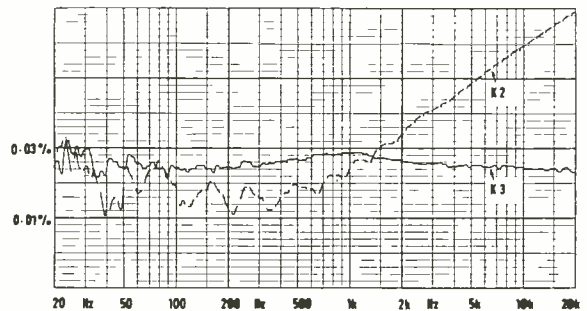


FIG. 6  
AUDIO+DESIGN COMPLEX 2  
HARMONIC DISTORTION  
AT +30dB MAKE UP GAIN  
+10dBm OUTPUT

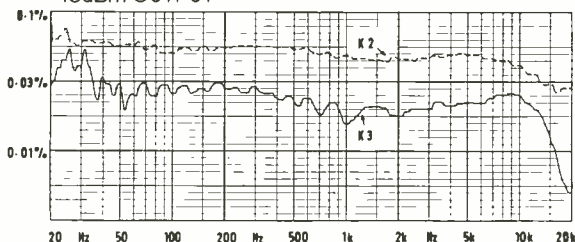
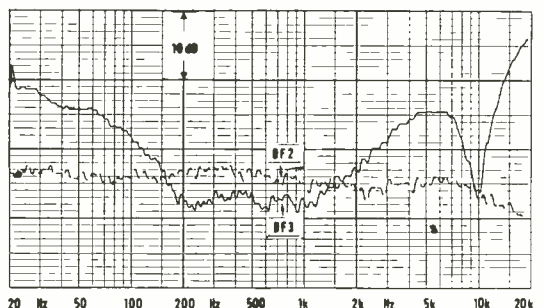


FIG. 7  
AUDIO+DESIGN COMPLEX 2  
IM DISTORTION  
10dB COMPRESSION  
MULTIPLY FREQUENCY SCALE BY 10



# NEW FROM Urei

## THE 809 COMPACT TIME-ALIGN® STUDIO MONITOR

Now there is a Urei Time-Align® monitor for small studios, or near-field use in any control room.

Built on the same solid principles to the same high standards as the respected and widely used 811B and 813B, the 809 is less than half the size. Natural sound, flat power response, accurate stereo image and reduced listening fatigue at high SPLs – all these qualities are perpetuated in the 809.



Find out more about the 809 by writing or 'phoning:

Urei, Harman Audio UK Ltd, Mill Street, Slough, Berks SL2 5DD. Tel: (0753) 76911

®Time-Align is a trademark of EM Long Associates, California

Studio Technology of world wide fame



## EMT Studio Turntables

### EMT 950

The EMT 950 Direct Drive Studio Turntable with direct drive, quick start, and reverse rotation for cueing permits numerous variants through modular design.



### EMT 948

The EMT 948 Broadcast Turntable is a universal unit with integrated and therefore optimally tuned absorber, quick start, and reverse rotation for cueing. It is easy to operate and affords high reliability with long service life.



### EMT 938

The EMT 938 Broadcast Disk Reproducer with direct drive and quick start is suitable for record auditioning, programming activities, and disk-to-tape recording.



PRODUCT LINE: Reverberation Units • Studio Turntables and Pickup Cartridges • Mixing Desk Systems • Digital Audio Spot Recorders • Digital Delay Units • Compressor Amplifiers • Polarity Testers • Flutter Meters

**EMT-FRANZ**

Postfach 1520, D-7630 Lahr, Tel.: 07825-1011

# REVIEW REVIEW

again using the above conditions for harmonic distortion with the plots showing an adequate performance.

## Dynamic conditions

Sinewave distortion under dynamic conditions is subject to the attack and release times identical to that under static conditions and there is no modification to the audio signal chain other than varying the gain of the voltage controlled element.

So far as the compressor is concerned **Fig 9** shows the relation between the input and output level for different settings of the ratio control in addition to the effect of the threshold control with the compression ratio set to limit.

The three switched attack times of the compressor provided full compression in 1.2 ms, 5.5 ms or 60 ms with the time for full release from 10 dB compression being roughly twice the calibrated

setting with the release characteristic being switchable between linear (dB linear versus time) or logarithmic (dB exponential versus time).

**Fig 10** shows the available ratios in the expander between 2:1 and hard gating with **Fig 11** showing the effect of the threshold control when expanding 2:1 at the maximum range. The switched attack times for 10 dB expansion were about 2 ms, 4 ms or 10 ms with the release being between 25 ms and 4 s.

The peak limiter with its threshold accurately variable from 0 dBm to +20 dBm was found to be very fast in action taking less than 50  $\mu$ s to operate and 250 ms to release. Above the threshold of limiting to output remained very constant with increasing input level with up to 20 dB limiting.

All these functions were completely free from undesirable overshoot or other forms of distortion.

Whilst the compressor/expander/limiter

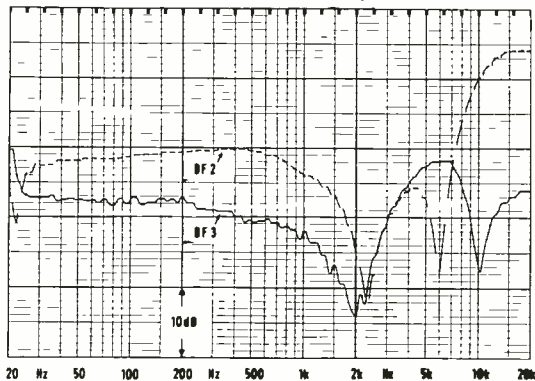
LED's were adequately fast in action the actual meter differed from a VU meter being far faster than the ASA standard. Also the indication of gain reduction was not particularly accurate. However, in practical terms, the difference between say 10 dB indicated gain reduction and 8.3 dB actual gain reduction is not of significance.

## Summary

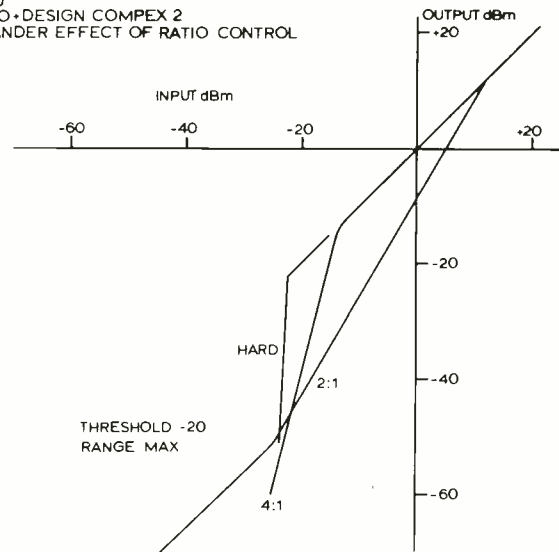
In practical situations this is a very good 'sound modifier' which is unobtrusive in action and completely free from undesirable effects. The unit is well built and easy to service with a good instruction manual.

Unlike some compressors the unit is effectively free from noise breathing effects provided that it is used sensibly and no undesirable effects were noted. Furthermore the measured performance was good with all parameters.  $\square$

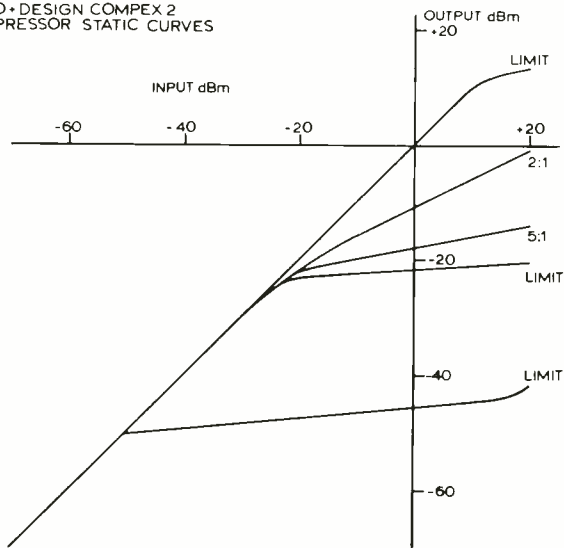
**FIG. 8**  
AUDIO • DESIGN COMPLEX 2  
IM DISTORTION AT +30dB  
MAKE UP GAIN AT +10dBm OUTPUT  
MULTIPLY FREQUENCY SCALE BY 10



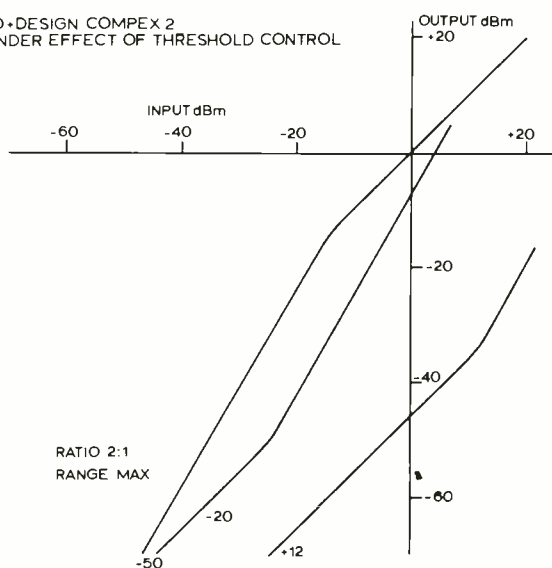
**FIG. 10**  
AUDIO • DESIGN COMPLEX 2  
EXPANDER EFFECT OF RATIO CONTROL



**FIG. 9**  
AUDIO • DESIGN COMPLEX 2  
COMPRESSOR STATIC CURVES



**FIG. 11**  
AUDIO • DESIGN COMPLEX 2  
EXPANDER EFFECT OF THRESHOLD CONTROL





**NEUTRIK**  
SWISS

# Innovate Continuously



**DISTRIBUTION**



**NATIONWIDE**



## 'FX' Series

Neutrik's new line connector the 'FX' Series is a totally new concept in connector design. The 'FX' series is probably the smallest professional XLR type connector on the market. One piece, die-cast housing, no screws, but fitted with unique rear mounted connector inserts enabling easy and very fast assembly. Neutrik connectors are extensively and consistently chosen for broadcasting and by sound

equipment manufacturers and are delivered nationwide through a network of leading distributors.

## New Jack Plugs:- 'NP' Series

Simultaneously Neutrik are introducing a super robust all metal die-cast 1/4" jack plug including similar functional design to the 'FX' without any riveted contact elements for long lasting use even in the most difficult environments.

Sole Agent UK **Eardley Electronics Ltd.** Telephone: 01-221-0606 Telex: 23894



## Explosive Results

The ultimate sound tool of the 80's is at your fingertips today. It's the Valley Dyna-Mite ... an extremely versatile multi-function signal processor.

Dyna-Mite delivers 18 operating modes offering a variety of choices for limiting, gating, ducking, and keying functions. And, when you consider that Dyna-Mite may be operated as either a two-channel or stereo-coupled device, it's easy to see why your problem-solving capabilities become practically limitless.

As you would expect, our Dyna-Mite comes in a small package. It's a rugged steel and aluminium, 1 3/4" x 19" rack-mount enclosure.

To discover why the Dyna-Mite is the hottest multi-function processor available, call your local Valley dealer.

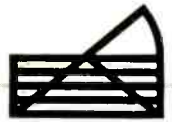
**VALLEY PEOPLE, INC.** · P.O. Box 40306 · 2817 Erica Place · Nashville, TN 37204 · (615) 383-4737 · TELEX 3785899 · NASH AUDIO

**VALLEY PEOPLE INTERNATIONAL** · C/O Gotham AG, Regensdorf Switzerland · Telex 59222 gothm ch. Tele 0041-1-840-0144

**Stirling**  
AUDIO SYSTEMS LTD

1 Canfield Place London NW6 3BT ☎ 01-625 4515  
Telex 946240 CWEASY G Ref No 190 14280

The DS:4-8 is a 16-Bit linear sampler/sequencer with 8-voice, 8-channel plus MIDI outputs. The sampling frequency is 44.1 kHz and the sampling time is 12 seconds. A double memory model is available with 24 seconds capability.



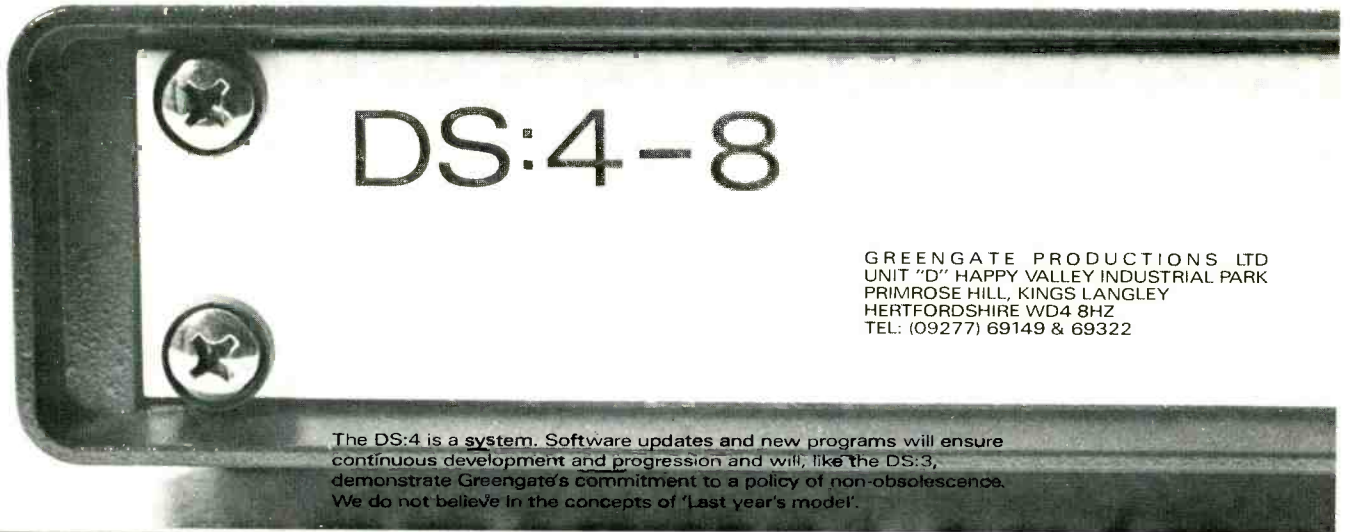
12 second model: £1,500  
 24 second model: £1,750

Complete with computer system 12s: £2,650  
 and high capability drives: 24s: £2,900

Call us for a complete brochure and specification.

The host computer is the APPLE II and existing DS:3 owners will already have the computer and peripherals required. Large capacity disk drives are available ensuring excellent sound storage facilities.

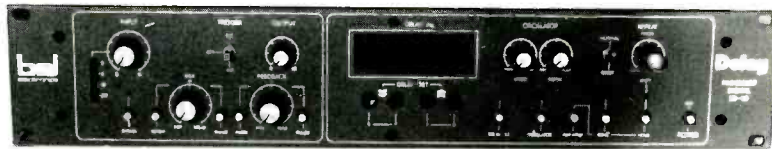
Software controlled digital delay programs allow the full 16-bit quality of the DS:4 to be used in the studio in addition to the very powerful sampler/sequencer facilities.



GREENGATE PRODUCTIONS LTD  
 UNIT "D" HAPPY VALLEY INDUSTRIAL PARK  
 PRIMROSE HILL, KINGS LANGLEY  
 HERTFORDSHIRE WD4 8HZ  
 TEL: (09277) 69149 & 69322

The DS:4 is a system. Software updates and new programs will ensure continuous development and progression and will, like the DS:3, demonstrate Greengate's commitment to a policy of non-obsolescence. We do not believe in the concepts of 'Last year's model'.

**8 SECS**



**SED**

**Bel BD80 DELAY LINE/SAMPLER**

4 TWO SECOND CARDS  
 15kHz

**24 SECS**

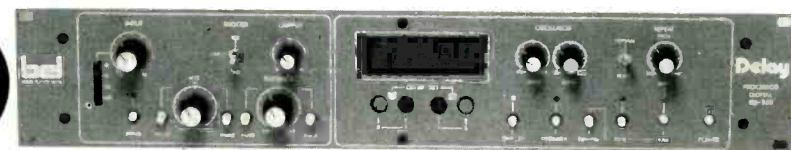


**SED**

**Bel BD240 DELAY LINE/SAMPLER**

4 x SIX SECOND CARDS 18kHz

**32 SECS**



**SED**

**Bel BD320 DELAY LINE/SAMPLER**

4 EIGHT SECOND CARDS 15kHz

Audio Services • Carlsbro Sound Centre • Chromatix • Don Larking Audio Sales • ESS • Future Music • ITA • Jones & Crossland • Gig Sounds • HIB • JSG Music • KG Music • Michael Stevens & Partners • Movement Audio Visual • Music Labs • Raper & Wayman • Sackville Sound • Studio Spares • ShuttleSound • Sound Business • Turnkey • The Turnkey Shop •

Studio Equipment Distribution

29 Guildford Street, Luton, Beds., LU1 2NQ

Tel: Luton (0582) 452495



## 11th International Broadcasting

### Convention

# 19-23 September 1986

IBC 86 will be held in BRIGHTON, UNITED KINGDOM

The TECHNICAL PROGRAMME of papers by specialist authors and discussions will cover new technologies including satellite, cable systems and other developments in sound and television broadcasting and related information services.

The IBC EXHIBITION complementing the technical sessions will have the latest professional broadcasting equipment on display and demonstration by leading world manufacturers.

The SOCIAL PROGRAMME during the Convention will include a Reception and a special Ladies Programme of talks and demonstrations and visits to places of interest.

FURTHER INFORMATION can be obtained by returning the reply coupon below.



The IBC Secretariat, The Institution of Electrical Engineers,  
Savoy Place, London, United Kingdom WC2R 0BL.  
Telex: 261176 Telephone: 01 240 1871



*Please send further details of IBC 86 to:*

Name ..... Position .....

Company/Organisation .....

Address .....

.....

# STAGING EUROPE

## EQUIPMENT & SERVICES

### DIRECTORY 1986

From the publishing house which gives you the world renown **Studio Sound** and the highly respected **Broadcast Systems Engineering** magazines comes our latest publishing first – **STAGING EUROPE**.

**STAGING EUROPE 1986** covers all aspects of staging a live performance, whether this be theatre, a classical concert, ballet or rock gig.

Over 3,500 European companies are featured divided into seven main sections:-

**The Manufacturers section** includes chapters on Amplifiers to Portable Stages, Hydraulics to Microphones, Lighting Effects through to Makeup & Wigs.

**The Hire section** provides a comprehensive listing of Companies throughout Europe, and includes all aspects of production equipment as well as Portable Stages, Properties, Furniture & Armouries and Light & Lazer Shows.

**The Service section** ranges from Wardrobe & Costume, Designers & Consultants, Set Construction and Catering.

**The Venues section** is a unique compilation of major venues in Europe listed alphabetically and divided by country.

**European Sources** is a unique guide to where equipment can be obtained in any country.

**The Address Index** includes the full address details of all the companies featured in the directory, each with telephone/telex numbers as well as key contact names.

**STAGING EUROPE 1986** brings together these important sections for the first time in one directory ensuring it is the most comprehensive information source available.



**OUT NOW!**

Professional Publications Group, Link House Magazines Ltd, Dingwall Avenue, Croydon CR9 2TA, United Kingdom.

Please send me ..... copies of  
**Staging Europe Directory 1986.**

£11 (UK) £14.50 Europe \$22 USA Airmail  
£16.50 World Airmail. *Includes Postage and Packing.*

I enclose a cheque/postal order/International money order payable to **Link House Magazines** for the amount \_\_\_\_\_

Or debit my credit card



Credit card No.

Credit card holders can order by simply ringing 01-686 2599 ext 550, quoting credit card No.

Signed \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

(please print)

Please return the completed order form enclosing full remittance (including delivery) or giving your credit card number to **Professional Publications Group, Link House Magazines Ltd, Dingwall Avenue, Croydon, CR9 2TA, United Kingdom.**

Please allow 28 days delivery in Britain, extra overseas depending on country and delivery method.



# CLASSIFIEDS

Advertisements for this section must be pre-paid. The rate is 55p per word, minimum £13.75. Box Nos. £3.50 extra. Semi-display rates on application. Copy and remittance for advertisements in JUNE issue must reach these offices by 8th APRIL addressed to: The Advertisement Manager, Studio Sound, Link House, Dingwall Avenue, Croydon CR9 2TA. Cheques made payable to Link House Publications (Croydon) Ltd. **Note:** Advertisement copy must be clearly printed in block capitals or typewritten.

Replies to Box Nos. should be addressed to the Advertisement Manager, Studio Sound, Link House, Dingwall Avenue, Croydon CR9 2TA, and the Box No. quoted on the outside of the envelope. The district after Box No. indicates its locality. **SEX DISCRIMINATION ACT 1975:** No job advertisement which indicates or can reasonably be understood as indicating an intention to discriminate on grounds of sex (e.g. by inviting applications only from males or only from females) may be accepted, unless (1) the job is for the purpose of a private householder or (2) it is in a business employing less than six persons or (3) it is otherwise excepted from the requirements of the Sex Discrimination Act. A statement must be made at the time the advertisement is placed saying which of the exceptions in the Act is considered to apply.

The attention of advertisers is drawn to "The Business Advertisements (Disclosure) Order 1977", which requires that, from 1st January 1978, all advertisements by persons who seek to sell goods in the course of business must make that fact clear. From the above date consumers therefore should know whether an advertisement relates to a sale by a trader or a private seller.

## SERVICES

**THE COMPLETE CASSETTE PACKAGE.** Duplicating, label and inlay card printing, shrink wrapping. Rate card from AUDICORD Records, 59 Mayfield Way, Barwell, Leicester LE9 8BL. Tel: 0455 47298. (F)

**REAL-TIME CASSETTE DUPLICATION.** High standards at realistic prices using Nakamichi equipment and good quality materials. Tapes Unlimited, 74 Garland, Rothley, Leicester LE7 7RG. Tel: (0533) 602064. (F)

**CROFT ELECTRONICS.** Service and repair most professional keyboards, amplifiers, tape recorders, mixers. Collection available. Croft Electronics, 6 Erskine Road, London NW3 3AJ. Tel: 01-586 0357. (E)

**CASSETTE COPYING**—Any quantity—real time or high speed. Top quality and quick service at keenest prices. C.S. COPY SERVICE—0904 642761. Quote Visa card number for express service.

**REAL TIME CASSETTE COPYING.** High quality professional service. Normal or chrome tape. Cassette, reel to reel or digital masters. Brochure and price list, call H.S.D. Basildon (0268) 413731 (24 hours). (D)

**THE COMPLETE SERVICE.** Disc cutting (masters and demos), pressings, sleeves, cassettes, labels. Fixed and mobile recording studios. Free brochure. TAM STUDIO, 13a Hamilton Way, London N3. Tel. 01-346 0033 (X)

**LOCKWOOD, TANNOY, etc.,** new and used equipment always available and wanted. Lockwood Audio Sales 01-866 0671. (X)

**WHO SAYS YOU DON'T NOTICE THESE SMALL ADS!** For as little as £13.75 + VAT you too could be getting your service message across. For more details contact Adrian Tippin at STUDIO SOUND. Tel: 01-686 2599.

**QUALITY HIGH-SPEED** and real-time audio and video cassette copying and processing. Any quantity. While you wait. 24-hour, 7-days-a-week service. Central London W2. GWBB Audiovision. Tel: 01-723 1583/5190. (X)

**DISC CUTTING EQUIPMENT** and systems bought, sold, installed and manufactured (under licence from ORTOFON). TAM/ENGLAND, 13a Hamilton Way, London N3 1AN. Telephone 01-346 0033. (X)



**THE CASSETTE DUPLICATING SPECIALISTS**  
Real time & high speed duplication  
Blank cassettes wound to length  
TEL: 061-881 2402

## SOUND BUSINESS

EAST LONDON AND ESSEX'S TOP RECORDING EQUIPMENT CENTRE  
NEW AND SECONDHAND

Aiwa	Drawmer	Symetrix
Iscam	BEL	Allen-Heath
Hevox	Alesis	Studiomaster
Fostex	Ameek	Tannoy
Yamaha	Sony	Dynamix
Lexicon	Sennheiser	Soundtracs
DBX		MTR
Lyrec		Electrovoice
Neumann		Ampex
Aphex		AKG

*Best prices. Many special discounts. Full back-up service  
Open 7 days a week 9am-9pm.  
(London Central Line)*  
**SOUND BUSINESS HOUSE**  
SOUTH WOODFORD E18 1DG  
01-989 6359

100 C-60 cassettes beautifully copied in stereo from £59.50 (plus VAT)  
We can copy from 100 to 5,000 high quality cassettes on our high speed loop-bin system, load them precisely into top-class shells. Price includes library case and all production work from your 1/4 in edited master. Any length C-5 to C-90. Ring for price check.

## STUDIO REPUBLIC

47 High Street, Pinner 01-866 5555 01-866 5555

Check It Out...



DIRECT FROM OUR MODERN U.K. PRESSING PLANT

- CUTTING · PRESSING
  - TEST PRESSING
  - LABELS · SLEEVES
  - CASSETTES
  - ARTWORK
  - COMPETITIVE PRICES
- MARKET LEADERS

**SRT**  
01-446 3218

## DATAGENIK

CUSTOM LENGTH BLANK CASSETTES  
MONO & DATA DUPLICATING  
LABEL PRINTING · SHRINK WRAPPING  
READING 0734-302600

**CASSETTE DUPLICATING:**  
**GAUSS Loop-Bin / TELEX In-Cassette**  
**High Quality Blanks / Label Printing**  
**OPEN REEL DUPLICATING**  
(ANY SPEED - ALSO TO BROADCAST SPEC.)  
**SPEECH RECORDING**  
(VOICE-OVERS; LANGUAGES; AUDIO-VISUALS)  
**SPEECH-PLUS RECORDINGS LTD.**  
UNIT 32, NO. 19, PAGES WALK, LONDON SE1 4SB. TEL: 01-231 0961

AMPEX

AGFA

RAINBOW TAPE SPECIALISTS  
HIGH DUALITY PRECISION WOUND CASSETTES  
AMPEX AND BASF DISTRIBUTORS  
HIGH QUALITY HIGH SPEED AND REAL TIME DUPLICATION  
ALL YOUR STUDIO ACCESSORIES  
HIGH QUALITY PRINTED INLAY CARDS AND SIDE LABELS  
31 ECCLESTON ST. PRESCOT, MERSEYSIDE  
TEL: 051 430 9001

BASF

ICM C-05

## CLASSIFIEDS

## SERVICES

### HIGH QUALITY CASSETTE DUPLICATION AND SPECIALISED LENGTH BLANK CASSETTES

ICM C-O's

*Leeholme Audio* AGFA/BASF TAPES

Leeholme Audio Services Ltd., 360-4 Leebridge Road, Leyton, London, E10 Telephone 01-556 4748

jbs records

#### MUSIC-SPEECH-COMPUTER

REAL-TIME or (Slow) HIGH-SPEED Quality Cassette Duplication and Blanks from 1 to 1000+. Computer printed Cassette Labels, Speech and 1/4" reel-to-reel recording/editing. Fast Security Delivery service.

jbs records - a division of FILTERBOND LTD.  
19 Sadlers Way, Hertford SG14 2DZ. 0992-551188.

#### SPEEDY REVOX SERVICE

Plus TEAC/TASCAM, FOSTEX, UHER, most Mixers, Amplifiers, Effects. Priority Bookings taken. Collection/Delivery arranged. A personal service by experienced engineers.

34 Danbury Street, London N1 8JU  
Telephone 01-359 9342/3030

**RAPER & WAYMAN**

## ANALOGUE/ DIGITAL TAPE

At Playback we sell BLANK TAPE (8 DISKS). In fact we stock everything from an analogue TDK D46 through to digital AMPEX 467. In VIDEO we stock all formats - 1" down to 8mm. Our FLOPPYS work in SSI's and LINN drum machines. We are very pleased with the companies we keep.

TDK · SONY · MAXELL  
AGFA · AMPEX · FUJI · BASF

**Playback**  
15 PERCY STREET  
LONDON W1P 1FD  
TEL: 01-637 8392

Let Saki expertise relap your tape heads in London

Factory-approved laboratory and training guarantees finish to original performance specification

ALL MAKES RELAPPED

Tapetek, 44A Brighton Road, London N16 8EG  
Tel: 01-254 5203 or 0860 317260 (mobile)

Replacement Saki heads from:  
Tape Marketing, 13 Elm Road  
Faringdon, Oxon SN7 7EJ



#### THE SOUND & VISION WORKSHOP LIMITED

SERVICE FOR ALL MULTITRACK RECORDERS  
SPARES · REBUILDS · PROFESSIONAL AUDIO  
ELECTRONICS · SALES · EQUIPMENT



SOLE  
U.K.  
AGENTS

COMPETITIVE 3M HEAD PRICES  
EXCHANGE MOTORS AND  
BOARDS. ALL SPARES IN STOCK.  
EXPORT ENQUIRIES WELCOME

153A Victoria Street,  
St. Albans, Herts, AL1 3TA  
Tel: (0727) 58977 24hr.

#### WEST 5 Tapes Ltd.

Rapid supply of high quality blank bulk cassettes C1-C120  
Example C60 31p

5-screw C-Zero - no minimum or maximum order

Phone Dave West 01-502 2447  
West 5 Tapes Ltd, Unit 34, Oakwood Hill  
Industrial Estate, Loughton, Essex

#### MAGNETIC TAPE/FILM HEADS

\*We manufacture to order, 1/4", 1/2", 1" and 2" tape heads and a wide variety of film heads at very competitive prices. Please specify machine type for an early quotation. \*We also offer a prompt RELAPPING service at standard prices.

BRANCH & APPLEBY LTD.

Stonefield Way, Ruislip, Middx. HA4 0YL  
Tel. 01-864 1577

#### BOOMLESS BOGIE IN BUCKS!!

Best wishes to Barry (purple bits) Caws, with his "flat as a pancake" monitoring, in the new B track writing demo facility the Boogie Bunker at High Wycombe

Well, you came to the right people didn't you  
Boomless pancakes & Boogie, for not a lot of Bucks

STUDIO INNOVATIONS

740 6060 661 9380

#### FOR ALL YOUR RECORDING NEEDS

AMPEX AUDIO AND VIDEO TAPE MAIN DISTRIBUTORS  
Spools, boxes, blades, splicing and leader tape. Blank precision wound cassettes C1-120, labels, library cases and cards, C-zeros, pancake, etc. Broadcast Cartridges.



103 Washway Road  
Sale, Cheshire M33 1TY  
Tel: 061-905 1127

FOR QUALITY, PRICE AND SERVICE

#### AA Tape Winders 03744-65010

For rapid supply of exact length  
Audio Cassette + Tape Duplicating

#### MEASURE IT

If you can hear it we can measure it and whats more tell you what to do with the minimum of inconvenience.

MUNRO ASSOCIATES. 01-480 7121

#### CASSETTE DUPLICATORS

SALES SERVICE MAINTENANCE  
High speed cassette duplicators throughout the United Kingdom and export

GRAFF WOLLENSAK SONY

Sound Cassette Services Ltd.

P.O. Box 2, Chard, Somerset  
0460 67237

#### LONDON SERVICING FACILITIES

#### REAL TIME CASSETTE DUPLICATION

Dolby B/C Standard / Chrome Tape

CUSTOM WOUND BLANK CASSETTES

Tel: Cardiff (0222) 790040

Backyard Recording Studios Ltd.  
60 Orchard Park, St. Mellons Cardiff



#### WHY PAY LONDON RATES?

Professional Disc Mastering operation offering top quality with over 20 years experience. Contact Brian East, "Suncliffe", 43 Sandgate Hill, Folkestone, Kent.

SPECTRUM SOUND

0303 38752

#### REAL TIME CASSETTE COPYING

All work carried out on Nakamichi machines to the highest standard. Normal or chrome tape available.

We also supply blank cassettes wound to length.

AGFA and BASF Chrome tape available

GATEWAY CASSETTE SERVICES

1 GAUDEN ROAD, LONDON SW4 6LR

TEL: 01-627 4758

#### ACCURATE SOUND LIMITED

Quality Cassette Duplication, High-Speed (Loop Bin) and Real Time, Exact Length Blank Cassettes, Labels and Inlays

Tel: Leicester (0533) 602064

QUENIBOROUGH (Ind. Est.) MELTON ROAD  
QUENIBOROUGH, LEICESTER LE7 8FP

**Revox & Uher Sales & Service**

16mm sound 35mm slide projectors, open reel and cassette recorders, amplifiers, etc., serviced and repaired. Bell & Howell, Elf, Ferrograph, Revox, Tandberg, Uher approved service agents. Maintenance contracts available. Visit our Amateur Radio Showroom at:-  
58 High Street, Newport Pagnell. Tel: 0908 610625.

**Photo Acoustics Ltd**

#### FOR SALE-TRADE

MOVING BACK TO USA. ENTIRE CONTENTS OF PRIVATE, MODERN well equipped, immaculately maintained 24-track (Otari MTR90II, MTR12G, Trident 80B, AMS etc.) MASTERING recording studio for sale. No equipment more than 2 years old! Excellent opportunity for someone setting up complete studio. Highly experienced technical assistance also available. Will only consider splitting contents if necessary. Many many extras. £70,000 + VAT. 01-286 5269. (D)

STEREO NAGRA. All facilities, leather case, 5"/7" lid, Q.G.B. 10 1/2" reel adaptor. Immaculate condition, little used. Ring 0902 751184. Price: £5,250 + VAT.

## CLASSIFIEDS

## FOR SALE—TRADE

**URSA MAJOR SPACE STATION:** Immaculate, £800+VAT. Stocktroniks plate reverb £600+VAT. Burman Combo £350+VAT. All o.n.o. Tel: Planet Studios on (031) 556 1707.

**STUDER MKI 2",** 16-track H/block for sale. Immaculate condition £1,500. Please call 01-481 8615.

**TEAC 244/34/38** discounts and HP and leasing. Erricks VCD, Brighthouse 722121 (Bob) (X)

**1 FERROGRAPH LOGIC 7** reel-to-reel tape recorder with built-in amplifier. £250+VAT. Telephone: Edric 0753 884646.

**USED STUDIO EQUIPMENT FOR SALE?** Advertise it now in **STUDIO SOUND CLASSIFIEDS** for as little as £13.75+VAT. For more details call Adrian Tippin at **STUDIO SOUND**. Tel: 01-686 2599.

**TTL MILANO TWO FULLY AUTOMATIC CASSETTE WINDERS,** perfect running condition. Complete with V. pump and air comp. £4,500. Also duplicators for sale. To view call: 01-965 9960.

## SECONDHAND EQUIPMENT FOR SALE

### COMPLETE SYSTEMS:

Unique opportunity. TAC Matchless, Fostex B16 with +4dBm interface and Icon remote/locator, JBL 4411's with Yamaha P2200 amp, Klark-Teknik 2 x 16 graphic, pr. Davids, amps, outboards, etc. Complete system, ready to go, all cabling, jackfield, everything. This is a top-quality set-up in virtually unused condition. Ring for details .....£15,000

ITAM 1610 1" 16tk recorder, remote, with ITAM Sigma 18/8. (16tk. mons) console. In name producer's private studio from new. Completely overhauled. Excellent condition .....£3,950

### TAPE MACHINES:

SOUNDCRAFT 1" 8tk., 2 1/2yrs old, vgc.....£2,950

TRIDENT TSM 24tk. Call for details .....£8,000

TASCAM 85-16B 1" 16tk., vgc. Choice of 2, one with full autolocator/remote .....£5,500 each

STUDER A80 Mk. 1, narrow body, 8 yrs old, 4-mem. locator, track remote, vgc.....£9,000

LYREC 24tk, call for details .....£8,500

AMPEX MM1200 24tk., well-maintained, vgc.....£10,500

STUDER A80 Mk. 2 wide-body 24tk; FM capstan, excellent condition.....£15,000

SOUNDCRAFT 2" 16tk. full remote, good condition.....£4,000

LYREC 2" 16tk., one careful owner, ATC, absolutely mint£6,500

OTARI MTR 10 1/2" 2tk. 3yrs old, perfect.....£4,500

OTARI MkIII-8 1/2" 8tk., ex-demo only, full guarantee ..£3,500

### MIXING CONSOLES:

SOUNDCRAFT 1624 24/16, 24tk. mons, jackfield, 3yrs old, not from commercial studio, perfect .....£7,250

SOUNDCRAFT Series 1600 24/8, 24tk. mons, jackfield£5,500

### MISCELLANEOUS:

A-K Q-Lock 3. 10-3, 2 Soundcraft interfaces, 2yrs old.....POA

A-K Soundcraft SCM381 interface for Q-Lock.....£300

All Prices exc. VAT

ITA, 1 Felgate Mews  
Studland St., London W6 9JT  
01-748 9009 Telex: 21879



## EQUIPMENT SALE

ADR COMPEX LIMITER

ADR GEMINI EASY RIDER

AKG 414/451 MICROPHONES

AMS DMX 15-80S (1 6SEC)

DIGITAL CLAP TRAP

DOLBY 372 PORTABLE UNITS

EMT GOLD FOIL

EVENTIDE ANALYSERS FOR

APPLE COMPUTERS

EVENTIDE FL 201 INSTANT FLANGER

EVENTIDE H949 DE-GLITCH BOARDS

EVENTIDE H949 HARMONIZER (NEW)

FAIRLIGHT MK1 WITH UPDATES

GAINBRAIN 2 MODULES

GOLDLINE ANALYSERS (VARIOUS)

JBL 4430 MONITORS

JBL 4612 CABARET WITH STAND

(MINI PA)

JBL 4695 'BIG' BASS SPEAKER

KEPEX 2 MODULES

LEXICON PCM 60

MXR 01A

QUANTEC QRS

SONY 20 INCH PROFEEL MONITORS

SONY PCM 701ES WITH 3-STAGE ADR MODS

STUDER A810

URSA MAJOR STARGATES (323/626 - NEW)

VISIONIK DAVID 6000

YAMAHA NS10M MONITORS (NEW)

AND A HORNBY INTERCITY HST 125 WITH

ACCOMPANYING TRACK, CONTROLLER

AND STEAM HAULED GOODS TRAIN.

## Marquee Electronics

90 Wardour Street, London W1V 3LE Telephone (011) 439 8421

## USED EQUIPMENT PACKAGES

Our Larking Audio Sales has masses of used equipment taken in part exchange and available at very competitive prices

**PACKAGE 1 24 TRACK**  
SOUNDCRAFT SCM762 24 track recorder with autolocator RAINDIRK Concord 28 input in line console plus set of interconnecting cables £16,500

**PACKAGE 2 24-TRACK**  
SOUNDCRAFT SCM762 24 track recorder with remote control SOUNDCRAFT IIB 32 input console with professional patchbay plus set of interconnecting cables £18,000

**PACKAGE 3 16 TRACK**  
MCI 16 track 2" recorder with remote control. AMEK 2000 20 input in line console plus set of interconnecting cables £7,000

**PACKAGE 4 16 TRACK**  
FOSTEX B16 16 track 1/2" machine MCI 400 in line mixing console plus set of interconnecting cables £6,000.

### ALSO IN STOCK

3M 16 and 24 track machines STUDER 16 and 24 track machines AMPEX MM1200 24 track machine PLUS wide variety of mixing consoles and outboard equipment



Luton 29 Guildford Street, Luton Beds  
Telephone: Luton (0582) 450066 Telex 825488 DONLAR G



Your Northern appointed agent for:

NEUMANN SENNHEISER SHURE BEYER UREI TRIDENT	JBL TANNOY REVOX TASCAM QUAD ROLAND	LEXICON DRAWMER DBX YAMAHA AMPEX AKG	SOUNDCRAFT STUDIOMASTER BEL APHEX APPLIED MICROSYSTEMS
--	--	---	---

18 42 Charlotte Street, WAKEFIELD, W. Yorks WF1 1UH  
Tel (0924) 371766

09728-67581  
09728-67580  
TEL

## LOW PRICES AND HIGH PERFORMANCE DO MIX!

**SML 1216** 1/2" 16 track **£2,799** + VAT  
**ACES B1816** Console **£1,350** + VAT  
(6 aux, 4 band EQ, 2 sweeps)

MS Audio are suppliers and installers of all studio and home recording equipment Full UK back up and deliveries throughout UK Europe and USA

MS AUDIO  
TEL 'Phone for our brochure

## FOR SALE—PRIVATE

**RAINDIRK CONCORDE MIXING DESK.** 28 in, 56 out. Patchbay excellent condition £5,000. Tel: 063 684582.

**24-TRACK TAPE RECORDER** and 32 input inline desk, internal patchbay, designed by ASE5 UK. One year old, excellent condition, private studio. £10,500. Tel: (0273) 561900.

**NEUMANN U47** Microphone P.U. mint condition £400. Telephone: J. R. Taylor on 021-356 9636.

**60,000 CASSETTES FOR SALE,** various lengths available, some pre-recorded, 10p each. Write or phone for list. 18 Sycamore Grove, New Malden, Surrey KT3 3DQ. 01-942 2847.

**NAGRA 4D,** mint condition. Richard Margoschis, 80 Mancetter Road, Atherstone CV9 1NH. Tel: 082 772925.

**BRENELL 1" 8-TRACK RECORDER.** Late model with full remote and vari-speed. Professionally maintained and in excellent condition (private use only) with manuals and some spares. £1,900 o.n.o. Tel: (0424) 432669.

**24 COMPLETE NEVE CHANNELS** for sale approximately 10 years old. Any reasonable offer accepted. For details call Jon on 031-440 1084. Palladium Studios Edinburgh.

**TEAC TASCAM 80-16** recorder with DBX. AMEK 20 into 16 mixing desk in console. For details tel: 0563 36377.

**UREI 811 TIME ALLIGNED STUDIO MONITORS,** as new, £2,850. Linn drum machine with extra sound chips, £1,250 o.n.o. Tel: 01-837 4424.

## OSMOND TRICKS

On instructions from C. Barlow, Esq., Liquidator  
Re: Novaden Limited In Voluntary Liquidation

## SALE BY TENDER OF AUDIO AND DATA DUPLICATING EQUIPMENT

Including: Neal mono cassette deck, two MXR 31 band graphic equalisers, Dolby B330 duplication unit, Revox B77 tape recorder, Telex 3 copy stereo and Wollensak twin mono cassette tape duplicators, Hameg Oscilloscope VDU and eighteen home computers.

On view Monday, 24th March, 1986., 9.30am to 4.30pm  
at **Regent Street Auction Rooms, Clifton, Bristol BS8 4HG**

Tender Documents Available from Auctioneers (30p by post)

**Auction Rooms Tel: (0272) 737201**

## CLASSIFIEDS

## FOR HIRE



LEXICON 224XL LARC  
AMS 15-80s 6.4sec/1.6sec  
PUBLISON INFERNAL MACHINE 90:  
- 21 SEC. STEREO SAMPLING  
**01-228 0984**

**THE  
P.A.  
COMPANY**

**HIRE • SALES  
INSTALLATIONS**  
**01-607 0087**

PROFESSIONAL SOUND SYSTEMS AND  
CONTROL EQUIPMENT (TOYS)



### HIRE AND PROGRAMMING

Please ring for details of our programming  
service and comprehensive range of hire  
equipment.

**MOBILE PHONE: 0860 316 269**

## SAM THERAPY

FOR AURAL EXCITEMENT

The first Hire Company to offer the  
New Fairlight III + 24-track facility

**Tel: 01-221 5967/960 1336**

## TECRON TEF 10

Time Energy Frequency  
Measurement Service

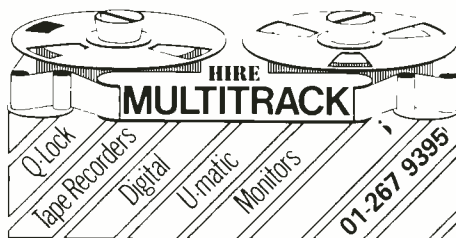
**MUNRO ASSOCIATES. 01-480 7121**

## WORKING IN THE USA?



"THE AUDIO RENTAL PEOPLE"

Complete selection of pro audio equipment for hire.  
Outdoor Equip ★ Digital Recorders ★ Walkie Talkies  
A/T Scharff Rentals. 1619 Broadway, New York.  
Phone (212) 582-7360/IMC(367)/MCI Mail 260-0455



## HIRE MULTITRACK

Q-Link  
Tape Recorders  
Digital  
U-matic  
Monitors  
**01-267 9395**

## WANTED

**SURPLUS** mono & stereo amplifiers, speakers,  
turntables etc; bought & sold at reasonable  
prices. Midland Radio Supplies, Maypole Lane,  
Birmingham B14 4PE. Tel: 021-430 7817.

## WANTED DEAD OR ALIVE

Neumann valve mics  
Types U47, U48, U67  
**Tel: 01-387 9356**

## WANTED

Revox or Teac Professional  
Cassette Deck  
**Telephone: 0244 881708**

**VERY EXPERIENCED** reliable recording  
engineer seeks freelance/permanent position  
anywhere. Telephone Marc in the UK on 01-437  
6255.

**EXPERIENCED ENGINEER.** Many credits.  
Worked in many studios as freelancer. Looking  
to join a new or established studio. London or  
South West. Reply to box no. 930. (D)

## FOR HIRE

## EMULATOR II

PLUS FULL SOUND LIBRARY

ALSO: LINN DRUM, SIMMONS KIT, KEYBOARDS ETC.

**STUDIO SUPPLY SERVICE**

**061 928 5037**

THE MANCHESTER BASED HIRE COMPANY

## APPOINTMENTS

## STUDIO FOR SALE

### FOR SALE

24 TRACK STUDIO

JACKSON MUSIC GROUP  
The Studios, Rickmansworth,  
Herts, England WD3 2XD

Telephone: 0923 772351 or Vodafone 0836 203557

*If you  
have a product  
or service you  
want to  
promote  
successfully  
then  
let this space  
work for you*

*For more details  
contact*

**ADRIAN TIPPIN**

*Tel: 01-686 2599  
Ext 189*

## SITUATIONS VACANT

**PROGRAMMER WANTED IMMEDIATELY.**  
Must be familiar with PPG, Prophet 2000, DX7,  
Oberheim, Synths and Sequencers. Steady studio  
work. Apply in writing to Katherine Ivison,  
CMO Management, 9 Disraeli Road, Putney,  
London SW15 2DR.

**If you want to sell your products  
fast, fill in the classified order form  
now!, or ring Adrian Tippin for  
more details on  
01-686 2599 Ext. 189.**



As the world specialist in recruitment of professional Audio personnel, we are looking for high-calibre and self-motivated Digital Engineers, Sales Managers, Maintenance Engineers, Test and Design Engineers.

#### Sales Manager

A new UK based PA hire and sales company with a  
European dealership on a leading US speaker system  
based in South Eng and you will set up and run the  
main sales department and help secure further  
business.

#### Digital Design Engineer

Digital and analogue experience. You must have 3  
years experience in design and should possess a B Sc  
in electronics.

#### Maintenance Manager

Leading digital studio based in S London. You should  
have 3 years minimum experience on SSL and Otari

#### Test Supervisor

To take charge of day to day operations in a small test  
department. You should have knowledge of 6800

#### Test Engineers

To work in a small production test en-  
vironment testing analogue and digital  
PCBs and sub systems

For more information please contact

**F & P Appointment Services Ltd., Charles House, 7 Leicester Place, London 01-737 9282**

## CLASSIFIEDS

**SITUATIONS VACANT**

The National Sound Archive  
**CONSERVATION  
 MANAGER**

You will be responsible for the management of the Conservation and Technical Section, including planning an integrated conservation and restoration programme, co-ordinating the selection and recording of broadcasts off-air, providing equipment for and participating in the Archive's external recording assignments and providing copies of recordings for the Archive's services and for sale.

You must have a thorough knowledge of digital and analogue recording techniques and of all types of sound carriers together with experience in operating equipment to a professional standard. Knowledge of computer

science, in particular its application to digital audio processing, would be desirable as would an active interest in some aspect of recorded sound, eg music and its history.

Salary: as Curator Grade E £9815 - £12,630. Starting salary according to qualifications and experience.

For further details and an application form (to be returned by 10 April 1986) write to Civil Service Commission, Alencon Link, Basingstoke, Hants RG21 1JB, or telephone Basingstoke (0256) 468551 (answering service operates outside office hours).  
**Please quote ref: G(8)382.**  
**An equal opportunity employer**

**The British Library**



**STUDIO DESIGNERS  
 AND CONSULTANTS**

**TIME DELAY  
 SPECTROMETRY**

Discover why your studio sounds the way it does . . . or should

**MUNRO ASSOCIATES, 01-480 7121**

**STUDIO CONSTRUCTION**

Studio environments built to the highest standards  
 Our services include  
 Fully engineered floating floors, suspended ceilings, high density doors, sound lock lobbies, concrete and brickwork, double glazing, low frequency absorbers, attenuated ventilation systems, insulating sealants, acoustic screens, electrical and electronic installation, equipment sales and commissioning.

*U.K. and international projects undertaken*  
 Planning, design and materials export.  
**Ring RECORD CONSTRUCTION LTD**  
**01-985 7573 - London, England**

**KENNETH SHEARER AND ASSOCIATES**

Consultants in acoustics and noise control

Over 30 years' experience in the custom design of all kinds of recording and TV studios, remix, dubbing and viewing suites - new and conversions, down to 25 Hz.

**Tel: 0442 54821**

**STUDIO  
 SOUND**  
 AND BROADCAST ENGINEERING

**CLASSIFIED ADVERTISEMENTS ORDER FORM**

Please use this coupon for all your sales and wants.  
 Rates: 55p per word. Min £13.75. Box Nos. £3.50 extra

PLEASE PRINT IN BLOCK CAPITALS


To: STUDIO SOUND, please publish the above advertisement for . . . . . insertions under the heading . . . . . Cheque/P.O. to be made payable to LINK HOUSE PUBLICATIONS LTD, LINK HOUSE, DINGWALL AVENUE, CROYDON CR9 2TA. Is a Box No. required Yes/No. If no, please include remittance to cover name and address and/or tel. no.

Name . . . . . Address . . . . .

**CLASSIFIEDS**

# AUDIO SERVICES

## BRITAIN'S LARGEST STUDIO SUPPLY SERVICE HAS EXPANDED EVEN FURTHER!

Our London Showroom enables us to offer nationwide coverage for sales AND service. Neither of our establishments are conventional shops. We don't employ shop assistants but informed experts who keep our customers well advised and up to date on the latest professional and home studio products - appointments are not essential but recommended. As always, Audio Services are fully conversant with the latest trends in recording practices and developments. Visit either of our Showrooms to see and learn about the advantages of SMPTE based transport and midi synchronising, with products from Synchronous Technologies, Fostex and Roland. Products which save you tracks, time and money!

### TYPICAL PACKAGE DEALS FROM AUDIO SERVICES

Tascam MS16 and TAC Scorpion-POA for numerous permutations. A special opportunity not to be missed! - our ex-showroom Tascam MS16 incl dbx and autolocator and model 520 mixer (an ideal video post production system) only £9300. Fostex B16 and Seck 1882 £4083. Fostex B16 and RSD 1616 £4517. Fostex B16 and AHB 1616 £4691. Fostex B16 and Soundtracs 16816 £5000. Fostex B16 and AHB 2416 £5056. Fostex B16 and AHB CMC 24 £5213. Akai MG 1212 £4343. Tascam 38 and Seck 1882 £2520 Tascam 38 and AHB 168 £2930 Tascam 38 and RSD 168 £2643 Tascam 38 and Tascam 216 £2373 Tascam 38 and Ram RM116 £2087 Tascam 388 8 track Portastudio £2173. Fostex Model 80 and Ram RM10 £1735. Fostex 80 and Fostex 450 £1739. Tascam 246 £778. Tascam 234 and 106 mixer £857. Tascam 312 (12:4:8) and Fostex M80 package £2450. Tascam 244 inc pair JBL TLX3 Monitors, Teac A313 Amp Teac 'phones £695. New model Fostex 260 £651. Tascam Porta One inc PSH £347. New Model Yamaha MTIX £391. Fostex X-15 inc PSH £237. NOT TO BE MISSED Tascam 'Potty-Porta' deal Tascam 244. Teac A313 Amp, JBL TLX-3 Monitors, Teac 308 Headphones - RRP £975 - £695! Tascam 388 - In stock/On Demo - £2173

### ONLY FROM AUDIO SERVICES

Synchronous Technologies 'SMPL' Synchronising System from: £595 to £1495. In its basic form, SMPL synchronises sequencers, drum machines etc to audio tape recorders, with 8 point autolocate programmable drop in/out and full transport control. With its lock unit, however, tape transports (audio/audio or audio/video) may be synchronised with midi units to form a flexible user friendly post production system. Anyone can use it! SMPL has been designed for operation by laymen and experts alike. Telephone now for details on the most cost effective synchronising system available.

### NEW PRODUCTS AND FACILITIES

**YAMAHA REV 1** - Two in stock and on demo (one South, one North). Lease-rental scheme through Lombard easily arranged. Pay as little as £27/week and qualify for tax relief. This represents just under £4.00/day - as opposed to £100/day if hired from one of the big hire companies.

**1986 BARNSTORMING PRODUCTS** - Available NOW (hopefully) YAMAHA SPX-90 full bandwidth 16 BIT linear processing, programmable digital reverb, delay, sampler, harmonizer, compressor, noise gate, parametric, auto panner, you name it - it does it! You've got to have one of these at £520!!!

**AKAI PRO-AUDIO** - Akai MG 1212 - superb audio quality. New low price £4345. Buy two with a synchroniser. FULL 24TK £8750!!! Think about it? Akai S612+MD280. Sampler available from stock £860.

Don't turn your nose up at this Akai equipment boys - its more professional than you'd know! Phone us for brochures.

We stock a very wide range of audio processing from Accessit to AMS. Also 2nd hand units available.

If you are a limited company or partnership and have been trading for 3 years or more - you too can gain significant tax relief through our lease-rental scheme - phone for details.

### CLEARANCE OFFERS/USED EQUIPMENT

**STOP PRESS**... Studer B67 Mk1 (2 available), vgc, full service history - £1595. Raindirk Concorde 20/16, in line - £1200 ono. ADC 52 hole patchbays (2 available) £150 each. Fender Rhodes 73 - £450. ARP Odyssey - £50. Tannoy SRM12B 'little reds' - £495. Quad 8 digital reverb £695. Full Rebis rack inc. PSU, 6 gates, 2 comp/limiters, de-esser, 2x dist. amps £450. Sony SL-Fi Video Recorder, TT Fi Tuner HVC 4000C Video Camera, incl all accessories tri-pod etc etc. Complete £950.

Rebis Parametric EQ £50. Sony SLHF950 - latest Beta-HiFi Video Recorders new £739. AHB 2416 'mint' £1795. Tascam 480B new, 1 only £2495. AHB Syncon A32.24 incl Patch Bat and Prod's desk as new £6000. MC1 JH1624 MkII o/w Autolocator 16TK W. red 24 £6000. JBL MONITOR SCOOP! EX-EXHIBITION STOCK L46 £250/pair L86 £395/pair L96 £450/pair. RAM MEGA MEGA! 42.8.24 one-off special 2nd hand mint £2300.

**UK customers - please add 15% VAT to all prices**

### STUDIO HOUSE

Tim Eastwood or John Gluck  
High Lane Village, nr Stockport SK6 8AA  
Tel: 06632 4244 Telex: 665721 SOTA

### LONDON

Alan Cheetham or Ben Curtis  
4 Wellington Road, St. John's Wood, London NW8  
(opposite Lord's Cricket Ground)  
Tel: 01-586 3167

**All major credit cards accepted**

## INDEX TO ADVERTISERS

APRS	12, 14
AMS Industries PLC	19
ACO Pacific Inc	14
Alpha Audio	86
Altec Lansing	77
AMEK Ltd	IBC
Ampex (UK)	IBC
Ant Nachrichtentechnik GMBH	89
Aphex Systems	37
Audio Design Calrec Ltd	12
Audio Kinetics	53
Audio Precision	65
Audio Service Co	102
Avcom Systems Ltd	19
Britannia Row	21, 35
Brooke Siren Systems	59
C Tape Developments	22
Connectronics Ltd	16
Court Acoustic Sales Ltd	23
Dolby Laboratories Inc	75
Don Larking Audio	78
Eardley Electronics	93
EMT-Franz	91
FM Acoustics Ltd	60
Feldon Audio	20
Future Film Developments Ltd	14
FWO Bauch Ltd	51, 57, 62, 63
Greengate Productions	94
Harman Audio UK	91
HHB Hire & Sales	25, 27, 29
Hill Audio Ltd	61
Hilton Sound	47
Hollywood Studios	86
International Broadcasting Convention	95
I.T.A.	54, 55
Lexicon	39
Mitsubishi Pro Audio Group	45
Mosses & Mitchell	86
Music Labs Group Ltd	4, 8, 9
N.T.P. Elektronik	18
Northern Audio	21
Otari	70, 71
Palmer Av Systems	16
Professional Audio	83
R E Instruments Ltd	67
Rane Corporation	7
Rebis Audio	6
Revox	51
SCV	13
S.E.D.	94
SAJE	15
Scenic Sounds	39, 65
Sony Broadcast Ltd	41
Sound Technology	33
Soundcraft Electronics Ltd	IFC
Soundout Labs	79
Sowter Ltd, E.A.	12
Stage Accompany	73
Startek	81
Stirling Audio Systems	84, 85, 93
Studer	62, 63
Studio Spares	17
Surrey Electronics	52
Sycos Systems Ltd	30, 31, 42, 43
Symetrix	16
Tannoy	57
Trad Sales & Services	22
Trident Audio Developments	10, 11
Urei Monitors	91
Valley People	93



# REFINING THE FINEST

*Advanced recording equipment demands advanced recording tape. Which is why for ten years Ampex has continued challenging machine capabilities. Through a decade of technological improvements, Grand Master<sup>®</sup> 456 remains an audio tape of unequalled sophistication and consistency. Which is why more top albums are recorded on Ampex tape than any other tape in the world. For Grand Master 456, the beat goes on.*

**AMPEX**

Ampex International, Magnetic Tape Division, Acre Road, Reading RG2 0GR, England. (44) 734-875200

Ampex Corporation • One of The Signal Companies

**AND THE BEAT GOES ON**

*For engineers  
by engineers.*

**AMERK**  
*Angela*

Head Office and Sales:  
AMEK SYSTEMS AND CONTROLS LTD, Islington Mill, James St,  
Safford M3 5HW, England tel: 061-834 6747  
telex: 668127 AMEK G

In the USA:  
AMEK CONSOLES INC, 10815 Burbank Blvd,  
North Hollywood, Ca 91601 tel: (818) 508 9788  
telex: 662526 AMEK USA

