

VOL 6 No.4
Dec. 1985
NBP 3779

Interview with Mark Moffatt

Digital Audio Hire

A look at: CEI

Radio 5AA



Recording & Broadcast Industry Magazine



The Sony JH-24. May all your recording stars be this reliable.

Unlike human recording stars, the JH-24 will never throw a temper tantrum. Or break down under pressure. Or refuse to go on with another session when the studio clock hits a new day; because MCI have added totally new electronics to a machine which is already an established star in top studios around Australia and around the world.

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Recording & Broadcast Industry Magazine

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Sugar Shack.



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Playback

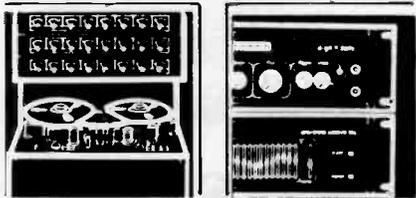
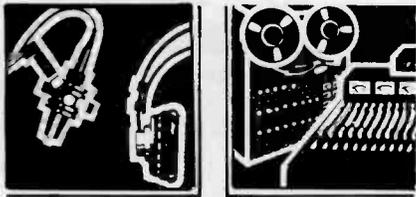
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BROADCAST EQUIPMENT

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RECORDING STUDIOS

News



FROM THE EDITOR

Well here we are, the last issue of Australian Sound & Broadcast magazine for the year. Our irreplaceable editor, David Halperin, is unfortunately not with us this issue, as he is romping around 'di land of di elephants' making use of his photographic talents for the Indian Tourist Bureau. Regardless, with a lot of team effort we have brought you yet another informative and interesting issue.

Mark Moffat and his studio, Sugar Shack, are on our cover this issue. The studio is aptly named as it's nestled amongst the cane fields in Queensland's north. Inside he discusses his ideas for the future and his new recording priorities.

This month has been one of great achievements for Consolidated Electronics Limited, formerly known as Consolidated Electronic Industries. They were presented with the coveted award for Industrial Design. Congratulations!

Phil Tripp brings us the latest on the new Email system; a computer mailing system especially for the music industry. He also tells us about the Sony Digital tape machine available for hire from Digital Audio Hire.

As always, we have plenty of industry news. It begins on page 39 through to page 56.

Before I sign off, I would like to express our sincerest sympathy to the folks at Sound on Stage, who suffered a devastating fire at their Pyrmont warehouse on Thursday, 31st October.

by Melissa Cody

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BROADCAST EQUIPMENT

FILM EQUIPMENT

RECORDING STUDIOS

LETTER TO EDITOR

Dear Sir,

In the No. 2 Vol. 6 edition on page 8 you credit AAV as being the "first" to record a digital music track for a film in Australia.

This is incorrect as this company recorded, mixed and released Australia's first digital film music track in our production "The Ambassadors Symphony". The track was recorded in August 1984 and mixed in January 1985. It was first screened in Cannes, France during the Midem Music Festival during January 1985. The recording engineer was Michael Gissing who wrote a paper on the recording technique which your magazine published late last year.

This film is to be simulcast on October 23 and will be the first to air direct the digital master tape in sync with the print on 1" video. At the same time stereo hi fi home video will be released as will a double LP. At Christmas a compact disc will also be released.

Brian Morris

Dear Editor,

Being a reader of your magazine for a number of years I was pleased to read your Guest Opinion article in Vol. 6, No 2 on minimalist recording for the age of compact disc.

It's amazing how caught up we become with super elaborate methods of production, stripping music down into its raw individual components only to 'stick' it all back together again in the mix. Could it be that this progress will lead to a more natural understanding, and perhaps we'll begin to notice more material recorded this way; with album covers carrying the notice "minimalist miking techniques used".

Simon Rees.

Playback

RECORDING

NEW DISTRIBUTOR APPOINTMENT

Audio Research & Technology have appointed Village Roadshow Technology as Australian Distributors for their range of Composite Speaker Systems and Associated Signal Processing Control Units.

Spokesperson Mr Duncan Fry is quoted as saying "This will offer our Speaker Systems nationwide exposure and backup service in both the auditorium and sound reinforcement markets which we as primarily a research and manufacturing organisation have been unable to give them".

A complete A.R.T. System is currently being installed in the Melbourne Concert Hall.

ANOTHER AKG SUBSIDIARY COMPANY: AKG USA!

AKG has taken over the distribution of all AKG products in the United States by establishing a wholly-owned subsidiary located at the existing facility in Stamford/Connecticut. This will allow AKG to steer their own course. Now, the U.S. organisation will enjoy more direct involvement from its parent company. The new U.S. operation joins W. Germany, Great Britain and Japan as the fourth subsidiary of AKG Vienna.

RECORD BID FOR AKG MICROPHONE! \$10,000 WITHIN 4 MINUTES!

The gold plated and elaborately engraved AKG microphone (C 535 EB) Frank Sinatra received from AKG and used during his Vienna benefit concert in October, has been sold at an auction in favour of the "Light in the Darkness" fund for handicapped children.

HIRE ITEMS FROM TROY BALANCE

Due to the vast expansion of the Australian Film and Recording industry, and current world developments in Audio Technology, it is our company's intention to remain at the forefront of services supplied to the recording industry of Australia.

We are pleased to introduce our new "Studio Outboard Hire" price list, with some new product lines, such as:

- * Lexicon 224XL
- * AMS 9.6 & 12.8 sec. delay/harmonizer units
- * AMS keyboard interface/chorus controller
- * Bell stereo flanger
- * Drawmer noise gates
- * Yamaha Rev 7 digital reverb
- * Neumann microphones — wide range

* Sony PCM-F1 digital encoder/decoder and many more items.

Contact Troy Balance Corporation or see our 1985 Yearbook.

LIMITED EDITION NEUMANN MICROPHONES

During 1984, Neumann produced a limited edition of 100 only chrome finish Neumann TLM170 microphones.

We have been granted access to these microphones and can offer to interested clients, on special order only, these rare instruments.

The microphone is available either as a single unit, or as a matched pair, in a leather presentation case.

Prices are as follows:

Single microphone	\$2690.00
Matched pair	\$5175.00

Contact Rank Electronics or see our 1985 Yearbook.

AAV AUSTRALIA

The music studios of AAV Australia will be having a very busy time over the next few months, recording some of Australia's biggest contemporary acts.

Joe Camilleri has just completed mixing two singles with engineer/producer Jim Barton in Studio One. Jim Barton recently returned to Australia following a stint in London with 'S.A.R.M.' Jim is now on his way back to London via New York where he will be doing some sessions.

Wendy Stapleton steps into Studio One to record two tracks for a proposed single with producer/engineer Ross Cockle.

Immediately following this project, the Hunters and Collectors move into the studio to mix their up-coming album with English producer Gavin McKillop. Hot on the heels of the Hunters and Collectors will be the I'm Talking album taking bookings up to the end of the year.

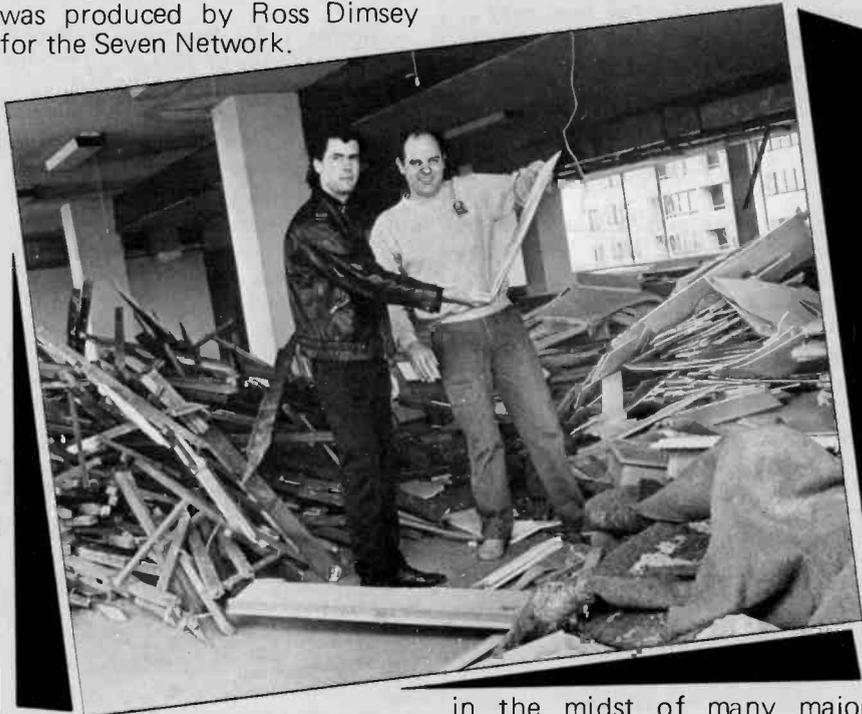


Studio One was also the scene recently for the recording of soundtrack music for the new television series "A Thousand Skies". The sessions were composed and conducted by Bruce Smeaton who recently returned home to Melbourne after several months in London recording two feature film soundtracks with the London Symphony Orchestra. "A Thousand Skies" is the story of the life and times of Sir Charles Kingsford-Smith, Australia's greatest aviator. The series was produced by Ross Dimsey for the Seven Network.

several occasions), New Zealand, Australia, Europe, Asia and Japan.

In his new position with the Company, Tom reports directly to Ern Rose, Manager of Audio for AAV Australia.

Flagstaff St. Kilda Road is a brand new two-studio voice production complex that is under construction right now. The area is on the top floor (6th Floor) of Glenvill House at 480 St. Kilda Road, Melbourne, right



Tom Kehoe has joined AAV Australia Pty Ltd in the role of Music Production Manager.

Tom brings a great deal of experience with him, having entered the industry in 1976 as the proprietor of a public address and trucking company, which worked freelance with various rock and roll bands along the eastern coast of Australia. He continued this operation until 1980, when he became Tour Manager for the John Farnham Band on their Australian tours.

In June 1982, he joined the Glenn Wheatley Organisation and became International Tour Manager for Little River Band. This association continued until May 1985, during which period Tom, along with the Little River Band toured the U.S.A. (on

in the midst of many major advertising agencies. When up-and-running, Flagstaff St. Kilda Road will be under the control of Steve Williams, one of our talented Flagstaff people, picture shows Ern Rose and Steve Williams.

General Manager of AAV Australia Pty Ltd, Ted Gregory, was presented with a special plaque from The Advance Australia Foundation in recognition of the generous support that Ted and the Company has given the Foundation. The presentation to Ted was made by Norm Spencer, the Executive Director of the Advance Australia Foundation . . . The plaque is on display in Ted's office.

AAV Australia has recently

taken a lease on the top floor of the Drager building directly opposite our premises at 180 Bank Street, South Melbourne. At this stage building operations are underway creating office accommodation that will shortly be occupied by existing AAV divisions.

IT COULD NEVER HAPPEN TO ME!

Musical and Recording equipment can be very expensive, in fact most musicians and groups have thousands of dollars worth. It is here that the insurance dilemma is most evident - "Can I afford to insure my gear? Can I afford not to?"

Musicians and recordists purchasing equipment on hire purchase should always take out insurance on gear because if it is stolen or destroyed the money will still be owed, but the musician will no longer have the equipment with which to earn the money necessary to meet the repayments. There are several Australian musicians who have had to abandon music and get a 'steady job' to repay the finance company.

To discover more about musicians and entertainers insurance call Ray Tehira at f.p.a on (02) 929 4655.

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RAMROD RECORDING STUDIO

Ramrod Studio has been operational for over a year now in Brookvale and was formerly located in Artarmon for four years.

The studio is owned and run by Herman Kovac and Les Hall (members of TMG – Ted Mulry Gang). Having recorded with the band for some 13 years they decided to build a studio from the musicians side first, that is, have a studio where drums and guitars sound big and lively in the room before going to tape. This has been achieved with a large recording area complete with drum room with glass sliding doors for visual contact with other musicians. The control room is large to accommodate musicians during playback with plenty of room for keyboards etc. when doing strictly control room recording. The room was tuned by Richard Priddle (who is responsible for tuning half the studios

in Sydney) so the sound you hear is what you take out.

The equipment is Tascam 85–16 16 track recorder with dbx, and Tascam Model 15 24 channel desk. Monitoring is through Tannoy Gold and Yamaha NS 10. The effects rack contains compressor limiters, noise gates, digital delays, digital and spring reverbs and the studio is about to purchase either the new Roland digital reverb or the Yamaha Rev 7.

Mastering is done on a Revox B77 and Ramrod is currently trying out the Sony PCM 501 Digital Mastering Recorder so this may be used as well. The studio has a full range of mics including Neumann, EV RE 20's, Shure, Sennheiser, AKG etc. The studio has just purchased an Emulator II which gives the studio an edge on other 16 track studios. The Emu is used with its 8 outputs and SMPTE code on one track of the tape machine making 23 track recording possible. The floppy disk library covers just

about any real sounds anyone could want (piano, strings etc.) plus synth sounds as well as every drum machine on the market.

The studio records everything from demos, finals, commercial and film music.

Bands who have recorded at Ramrod include: Midnight Oil, Non Stop Dancers, Private Lives, Full Marks, Samurai Trash, Snake, Skolars, John Paul Young, Jeff St. John, Hot Cottage, Happy Hate Me Nots, Young Hearts, Angela Ayres plus many more.

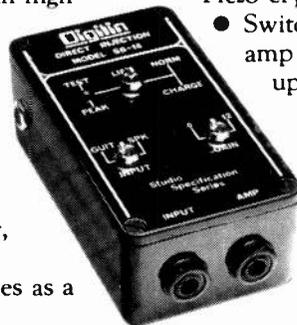
In the last four months the studio has completed 26 jingles with Vince Malouney (ex-guitarist Billy Thorpe Aztecs, Bee Gees) and on the sound-track side 6 episodes of a documentary have just been completed with Colin Stead.

P.S. After trying out the Roland SRV-2000 and Yamaha REV 7 digital reverbs, we were so impressed, we purchased them both.

DIGILIN SS-18R. THE D.I. BOX THAT IS PREFERRED BY EMI STUDIOS 301.

At last a no compromise D.I. Box designed for use where the highest standards are demanded. The exclusive features incorporated in this unit, together with high performance make it the ideal choice in the studio, or at live performances.

- Fully electronic, transformerless circuitry, balanced output, for low distortion and wide frequency response (10Hz-50KHz, -1dB.)
- Rechargeable Ni-Cad batteries with built in provision for charging from phantom power, or from an external plug pack charger.
- Peak warning LED indicator that also doubles as a



battery test indicator.

- High input impedance to suit all sources including Piezo crystal pick-ups.
- Switchable input attenuation and switchable internal amp gain result in capability to handle guitar pick-ups, keyboards, line levels and speaker outputs.
- Output to instrument amplifier.
- Ground lift switch.
- Rugged die cast metal case finished in powder epoxy coating. Low profile switches.
- 5 YEAR WARRANTY
Dealer Enquiries are Invited.

DIGILIN, SETTING NEW STANDARDS IN RECORDING EXCELLENCE.

Digilin Electronics

10 Buchanan St., West End, Qld. 4101. Ph: (07) 44 9933

Playback

BROADCAST

SBS NEW EXECUTIVE DIRECTOR

The present Director of the Commonwealth Department of Social Security in NSW, Mr Ron Brown, is to become the new Executive Director of the Special Broadcasting Service.

Mr Brown's appointment was announced last month by the Minister for Communications, Mr Michael Duffy. The term of appointment is almost two years, ending on 30 June 1987. Mr Brown succeeds Mr Ron Fowell who did not seek reappointment.

SWAN TELEVISION EARTH STATION TO BE LICENSED

A small earth station installed in Perth to watch television programs being transmitted over Intelsat's Pacific Ocean satellite is to be officially licensed for such monitoring purposes only.

A spokesman for the Department of Communications said recently the licence would be issued under the Wireless Telegraphy Act to Swan Television and Radio Broadcasters Ltd.

"Special conditions will be imposed ensuring that the licensee does not retransmit or distribute the Intelsat signals in any way", the spokesman said.

"This is consistent with the present Government's policy that the Overseas Telecommunications Commission is the sole provider of international telecommunications services in Australia."

STUDY SHOWS INTEREST IN STEREO AM RADIO GROWING

The new sound of stereo AM radio appears to have created considerable consumer interest, according to a new McNair Anderson survey. At the same time stocks of Stereo AM receivers are improving to meet the growing demand.

The survey, which was commissioned by Stereo AM Australia (a committee representing AM radio

stations broadcasting in stereo), shows that some 73% of Australians are aware most AM radio stations can be heard in stereo.

NEW AGENT FOR PATON ELECTRICAL

Paton Electrical are pleased to announce the appointment of Graphic Electronic Industries Pty Ltd as their South Australian agent.

Graphic Electronic industries will be appointing a new sales engineer to specialise in the marketing and promotion of Paton Products.

The Paton range of products will complement Graphic Electronics Industries existing product range and allow them to supply an increased range of products to their existing customers.

BROADCAST NEWS IN BRIEF

AEG-Telefunken has received orders worth several million DM for high power broadcast transmitters from Japan and USA. The energy-saving Pantel modulation method, an AEG-Telefunken invention, which was one of the decisive factors for international success. Radio Japan has placed orders for two 300kW transmitters to be used for their international shortwave service. Voice of America will have their 500kW transmitter ready for service in mid 1986.

On 3 April, 1985 the first commercial, multichannel, single mode fibre optic link for a CATV operation was activated in Indianapolis, USA. The link is approximately 12.5 km in length.

Crow of Reading has been awarded the contract for installation of a supervisory desk system for Kuwait Broadcasting Service.

Harris Broadcasting Group has won an order worth A\$4 million for supply of a number of 1kW, 5kW and 10kW transmitter for the Tianjin Broadcast Equipment Company from the Peoples Republic of China. "This marks the beginning of a long term relationship with the Peoples Republic of China" said John Delissio, Vice President, Sales and Operations.

1985 ITVA MOBIE AWARDS

With the swing to video communications now firmly established in the corporate sector the need to foster high quality productions has become paramount.

Each year the Independent Television Association (ITVA) conducts the Mobie Awards with the object of achieving both the promotion of quality programmes and recognition for the producers of non-broadcast productions.

Now in the 4th year, the 3M sponsored Mobies comprise one gold and five silver awards drawn from the five competition categories of Training, Information, Sales/Marketing, Public Service/Public Relations and Organisational News.

Entries are open to all producers of non-broadcast video programmes.

Awards do not necessarily go to the most lavish productions but rather to producers who, whilst utilising the resources available to them have best succeeded in communicating with their target audience.

The coveted Mobie Awards are an excellent opportunity for non-broadcast producers to not only gain recognition but also to compare their programmes with other productions.

Entry fees are \$25 for ITVA members and \$50 for non-members and applications close on November 22, 1985.

The Award presentations will be made on Friday, December 6 at Curzon Hall, Marsfield. Hosted by Geoff Stone, national television presenter, supported by Terry Willesee as guest speaker, the Awards Day will provide guests with an informative overview of non-broadcast video production and an opportunity to see clips of the winning programmes.

Entry forms and ceremony bookings can be made to Rob Manger or Caroline Masel on (02) 858 7600.

Advertisement NEW PRODUCT

THIS IS AN AWARD WINNING ADVERTISEMENT

MELBOURNE: The auto phase 2000 cartridge machine from Consolidated Electronics will set new broadcast standards throughout the world.

So is it any wonder it was recently honoured with a coveted Australian Design Award from the Industrial Design Council of Australia.

It's main feature is that it automatically corrects stereo phasing on replay.

So for the first time broadcasters can take advantage of phase correction techniques utilising their existing cartridge library without modification or change.

No longer does quality have to be compromised.

Rather than try to manually control the sound quality of pre-recorded tapes – a timely, labour intensive and costly method – simply plug in the auto phase 2000.

Press "start" and any phasing errors will be corrected automatically. Whether due to poor recording or mishandling of the cartridge.



WORLD FIRST FROM CONSOLIDATED ELECTRONICS AUTO PHASE 2000

The state-of-the-art circuit behind every auto phase 2000 was developed within Consolidated Electronics' research and development department by chief engineer, Mr Peter Kay.

It truly is a world first.

The revolutionary circuit searches for phase errors in the replay process then automatically corrects them. Thereby restoring the original quality of the recording.



Designed as a studio space saver the auto phase 2000 can be easily stacked in single, dual or triple mount housing.

More than \$400,000 was invested in the cartridge machine following a survey of industry needs not only in Australia, but also throughout the world.

Prior to its release in Australia, the auto phase 2000 was thoroughly demonstrated and evaluated in the US, UK, Canada and Europe.

Not surprisingly all prospective customers praised its outstanding performance and new features.

Features that include:

- * Four cues – END OF MESSAGE, AUXILIARY, DATA and STOP – displayed simultaneously on front panel for easy fault analysis.

- * FSK-coded output allowing the logging of pre-recorded text each and every time a cartridge is played to air for ease of billing and to keep check on programming.

- * Mother-board and plug-in p.c.b. for easy and rapid servicing.

- * Front panel controls are ergonomically designed with quiet push-button switching for noise-free broadcasting.

- * New and improved precision DC servo capstan motor providing low wow and flutter measurements for improved quality.

FRONTLINE TECHNOLOGY

In 1984 Consolidated Electronics was acquired by Kemptron Limited and quickly restructured its management and organisational systems.

Changes that proved much more than just cosmetic.

Although struggling for its existence, the company decided it was necessary to redesign its flagship – the cartridge machine – to be on the frontline of technology.

Many of the features built into the auto phase 2000 far exceeded initial performance expectations.

As did the turnaround in Consolidated Electronics' financial future.

Within 12 months Consolidated Electronics managed to turnover a massive \$650,000 turnaround in profits

Today the company operates a research and manufacturing plant at Thornbury, Melbourne. More than 80 employees are engaged in providing high-tech broadcast and data communications equipment including modems, monitors and voice communications recording systems.

All backed by a local service and supply operation that's second to none.



Left to right: Mr Peter Roberts, Mr Hawke, Mr Peter Kay and Mr Peter Farrer

Playback

INTERNATIONAL

RADIO FREE EUROPE/RADIO LIBERTY AWARDS \$135,000 CART MACHINE CONTRACT TO BROADCAST ELECTRONICS

Broadcast Electronics has received a \$135,000 contract from Radio Free Europe/Radio Liberty (RFE/RL) to supply 110 Series 3000 Tape Cartridge Machines and accessories. This is the largest single contract for tape cartridge machines, for broadcast station use, ever received by Broadcast Electronics.

In 1981, Broadcast Electronics received a contract in excess of \$500,000 from Walt Disney Enterprises for custom built, five deck, DC servo design, stereo cartridge machines for use at EPCOT.

The equipment for Radio Free Europe will be installed in a new broadcast studio complex now under construction at RFE/RL headquarters in Munich, West Germany.

Broadcast Electronics' Series 3000 machines were selected after evaluation of several similar products manufactured by other companies.

The Series 3000 cart machines purchased by RFE are noted for their extraordinary reliability. More than 10,000 of these machines are in use at radio and TV stations throughout the world. Three machines will be used in each of 30 new studios under construction and 16 in master control for each outgoing program line.

VALLEY PEOPLE APPOINT NEW REPRESENTATIVES

Ray Updike, Sales Manager of Valley People, Inc., has announced the appointment of the following representatives for the company's product line: Darmstedter Associates, Electro-Acoustic Marketing, Wilson Audio Sales, Bencsik Associates, Dobbs Stanford Corporation, YoreCo, RM Associates, and Radon and Associates.

Updike stated that the appointment of these firms was necessary to reinforce the rapid sales growth experienced in the recording, broadcast, communications, sound contracting, and sound reinforcement

marketplaces. He further stated that as Valley People continues to introduce new product lines and increase its prominence in the marketplace, "we will be adding additional representatives and distribution outlets to better serve the industries in which we are involved."

NEWS IN BRIEF

- * APRS forms a "Producers Guild", some of the distinguished members Trevor Horn, Hugh Powlgam, Terry Britten, Alan Parsons etc. The main aim is to maintain and improve standards.
- * Carnegie Hall chooses an Amek "Angela" console.
- * Grand Ole Opry in Nashville has installed a "Turbosound" speaker system.
- * Wolff Associates have purchased the entire API product line.
- * CEI Melbourne releases a world first, cartridge machine - see feature in this issue.
- * Agfa-Gevaert is offering a special 15 min. "How to Align Your Tape Machine", video tape.
- * A public conference was held "Australian Commercial Television - The Future". Full information can be obtained from Department of Communications (062) 64 4481.
- * US Government station "Voice Of America" claims an audience of 120,000,000. (Imagine the what it would cost to advertise).
- * Our Survey '85, a full report in our next issue.
- * AKG releases D330 WL Wireless system microphones.
- * International Public Relations of Melbourne has published the: Australian Media Directory, contact L. Riviere for details (03) 63 3322.

* School of Audio is opening another office in West Germany, Munich.

* New tapes from Sony - The new series BCT-K supersedes the H6 series. BCT-5K (6 minutes), BCT-10K (12 minutes) BCT-20K (24 minutes) and BCT-30K (36 minutes).

* Sony has now available the K-1105 8 channel digital mix-down system. However we are informed, "that the system is still in experimental stage" by Mr. Roberts, Pro-Audio Manager, Sony Aust. P/L.

SOUNDCRAFT WINS CONTRACT FOR 1986 COMMONWEALTH GAMES

Soundcraft Electronics Limited has won three separate orders from the BBC for its sound mixing consoles including a contract to supply four systems which will be used for television applications during the 1986 Commonwealth Games, to be held in Edinburgh, Scotland from 24th July to 2nd August.

Four customised Soundcraft Series 500 consoles are to be installed at the purpose built Broadcast Centre in Edinburgh - currently under construction - and will be used by both the BBC, as host broadcaster, and ABC Australia.

In Australia Soundcraft is represented by Rank Klarion P/L.

SOLID STATE LOGIC OPEN FAR EAST OFFICE

Solid State Logic (SSL) has announced the opening of a new regional headquarters in Hong Kong affirming its commitment to the Far East recording and broadcasting industries. According to SSL founder and Managing Director Colin Sanders, "Our studio and broadcast systems have become very popular in this part of the world, and we forecast considerable additional growth throughout the region. SSL Far East will provide these clients with the kind

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AUDIO & VIDEO EQUIPMENT FOR SALE

PARADISE STUDIOS

Dear Reader,

Owing to the TIME it takes to sell SECONDHAND audio & video equipment, the COST OF SELLING, the DELAYS in getting what you need to sell IMMEDIATELY on the market NATIONWIDE and the TIME IT TAKES TO FIND CERTAIN ITEMS you are trying to buy, I have started BUYLINE - Professional Audio & Video EQUIPMENT FOR SALE NEWSLETTER and DATA BASE.

WHAT IS BUYLINE ?

1. A weekly newsletter * of audio & video equipment for sale, distributed to audio video users on a Nationwide basis.
2. A computerised central market place whereby buyers call in and are immediately advised on who's got it for sale, along with full details as supplied.
3. A market monitoring service whereby we let you know immediately who's got what you need when someone else puts it on the market.

WHAT IT COSTS ?

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| 1. 12 months <u>subscription</u> | \$65 (\$45 if you subscribe now). |
| 2. <u>To sell</u> items over \$500 | \$25 till sold (6 Mths max.). |
| under \$500 | \$10 |
| under \$250 | \$5 |
| 3. <u>Market Monitoring Service</u> | \$5 (for up to 6 Mths). We telephone reverse charge when we find what you are looking for. |
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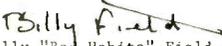
We do not buy or sell or charge any commissions. We are a computerised information service only.

Items placed in the newsletter represent an interesting sample of new items for sale. For up to the minute information on all items for sale just ring BUYLINE. All calls welcome. Guaranteed placement of items for sale in the newsletter can be arranged if required.

I strongly urge you to join the lazy throng and subscribe now. I believe the industry badly needs this service. Think of the thousands of dollars you can realise for gear you don't need but someone else may want. Think of the equipment that would be more economical to rent on the few occasions it is required. Think of the money you can save by buying certain items secondhand. Think of the time you will save.

"It's so good I'm subscribing myself".

Yours Faithfully


Billy "Bad Habits" Field.
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* We reserve the right to publish less frequently depending on current volumes.

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of technical support and information exchange enjoyed by SSL owners and users in the world's major production centres'.

The office will serve SSL clients in China, Singapore, the Philippines, Malaysia, Indonesia and Thailand. There are currently six staff members, all of whom are multi-lingual, operating under the direction of SSL Far East's Managing Director, Mr Bingo Tso.

In Australia SSL is represented by Syntec Int'l P/L.

BEYER DYNAMIC – A HISTORY

Beyer Dynamic have been involved in supplying professional audio equipment to the industry over the last 60 years. In that time they have been innovators in the design of transducer technology. Below is a quick rundown on their achievements over the last 60 years.

1924 – Foundation of the company in Berlin, development and production of loudspeakers for sound-movie-theatres.

1937 – The first Dynamic headphones in the world: DT 48. Still in production.

1939 – First Dynamic studio-microphone: M 19. Becomes standard mike of former German National Broadcasting Company.

1945 – War actions in Berlin destroyed company's production plants.

1948 – Re-establishment in Heilbronn. Besides the well-known DT 48 and M 19, meeting a quick sale to the new established broadcasting companies in West Germany, development of horn speakers and ribbon-microphones.

1950 – First public presentation of dummyhead-stereophone with a stereophonic version of the famous DT 48 – the first stereophones in the world.

1951 – Development of the 'Stenomatic' dictating machine called Dictaphone, later on produced and sold as 'Grundig-Stenomatic'.

1953 – The Dynamic telephone-type handset DT 49 revolutionises grammophone-disc stores by realising the 'headphone-bar'.

1957 – The famous Dynamic moving coil microphone M 100 with a diameter of only 22 mm proves, that moving coil mikes must not be larger than condenser-mikes.

1958 – The world's first ribbon-microphones, not larger than moving coil types, an ingenious development of Eugen Beyer were considered as a tremendous step to a new microphone

technology.

1959 – First AF-input transformers, made by a new patented winding method, miniature and subminiature sized become standard parts to Ampex, Collins, MCI and Studer tape recorders and mixing consoles. Sudden death of Eugen Beyer – his son Fred R. Beyer takes the lead of the company.

1962 – First radio-microphone, called 'Transistophone'.

1963 – The new Beyerdynamic uni-directional microphone M 88 will be chosen as official microphone for the first visit of H.M. Queen Elizabeth to Australia.

1965 – Beyerdynamic ribbon-mike M 360.

1966 – The Beatles in Germany using only E 1000-type microphones, developed and produced by Beyerdynamic as an OEM-model for a German company in orchestra electronics.

1967 – The legendary 'Soundstar X 1' comes on the market.

1969 – Ribbon mike M 500 which was the first reliable and rugged microphone of its kind.

1972 – First personal guiding system for production plant visits.

1973 – First quadrophones DT 204.

1974 – The DT 302 headphone, in its time lightest stereophones in the world, will be presented.

1975 – First Beyerdynamic condenser-microphones.

1976 – ET 1000 is the first electrostatic headphone developed and produced by a German manufacturer, 'It's Beyerdynamic'.

1979 – The world's smallest studio-lapel-microphone MCE 5.

1980 – Beyerdynamic DT 880: The world's first Dynamic headphones, sounding like an electrostat.

1981 – The DT 660 is the world's first closed headphone utilising the bass reflex system.

1983 – Acoustical sound barrier microphone MPC 50. More than a decade of experience in developing and producing PA systems in OEM business are realised in new PA products under own brand.

1984 – New wireless microphone systems with the handheld radio-mike S 85 brought about famous artists in show business converting from wire-bound microphones to wireless ones. The 'Headmike' HM 560, a ribbon microphone goes into the market.

1985 – DT 880 monitor meets the new headphone recommendations of German Institute for Radio Technology. The MC 740 condenser microphone with switchable polar pattern makes Beyerdynamic one of

the top producers of condenser-microphones.

Beyer Dynamic is represented in Australia by Rank Electronics P/L and Klarion Enterprises P/L.

TROY BALANCE CORPORATION PTY. LTD.

Due to the vast expansion of the Australian Film and Recording industry, and current world developments in Audio Technology, it is Troy Balance's intention to remain at the forefront of services supplied to the recording industry of Australia.

They are pleased to introduce their new "Studio Outboard Hire" price list, with some new product lines, such as: Lexicon 224XL; AMS 9.6 and 12.8 sec. delay/harmonizer units; AMS keyboard interface/chorus controller; Bell stereo flanger; Drawmer noise gates; Yamaha Rev 7 digital reverb; Neumann microphones – wide range; Sony PCM-F1 digital encoder/decoder and many more items.

The new "Linear Transfer Fold-back Master" has just been released to the Australian market. In brief, it is a 10 channel input headphone mixing system, with two sets of stereo outputs, driven by its own 50 watt per channel amplifier. If you wish to view or evaluate this new product, please contact Adrian Smith for a demonstration.

You can now contact Troy Balance via "AMC/IMC" – Australian and International Management Communications System. This is an electronic mailing service, commonly known as E-Mail. To contact the Studio Effects Rental Dept. the code is – SMITH.A-AA.

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With the advances being made in digital technology, it's hard to believe that more hasn't been done to 'digitize' the Australian studios. At the same time, the investment of over \$250,000 is hard to justify for studios which have experienced continuous upgrades to their equipment as well as stiffer competition from other studios for their clientele.

Now, two producers have teamed for an enterprising venture that will allow recording studios and performers in concert to go digital without the major outlay for gear. For these two have made the hefty investment themselves in the state-of-the-art Sony 3324 24 track digital tape machine with a PCM 1610 digital mastering system. Cameron Allan and Gerry Nixon have formed Digital Audio Hire, a concept they feel will advance the use of digital recording technology another step in Australia.

Allan helped start Regular Records in 1979 and produced the first two Mental As Anything albums and the first Icehouse effort. Gerry Nixon, operations manager of EMI's Studios 301 engineered the Icehouse session and went on to do the Sports' last album "Sondra" with Cameron. While Cameron went on to write soundtracks for films such as "Heat Wave", "Midnight Spares", "Hoodwink", "Summer of Secrets" and the recent "Emoh Ruo", Nixon worked at 301 for seven years with projects like the first digital album for Australia — Kerrie Biddell's "Compared To What" in 1978 and the first digital soundtrack for Bill Motzing's compositions on "Cowra Breakout". He co-produced the Saints' "Monkey Puzzle" album with the band and oversaw hundreds of other projects from commercials to overseas artists recording their analog and digital product.

Both he and Cameron saw the digital revolution coming. Allan made ten trips to Japan where the rental of digital recorders is quite common. "It's not seen as anything extraordinary

DIGITAL AUDIO HIRE



Left to Right: Cameron Allan, Gerry Nixon and partner Peter Ryan

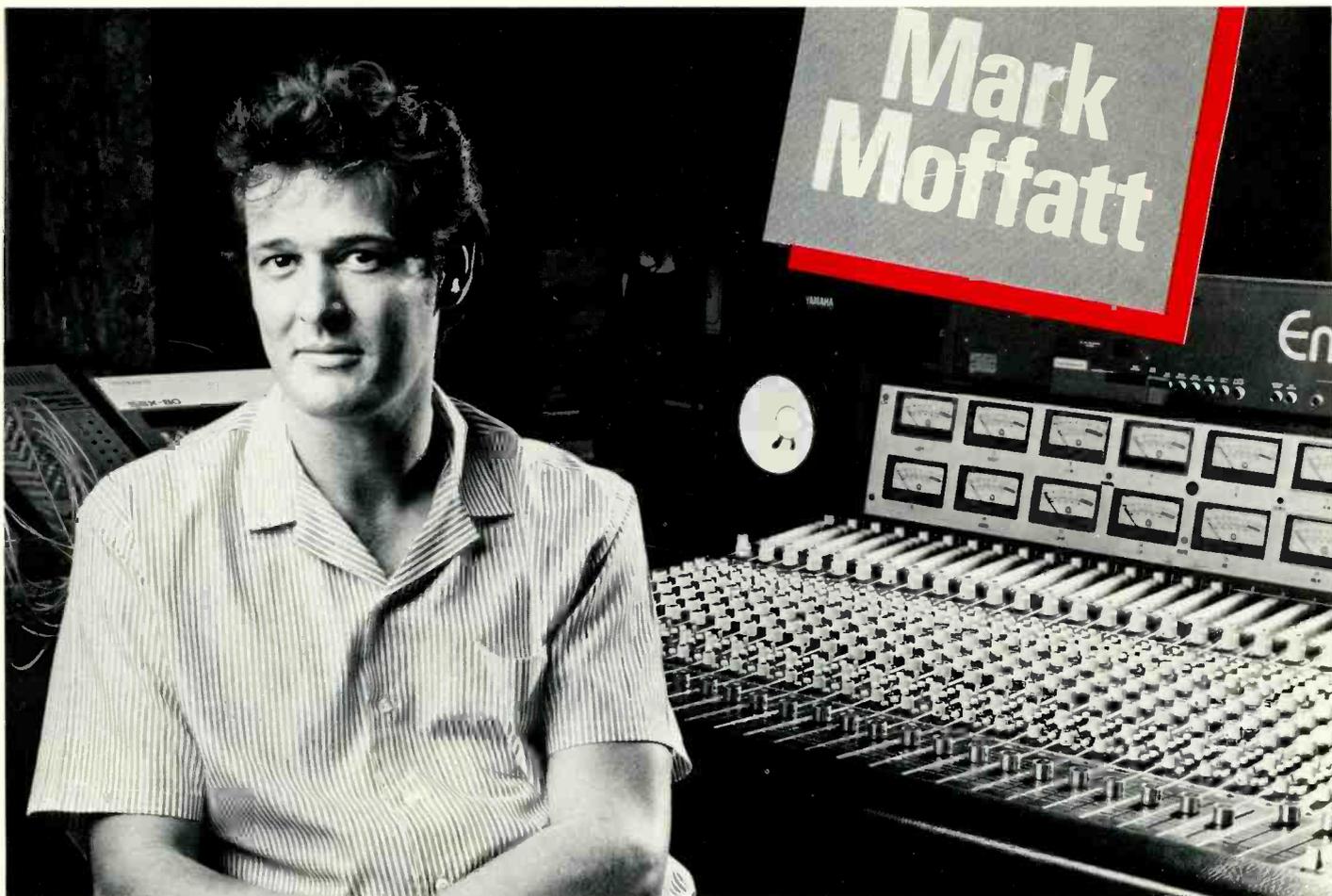
there." Allan recounts. "In Japan, you rent the studio and choose the equipment you want — even the type of digital gear — they understand the improvement on audio quality and see requests for digital equipment as standard."

But in Australia, it has been a different story. So far, the only studio to install a digital tape machine has been Melbourne's AAV. Artists who wanted to record their material digitally had to either wait for an opening there or use the upmarket consumer units like the F1 or 501 and 701 systems.

Now their mutual venture, Digital Audio Hire has changed that. Their gear is for hire in any studio or live performance venue the artist or producer may choose. As Nixon explains, "Digital gear is so incredibly portable. The 3324 is the size of a washing machine yet it's extremely robust and requires no lengthy lining up process, azimuth or bias adjustment like its analog counterparts. Matter of fact, it requires less maintenance than some Walkman portable cassette decks. . . at least the ones I've owned."

As an example, he pointed to the first session that was done with the machine. "The guys from Sony unwrapped the machine, plugged in the cables, turned it on and within five minutes, it was recording. And the irony of the situation was that the first session was for a commercial, not a rock star or symphony!"

Commercial producers like John Gillard who decided to go digital on his Lan Choo Tea ad are a prime target for Digital Audio Hire. Already, film people, bands and the ABC have expressed interest in using the machine for their projects though Nixon says the real beauty of the machine will be in making CDs a more cost efficient possibility for Australian producers and artists. "From start to finish, it's now possible in Australia to record and master for Compact Disc and with our equipment, the job can be done in a studio down the street or in the Sydney Entertainment Centre. The audio profession in Australia has to wake up. CD is here to stay and digital won't go away. Artists in this industry who want to sell overseas have to



The engineering staff at Studios 301 have been singing praise to the clean, hard rock and pop sounds Mark Moffatt has been bringing to the mixdown suite. His private 24-track facility has been operational for 9 months, and in that time has completed two albums. He intended that the studio be used for developing new artists, predominantly drawn from the many tapes he receives from "Front Room" studio bands largely ignored by record companies. The studio, situated 30 km north of The Rum Centre, Bundaberg, is there because his overheads are zero. (It's on family land, and was built during breaks between Sydney based projects in 1983-84. He still maintains a Sydney flat and office). The concept is for totally personal use, and the charge is only a nominal fee included in the production fee. It's this cost effectiveness which allows the freedom to experiment that he has wanted for so long.

What is the equipment line-up?

Recording equipment is an Auditratics 501, 26 into 24, heavily modified with factory updates, 16 Jensen transformers, and 10 channels transformerless. The tape machine is a Soundcraft SCM 762, which performs very well. All I care about is that it sounds good when I put it on a Studer to mix at 301. Outboard gear - well, AMS and Roland reverb, Pultec EQ, Drawmer gates, Dimension D... it goes on, but that's roughly it. The element that makes it all work is that all my computer music equipment is permanently set up, and it all moulds into one with the studio gear. If an idea comes, I can get it on tape without any fussing about.

How about acoustics - did you get any design work done?

Yes - the control room is basic Eastlake style front end - 60° flush mounted, 10° from horizontal - once you understand the geometry of front ends of

control rooms the mumbo jumbo disappears. The rear of the room is extensively trapped with 8 ft hangers, which **do** work. It's a huge well placed trapping system, and it's as "tight" as any of the major studios I work in. The studio consists of a 12' x 15' timber live room, with 14' ceilings. It gets used mainly for guitar, vocals, and drums, and the odd game of darts. The whole building was purpose built, so it was easy to get what I wanted.

People have commented on your bass sounds recently... what sort of approach are you taking?

Very complicated - the Emulator II mainly... I have a Steinberger, and a very very clean, strong array of samples. The player plays his part, and I spend quite some time replicating that, with dynamics, and small timing changes in the Roland MC4. If there are any small nuances it can't get, he plays that bar, or piece with the track, which is

sampled and then triggered at that point in the song. It all comes together as the cleanest, "rattle free" bass part ever! I then add effects to tape usually in stereo. It's hard to tell it's not actually being played. . .but every note is "open" — so it's very clean. If he can play it without any "grunge", we just do it live. Most effects are short delays with phase changes, and feed back, and usually "Dimension D", and stereo harmonizer.

Do you still do your own engineering?

Yes — I must. I sit there with all this stuff around me, and it all seems to become one — change a computer, play some guitar, adjust EQ, or effects sends. . . that's what I've always wanted, and it's taken a while to get there, but now I can start making music how I should have been all along. Ideas are all important, and if they can get onto 24-track tape without going through the demo stage, terrific. So I see engineering during recording just as part of operating everything else. At mix time, I usually employ Jim Kramer, as we go back quite a way now, and he's good to bring in as the "objective ear" at that point.

Is sampling technology the way to go with keyboard instruments?

If you can achieve the results, use anything — if you can pop it into a machine and play it, even better. I don't "AMS" drums any more — the lack of dynamics annoys me. With an Emulator you can do builds, random volume hits, anything — it doesn't re-trigger strangely like an AMS. Having a studio helps sampling become much more creative, as you tend to spend more time "getting it in there" and then bending it some how. The fact that most of my tracks are some sort of computer controlled sample helps create a lot of "air" between sounds. Your imagination is the limit. . .I think sampling creatively is a very

strong direction, but should be used to sound live, not so clinical as we've been hearing.

In America and England there are so many personal use studios . . . why hasn't it happened here?

Equipment availability. . .you can't find 24-track machines secondhand that often, and duty, sales tax, high profit margins push the prices out of our range. I imported the Soundcraft before a major "dealer" got their claws into it. Now, they've gone up \$11,500!! In England they're everywhere. . .you can stroll into Don Larking Audio and organise a 24-track package which is truly affordable to the serious musician, or writer. Here, it's been kept the domain of major concerns, and record companies tend to think it's best to "block book" one facility for a whole project. They could easily record what they really have to in a big place, check around for smaller places to overdub in etc, and then head back to the major facility to mix. I'm saving around \$60,000 per project at the moment, and having a ball doing it.

Do you think A & R people are starting to look further than obvious "live" acts for their potential signings?

Definitely. . .if they're not they should be. . .I've always enjoyed working with new "studio based" acts, but once you reach a certain level of success here, you're pigeon holed as a mainstream Richard Perry type producer. I still see myself as a musician with engineering, arranging, producing, studio management, studio owner, record label executive, synthesiser programming chops (Ed. For more information about Mark Moffat's experience please contact Mark direct), and find it much more satisfying now that I'm working with unknown acts again — A & R people are beginning to see the potentially "project" type recordings along with the "where can we see you" syndrome, which has stifled so much Oz music. I just find it much more enjoyable working with someone "from the ground up" so to speak, then sorting out some dull band and its problems in a \$120 per hour studio.

Personal Multitrack



Television Production Techniques

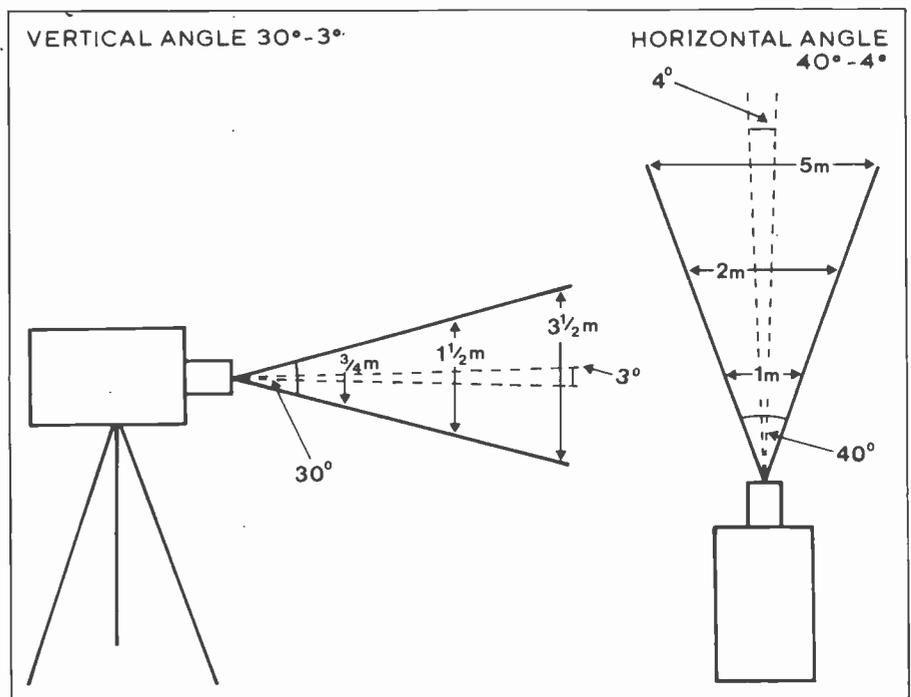
Director and Cameraman

You don't have to be a chicken to recognise a bag egg. Similarly a conductor does not need to be able to play every instrument in his orchestra in order to recognise a wrong note. It helps however if he has some appreciation of both the possibilities and the limitations facing each musician playing under his baton.

A TV director fulfils a similar role to that of an orchestral conductor. He too is trying to obtain the best not only from his cast, but also from the specialist technicians who make up his crew. None is more vital than the cameraman with whom he has to collaborate. Just as the conductor will achieve an easier acceptance if he leaves the string players to their own devices, so cameramen will claim that they prefer directors who don't 'interfere'. But the crew will respect, even if not necessarily like, a director who knows what he wants and has some idea of how to attain it.

Directors of million dollar film epics may get away with wearing a small viewfinder slung round their necks like a talisman through which they peer from time to time, searching for their next camera position. In shooting for television, the crew would find such behaviour pretentious. The director is meant to be able to visualise in his mind's eye what the camera will see from a particular vantage point.

On location, once the cameraman has set up his shot, the director asks to look through the camera viewfinder. (In the studio the director will see the shot on a monitor.) Once he has looked through he either accepts what is offered or asks for changes — slightly wider or tighter on the subject, more to one side or the other on the framing. The director knows he is treading on delicate ground. He is not



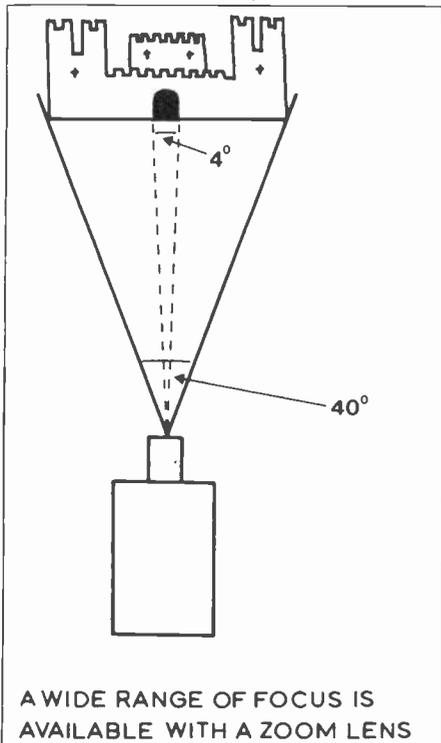
there to teach the cameraman his job and he should have told the cameraman very clearly the kind of shot he wanted. No two people ever see exactly eye to eye on where literally to draw the line on a shot; no two people use the terminology to mean exactly the same thing. How tight for example, is a tight close-up? So the director is perfectly within his rights to check the shot before he accepts it.

It is only after years of working together that cameraman and director reach the degree of empathy where each completely understands the other's aim. The cameraman is responsible for the focus, exposure and composition of the shot. The director is responsible for the whole production and every detail of it. Like the captain of a ship he cannot pass the buck or try to hide behind the

errors of others. He may be able to delegate authority. He cannot delegate blame. Therefore in self-defence he needs to check most things. This double-checking may not endear him to the crew. (But being a good director and being popular do not necessarily go together.) Nevertheless the director need not throw his weight about. He may be far less experienced than the cameraman. Everything will depend on the way in which he asks to look through the viewfinder and the way he asks for any alterations. "Lovely shot, but do you think we could make the subject a little bigger in frame?" or whatever.

ANGLES

The director must also realise that the cameraman is not a magician and that, given the TV screen proportions of four wide to three high, lenses can neither be stretched wider nor squashed flatter than these fixed ratios. No matter what the cameraman does, how much he zooms in or out, the shape of the picture remains unchanged. Moreover even zoom lenses are not infinitely variable.



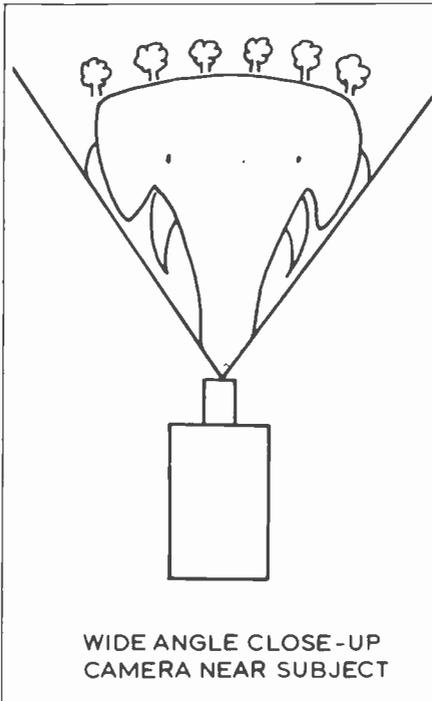
Each lens subtends or accepts a certain angle of vision which can be measured in degrees. This is true for all lenses whether fitted to film, ENG or studio cameras. For example a wide angle lens may encompass a horizontal angle of 40°, the outer edges of its angle of vision radiate forwards and

outwards in straight lines. It 'sees' everything within these lines. It sees nothing outside them. It cannot see round corners. Near the camera the shot is relatively not very wide – the further away from camera the wider the shot becomes.

Because of the 4:3 ratio the lens with a 40° horizontal angle will have a 30° vertical one. If the lens is a zoom lens, it means that it can vary these angles by a fixed factor of say, 10. Thus a 10:1 zoom lens with 40° as its widest will be able to zoom in to a narrow angle shot of 4° on the horizontal plane and 3° on the vertical one.

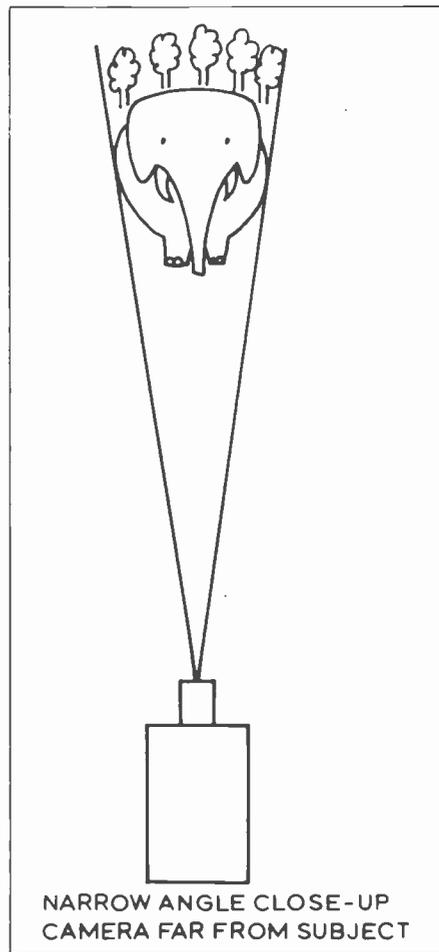
The 40° will give a wide angle shot of a whole castle; from the same position the 4° narrow angle will show just one window.

THROUGH STREETS BROAD & NARROW



Close-ups can of course be taken through narrow or wide angle lenses. A close-up of for example an elephant's head on a wide angle lens means that camera and elephant must be relatively close to each other. On the other hand if the elephant is less than friendly the close-up can be taken from further away on a narrow angle lens. Looking at a scene through a narrow angle lens is like looking through a telescope. In fact the narrow angle lenses used on outside broadcasts are sometimes referred to as telephoto lenses.

The two close-ups of the ele-



phant are however not the same. The wide angle although it shows the elephant's head in foreground, will still include some of the background trees. The narrow angle shot though taken from further away will fill more of the screen with elephant's head and less with background. The elephant will appear bigger in frame than on the wide angle.

FOCUS

Narrow angle lenses normally have very little depth of focus. For example on the narrow angle shot the front of the elephant's trunk and his eyes may be in focus but his ears because they are slightly further away from camera, will be muzzy or in soft focus – the little that is shown of the background trees will be completely out of focus. The wide angle lens shot taken in close proximity to the animal will have much greater depth of focus from tip of trunk to tips of his ears and the elephant's head will be in sharp focus.

LOW OR HIGH

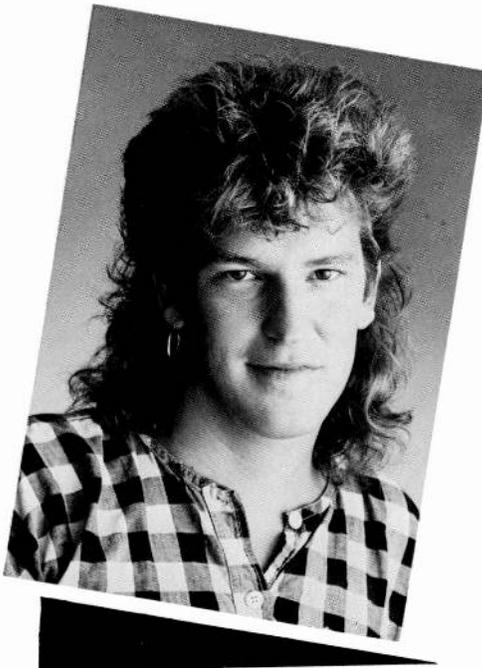
If cameraman and director want to impress or even frighten the viewer

STEVE HOPKINS

Steve Hopkins has been a busy boy with over 250 video clips and commercials to his credit. Having moved to Australia from England only a little over a year ago, his credit list includes some of the higher budget clips locally and he shows no signs of stopping. And his propensity for creating unique and unusual clips has garnered him international acclaim and awards though he would rather see budgets increase for Australian acts than get another mantlepiece statuette.

His entry into music video started oddly through his fetish with comic books. A chance meeting with Aussie clip maker Russell Mulcahy led to their all night discussion of comic fantasies and Russell saw Hopkins' talent for drawing and ideas as a natural entry into storyboarding and art directing clips. Mulcahy took him along to the set of "Video Killed The Radio Star" and in Hopkins' words, "I fell in love with music video. At that point, I realized that it offered the opportunity to realize my fantasies in three dimensions and in motion rather than just on the printed page."

Explaining his fascination with comics and their relationship to music video Steve comments, "Comics are a great storytelling medium very similar to video clips. You are working within a strict framework and each frame has to connect the storyline and express a number of factors — mood, setting, plot, dialogue, facial expression and action. Working in comics hones your ability to understand and work within a narrative style, frame by frame. I'd really like to see some of the great comic book



artists do video clips. Clips connect directly with that part of the mind that comics do — imagination and magic!"

Through the past five years, Hopkins has brought some magic to the video medium. His 18 rock clip styled commercials for Big M milk products were screened extensively on TV and in cinemas with a resultant increase in consumption of millions of gallons of that product.

His art direction of Elton John's "Sad Songs" for director Russell Mulcahy won him a Billboard Music Video Award for the desolate street set he created. His clip for Eurogliders' "Heaven" racked up another award.

Eurogliders have used him for three of their clips — "Heaven", the apocalyptic "City of Soul" and their latest "Can't Wait To See You". In that clip and a previous one for Koo De Tah titled "Body Talk", Hopkins put his hand to the incredible Video Paintbox to create images on film as a supplement to the performance footage. "Even though the Video Paintbox costs around \$300 an hour to use," he says, "it has enormous possibilities for use in jazzing up music video clips and can even be used on its own with a great degree of innovation and creative control."

His heart is in directing clips with recent ones being "Casta-way" and "Blue Day" for Mi-Sex, Real Life's "Catch Me I'm Falling", four live shoots for Pseudo Echo for "Destination Unknown", "Walk Away", "Stranger In Me", and the acclaimed "Dancing Until Midnight" plus the super budget Icehouse "Taking The Town"



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effort.

Art direction is his forte though and aside from handling set design and storyboarding for his own clips, his work has graced Elton John's "I'm Still Standing" and "That's Why They Call It The Blues", Billy Idol's "White Wedding", Rolling Stones "Going To The Go-Go" and Duran Duran's "Please Tell Me".

For a clip of Joy Smithers' "Hearts On Fire" he used his comic book tricks to create a set that Joy weaved in and out of with stunning effect. And his bizarre treatment of Sharon O'Neill's "Power" clip helped rocket that song up the charts.

Hopkins has a particular affinity for Australian bands. "The life force here really reflects itself in the music. I've had a chance to dabble with a lot of great Oz artists with the result that a lot of ideas I had in the memory banks were able to be realized on film. Plus I love the country and the crews here are nothing short of fantastic compared with what we have to put up with overseas."

Describing his style Hopkins

says, "If anything, it's very clean. No sex, nice violence, yucky glamour and a schmaltzy feel that some people strangely find offensive here yet is quite the norm overseas."

"I try to do something different in every clip though. Originality is a necessity - I just can't see rehashing the same ideas from old films, clever but cliched video concepts and the latest photographic style from the newest issues of Vogue Magazine. By doing art direction, set design and then learning to direct, you build up a mountain of techniques. But you can make the mistake of being over-ambitious in a clip."

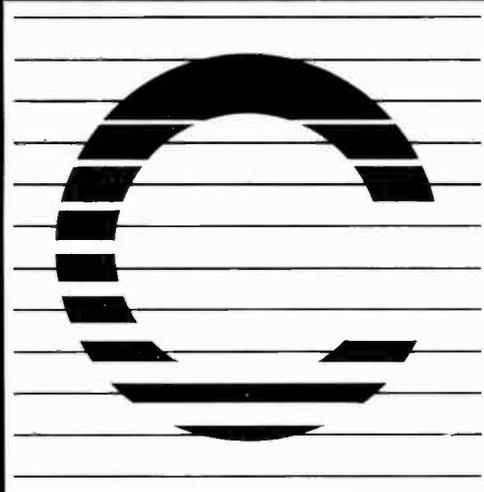
That's one of the problems with doing Australian clips and why he is heading back overseas for a stint to do some mammoth projects there. "The budgets are too small here for local artists but that's because it's a small market. The bands are acquiring more style though and gearing their clips for an international success which was a dirty word until recently."

Hopkins feels that the real

secret to success for clip makers here will be to bring in overseas artists. Earlier this year he directed a clip for Meatloaf, "Surf's Up", which was reported to cost \$100,000. As he says, "Luring overseas artists here is attractive to them because of the world class facilities and talent, third world budgets for clips compared to LA and London, magnificent scenery and much better weather at the end of the year than they get up north."

Hopkins trip overseas will be short though. He has to return back to Australia to do a feature film which will be shot in 1986. He recently was second unit director on Russell Mulcahy's feature "Highlander" in Scotland and it whetted his appetite for film making on a more grand scale than just clips.

"After all, video clips are only three minute movies. The real challenge is to stretch out the medium and do a musical film or a feature set to music if possible. Plus, I have to come back to visit my comic book collection!"



CONSOLIDATED ELECTRONICS LIMITED

A COMPANY PROFILE

Consolidated Electronics Limited, previously known as Consolidated Electronic Industries Pty. Ltd., was founded in 1972 and established itself in the design and manufacture of control systems and engineering consultancy.

Soon after it commenced operations, Consolidated Electronics acquired the manufacturing plant and contracts of the Plessey-Rola Magnetic Recording Division, and started manufacturing a comprehensive range of professional quality record/replay equipment for the Australian broadcast industry. These new products, and in particular the Consolidated Electronics cartridge machine, won ready acceptance and were sold in increasing quantities over the years, until Consolidated Electronics attained a dominant share of the Australian market for these products — a position it still holds today.

Consolidated Electronics cartridge machines are found virtually in every Australian broadcast station, where their quality and reliability continue to uphold the company's reputation. In fact, every person who has listened to the fine music and programs on Australian radio, has been listening to a Consolidated Electronics product, almost certainly without being aware of it.

In 1984 the company was acquired by Kemtron Limited, one of Australia's largest electrical companies, and following substantial management and organisational changes, the company was re-invigorated with a fresh sense of dynamism and purpose, with

a new emphasis on aggressive marketing backed by a substantial lift in the company's commitment to research and development of new products.

It was clear that two major steps had to be taken to ensure the company's viability and indeed to launch it into a new growth phase. It was necessary for the company to substantially update the design of its "flag-ship", the cartridge machine, and also to diversify into the rapidly growing data communications market.

A thorough investigation was made of the needs of cartridge machine users both locally and overseas, and visits to trade exhibitions overseas confirmed that few of Consolidated Electronics competitors were making any progress towards new cartridge machine design. It became clear that a new cartridge machine of excellent design would gain increased market acceptance, both in Australia and also in the valuable export market.

The Consolidated Electronics cartridge machine, despite its wide acceptance in Australia and to some extent in overseas markets also, was due for a re-design program, but to undertake such a project present the company with a serious dilemma. Consolidated Electronics was now finally running at a modest profit, and although there had been improvements in its organisation and direction, the company could still barely afford the significant investment to undertake a total re-design of the cartridge machine.

An estimate of the cost for such a

project was something in excess of \$400,000 and a well-prepared submission was made to the Australian Industrial Research & Development Incentive Board in Canberra.

In the hope that the submission for a grant would be successful, Consolidated Electronics implemented an intensive research and development program on the new cartridge machine. Very quickly it was realised that the many innovative ideas which were to be incorporated in the new machine were indeed practical to manufacture and would produce a finished product which exceeded the company's initial expectations in terms of performance.

At this stage, the company contacted the Industrial Design Council of Australia with a view to obtaining constructive comment from that body in relation to the design of the new cartridge machine which was now termed the "Auto Phase 2000". The Industrial Design Council made several helpful suggestions which were incorporated in the final design of the product and Consolidated Electronics was encouraged by its advertising agency, The Ideas Factory, to submit the product to the council for consideration for a design award.

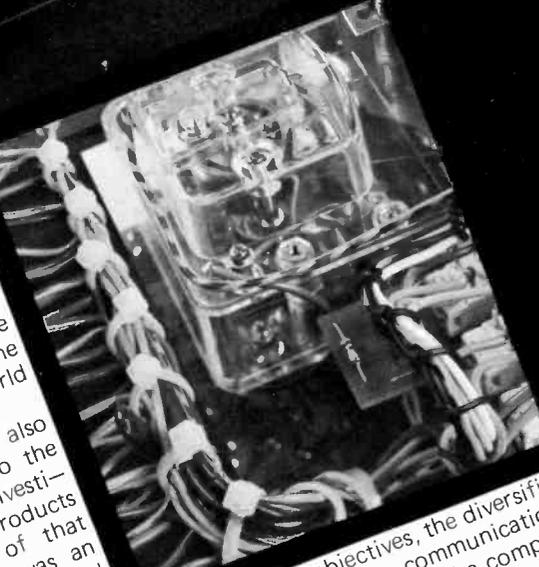
In early 1985, Consolidated Electronics, feeling confident about its future, actively investigated overseas markets. The new cartridge machine, which was still cloaked in secrecy in Australia was demonstrated and evaluated in the U.S.A., Canada, U.K. and Europe. All prospective customers who saw the machine and noted its



performance and the many exciting new features were high in their praise and acceptance of the new design, and indeed seemed somewhat surprised that a product of such innovation could have come from the Antipodes. All of these reactions reassured the company in its conviction that the Auto Phase 2000 would be of world class quality and performance.



Consolidated Electronics also took part in a trade mission to the People's Republic of China to investigate the prospects of selling products to the Broadcast Ministry of that country. The trade mission was an immediate success and Consolidated Electronics has been invited to establish a joint venture manufacturing facility in China, to produce broadcast products for sale within China and also to U.K., Europe and North America.



While the new research development program for the Auto Phase 2000 was under way, another significant product development program was implemented in parallel. Consolidated Electronics, once again with the assistance of its innovative team, developed a small range of innovative modems, modern electronic devices which enable computers to communicate with each other.

The new modems, which were released, were an instant success and showed many performance advantages over competitors, whether local or imported. In this fashion, Consolidated Electronics fulfilled the second

of its primary objectives, the diversification into data communications products. By early 1985 the company was now having continuing success with products for the broadcast industry but now also was making its mark in the data communications market.

Today, Consolidated Electronics operates a manufacturing facility of around 17,000 sq. ft. in Thornbury, a suburb of Melbourne, Australia, where approximately 80 employees are engaged in manufacturing broadcast and data communications equipment. Indeed, with recent successes, the work force has been increased.

The local manufacturing operations are supported by the importing

and distributing of a wide range of high-quality professional electronic products from overseas companies such as Barco Electronics and Barco Industries of Belgium, Allied International, Comrex, Dictaphone and Audichron of the U.S.A., Melbourne and Sydney and also recently in the newly-established offices in Brisbane and Perth, with another new office in Adelaide expected to be opened in early 1986.

At all times, Consolidated Electronics has had a company commitment to the manufacture of quality products, and to product research and development. For many years, much

of this effort was wasted due to a lack of company direction and purpose, until recently when, with new management and a fresh enthusiastic approach, the company embarked upon an extensive but carefully considered new program of new product development and export marketing.

The management and staff of Consolidated Electronics are proud of the company's recent achievements and are confident that the company's many customers, whether long established or new, are equally pleased with this success story of an Australian company.



Mr. R. Hawke with Mr. P. Roberts, Managing Director of C.E.I.



WORLD'S FIRST WINS AWARD

A Melbourne-based electronics company has received an Australian Design Award for a device which it claims is a world first.

The Prime Minister, Mr. Hawke, presented the award to Consolidated Electronics Limited at Melbourne's Regent Hotel late September 1985.

Consolidated Electronics also used the presentation dinner, which was organised by the Australian Design Council, to officially unveil the award-winning invention, called the Auto Phase 2000.

The device automatically rectifies typical phase errors in stereo production, therefore enhancing the clarity and crispness of broadcast sound.

The development of this product has been welcomed by the Australian

broadcasting industry because it will greatly improve the cartridge operations of radio and television stations throughout the country.

By installing an Auto Phase cartridge replay machine, radio and television station personnel will no longer have to manually control the sound quality of pre-recorded taped music.

Consolidated Electronics was founded in 1972 and established itself in the design and manufacture of control systems, and also in engineering consultancy.

In 1984, the company was acquired by Kemtron Limited, one of Australia's largest electrical companies, and considerable management and organisational changes soon followed.

Today Consolidated Electronics manufacture a comprehensive range of professional record/replay equipment for the Australian broadcast industry.

According to Managing Director, Mr. Peter Roberts, the company's cartridge machines are found virtually in every Australian broadcast station.

He said that as a result of a recent local and overseas survey, Consolidated Electronics identified a demand from the broadcasting industry for a more innovative electronic design and improved styling of technical products.

With the assistance of a research and development grant from the Federal Government, Consolidated Electronics invested considerable time and money in the development of a series of innovative new Auto Phase products.

The end result, of course, was the Auto Phase 2000, a product which the Industrial Design Council considers to be technically superior, advanced in design and meets rigid performance and safety standards.

PEOPLE

JOHN VIDALE DIES

John was diagnosed as having stomach cancer on May 1, 1985 after an operation, and although his medical advisers maintained an optimistic attitude, his condition deteriorated quite rapidly. John showed a brave face, and was his usual wonderful strong, stubborn self until the end. As per his wishes, he died at home.

John is survived by his wife Anya, daughter Nina, and sons Michael, Nicholas, Anthony and Simon.

The Record Mode Sound Studios will be in operation throughout 1985, with Peter Clark and Jennifer Hertz.

NEW APPOINTMENT

Paton Electrical Pty Ltd are pleased to announce the appointment of Andrew Colgan to the position of Sales Engineer. Andrew has been promoted to this position after four years of involvement in the manufacturing of electronic products and analogue meters.

Andrew Colgan will operate out of Paton Electrical Head Office at Ashfield and will service the Sydney Metropolitan area.

ASB APPOINTS NEW SALES MANAGER

ASB Magazine has announced the appointment of Steve Maynard to the position of Advertising Sales Manager. Responsible also for Musician Home Recording Magazine Maynard replaces Tracy Williams at ASB. With wide experience in sales and marketing Maynard believes he can now help clients plan their advertising schedules and budgets effectively across both publications. Bookings and enquiries for the 1986 issues can be made by ringing Steve on (02) 699 8472.

MEETINGS

EVENTS

PHOTOKINA

10-16 Oct. 1985 to be held in Koln, West Germany.

IVAC 86

3-6 Nov. 1985 to be held in London, UK. A Video & Communications Exhibition.

INTERBEE 85

20-22 Nov. 1985 to be held in Tokyo, Japan.

CTEAP

17-19 Dec. 1985 to be held in Paris, France.

AES

4-7 March 1986 to be held in Montreux, Switzerland.

BROADCAST 86

7-10 May 1986 to be held in Frankfurt, West Germany.

TELEMATICA 86

11-14 Jun. 1986 to be held in Stuttgart. (01) 236 0911.

IBC

19-23 Sep. 1986 International Broadcast Convention.

GLEBE STUDIOS

Some of the recent work includes an album for the Mockers produced by David Richards, an soundtrack for D. Skinner "An indecent obsession", engineered by John Frolich, La Cage Aux Folles have recorded an album produced by P.Martin and engineered by Richard Lush. Other projects include Moving Pictures, Armando Hurley. The studio has also added an 8 track system for pre-production also added is the Q-Lock system and Eventide SP 2016.

IMPORTANT NOTICE

We have been receiving a number of orders lately for ASB Yearbooks, using our old 1984 order forms from several issues back, and containing payments of \$20.00. We are now taking orders, however, for the 85/86 Yearbook, which costs \$25.00. Much of the information in the 1984 book is now out of date, and for the extra \$5.00, it pays to have the new edition, which has just been released. So please — from now on — order your '85/86 book using the updated forms in this issue, or drop us a note with your payment of \$25.00, and avoid receiving an out-of-date book.

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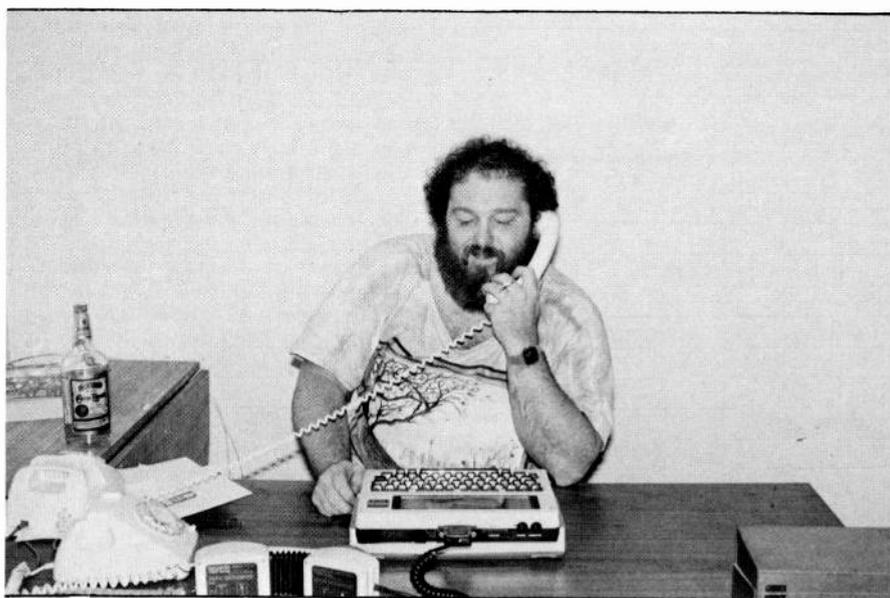
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GUEST OPINION

Communications in the Entertainment Industry



In recent years the buzz in the music industry has surrounded digital advances in recording and instrument technology. But now a different manipulation of digital information is revolutionizing the way that the industry is taking care of business. Through the use of simple lap top portable computers and acoustic couplers for telephones, the far flung interests in a wide range of the business is being kept in constant touch through a unique computer network that spans the globe. Over 3000 subscribers including more than 200 Australian members are now on line with International Management Communications which operates the computer network and electronic mail system that is being used by the

recording, concert production and allied interests. Linked to each other through an international system of mainframe computers that zap messages, news and information instantly over the phone, managers, agents, record companies, publishers, concert promoters, sound and light companies, producers, video houses, merchandisers, musicians and a wide range of other users are bridging the intercontinental distances with amazing ease.

The user can access the system from virtually any phone in the world for the cost of a local call. Plugging into the system by means of an acoustic coupler which fits over the handset connected to a portable or office computer, the user can

then perform a series of simple or complex operations to place him in touch with the upper echelons of the music industry.

Most subscribers use Tandy System 100 computers which easily fit in briefcases and are battery or mains operated. Tandy machines are preferred also because of their ease of use, durability, simple inbuilt software that allows for reliable communications usage and the worldwide network of Tandy/Radio Shack stores for service and upgrades.

Operation of the system is simplicity itself. Once the local call is made, the user is connected into the telephone company's mainframe computer — ITT Dialcom in the US, Telecom Gold in the UK and OTC's Minerva system in Australia. Once on line, a variety of functions are available.

The most useful is electronic mail. No matter where a user is in the world, they can send and receive mail on their machines with the additional ability to access or be contacted by any of the 1.6 million telexes worldwide. If a manager is on the road with a band in Japan, he can keep in touch with the Sydney office channelling info on tour grosses, appearance schedules, changes in itinerary, and general data as well as receiving his messages, copies of contracts or deal proposals. He can stay on top of record companies and publishers in other territories,

book dates through on line agents and venue availabilities listing or even check on airline schedules.

An on line news and information service provides weekly chart reports from Billboard magazine, Australia's Kent Music Report or the UK's Music Box. And to stay current with news and issues in the industry, two information services are provided — one with international news and the other covering information from Australia.

Fairlight Instruments, manufacturer of the Computer Musical Instrument, Computer Video Instrument and other devices has just initiated an on line news and users' group which supplies new product updates, applications information, a listing of dealer and service outlets, a bulletin board for users as well as a hotline for problems or questions. Other manufacturers are considering adding the same type of facility.

For studios, the IMC system is a useful tool in contacting

bands and managers for the purposes of presenting their facilities for use while the band is in town. Last minute cancellations can be salvaged in this manner as well as keeping in touch for information on advance bookings.

Road personnel have found a large number of applications. Filing daily reports on income and expenses is a breeze, keeping in touch with the home office or the globe-trotting manager is assured and the road crew can interface with transport companies or production companies as their needs arise.

For late nights after the gig, a set of games are provided for on line play, various user group bulletin boards can be scanned or with the simple entry of 'online' a readout appears of all the users who are currently using the system at the moment in that country. Then a command of 'chat' can be entered which allows a two way conversation with another user by keyboard. Even conferencing by keyboard

is possible with a large group of users.

An on line directory can be accessed to find out the Email addresses of other users and a daily listing of new users can reveal companies or friends who have just joined who the user would like to get in touch with.

From Australia, the system is extremely cost efficient. The local system is operated by Jands Concert Productions and system manager Dave Mulholland says that the industry is coming on line rapidly as they see the effectiveness and money saving potential. "Probably the most attractive aspect is the Xmail telex facility. You can get rid of the office machine which costs upwards of \$140 per month to have on premises and send or receive all telexes on line through a computer. It costs the same to send telexes, you just don't have a machine anymore which adds up to over \$1500 a month savings."

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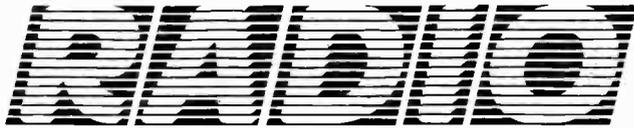
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5AA



Radio 5AA has changed! In only sixteen weeks it has moved to larger premises and completed extensive refitting, rewiring and rebuilding to cope with the changes in its broadcast format.

It is moving away from the 'easy listening' theme and encompassing more racing, sport, talkback shows and the like. Obviously a move like this in such a short period requires enormous organization and a well trained team.

Making the TAB headquarters its base and taking up the whole of its first floor, the \$1.3 million complex consists of a control centre, where all the signal switching, distribution and logging takes place, three identical, fair sized, on-air studios, a TAB studio, a cart preparation room, voice booth, a full production suite and a news room with one production booth and one newsreaders booth.

Over 90% of the equipment is brand new and was supplied by Paul Kirk Electronics. This



equipment is found throughout the complex and under the direction of their Engineering Manager, John Ferguson, it is operated with ease.

The studios and related booths are of fully-floated construction, removing them far from the noise of traffic.

While most programmable material is still in mono, stereo capability does exist - with only advertisements and music getting the real benefit from it. This is due to their present heavy expansion program. Nevertheless, they

will convert to full stereo within the next twelve months.

At the moment all their funds are being channelled into acquiring two S.A. regional stations, 5RM and 5AU, pending the A.B.T. grant approval for the transfer of the shares.

The 5AA Control Centre has an eight-rack cabinet, housing the studio cabling, switching, ancillary signal-monitoring, distribution racks and two Revox A77 loggers (running at 1 & 7/8 ips). The station has sixteen OB units, in the field at all times; also 18 permanent land lines, with another 30 extra link the station across the state. Eight out links interface each studio.

The out-going centre/rack, feeds lines to Sound Op. centres around the country. The superseding delegation switchers control all the programs to their twin AWA 2.5kW transmitters at

Bolivar, on the outskirts of Adelaide, with 2 Audio + Design- 'Express' programme limiters in line.

Four Urei LA-4 limiters are used to feed the program network. The transmitter remote control unit, is a JNA unit - due for replacement - pending the purchase of a Canadian-made transmitter.

Interesting to note, is their use of a single Eventide DB555 delay unit - saving some \$9000 by wiring left and right channels in parallel.

STUDIOS

The three on-air studios are identical and in many cases are used in conjunction with a TAB studio (for Tote dividends); so it's a fairly big on-air operation.

The announcers' console is a Paul Kirk CSC-1, customised for 5AA's requirements (the entire complex being wired in stereo). Studios are equipped with two Otari 5050 2trk machines, two ITC Delta Three triple-deck cart machines, CEI 993R Stereo Cart Recorder and one SP10 Technics turntable. The mics are Sennheiser MD 421's, with AKG C414EB's used in the production suite.

There are also twelve incoming telephone lines, plus two newsroom lines and six talkback lines. 99% of their material is from cart; all being done in a cart dubbing room using a PKE fixed-design console and a JBL4301B monitor; the monitors in control rooms are all Magnavox—AWR's.

PRODUCTION

The equipment used in production, centres around the Yamaha 1516 customised console, using Yamaha NS-1000 monitors, powered by Yamaha P2100 amp, plus Auratones, of course. Other equipment includes an Optro Graphic equaliser, Optro-666 spring reverb unit, Audio + Design complex/limiter F760XRS,, Otari MX5050, remote controlled Otari MX7800 eight-track unit, two Revox A77 stereo playback machines, plus two Revox A77 stereo playback machines, plus two Cue-master full track units and a Technics SP-10 turntable.

The change of format, the change of location, expansion, the recent appointments in senior staff, a recent takeover and a further acquisition — pending the outcome of the A.B.T. hearing — spells a hopeful future for 5AA and Festival City Broadcasters Ltd.



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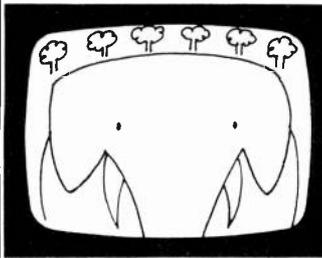
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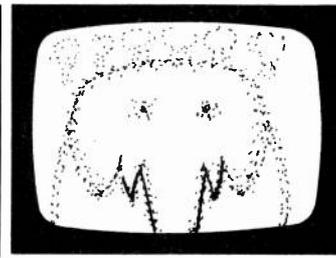
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WIDE ANGLE

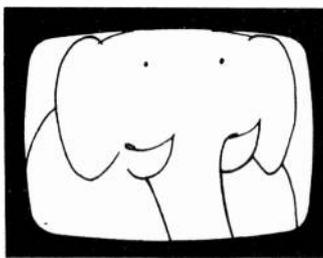


SHARP FOCUS

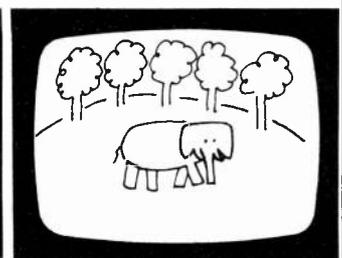
NARROW ANGLE



EARS AND BACKGROUND OUT OF FOCUS



LOW ANGLE



HIGH ANGLE

with their monstrous elephant they will place the camera low near the ground, or even in a trench and let the elephant loom over them and take a low-angle shot. If they want to make the viewer feel sorry for the lonely elephant and to diminish its stature they will climb up a tree and take a high-angle shot.

STILL OR MOVING

Whoever it was, probably an American who first called a film camera a motion, picture camera, has in retrospect much to answer for. Because film, video and TV cameras can indeed accommodate movement the notion has arisen (and in many places stubbornly refuses to die) that virile cameramen never let their cameras come to rest.

On the contrary they wave them about like flags. The makers of modern lightweight video cameras wittingly or not, abet them in their mistaken belief. Their advertisements show macho cameramen with cameras perched on their shoulders like parrots, or intrepidly 'handholding' them at a crouching run under fire in some exotic troublespot. Rarely heard is the still, small voice which proclaims that to produce the best pictures the camera should be held still and the action allowed to move inside a static frame. All that a moving frame and particularly a violently moving one achieves is to make the viewer feel queasy.

TRIPOD V SHOULDER

Even the most rickety and spavined tripod provides a steadier camera platform than the sturdiest human shoulder. The director should therefore assiduously encourage its use. He should resist the blandishments of cameramen who promise that their hand-held or shoulder-mounted shots will be 'rock-steady' and

indistinguishable from those taken from a tripod.

The director must recognise that in certain circumstances, like the coverage of a riot, the use of tripods does not apply. Equally he must accept that working with a tripod, dismantling, shifting and re-erecting it for every new set-up, will slow down the work of his unit. But he should know that general reluctance by cameramen to use tripods stems from the simple fact that they are heavy, cumbersome and hard work to carry, particularly in high temperatures. Acting on this knowledge the director should take his turn at carrying the thing himself.

NO HOSEPIPES OR TROMBONES

Golden rules of which directors and cameramen should be persuaded are: firstly, cameras should be kept steady — wherever possible on a tripod; secondly, they should be kept still — cameramen should be persuaded to refrain from 'hose-piping', ie. moving the camera randomly across the scene as though they were sprinkling water from a garden hose; and finally, lens angles of vision should remain unchanged — ie. cameramen should be persuaded not to 'trombone' ie. zooming in and out as though the handle of the zoom lens were the slide of that raucous brass instrument.

MOTIVATED MOVEMENT

Of course sometimes the action can't be contained within a static shot. Then the director has the choice of cutting to a wider shot or following the action on the present one. Take the imaginery coverage of the arrival by air of a visiting statesman.

In close-up the statesman is seen waving from the doorway of the landed aircraft. The cameraman zooms out, tilts down as the statesman

descends the waiting airport steps, revealing the aircraft on the runway. The camera then 'pans' (swivels horizontally) as the statesman crosses to inspect the waiting guard of honour. All these camera movements the zoom out, the tilt down and the pan are motivated by what is actually happening — the action. Having shown the statesman in the original close-up, the zoom out and tilt down are not only necessary to contain the action; they enable the viewer to orientate himself and the statesman. The cameraman does not pan to the guard of honour not because he or the director want to show them but because the statesman — the focus of interest goes to inspect them. The pan is motivated by and coincides with the action.



HEADROOM

If then the cameraman or his director wanted the viewer to see either a longshot of the inspection ceremony or another tighter close-up of the statesman carrying out the inspection, there would be no further pan or zoom. To avoid any danger of tromboning or hosepiping, the further scenes would be individual shots cut or joined on — possibly after the insertion of a 'cutaway' close-up of one of the guards presenting arms.

RECORDS BROKEN AT MUSIC EXHIBITION

Last year in Sydney exhibitors and organisers were congratulated on the record 20,000 plus crowd who were attracted to the 7th Australian Music Exhibition.

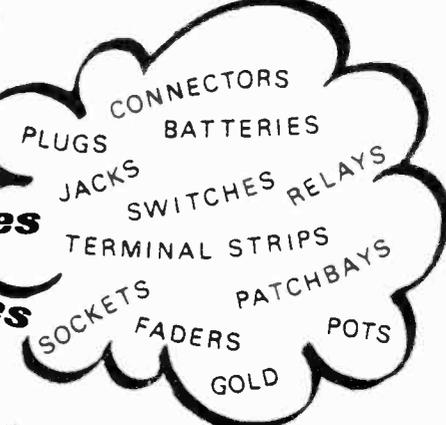
This year was even better. Over 25,397 public and 1,264 trade visited and enjoyed the 8th Australian Music Exhibition, (The Melbourne Music Expo). Held in the Royal Exhibition Building, Melbourne, this year's Exhibition was not only the largest in terms of area booked but the largest in attendance, breaking records for both public and trade.

The 8AME organisers, Exhibitions & Trade Fairs Pty. Ltd. (ETF) felt this success could be attributed to many factors. Exhibition Director, Mr. Bryan Humphris commented, "It has been four years since the event had been staged in Melbourne. From 1982 to 1984 the Exhibition has been held in Sydney and Melbourne was ready for us."

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Audio Broadcast Dist.	906	11.2
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Video Production Facilities	611	7.4
Freelance Recordists & Prof.	1070	13.0
Engineers/Producers	206	2.5
Advertising Agencies	388	4.7
Film Facilities	308	3.8
Sound Reinforcement Org.	278	3.4
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FRAMING AND COMPOSITION

The director should be able to rely on the cameraman framing and composing the shot adequately by himself. Nevertheless sometimes in the heat of the moment the obvious is overlooked; the director should not hesitate to point it out.

Composing a pleasing shot is largely a matter of personal taste but a number of conventions have become generally accepted: for example in normal close-ups and close shots the top of people's heads should not disappear out of the top of screen; nor should the top frame line sit absolutely tight on the dome of a head, like a mortar-board. Normally the cameraman or woman leaves a little gap at the top of the picture for 'headroom'. If in two succeeding close-ups two individuals are talking to each other, the cameraman should frame them on opposite sides of the screen leaving plenty of room for them to talk into — 'talking room'. On its own, each composition looks asymmetrical and unbalanced. The director and cameraman should both be aware that they are not dealing with single pictures but with sequences. The apparently asymmetrical shot will be balanced by the succeeding one.

Only station announcers, news-readers, quiz-show hosts and heads of state addressing the nation are normally framed dead-centre talking into the camera. However if a political leader or other speaker is addressing a group or meeting then conventionally he should be framed on one side of screen, leaving space for talking room. The listening group is framed on the opposite side of screen with space for 'looking room'. Again only when the two asymmetrical compositions are cut together either by editing or vision mixing, do they balance.

WALKING ROOM

Similarly if the cameraman pans with the statesman as he crosses to the guard of honour he will normally try to keep plenty of screen space ahead of him, something like a half to two thirds of the frame for him to walk into — 'walking room'.

Whenever the cameraman proposes a panning shot, it is better for the director to stipulate that the cameraman first shoots a static shot which he holds for some moments; then he starts and pans the camera



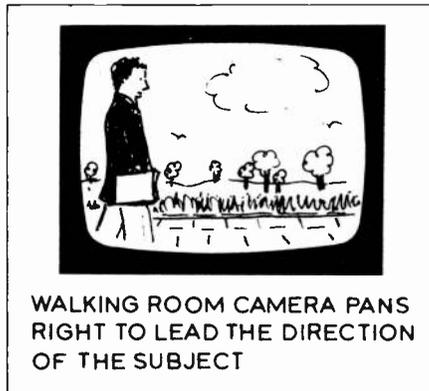
TALKING ROOM TO THE RIGHT AND LEFT



LISTENING ROOM TO THE RIGHT

TALKING ROOM TO THE LEFT

which comes to rest on a predetermined end framing. The cameraman again holds this end framing for some moments before he switches off. This is a form of insurance so that if at the editing stage the director wants to omit the pan because it was either too fast, or too slow or unsteady he may do so without losing the entire action.



WALKING ROOM CAMERA PANS RIGHT TO LEAD THE DIRECTION OF THE SUBJECT

He can replace the panning shot with the static shot at the beginning then inserting a cutaway shot and come to the static shot at the end. For the cameraman to achieve a smooth pan in all circumstances is not easy. Some of the all-time 'greats' practise deep breathing in preparation for a pan. In

order to achieve a really smooth panning camera movement the cameraman takes a deep breath pans, and does not breathe again until the pan is completed and the camera switched off.

THE GOLDEN MEAN

The way cameramen and women compose their pictures in the Western world, that is proportions of various areas of the scene one to another and to the full screen as a whole, are said to be consciously or subconsciously influenced by the culturally acquired preference for the 'Golden Mean'. This is a mathematical relationship used in Western art and architecture since the days of Classical Greece. It can be formulated as: 'the lesser is to the greater as the greater is to the whole'.

So in a TV shot of a landscape, the cameraman does not frame the shot with the horizon across the middle of the screen but so that the proportion of the lesser area below the horizon to the greater area or sky is the same as the proportion of the sky to the whole frame.

Another effective pictorial composition which the director should know about is the use of the diagonal.

record and master digitally to be taken seriously in the future."

The team of Allan and Nixon are hot on the trail of major overseas artists to record with their new equipment. Since it is air-freightable and also extremely roadworthy, it is a natural for recording live dates on consecutive tour dates as well as its obvious use in the studio.

Film and video producers will also find it an incredibly useful tool because the system has a special interface card that will link the unit with any film or video chain for precision linking.

But Cameron Allan admits a weakness. "I really wanted the machine for myself for use in soundtracks. Buying one was out of the question for personal use but hiring it out at least gives us the possibility of using it for our own projects from time to time.

Still, with the interest that's being shown in the gear, that

won't be very likely. Asked if they were going to offer any deals on the equipment's rental Allan responded with a chuckle, "Well, we were considering giving free sushi and a six pack of Kirin beer to the first 100 users. But that won't be necessary I don't think."

They stress though that the cost effectiveness of the machine for recording digital material will be a great plus in bringing that technology to the potential user. Aside from the single use of the machine in a studio like EMI's 301 or on the road, it can be linked to AAV's 24 track digital machine for 48 channel operation. And with the mastering facility offered, it will allow a complete system for all uses of digital recording from audio to video and beyond.

"Our hope," explains Allan, "Is that composers, performers, producers and engineers will cast aside their aversion to digital recording from the standpoint of complexity or fear of the future. Anyone who was afraid of having

to go to Japan to utilize the ultimate in digital technology won't have to learn a new language — either Japanese or digtalk. And they'll find us to be pretty user-friendly!"

AMTA News from page 27

outside the ticket boxes from the early hours."

"The backing from 92.3 EON FM radio station extended our advertising and promotions to really home in on one of the major target markets of 8AME", Mr Humphris said.

This year's Exhibition saw the music industry leaders delving more than ever into the fields of electronics and computers. The industry is developing rapidly in the area of high-tech and electrical equipment.

There was a touch of musical nostalgia for visitors with the re-launch of former Doobie Bros. member, Jeff Baxter. 8AME saw the birth of "My Old School" headed up by Baxter and former Steely Dan guitarist, Elliott Randal. The group was sponsored by I.M.I.

This year's Australian Music Trade Association's annual award for the best Stand was won by Billy Hyde Music Pty. Ltd. Rose Music nearly put awards back to back with a close second.

Another feature of 8AME that proved to be popular with the crowds were the Sound Proof Demonstration Areas. These were presented by Roland, I.M.I., Rose Music, Billy Hyde and Wayne Music.

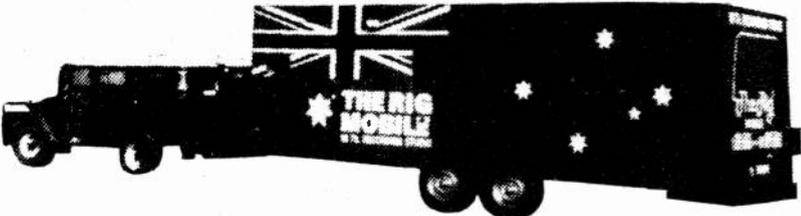
Prior to 8AME, Melbourne was abuzz for the week leading up to the Exhibition. Banners in the City streets, lunchtime concerts in the City Square and the big advertising and promotional campaign left few unaware of what was in store at the Melbourne Music Expo.

"It is essential for our Association to mount a major event such as this on a regular basis. Probably not only in Sydney and Melbourne but in all the major capital cities. This exhibition can be seen as an important marketing event for the music industry both at trade and business levels, Mr. Egan said."

For further information on this very successful Music Exhibition please contact: Mrs Pat Matthew, Exhibitions & Trade Fairs Pty. Ltd., 102 Chapel Street, St. Kilda, VIC, 3182. Telephone (03) 534 0267. Telex: 37528.



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A UNIQUE OPPORTUNITY

Audio Post-Production: The Sony Approach

Post production, within the audio business, has never seen such a time of change. Demands are being made on flexibility which require multiple machine synchronisation and control, especially where pictures are involved, and the use of time-code is rapidly becoming unavoidable. It is important to realise that synchronisation has always been inherent in the editing and post production of video tape, except in the very early days of its life when painstaking razor blade splices were done using magnetic developing fluid to see the tracks on the tape. For the audio engineer (and here I exclude film production), synchronisation has not needed to be foremost in his mind.

The revolution which is being experienced by the music studio is that of being faced with a picture: now becoming an almost statutory appendage to every single release, and, in many cases, challenging the sound for primary attention. Perhaps the only area in which the music studio might previously have experienced the need for synchronisation would have been when requiring to lock two twenty-four track tape recorders together, thus expanding the track capability of their studio. More recently time-code has permeated the music industry in the form of synchronous drum-machines, console automation systems, and other such semi-automatic devices.

Looking at the revolution from the other side; the people who have accepted pictures for

years as the 'be-all and end-all' of the media are having to come to terms with the possibility that very soon people will start asking for better and more flexible sound.

Doubtless, certain established broadcasting organisations will claim to have been aware of this requirement for years, and this cannot be disputed, but there has not previously been the massive interest in improving sound in the video domain. This is partly due to the fact that much of the flexibility in sound dubbing has lain with the film people, where multiple track laying and ease of editing has become the norm, and conversely due to the rise in demand for a 'video equivalent' which could be used with ENG/EFP-type productions, such as those made on Betacam and U-matic recorders. It is quite clear to us at Sony that if we could provide a system concept which began to approach the previously accepted capabilities of film in the audio domain, then the desire for a video-based operation would increase.

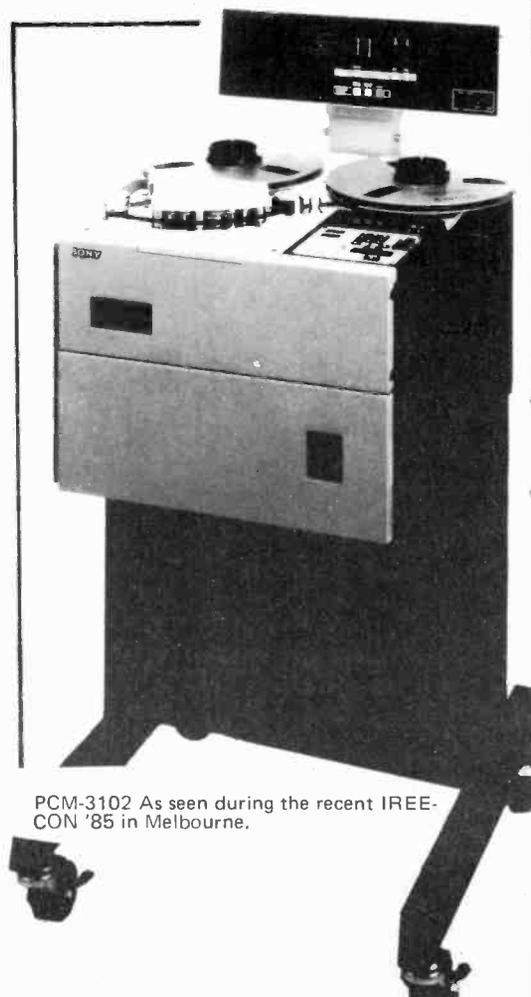
It is to this end that I will introduce a few ideas, based on equipment recently brought into production by Sony, which may enlighten those who remain in the twilight area of indecision about these developments.

Where Lies the Synchroniser?

As we have already seen, synchronisation of a sort is inherent in the design of a video tape recorder, and is necessary because

the video signal to be recorded is, by its nature, sampled. A continuous picture (to the eye) is composed of a series of still frames which give the illusion of motion when played in quick succession. If we are to combine pictures from more than one source, for example in a vision mixer or editor, then the video signals from each VTR in the system must be locked to a common reference, which provides synchronisation and colour phase information to all the vision equipment in one establishment. It is true to say that certain video equipment, such as time base correctors, will not function at all correctly unless they receive an external reference.

The reason for pointing this out is that audio tape recorders and mixers have never required this, or any form of external reference in order to be able to edit with them, or to mix the signals together. This comes as a surprise to many a video operator, who will find it hard to visualise the



PCM-3102 As seen during the recent IREE-CON '85 in Melbourne.

problems in a post-production environment where it is found necessary to lock a VTR as a slave to an ATR. Effectively, all VTR's are slaves in an all-video system: slaves to the external reference, whereas audio machines are generally free-running thus requiring some form of external synchronisation.

Up until now, this has been the standard procedure for audio/video post-production: a central synchroniser with a VTR as master and various audio slaves. In this system timecode is the common reference, and is recorded on all the relevant tapes, giving the synchroniser a means of locking the motion of the audio tape to that of the video tape. If the VTR is externally referenced then so will be the ATR, by virtue of the timecode lock between them but if for some reason the ATR is made the master, considerable problems could be encountered due to the fact that the timecode it will produce may not be in phase with the external video reference. In this case the central synchroniser will say, in effect, 'This VTR slave must lock to ATR timecode', while the VTR is saying 'I'm not locked to station sync', and a variety of situations may result, depending upon the system software priorities.

It is the usual case with this type of audio synchroniser that continuous speed control is exercised over the slaves, in order that lock be maintained to the master timecode, so that if the slaves drift they are pulled back into lock. Nevertheless, a somewhat different method is utilised with certain video editors, which take advantage of the fact that each VTR should lock itself to station sync of its own accord. The Sony BVE-5000, for example cues each VTR to a park-point at the start of the pre-roll, then pre-sets a so-called 'perfect clock' to the park point: when the edit is executed, all tapes roll from their park points, and their off-tape timecode is compared to the 'perfect clock'. During the

pre-roll the editor exercises speed control over the VTR capstans to bring the off-tape timecode into sync with the perfect reference. Once this is achieved, the speed control is released, and subsequent synchronisation of the VTR is left to the machine itself, which will thereafter maintain lock to external reference. It is assumed that the editor will no longer be required to exercise speed control over the VTR.

Digital audio recording systems, such as the PCM-1610, have been based around a videocassette storage medium such as the U-matic format. This has placed upon it the characteristics of a video system, but unfortunately for us Australians it is an NTSC-type format, which is not easy to synchronise to a PAL picture. Domestic digital processors like the PCM-F1 and 701, work in the EIAJ PAL format, and the audio from these can be more

easily synchronised to a PAL picture, but there is no professionally effective way of editing such material, which takes it back to square one unless a continuous unbroken scene is being dealt with.

It would seem that the possibilities for using digital tape recordings in video production will become greater now that DASH format (digital audio stationary head) machines, like the PCM-3102, are available, without the restrictions of a VTR. These transports can be synchronised both to an external reference and to timecode, using their own internal synchroniser, about which I will write later.

Traditional Audio Post PRODUCTION

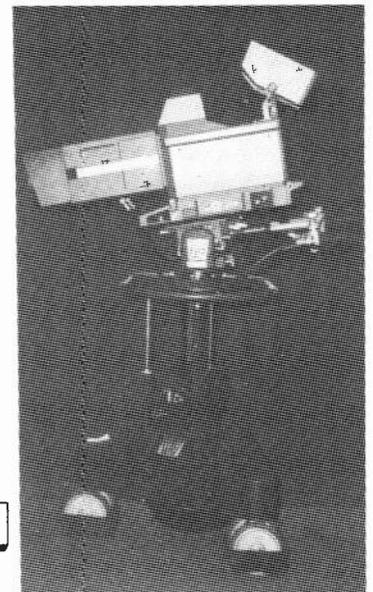
Much has been written about existing post-production techniques, and it is not the intention of this article to duplicate that

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AUDIO SYNCHRONISERS

work; nevertheless, before investigating possible new directions it would be sensible to provide a resume of currently used techniques.

The conventional layout of a VAPP suite has tended to revolve around a multitrack tape recorder, a U-matic video player, and possibly, a number of two-track centre-timecode ATR's. Naturally there will be the usual selection of peripherals such as carts, turntables, effects, etc. The flexibility of such a system will depend primarily on the central controller, or synchroniser, which will have a number of machine interfaces to 'talk' the language of each tape recorder in the studio, the limiting factor being the number of machines that can be locked at one time.

Sony have realised the need for the central controller to be more than just a unit for locking machines together, and to this end we have produced a controller which can be considered as an audio post-production editing system, allowing a degree of speed and flexibility previously impossible with other systems.

The system is known as the SYNC MASTER, and differs from the traditional 'synchroniser', in that the controller has intelligence of its own, rather than being a remote display and keyboard for a rack mounted computer. I will spend a little time outlining the reasons for this approach to the system.

The Sync Master as an Audio Editor

Audio editing has always been a primitive business, but it is very difficult to criticise the barbarism of razor-blade and sticky tape when it is so economical and generally successful. Even so, one runs up against a few problems in cutting up the tape when it has a contiguous track of timecode recorded on it, and I think that the time has come to try and accept the fact, if we require the advantages which timecode based post-production has to offer, that electronic editing of the audio is a must. Film editors changing to video techniques have had to accept this, and there is no reason why the same should not be true for audio.

The Sync Master provides the facilities, in conjunction with a modern mixing console to effect all the preview, looping and execution of multiple edits which would be expected for a comprehensive production. Let us look at a review of Sync Master features:—

- 1) A 200 page EDL in non-volatile RAM. Each 'take' in the EDL can hold a PUNCH-IN point, a PUNCH-OUT point, a separate OFFSET for each slave (which can be as small as 1/80 frame), RECORD and LOCK enable statuses for each machine and up to eight user-programmable relay closures.
- 2) EDL management, including trim of all registers and modification of stored takes.
- 3) Comprehensive and easy to read display.

- 4) Integral multistandard time-code generators and readers, with code in user bits for alternative synchronisation.

- 5) Video burn-in and ext reference for processor rack with DABK-511 option.

- 6) Intelligent machine interfaces performing ballistics measurements of system for optimum locate time. No adjustment of interface presets required because each machine has a unique identity code, calling up the relevant parameters from the LOGS.

- 7) Four machines controllable at one time.

- 8) A 32 character alphanumeric display on controller for status reporting and 'help' messages.

- 9) Search wheel for slow speed location of edit points.

- 10) Eight dedicated and eight user-programmable relays for each take.

The Future of Audio Post-Production Systems

The Self-Synchronising ATR and the SMPTE/EBU Control Bus

It is interesting to see how the Sync Master as a controller (just the AVS-500) fits in to the system, when using the latest ATR's which Sony have produced. I am referring to the APR-5003, primarily, which is a studio quarter-inch centre timecode ATR with the capability to lock itself to an external feed of time-code. This is a standard feature on all APR-5003's (and, for that matter, on all PCM-3102/3202 DASH format recorders), and is set to cause a revolution in the way we approach systems.

There are a number of reasons for this approach to the problem of multiple-machine synchronisation and not the least of these is the advent of the long awaited



APR-5003

SMPTE/EBU remote control bus, which sets out to provide an industry standard communications protocol between controller and machines. In its concept, the standard requires that the machine on the end of the bus contains at least a modicum of intelligence, and preferably the ability (in an ATR) to lock to external timecode of its own accord. This would mean that the controller could issue 'macro-scale' commands to the machines, like 'locate to this timecode address', or 'track 3, record ready', without having to preside over every single operation.

Each machine (either ATR or VTR) on the bus would have its own unique 'address', up to a maximum of 32, so that the controller could indicate which machine or group of machines it wished to talk to.

This all sounds very nice, but, as with any standard committee, the machinations are slow and laborious, requiring ratification by representatives of all the major equipment manufacturers affected. Nevertheless, this does not need to preclude the implementation by individual companies of their own language, based on the SMPTE/EBU proposals, using the specified electro-mechanical interface, and requiring little more than a PROM change on the remote interface of the tape machine as and when the committee come to agreement.

It is with this in mind that the Sync Master Controller could be used as an intelligent editor for intelligent tape machines, obviating the need (in some cases) for the processor rack, because the synchronising action takes place within the tape recorder. This is without a doubt, the direction in which audio/video systems must go, because it removes the one primary barrier to flexibility, namely that of one synchroniser box with limited interfaces. In the ideal system, master timecode would be distributed around the studio, together with a 'ring main' SMPTE/EBU link directed

from a system controller which would not be a synchroniser, and it is for this reason that the Sync Master controller is not just a box full of switches and LED's.

Other Uses for the Self-Synchronising ATR

Outside a system requiring direct remote control of each tape transport, the self-synchronising ATR still has many advantages in being able to chase and lock to an external feed of timecode, with or without an offset entered on the front panel.

It is possible to envisage a system in which any number of APT-5003s are connected together by timecode, just as a number of sepomag film transports would be slaved using bi-phase lock. This would give unlimited track flexibility and expansion capability, while giving two tracks of high quality audio on each machine. The projector equivalent in such a system would be a video transport such as the BVW-10 Betacam player, which could

provide timecode even in fast wind modes, to which the APR-5003s with their high speed timecode readers would chase and lock.

Using the APR2003 (a portable centre-timecode ATR), tapes could be made in the field, as well as building up a library of sound effects on 1/4" tape, and brought into such a dubbing theatre for post-production work, in a video equivalent to film-style operation. Control of the video player could be effected from a basic RS-422 remote-control panel with search wheel, customised to include record drop-in functions for some ATRs, which could be effected via a single connection to the ATRs parallel interface. Also bear in mind that the same possibility exists for PCM-3102/3202 digital recorders.

Flexible Audio During Video Editing

Two schools of thought appear to exist about the use of audio machines during video

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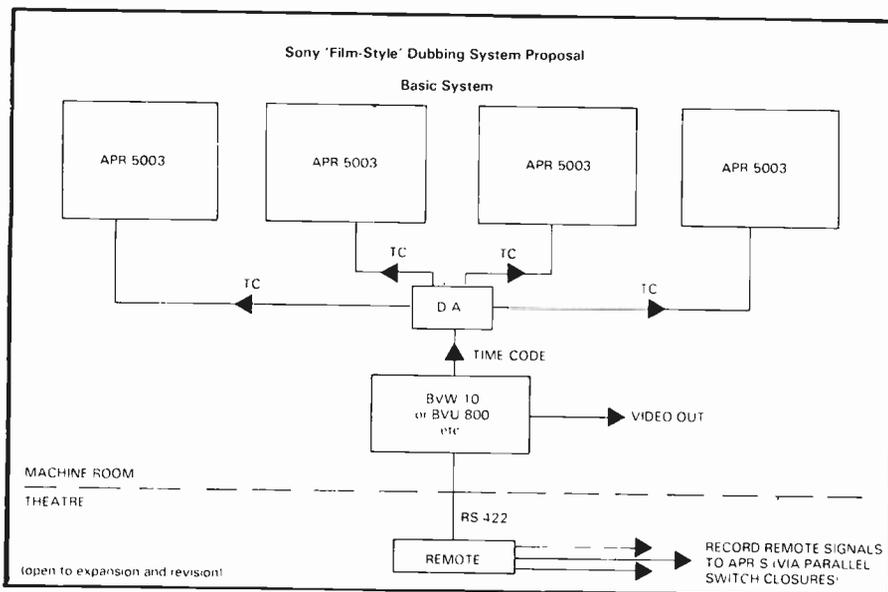
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editing: these could be broadly split into those who feel that it is an absolute must to lay tracks while editing the video, and those who consider that this would hamper the speed of editing, and anyway they like to charge the client again for audio post-production!

The view depends largely on the job to be done, and for ENG work it is often wholly uneconomical to tie up a post-production suite for a few extra overdubs on a basically simple production. For this reason, customers often press for a basic synchroniser which allows the relevant audio machines (often just an eight-track tied to the record VTR), to chase and lock wherever the VTR goes.

It is worth pointing out at this stage (to quell the phone calls), that the Sync Master is not that

sort of box, and that trying to connect a Sync Master to a video editing system has the same amount of sense as trying to connect two video editors together; even so, there are basic chasers that will do this job.

One major problem encountered with using a simple chase synchroniser in a VT editing system is that the editor has no idea of what is happening to the ATR: therefore, the editor could locate and pre-roll the VTRs without the ATR having caught up and locked. This requires the man doing the editing to keep a constant eye on the synchroniser or ATR, which slows both him and the production down.

Two solutions exist:— one being to use a large editor such as the BVE-5000 which has a number of player ports, one or more of which can take an ATR interface and treat it like a VTR,

but this is not practical on financial grounds for many organisations, although it is worth pointing out that London Weekend Television have adopted this procedure using BVE-5000 and Sony eight track's for their ENG Post Production.

The other solution lies in a 'black-box' to be interposed in the RS-422 link between editor and VTR, which could interpret commands and parallel them to an ATR with synchronising action. The aim would be to maintain almost solid lock between ATR and VTR time-codes, so that the black box became invisible to the operator, with the ATR acting just like extra tracks for the VTR.

This could be used on either play or recorder VTRs, so that perhaps an eight track could be linked to the R-VTR, with some two-tracks linked to the play VTRs, carrying the centre-timecoded tapes made on APR-2003s in conjunction with, say, Betacam videotapes in the field.

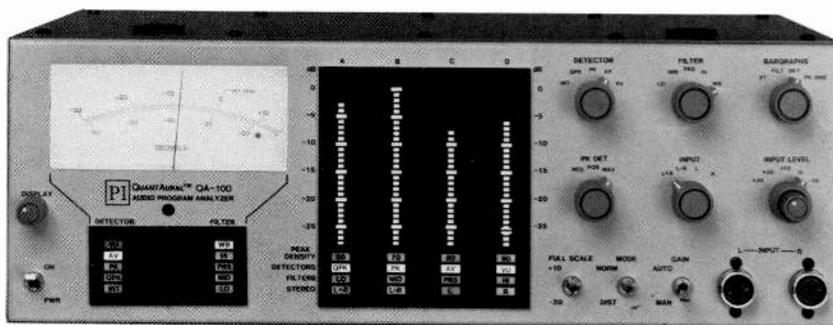
Conclusion

It has been the aim of this article to show how the world of audio post-production is evolving faster than ever before, and that Sony are not standing still with regard to new developments in this area. I would hope that we have shown a variety of routes open to those people who wish to pursue the business further, and provided a useful resume of the current state-of-the-art.

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A pad switch allows to handle line levels at the input.

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Each group of inputs and outputs has its own ground lift to eliminate hump loops.

A unique feature of the model 824 is the test circuit which allows instantaneous monitoring of the incoming signals. For this purpose, a 12

segment illuminated bargraph and a headphone control are provided.

A typical application is live recording, when a multitrack recording and a broadcast mix must have place simultaneously with a live concert using a main PA mixer and a stage monitor desk. In the past two solutions existed: direct parallel connection which introduces an excessive load on microphones yielding level losses and excessive distortion, and connection via splitting transformers which introduce a noticeable level loss.

The model 824 overcomes all these problems by its all active design, providing total isolation between input and outputs. The model 824 employs state of the art ultra low noise circuitry so that no degradation of the signal may occur.

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Rank Electronics Pty.Ltd., national distributors of professional audio equipment, is not connected in any way with either Rank Industries Australia or Rank Major Appliances. Rank Electronics Pty. Ltd. is a wholly owned subsidiary of Broadcast and Communications Ltd. (BCL), a company listed on the Australian Stock Exchanges.

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Flexistage Australia who build the cosmo portable platform are now building an even safer stage. The retention nuts and bolts are now replaced by Vzuz clips for extra fast release, and use is now made of a new type of swing bolt to secure the extra support bars now standard on every Flexistage platform. Other improvements include high impact plastic extrusions.

SOUND ON STAGE FIRE

A fire blazed thru the Sound on Stage headoffice early on Thursday morning the 1.11.1985 and almost totally destroyed all the offices and stock. Sound on Stage can be contacted through their store in Kent St., Sydney.

STUDIOS 301

Our Sanken CU-41 microphone was stolen from the studios sometime between 9th October and 14th October.

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1. If guitarists want "more guitar" in the mix . . . \$25.00

Note:

If any record company executives want to "produce" the product, double all rates immediately.

efficient way of communicating with people. It costs a little over 30 cents a minute to be on line and long letters or contracts can be prepared before going into the system to make things flow faster. It saves a heck of a lot over phone or telex communication and as the recent mail strike proved, it can overcome some man-made obstacles as well."

The list of users locally is impressive. Mushroom Records has found tremendous cost savings for its execs who go overseas. Compared to telephone calls or telexes from hotels, it is a godsend. Wheatley Records uses the system to stay in touch with far flung record companies and publishers as well as its LA office. Band managers such as Chris Murphy of INXS, Gary Morris of Midnight Oil, John Woodruff of Dirty Pool and Steve White of Dragon use the system to handle tour communications with bands as well as negotiating with various people. Several Australian pro-

motors are on line including Zev Eizik, Paul Dainty, Michael Coppel, Garry Van Egmond and Kevin Jacobsen. As well, the merchandising companies that handle T-shirts and posters use the system while touring with bands.

More publications are accessing the IMC system with magazines like Billboard, Music Week, Performance, MIX, Pollstar and Optic Music receiving stories from their world correspondents as well as press releases from publicists.

Learning to use the system takes a couple of hours but training is included in the \$175 join-up fee. And the cost of a Tandy System 100 portable with an acoustic coupler costs around \$1200 from AMC or less if one gets it duty free or overseas. Present office computers like Apples or IBMs can be easily linked via a modem or acoustic coupler. The age of digital technology has made the transition from music making to deal making and this system may advance the industry yet another step.

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Engineered by

Special features?

Album/Single/Soundtrack/Commercial

Title

Artist

Record Co. or Agency

Produced by

Engineered by

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Title

Artist

Record Co. or Agency

Produced by

Engineered by

Special features?

2. Any recent changes of personnel?

3. Any significant equipment purchase or expansions?

Please contact me with information about advertising in ASB.

News RECORDING

TASCAM RELEASES ATR-60 SERIES

The ATR-60 is a professional 2 channel recorder with centre time code track. Tascam engineers have developed a new head which has in-line audio and time code tracks with excellent crosstalk characteristics. By selection of the Memo mode, the time code track can be used to record a 300Hz - 10kHz analog signal for oral memos. Features are: +4dBm balanced input/output; real time tape counter; capstan sync selector; search to cue; crosstalk 70dB; ceramic capstan shaft. Options: remote transport control unit; 10 point auto locator; console rack; Monitor Amp/Speaker; DBX noise reduction unit. Available in the following configurations: ATR-60/2HS 2 track 30/15 ips on 1/2" tape; ATR-60/2 is a 2 track 15/7 ips on 1/4" tape; ATR-60/4HS a 4 track 30/15 ips on 1/2" tape; ATR-60/8 an 8 track, 15/7 ips on 1/2" tape. For further details contact: Teac Australia, Melbourne or see our 1985 Yearbook.



SAMPLER FROM REBIS

The RA226 is a sophisticated digital solid state recording device offering many features not found on other units.

The Input control and LED display allow you to optimise the level

through the unit. When Delay is selected the overall delay length is set with the End control, the Feedback control providing a variable number of repeats.

The Mix control gives a balance of input and output in delay and sample modes.

When the Record button is pressed its associated LED flashes to indicate the unit is in the record mode. As soon as an input signal above the internal threshold is detected the LED stays on and the signal is recorded into the memory. In this mode the Start and End controls define the area of memory into which the sample is recorded. This provides a multiple sample facility.

The Pitch control varies the rate at which information is recorded into or played back from memory. This allows you to trade off bandwidth against sample time when recording and to shift the pitch of the recorded material on playback. Two octaves of pitch shift on output are available, representing from 21 seconds at 4kHz bandwidth to 5.25 seconds at 16kHz bandwidth when recording.

An external C.V. of 1 volt/octave can be used to perform the same function and when this is done the pitch control acts as a fine tune.

Contact Audio Mix Systems or see our 1985 Yearbook.

HARRISON SYSTEMS INTRODUCES WORLD'S FIRST TOTALLY AUTOMATED AUDIO CONSOLE

Released at the 79th AES, which was held in New York, during October 1985.

"The introduction of the Series 10 marks a new beginning at Harrison Systems", said David Harrison, President of Harrison Systems in presenting the Series 10 system. "The Series 10 is the first system to be designed and built with total integration of micro-processor technology. In our design, each Series 10 module is fitted with 2 high speed CMOS microprocessors. The system is supported with a multi-processor, multi tasking, central automation computer system for storage of dynamic automation data. This unique approach to automation system design eliminates all of the undesirable delays of previously developed automation systems. As the Series 10 is the first totally automated audio console system, the demands on the console and its automation system are more than an order of magnitude greater than any previously developed automation system. The distributed processing approach which we have developed and evolved over the last 7

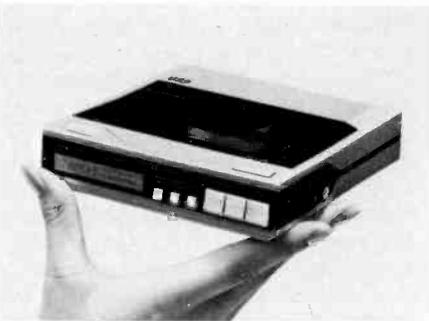


years is the only real solution to the problems associated with undertaking an automation task of this magnitude."

"The market acceptance of the Series 10 has been overwhelming", said Claude Hill, Harrison's Vice President of Marketing. "To date we have seven confirmed orders for systems to be delivered beginning in November 1985 through April 1986.

In Australia contact: Sontron Instruments, Melbourne or refer to our 1985 Yearbook.

MATSUSHITA UNVEILS THE WORLD'S SMALLEST PORTABLE COMPACT DISC PLAYER



National's parent company in Japan, Matsushita Electric, has announced the introduction of the Technics SL-XP7 portable CD (compact disc) player. . . The world's smallest truly portable CD player.

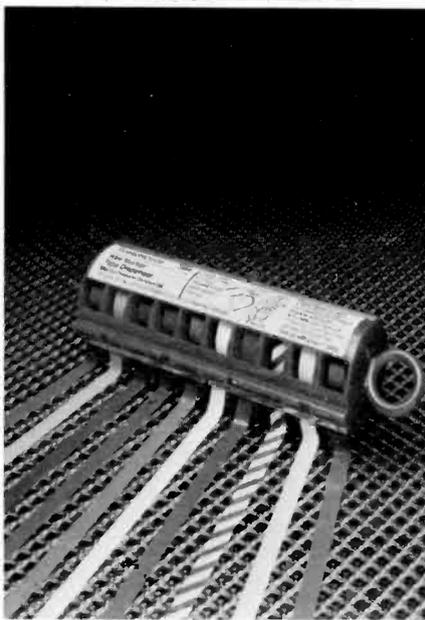
This new unit which measures only 126mm (W) x 31.9mm (H) x 126mm (D) and weighs only 520 grams, fits in the palm of a hand and incorporates an all-new laser pick-up system as well as 15-step random access programmability.

NEW SCOTCHCODE WIRE MARKER DISPENSER

In the short period since its world wide launch, the 3M "ScotchCode" brand Wire Marker Dispenser has revolutionised the wire and cable identification market. This innovative product replaced the awkward and cumbersome slide-on and card systems and eliminated the need for insulating tape for colour coding.

Originally developed by 3M in the United States, the product utilised existing 3M industrial electrical tape technology and combined it with a simple, high quality dispenser.

According to David Padula, 3M's Marketing Supervisor, Electrical Products Group, the "ScotchCode" Wire Marker Dispenser has enjoyed an equivalent success in Australia. "The original product dispensed numbered



or lettered rolls of adhesive tape and achieved an unprecedented acceptance by electrical contractors, maintenance contractors and Telecom linesman. It proved to be faster and easier to use than any other system and avoided waste by dispensing the precise length required", Padula said.

Now 3M has launched a new "ScotchCode" Wire Marker Dispenser which it is confident will also be rapidly accepted. This new product has the benefits of the unique "ScotchCode" Dispenser while offering the added option of a colour coding system for wire and cable identification.

S.C.V. PHASE CHECKING SYSTEM

The PC 80 is an advanced absolute phase, engineering measuring tool that represents a highly portable, flexible way to measure the phase accuracy of any electronic audio system, including microphones, compression drivers, passive or electronically crossed over loudspeakers and loudspeaker systems, power amplifiers, mixing console patch points, wiring phase in building and patch bays. Two additional features make the system unique; it measures either electronically or acoustically. Generating a one hertz special wide-bank pulse and reading it with a built in microphone, the transmitter also features an XLR output and level control for measuring wired systems. The PC 80 is an impressive time saver for the contractor, professional musician or recording studio. Further details: AR Audio Engineering (02) 211 3026.

AUDIOSOUND SPEAKERS AT SYDNEY OPERA HOUSE

The ABC have recently installed the Audiosound Linz 8066 monitors in their control room at the Sydney Opera House for monitoring.

The 8066's have an extended sub-woofer performance in the bass end with excellent mid and H.F. smoothness and were preferred to the latest Quad E.S.L.s in an independent test report. The 8066's are fully designed and manufactured in Australia, copies of the test report are available from Audiosound, Sydney.



INTRODUCTION OF THE NEW AKG TDU 8000 DIGITAL TIME DELAY UNIT

For one or two inputs and two to eight outputs. Max. delay time 1300 ms (mono) or 650 ms (stereo), bandwidth 20kHz, total dynamic range approx. 120dB, 0.1 ms increments up to 999.9 ms and 1 ms above 1000 ms, remote control facility optional.

STELLAVOX SU 8

The latest addition to the Stellavox line of portable audio recorders is the SU 8. Derived from the SP 8, the new model has an optional built-in SMPTE time code generator, which records code on a centre track. Six head configurations are available: mono, mono with 'Neo Pilot' synch, stereo, stereo pilot synchrotone, Stella Dia Pilot and mono/stereo Pilot.



AKG WIRELESS MICROPHONES SYSTEM

For AKG microphones, success began in the studio world, where only top quality counts and has continued its way into the field of stage application.

The AKG D 300 Series for the first time combined "on-the-road" ruggedness and studio level sound reproduction, two requirements that other microphones have not been able to fulfill before. The overwhelming international success of these microphones is proof that they are exactly what the users urged for.

Another request continuously placed with AKG during the last few years was the realisation of wireless versions of popular AKG microphones. In order to fulfill those demands from the marketplace for wireless AKG microphones, AKG decided to seek the cooperation of an adequate partner.

First of all, the wireless system had to be of the same superior and uncompromising quality as the current range of AKG products.

AKG was looking for a partner, maintaining high quality standards and a solid reputation as a manufacturer of well proven products. Such a partner was found in 'Beyer Dynamic' whose wireless system had been popular among discriminating professionals for years.

The combination of this proven wireless system and the internationally successful AKG microphones provides the user with the ideal solution for all those live sound situations where microphone cables could not be used or would defeat visual effects, etc.

AUDIO CONNECTORS, WIRES AND CABLE

Scalar Industries have a comprehensive range of professional audio connectors, plugs and sockets including 3.5mm and DIN connectors; 2, 3, 4, 5, 6 and 8 pin microphone plugs and sockets; and in-line and panel mount plugs and sockets. Also power terminals and connectors, TV and radio plugs and sockets and fuse holders.

Scalar have speaker wire, DC power cable, microphone cable also hook up wires and multicore cables in various different colours.

For further information contact Scalar Industries Pty. Ltd. Telephone: (03) 725 9677 or (02) 502 2888.

SSL IN JAPAN

Though known worldwide for its consumer audio and video electronics and its role in the development of the Compact Disc, Japan still turns to the West for much of its professional studio and broadcast equipment. In particular, one British company has played a key role in the modernisation of Japan's recording studios and audio post-production facilities.

Audio giants such as JVC, Matsushita, Toshiba EMI, Warner, Pioneer and Yamaha have chosen to equip their professional studios with Solid State Logic consoles and studio computers. SSL attributes much of their success in Japan to the excellent service provided by their local representatives, Studer Revox Japan, headed by Takeo Asano. But Asano and his chief SSL Products Manager, Takashi Suzuki, credit Solid State Logic's innovative software and superior audio quality for the phenomenon.

"Studios here are choosing SSL for the same reason as their occidental counterparts", explains Suzuki. "The purity of sound quality is a primary attraction, but logical features, ease of operation and maintenance-free reliability are significant features as well."

Takeo Asano adds "Digital audio and stereo broadcast television have made the biggest impact here. Japanese studios are constantly under pressure from consumer hardware manufacturers to provide excellent sound. It is revealing that many studios owned by these manufacturers have identified SSL as a key to resolving this need."

Contemporary Japanese music reflects the nation's high tech edge. Most artists rely heavily on electronic sounds and advanced recording technology to create the special textures which lead to popular success. While many Japanese confess that much of the music is not particularly adventurous (the local terminology is "candy pops"), the layering of sounds is both sophisticated and fascinating — and the demands on the studio industry for quality and innovation seem never ending.

Swiss-made Studer multitrack recorders have long been the Japanese standard, though recently the country's own digital multitrack and two track recorders have gained popularity. Whatever the tape machine, the SSL has clearly eclipsed past console favourites amongst the country's leading engineers, musicians and producers. SSL's combination of

computer features, sonic quality and creative flexibility have become an indispensable part of their repertoire.

Besides new technology, the studios themselves are changing. In response to the astronomical cost of Tokyo real estate, a new industry segment has developed in the countryside. In another break with tradition, reminiscent of the western studio industry in the early 1970's, many of these "resort studios" are independently owned, rather than run as subsidiaries of major record labels and electronics companies.

A prime example of these changes is Music Inn, located at the foot of Mount Fuji, about an hours drive from Tokyo. Opened in summer, Music Inn boasts an SL 4000 E Series Master Studio System and Studer multi-tracks. The complex also has a practice room and several American-made log cabins which provide guest accommodations with one of the world's most famous and awe-inspiring views.

However, the SSL phenomena in Japan isn't limited to recorded music. The success of Stereo Television in Japan has opened the broadcast market to Solid State Logic. The company's SL 6000 E Series Stereo Video System was recently selected by Yomiuri Television (YTV Osaka); independent post facilities including JVC Videotech, Ginza Videotech, Cross TV and Onkio House use the SSL to create television and laser disc soundtracks.

Another SSL is planned for a major Japanese broadcaster's new Outside Broadcast truck in the near future. "These broadcast sales are most significant", explains Suzuki, "because domestic manufacturers are clearly favoured by Japanese broadcasters. The need for customisation by these clients is extreme. However, the high standards achieved by Solid State Logic worldwide have not gone unnoticed by our broadcast industry, and the extensive custom broadcast capability of the new SL 5000 M Series has sparked great interest".

Solid State Logic will be exhibiting the SL 5000 M Series and other products at InterBee, November 20-22, 1985. A paper discussing the new SSL system will be presented at the concurrent International Broadcasting Symposium by Douglas Dickey, SSL's Vice-President for Design Communications.

For further information, contact Solid State Logic or Studer Revox Japan Ltd, 1-22-2 Yoyogi Shibuya-Ku, Tokyo 151, Japan. Telephone 81+ (3) 320-1101.



SHURE SM87

Shure have recently introduced the SM87 supercardioid condenser mic designed as a live use vocal mic. The design is the result of many months of practical testing within the sound reinforcement industry with particular care being taken over the frequency response and the polar pattern. The result is claimed to be a mic with very high gain before feedback. It apparently also has a response that has been optimised for vocal use which in many cases removes the need for external equalisation.

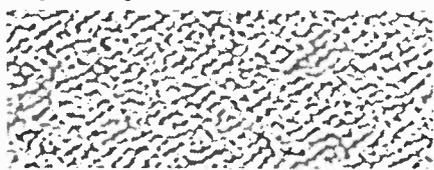
The SM87 can be phantom powered and will operate over a range of voltages from 11 to 52 VDC, covering both DIN standard 45 596 voltages of 12 and 48 V. The mic has a built in wind and pop filter with the body being a rugged lightweight aluminium casing finished in grey.

S.C.V. 1/3 OCTAVE GRAPHIC EQUALIZER

Made in France and recently introduced into Australia. The 1/3 octave equalizer is a no compromise design, using minimum phase L.C. networks and ultra-low noise integrated circuits, and offering superb performance in disc mastering, broadcast, TV, control rooms and PA applications. The model 128 provides up to 12dB cut or boost at 28 centre frequencies, covering the whole audio spectrum from 40 to 20kHz. Centre detented, long stroke slide controls provide a visual feedback of equalization. The level control sets gain from infinite attenuation to 6dB gain. The detented centre position sets unity gain. An illuminated equalizer by-pass is provided, keeping the operation of the level control active. A delayed by-pass relay allows quiet turn on and turn off of the unit. High impedance electronically balanced input and low impedance transformer balanced output allows interconnection with any type of equipment. Other features include, ground lift switching, signal to

noise ratio better than 94dB, THD .01% frequency response 20 to 20kHz +/-1dB, manually tuned centre qents, "one screw" instrument case access, and a security cover is also included along with a five year warranty.

Details available from: AR Audio Engineering (02) 211 3026.



A NEW "MULTITRACK MIXDOWN" CONSOLE (THE AMEK APC1000 - ASSIGNABLE PRODUCTION CONSOLE) "AN EXCLUSIVE PREVIEW"

The new Amek APC1000, replaces the original APC1000 Console System which was brought into production in 1979.

The new console is purpose-designed for many of the new applications for consoles which have arisen over the past seven years as a result of the expansion of the broadcast and video production industries. This expansion has necessitated new and imaginative responses from the manufacturer.

The APC1000 uses novel techniques to simplify what have become increasingly complex operational requirements and to satisfy extremely varied demands. The flexible chassis system allows many different input configurations to be created easily; the central key-board control for assigning module switching functions allows multiples of console routing and switching setups to be recalled either as snapshots, or, in the near future, as dynamic routing adjustments in real time synchronized to timecode ('Synchronous Reset'); and a 'Total Recall' of rotary knob positions using a novel and simplified setting up procedure will be available. The console is fitted with AFV (Audio Follows Video) ports as standard; and two levels of computer automation are available.

EVENTIDE ANNOUNCES NEWEST SP2016 REVERB AND EFFECTS SOFTWARE

Eventide has once again enhanced its SP2016 Effects Processor/Reverb with four new reverberation programs, a vocoder program and an automatic panner program. The new programs are being introduced at the Fall '85 AES Convention in New York City.

The RMX Simulation Plus programs provide accurate simulations of two of the most popular AMS RMX

16 reverb programs: Reverse Reverb and Non-Linear Reverb. But unlike the single channel AMS unit, the Eventide SP2016 gives the user two independent channels simultaneously. "It's like having two RMX 16's, in one SP2016," commented an Eventide spokesperson.

As a counterpart to these special-effect-decay reverbs, a "Natural" Reverb, featuring natural decay ambience is also being introduced. A Gated Reverb program has also been added.

All of these new reverb programs have been added at no extra charge to the standard Generation II software package, and are available as free software enhancements to present SP2016 owners. Each SP2016 now comes with a total of ten reverberation programs and twelve effects programs — by far the most comprehensive standard software package in the industry.

The newly-released Automatic Panner program provides delay panning as well as amplitude panning functions. User-adjustable parameters

FLEXIBILITY

With the extensive features now required on broadcast and video production consoles, conventional consoles are becoming increasingly unweildy and confusing owing to the sheer density of controls. Many switch functions are virtually unused from day to day, or are 'presets' which when set up are not touched during operation. Furthermore, switches are electro-mechanical devices and inevitably suffer from wear and tear, which increases unreliability.

The number of inputs and outputs required in a system is also increasing in some applications, necessitating very large consoles (typically 40 to 64 inputs, and 48 outputs with extra stereo busses). The assignable system allows a narrower module width to be used — as required by various broadcasting authorities — and for compactness of size to be retained.

The problem of size, ergonomics and general difficulty of operation, together with those of supplying consoles in various configurations, are overcome by using an assignable system.

Almost all the switch functions on the input and grouping modules with the principal exceptions of PFL, Solo, Mute and Remote Start are removed from the individual modules and relocated to a master assignment panel. Several other functions also retain individual local switches for preview or effects use. The removal of the switches also makes the rotary controls clearer.

Switch functions controlled

from the keyboard include:

- Main dynamics section characteristics (option);
- Channel input selection, from 3 inputs, with +48V, Phase, etc;
- Equalization in/out, including pass filters separately;
- Auxiliary output buss selection, with pre/post and in/out;
- Up to 48 routing busses and 6 stereo busses;

(and on non-automated systems:

- 4 DC subgroup busses;
- 4 Mute busses).

Additionally there are memory control function keys (Save, Load, Write, Read etc).

To access the keyboard from an input module, the 'INT' (Interrogate) button on the module will be pressed. The keyboard will then illuminate according to which functions have been selected. If these selections are to be changed, the appropriate switches on the keyboard are pressed and the new setup is stored in RAM.

When the engineer has set up all the input channels to his liking, the setup positions may be stored as a Page in the memory for long-term Recall applications, the various set up configuration may be stored as pages in the RAM and recalled as each new engineer begins work.

Assignment and selection of switches, busses, etc can be quickly checked using the keyboard and a large rectangular LED which is located in the meter hood behind each input module strip. Should the engineer want to check, for example, which channels are selected 'Eq

In', he simply puts the keyboard to 'Display' mode and presses the 'Eq' button. The LED behind all those channels selected 'Eq In' will then illuminate. This simple procedure can be followed for all keyboard-assigned functions.

Banks of assignment LEDs are not fitted to individual input channels, since our research has shown that this display method does not enhance operational convenience.

MODULES FOR ALL REQUIREMENTS

In the broadest sense, the general configuration of the APC1000 console is (n) inputs with routing up to 48 busses and six independent stereo busses, from each input.

The APC1000 may be configured for 48-track recording, as 48 mono subgroups, as 24 stereo subgroups, etc etc, as required; the console may, of course, be set up with less than the full amount of busses and in principle could even be supplied as a 6 into 1, or 12 into 2. The maximum amount of input modules which may be used in any one console is 88. Within this framework almost any variant is possible.

For a large multitrack console, the APC1000 can be configured using input modules as Buss/Tape monitor modules (for example, 96 input modules, using 48 for inputs and 48 as a (split) monitor), since the module width is narrow enough to support such a large configuration without extraordinary overall console width.

Amek is distributed in Australia by Creative Audio P/L.

make possible a wide variety of cross-fade and panning effects. This program is available as an option on new SP2016's as well as units in the field.

The new Channel Vocoder ROM is also available as an option. Another Eventide exclusive, this program high-lights the versatility of the SP2016. With the Channel Vocoder ROM, the SP2016 can function as a full 18 band, professional quality vocoder, with performance that compares favourably with the best high-end single purpose vocoders. "A vocoder isn't something you need every day. . .," commented an Eventide spokesperson, "but when you need one, nothing else will do. Now SP2016 owners can have the sound of a megabuck vocoder, for just the price of a software program."

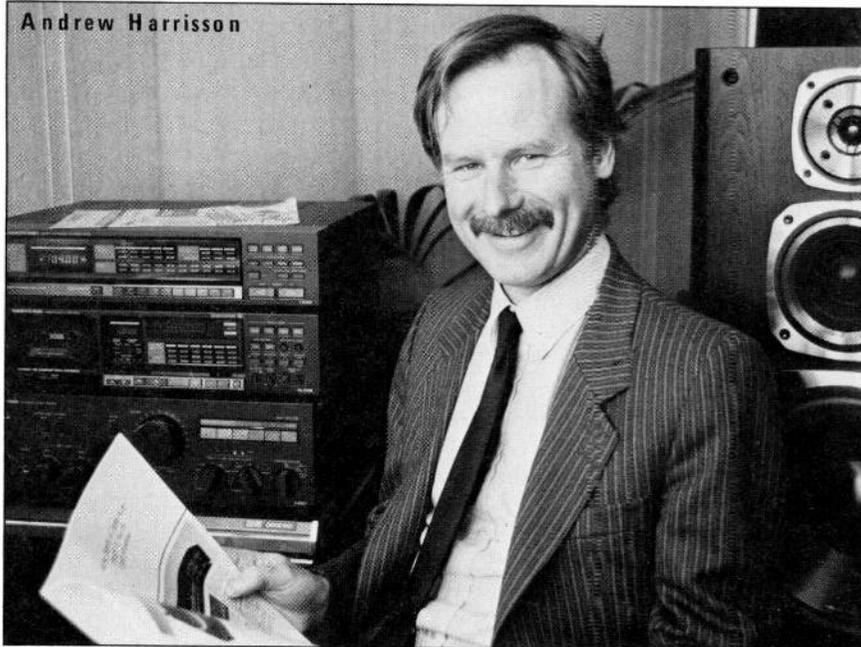
These new software additions represent the latest releases in Eventide's ongoing program of software development for the SP2016. As Eventide's spokesperson puts it: "We're not just updating existing programs, but also continuing to come up with whole new things for the SP2016 to do. In that sense, the product is always evolving. And that evolution benefits every SP2016 owner."

Eventide is distributed by W.C. Wedderspoon P/L.

ONKYO DISTRIBUTED BY RANK ELECTRONICS

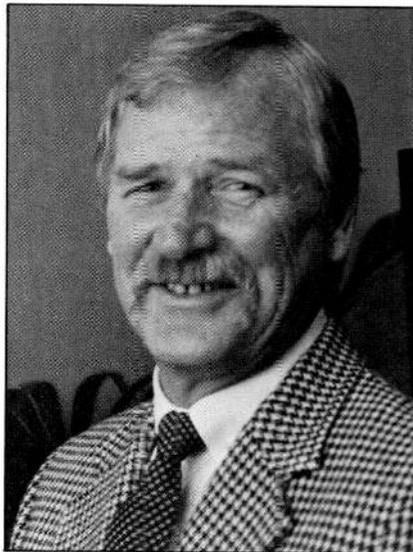
Onkyo products, featuring a range of sophisticated hi-fi audio components, are being marketed under an arrangement with Rank Electronics Pty Ltd - a subsidiary of the publicly listed Broadcast and Communications Ltd.

Andrew Harrison



Onkyo (the Japanese word for 'audio') is a highly respected name in the Japanese audio market, being one of the few companies to remain an 'audio specialist' throughout its 30 years of operations.

Mr McFarland has been appointed Sales Manager for the Onkyo range. Mr McFarland was previously Manager of Douglas Hi-Fi and Mr Ross Mather to handle the products in Victoria.



Peter McFarland

Andrew Harrison, General Manager of Rank Electronics' Audio Division, said the agreement with Onkyo represents Rank's first foray into the marketing of consumer electronics products. (The BCL subsidiary is a distributor of broadcast equipment, commercial and professional audio and audio-visual technology.)

"As one of the top three brands in the highly competitive Japanese hi-fi market, Onkyo is certain to make a major impact in Australia," Mr Harrison said. "To this end, Rank will be making use of its wide and well established distribution network."

For further information, please contact: Rank Electronics P/L.

SPECIAL OFFER ON AXR CONNECTORS

STC-Cannon Components Pty. Ltd. is offering a "beat the devaluation" special on AXR Series connectors. The AXR has a number of advantages over its XLR predecessors, including greater ease of assembly, superior cable clamping, and improved RFI protection.

TANDBERG: PROFESSIONAL AUDIO AT HI-FI OUTLETS

Rank Electronics Pty Ltd, distributors of the Tandberg range of top-market audio equipment, have announced a major marketing move to promote the well-known brand through Rank's newly established retail dealer network.

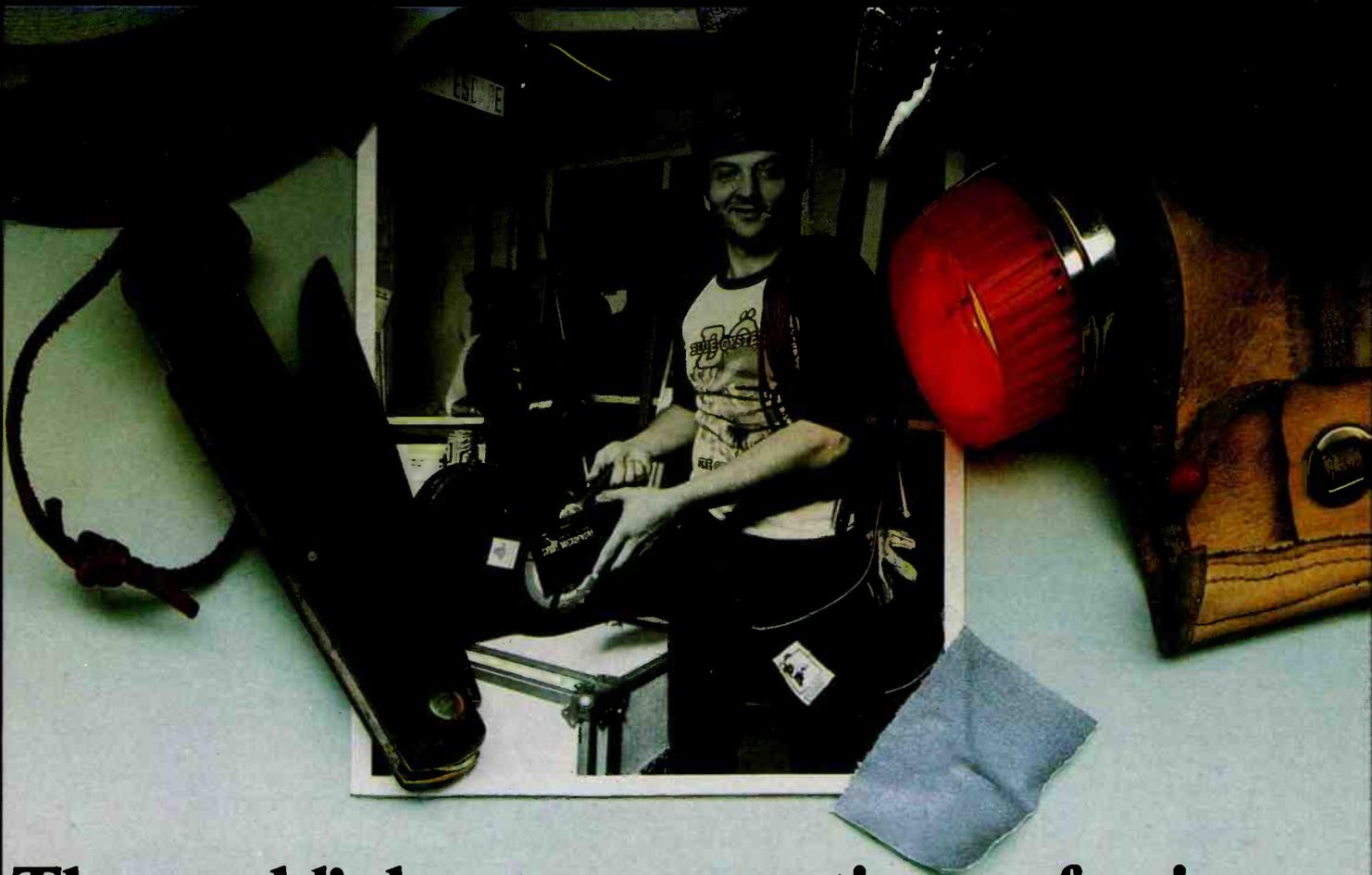
Until now Tandberg's main market has been studios and audio professionals who were looking for superior performance from their home audio equipment.

The Norwegian firm is a specialist electronics company which has established its reputation through manufacturing language laboratories and professional audio equipment geared to meet rigorous standards.

With Rank Electronics' decision to make it more readily available, Tandberg's high-end range of audio equipment - led by its exceptional 3000A series of tuners and amplifiers - will be actively promoted through Rank's newly set-up network of specialist audio dealers throughout Australia.

Tandberg's 50 years of operations spans many 'firsts' in the area of high fidelity electronics, including development of the first battery-powered radio in the 1930s.





The world's least conservative profession has maintained one rigid tradition. The SM58.

In an industry that discards electronic products like ice cream wrappers, the SM58 and its close cousin, the SM57, have remained the overwhelming choice of rock, pop, R & B, gospel and jazz vocalists for the last 16 years.

Why?

Simply because there is no sound quite like the SM58 sound. Its punch in live vocal situations, coupled with a distinctive upper mid-range presence peak and fixed low-frequency rolloff, give it the trademark quality no other manufacturer can imitate, although others have tried.

And to protect that sonic perfection, the SM58 is extraordinarily tough. Even six-foot drops on hardwood floors won't faze it. Ask any roadie who has used—and abused—one.

Performers the world over favor the weight and balance of the SM58, especially in hand-

held situations. Even the finish is totally professional—a non-glare grey that looks as great on stage as it does on camera.

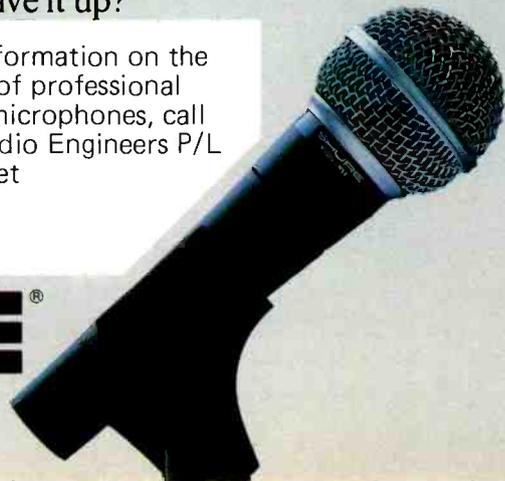
The crispness of the closely related SM57 enhances musical instruments the way the SM58 handles vocals. Beautifully.

Musicians are tough to please, but with the world-standard SM58 and SM57, they'll tell you, "when you've got a good thing going, why give it up?"

For more information on the complete line of professional performance microphones, call or write to Audio Engineers P/L
342 Kent Street
Sydney 2000
(02) 29 6731.

SHURE®

THE SOUND OF THE PROFESSIONALS®... WORLDWIDE



News BROADCAST

IREE REVIEW

CROTAN ISOLATION TRANSFORMERS

Computers, telecommunications, instrumentation process control equipment and other electronic devices are extremely prone to transients and noise. Crotan Electronics has introduced a range of 'Isopac' super isolation transformers which offers 160dB common mode noise attenuation at ratings to 10kVA.

Isopac virtually eliminates common mode noise problems, minimises the effects of transverse mode noise, isolates sensitive equipment from 'noise' producing equipment from other equipments sharing the same power line. It can be used as a 'step up' or 'step down' transformer and operates from either 50 or 60Hz.

Contact Paton Electrical or see our 1985 Yearbook.

SOUND TECHNOLOGY INTRODUCES NEW AUDIO TEST EQUIPMENT SERIES

Sound Technology has introduced the 3000 Series of audio and transmission test systems designed for benchtop, field service, production line and remote testing.

The 3000 Series consists of two separate components: the 3100A Generator and the 3200A Analyzer. Both microprocessor-based instruments feature front panel programmability which allows storage of extensive automated test sequences. Both also feature the ability to communicate test data through the audio line being tested because of an exclusive Frequency Shift Keying (FSK) technique. This feature allows unmanned, automated remote transmission line testing (such as proof of performances for microwave, satellite, or telephone lines) without the need for external computers and modems. Test results are achieved in less than sixty seconds and may be graphed on a standard printer or plotter. If desired, the 3000 Series functions may also be controlled via RS-232C or GPIB (IEEE-488) communications ports.

The two channel, electronically balanced and floating 3100A Generator outputs sinewaves, squarewaves, IMD, toneburst and sine-step waveforms. The two channel companion 3200A Analyzer will measure level, noise, frequency, harmonic distortion, intermodulation distortion, phase error, channel separation and quantizing noise (digital data).

Contact Dindima Industries or see our 1985 Yearbook.

AMBER 5500 — PROGRAMMABLE DISTORTION AND NOISE MEASUREMENT SYSTEM

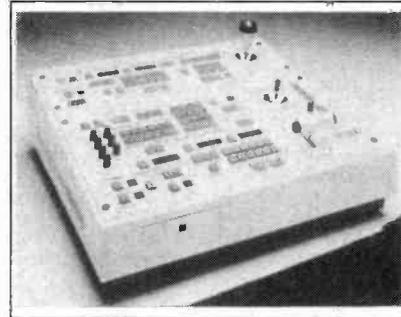
The Amber model 5500 is a fully automatic, programmable, high performance audio measurement system.

The model 5500 contains a high performance programmable generator covering the range of 10Hz to 100kHz.

The 5500 measurement section measures signal level to over 100 V (+40dBm) noise to below -120dBm, total harmonic distortion to as low as 0.003% (-90dB) and optionally, intermodulation distortion.

Contact Rank Electronics or see our 1985 Yearbook.

NEC EFFECTS



NEC's reputation as a manufacturer of quality electronics equipment, plus extensive use of advanced C&C (Computer and Communications) technology is combined to assure reliability in the E-FLEX II, say the company.

Logical controller panel layout and bubble cassette memory make operation smooth. Two channel operations are possible, since the main unit and controller are electrically separated. Each can be used in different voltage areas. Effects programmes can be recorded and saved for more efficient use of production time. New effects are the freeze and slide effect (optional), A/B switch function (optional) and cropping effect (basic).



FOR—A MIXER

CVM-500 is a competitively priced PAL mixer specially designed to provide post-production users with the best picture quality that competent processing can offer, claim For—A. Edge noise is reduced to a minimum during keying, matting and wipe operations, and a high resolution image is produced for all modes of mixer operation.



CVM-500 is a compact, portable product that interfaces with existing equipment and offers a wide range of features, including the optional CCK-500 Exkey chroma keyer and FXM-500 Extrol effects memory. For further information contact Hagemeyer BV.

NEW UNIT INTRODUCED FOR MTS BROADCASTING

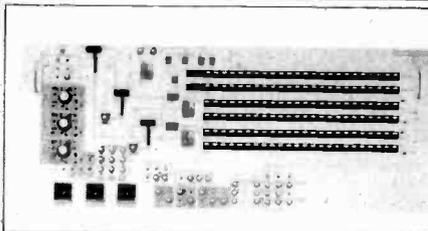
Studio Technologies recently announced, the introduction of its RCU-1 Recognition Control Unit. The RCU-1 is designed for use in conjunction with MTS television broadcast operations. The unit precisely determines and displays the mono/stereo status of broadcast audio programming and automatically switches a stereo simulator into the on-air broadcast chain upon recognition of mono.

The RCU-1 employs VCA based cross-fading circuitry so that the transition from true to simulated stereo is smooth and inconspicuous to listeners. Extensive circuitry is used to allow +/-45 degrees of phase error (at 1kHz), and channel level difference of 10dB to still be recognised correctly.

The RCU-1 can also be used as a dedicated mono/stereo recognition device in a television broadcast or production facility. Prior to broadcast, videotapes can be monitored to determine the actual status of the audio channels present.

OMNIREADER

Is a revolutionary system in taking words from page to computer. It has a feature which allows the unit to learn various typefaces; word processor and computer compatibility; suitable for entering electronic mail. Contact: Audio Engineers or see our 1985 Yearbook.



CROSSPOINT LATCH 6139

From their extensive range of production mixers comes the powerful 6139. It has a unique design which permits portions of five different video signals (not including the downstream keyer), to be displayed at the same time, thus making maximum use of its six buses. The Preview bus is independent of the programme system, and can be used to preview the entire complement of mix-effects systems, including the downstream keyer.

Beginning with a background scene, the 6139 permits the operator to add a bordered insert over the scene, to add another insert alongside the first one, add a third insert within one of the other two, then add a key over the entire combination and follow that by dissolving the downstream key over all of them. The preview system is just as versatile, and is independent of Program. The master fade to black fades everything to black including the downstream keyer.

QUANTEL ADD TYPEFACES

Quantel introduced hundreds of new typefaces to the Paintbox. Although of course not confined to character generation, the Paintbox can now rival the non-graphics competition for text variety and production.



Licensed now for use on the Paintbox are: International Typeface Corporation, Letraset, Mergenthaler, Linotype, Stempel, Hass and the Monotype Corporation.

COST EFFECTIVE AUDIO SYNCHRONIZER FROM McCUBBIN

The synchronizer enables the playing of a multitrack recorder in perfect sync., with a video recorder. This is achieved by using one of the multitrack recorder's channels to record a "control track". In an initial recording session the video is recorded on a video recorder and an audio track is either recorded on the video recorder or one track of the multitrack recorder. From this starting point the audio can now be multitracked until the final recording is achieved. It is then a simple procedure to obtain a replay of both video and the multitrack audio - during this replay the audio can be mixed and dubbed onto the video tape, thus obtaining an excellent sound track for any video recording. Available from Everything Audio Video P/L.

McCUBBIN MBC-10

A low cost stereo 'on air' broadcast console with simplicity of operation as the major design consideration.

JUST RELEASED!

THE 1985-1986 AUSTRALIAN SOUND & BROADCAST YEARBOOK. The complete recording, broadcast and associated industry reference book.

THIS LONG AWAITED INFORMATION SOURCE IS LARGER & MORE COMPREHENSIVE THAN BEFORE.

Nearly 400 pages covering 38 categories of audio equipment and their suppliers. 142 categories of Broadcast equipment, not to mention music publishers, recording studios, film mixing and post production, disc cutting services, live sound hire, record companies and labels, video and audio visual production and much, much more!

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Inputs/Outputs: 6 unbalanced stereo inputs, 2 low impedance balanced mono mic inputs (XL3) with 40dB of gain control. 2 stereo phono preamp inputs RCA with +/-10dB gain.

All outputs (via 6.5mm Tip and Sleeve): 1 stereo unbalanced output referred to as Program. 1 stereo unbalanced output referred to as Cue. 1 stereo monitor output from the monitor selector for a headphone amp or to drive 600B headphones. 1 mic muted monitor output from the monitor selector for a speaker amp. 3 stereo monitoring inputs. 1 Tip and Sleeve connector to an open collector which goes low whenever a mic is selected.

Available from Everything Audio Video P/L.

HIGH DEFINITION VIDEO SYSTEM

AAV is the first and only company in Australia to have produced a demonstration montage using the new High Definition Video camera and associated equipment.

The first recorded video image was on an Edison style gramophone disc in England in 1927. Its inventor, John Logie Baird, called it "Phono-vision", but saw little use for its 30 line picture since it couldn't compete with the film quality of the day.

In Australia, we've been exposed for some 30 years now to the standard PAL image of 625 lines — a huge improvement on Logie Baird's earliest efforts.

But now, there's High Definition video, and the improvement is obvious in picture quality. We now have 1125 line picture resolution, an aspect ratio of 5 horizontal to 3 vertical, and overall, five times more information is contained in the picture compared to the current system.

The system uses the very latest technology such as fibre optic cable and digital processing, and a particle beam transferring system allows for the conversion to 35 millimetre film stock. The implications for the movie business are obvious.

It's early days yet for High Definition Video. The images are the first to be recorded in Australia. But overseas, a range of complimentary equipment has been developed such as telecine chains and vision mixers. It's an exciting glimpse in the future.

The programme produced by AAV Australia consists of material shot in and around Melbourne in various locations, and part of it features well known Australian singing star, Wendy Stapleton, recording a new song written especially for the occasion by Peter Sullivan, who also produced the track, and is seen with Wendy in the segment.

AAV Australia acquired the use of the High Definition Video System equipment through the courtesy of Sony Australia.



AMPEX ADO

The ADO 2000, a new member of the Ampex Digital Optics (ADO) family, was shown at the NAB in April. Designed for the specific production needs of broadcasters, as well as for on-air use, the new ADO 2000 is available as a single channel, expandable to two, three or four channels.

The basic system provides quick access to the 30 most used on-line effects, each available with a keystroke or two. The ADO 2000 can be equipped with rotational ability, a wide range of effects from the Digimatte dedicated key processing

channel, and true 3-D perspective.

Ampex has also introduced Infinity, an ADO accessory that enables graphic artists to pass frames, planes or objects directly through each other. Using 3-D priority technique, Infinity keeps track of and locates all pixels in X, Y, and Z space, allowing one plane or object to slide through another. The operator can pass people through walls, intersect planes in 3-D space or build a variety of other effects never before possible. Infinity also includes a target framestore system, which lets users build swirls, trails with variable decay and sparkles into their effects. Contact Ampex Aust. P/L.

RME PRODUCT HIGHLIGHTS

Stereo Limiting Amplifier (334A1)

This unit is primarily designed to prevent over-modulation of broadcast transmitters. However, it may also be used to provide record level limiting for professional tape recorders.

DIL switches inside the amplifier allow for the simple selection of the ideal mode of operation for:

- 1) FM Stereophonic or monophonic transmission,
- 2) AM Stereophonic transmission employing the Motorola C-QUAM system. Limiting criteria precisely follows the Motorola recommendations,
- 3) AM Monophonic transmission,
- 4) Limiting for the input of tape recorders, digital delay machines, etc.

Stereo Level Indicator (451M1):

This is an advanced designed level indicator employing dual-in-line 80-LED VU display.

The unit accepts stereo left and right input signals from 600 ohm balanced lines and provides:

- 1) Readings of left and right signals on two in-line displays,
- 2) A peak warning LED module operative on L & R signals, depending on whichever is the greater. The trigger level may be customer—reset,
- 3) Illumination of a red LED module when there is a gross aberration of relative phase between L & R signals, indicating that the programme has been connected or recorded out—of—phase, and

- 4) (L+R) and $-(L-R)$ outputs are available on BNC connectors as y and x drives respectively for a CRO. These outputs are of great advantage in determining the nature of the stereo signal in both phase and amplitude for AM and FM broadcasting. When dealing with AM Stereo, the y axis (L+R), corresponds directly to the amplitude modulation and the x axis $-(L-R)$, corresponds to phase modulation.

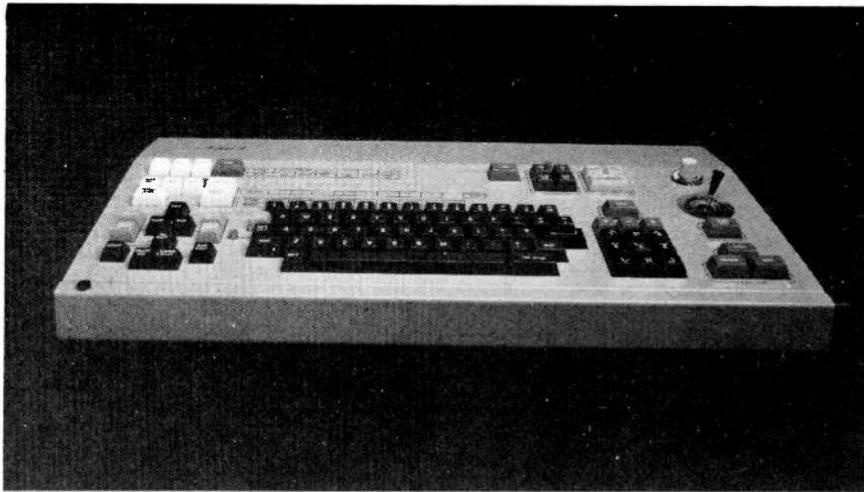
NEW ASTON MACHINE

Aston are well established as a leader in the field of character generators, and their new Aston 4 (launched at Montreux) attempts to further consolidate that reputation.

The company believes they have rivalled the definition of mechanical graphic artwork with this new machine. A complex filtering system

has eliminated horizontal display flicker (aliasing), diagonal stair-stepping and top and base flattening of curved characters.

There is automatic kerning, resolution of better than 10 nano-seconds, and freedom from spacing constraints. The system offers a 4096 colour palette, diagonal writing, a library of over 1500 licensed typefaces and multi-coloured logos, among other features.



THOMSON BACK TO BASICS

Thomson—CSF has expanded its character generator line with the introduction of a new, medium priced Vidifont. The new system has many of the basic features of the higher-end Vidifont Graphics V, with the capability to incorporate optional features such as animation, time—sequential—overlays (TSOs) and the playback sequence controller.

The new system has access and compatibility with Thomson's complete font library of nearly 100 faces. In addition, Thomson's font and graphic compose service can create custom fonts and logos for use with the new system.

Launched last month, Thomson believes that the new unit will provide corporate, educational and commercial users with a new dimension in character generation at a moderate price.

FOR—A CROSSOVER

This interesting new product — a character effect interface — provides a wide range of exciting digital effects for characters produced by a character generator, or title camera system.

Effects include cut, fade, wipe, compression, spin, push, mosaic and back push. Each effect can be performed in any one of eight directions with a choice of four display speeds. The CE—10 can take up to three character inputs and a title camera source, and colourise each. The unit also generates background colour as well as adding a black edge to characters.

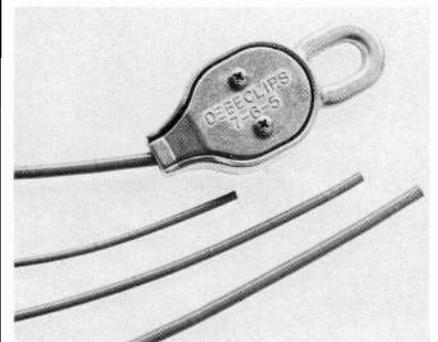
The CE—10 interfaces easily with many currently available character generators and title cameras to provide professional character effects, say the company.

GUY WIRE SUBSTITUTE NOW AVAILABLE IN 6 MILLIMETRE SIZE

GFS Electronic Imports of Mitcham, Victoria, have announced that they now have 6mm Debeglass antenna tower guy—wire substitute available as a stock line. The addition of DB—6, 6mm Debeglass to the range means that their customers now have the choice of 4mm, 5mm and 6mm sizes.

For those not familiar with Debeglass, it is a non—conducting, non—corrosive, low elongation, high tensile wire substitute which has a number of applications in the area of radio tower guying. It also has applications in many other areas including the fishing and marine industries, mining, offshore exploration and drilling as well as building.

The new 6mm diameter DB—6 Debeglass has a tensile strength of 970 kilograms with a weight of only 44 grams per metre. DB—5 and DB—4, 5 and 4mm Debeglass, offer 560 and 430kg tensile strength respectively for weights of 31.5 grams and 19.5 grams per metre. Termination of the three Debeglass sizes is done simply by using a thimble and standard "D" clamps or with a debeclip, of the type shown in the photo.



For full specifications and a brochure on the range of Debeglass wire substitutes contact the Australian distributors: GFS Electronic Imports, Phone (03) 873 3777, Telex 38053 GFS.

SOUND TECHNOLOGY AUDIO GENERATOR

Sound Technology Inc. have introduced the 3000 Series of audio and transmission test systems designed for benchtop, field service, production line and remote testing. Maximum flexibility is provided by a separate generator and analyser which communicate through the audio line being tested (based upon a European Broadcast Union proposal). The

generator and analyser have extensive front panel programmability allowing storage of entire automated test sequences such as proof of performance. This unique approach allows unmanned automated remote transmission line testing to be performed through any audio line being tested (ie. microwave, satellite, or telephone transmissions) in typically less than 60 seconds, without usage of modems or external computers. Test results can be graphed on a standard printer or plotter. The 3000 Series can also be programmed with RS-232C or GPIB Interface.

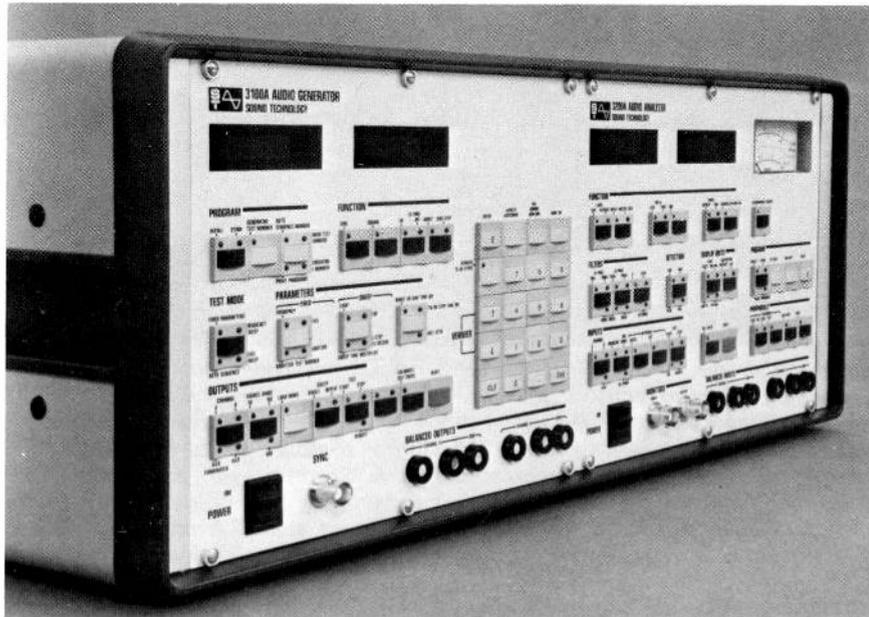
The 3100A Audio Generator is the most versatile available, generating sinewaves, squarewaves, IMD, tone-burst, and sine-step waveforms. Output is two channel, electronically

balanced, and completely floating. The 3200A Analyser performs more measurements than any other analyser available, including level, noise, frequency, harmonic distortion, quantizing noise, intermodulation distortion, phase error, and channel separation. Exclusive features not available in any other system include ease of remote testing, ability to measure quantization noise in digital audio systems, +30 to -90 dBm/600 ohm output levels, sine-step test, squarewaves up to 50kHz and 10, 25, 50 and 75 microsecond de-emphasis. Other features include extensive RF rejection, distortion less than .001%, and a measurement speed of 500 msec for distortion and 150 msec for level above 50Hz.

10½" reels).

- Built-in time code generator. Transport and generator will self-lock to external time code input.
- Serial and parallel machine control port upwardly compatible to future unified studio control bus.
- MVC (manual velocity control) for editing.
- Variable spooling speeds in fast forward or rewind to safeguard valuable masters.
- Highest reliability through use of proprietary LSI circuitry, reducing power consumption and internal system interconnections.
- A new generation microprocessor controlled transport.
- Rugged cast deck plate ensures long-term stability.
- Compact design provides for rack mounting, console mounting, or portable use.

Available from Sony Australia P/L.



COX T8 VISION MIXER

Cox announces the release of their new 8 input 'T' Series Mixer. The T8 retains much of the powerful facilities of its big brothers, the T16 and T24, but in a more economic package suited to post production situations. Available from Quinto.

ROTATABLE, LIGHTWEIGHT TELESCOPIC MASTS FROM SCALAR

The Clark ST series telescopic air operated masts are most suitable for carrying directional antennas. Five masts are in the ST series and have extended heights from 7.62m for ST1 to 12.19m for ST5. The maximum recommended headload varies with size but range from 9 kgs to 4.5 kgs.

Models ST3 and ST4 are particularly suitable for mounting inside small vehicles whilst the range as a whole finds abundant applications in communications headquarters and exhibition caravanning, outside broadcast and scientific survey vehicles. The ST series are sturdy, lightweight and rotatable.

There exist many applications where a well engineered heavy duty mast is required yet, because the headload is low a P.T. series mast seems too heavy for the application. If at the same time the headload must be rotated with the mast or remain aligned with the base during extension, then an ST mast with its axially keyed

SONY PCM-3102 DIGITAL AUDIO RECORDER

This 2-channel Dash format recorder/reproducer combines the sonic advantages of digital recording with a new generation microprocessor controlled transport. All customary machine control functions have been provided, including repeat, MVC, and autolocate. Several new functions have been added, including a built-in SMPTE/EBU time code generator for location and synchronization. The transport provides the intelligence necessary for serial machine control in future studio networks, while allowing room for future software enhancements.

Features:

Dash format's 16-bit linear quantization and switchable 44.1kHz

and 48kHz sampling frequency yields a dynamic range of over 90dB with frequency response within +0.5dB and -1.0dB from 20Hz to 20kHz. The Dash format digital, generation after generation, with no loss in quality.

- 44.1 and 48kHz switchable sampling frequencies. 44.1kHz for direct transfers to PCM-1610 system for CD mastering, through optional interface.
- Five-channel format: 2 digital channels, 2 analog channels, one dedicated time code channel.
- Analog audio tracks are time aligned with digital audio, enabling razor blade editing and sequencing.
- Provides up to 3 consecutive hours of recording or playback on digital ¼" tape such as Sony V-16 on 12.5" reels (2 hours on

sections is clearly the choice. Although the small diameter top section limits the headload, the small volume results in a mast which is very quickly extended when powered by a standard Clark power pack or even a hand-pump. The base tube diameter of all ST series masts is 3 inches. They have a maximum of 5 sections. Each tubular section carries a full length keyway to prevent relative rotation. ST masts are therefore suitable for carrying directional antennas. Rigidity when extended is achieved by the use of an expanding collet ring fitted within the tube overlay. A special rubber seal moulded by Clark and fitted to each piston ensures a very high standard of sealing under all conditions. The base of each mast is fitted with a safety valve, condensate-water drain valve and air inlet connector. The headload clamping socket in all models is standard 24mm diameter.

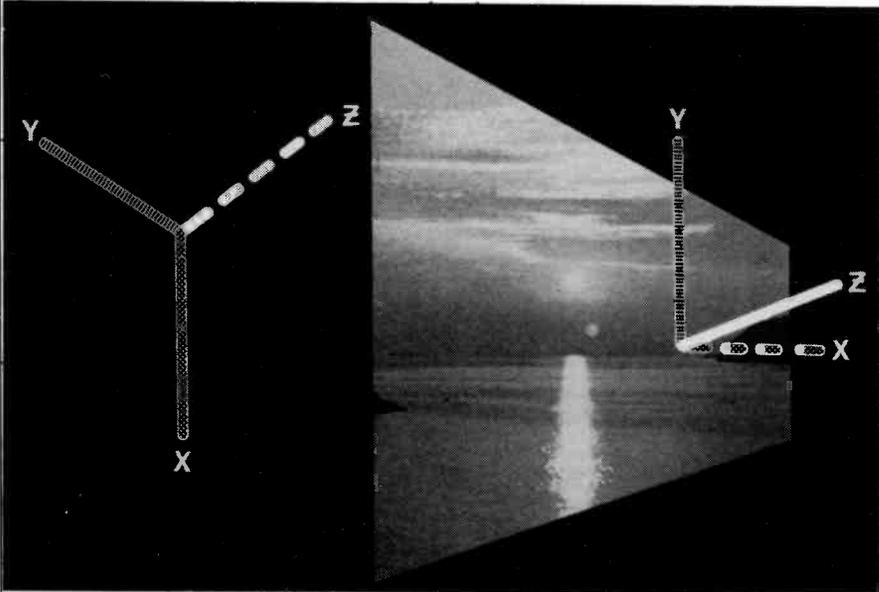
A full range of installation accessories is available, the most commonly used of which are clamp collars for semi-permanent extension; turntable base with brake, a weather-proof vehicle roof bearing and a side handle to assist rotation.

Maintenance is limited to regular cleaning of the exterior surfaces and at very long intervals, light greasing with silicone grease. When eventual servicing is required no special tools are needed and all the work is within the capability of the simplest workshop.

For further information please contact Scalar Distributors Pty. Ltd., Head Office, 20 Shelley Avenue, Kilsyth, Vic. 3137, Phone (03) 725 9677 or branch offices Sydney (02) 502 2888, Brisbane (07) 395 1188 or (07) 395 1817, Perth (09) 446 9177.

QUANTUM NEW RELEASES

"Step Closer To The Digital Studio" was the theme of the Quantum Electronics exhibit at IREECON 85. Quantel's Encore Digital Video Effects System operating on the SMPTE/EBU 13.5MHz 4:2:2 digital sampling standard. The integral combiner allows any practical number of Encore video channels to be inter-connected digitally via a parallel high



speed highway. Furthermore the Encore control flexibility is such that the remarkable Quantel Mirage with Floating Viewpoint Control may be integrated with Encore channels and controlled from any mode.

The Quantel Digital Paint Box, now includes a "Perspective" capability. Cypher - The Ultimate Caption Illusion was also on display together

with Quantel's DFS 3005 and DFS 1751 Digital Framestore Synchronisers. Cypher provides print quality characters with the ability to perform Encore like 3-D manipulation.

Thomson cameras - TTV 1525C Studio/OB colour television camera together with the "Betacam" plug compatible 1623/1624 series ENG/EFP colour cameras. The PAL version of the well known Thomson Vidiplex system was shown combining two

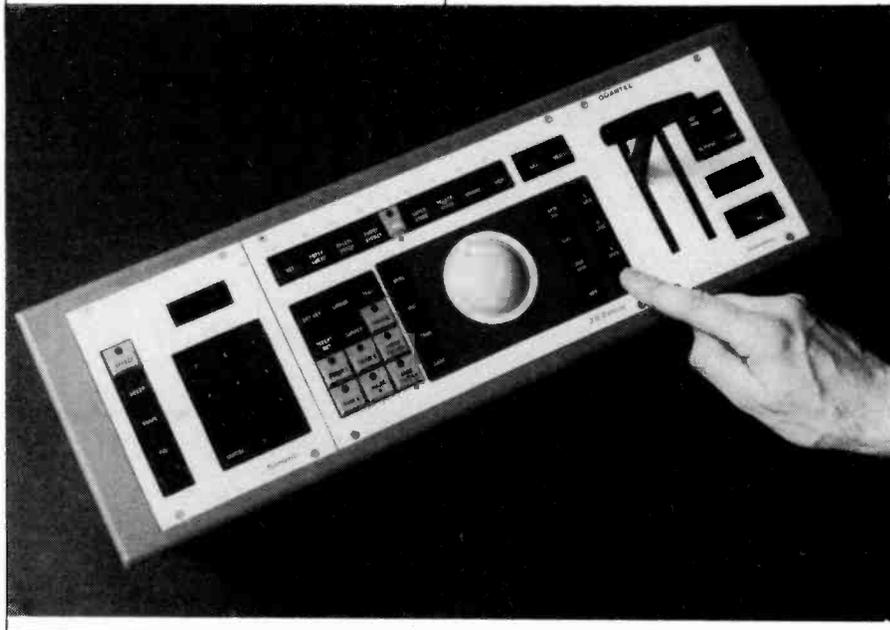
colour television programs for transmission over a single video channel.

The recently released Thomson ultra compact, high resolution CCD Slide Scanner with an optical zoom capability was displayed on the Quantum stand. A computer assisted video test set known as Thomcat was also exhibited by Thomson at IREECON 85.

New Vision Mixer from CDL, a Fibre Optic Video/Audio Link from Artel, Skotel Time Code Generators and Readers, a Pearce Time Code Sync Monitor and the Polar Safe Area Generator. The CMC Technology Format DPT replacement video head was also featured.

AUDIO KINETICS RELEASES "MASTER MIX"

Master Mix is an independent automation system for audio consoles. The system requires only one audio track for the standard SMPTE/EBU time code, information is stored on a 5.25" floppy disc with 600k bytes of data storage. Some features include: independent level and mute automation; automatic on line edit and merge; mastergroup; time code generator; requires no machine inter-



Shure's new FP31 Mixer. All the features without the weight.

The most innovative field production mixer of its kind, Shure's new FP31 packs in the same important features as much larger, heavier mixers. Plus a few of its own. You won't find another mixer this small with these features, dependability and ease of operation.

- Size just 6 $\frac{1}{3}$ "x5 $\frac{1}{3}$ "x1 $\frac{7}{8}$ "
- Weight 2.2lbs Mic/line level on every channel
- Limiter with adjustable

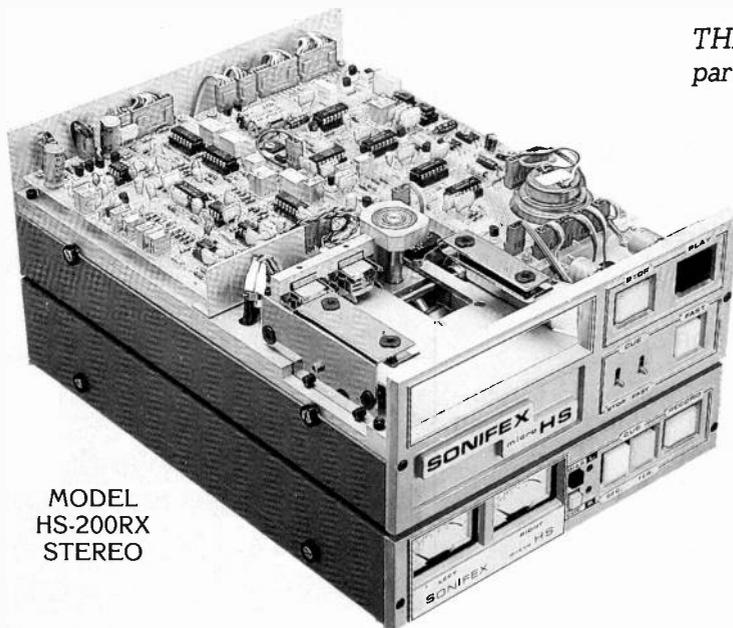


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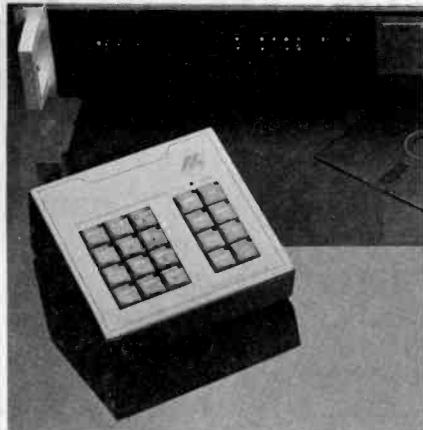
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ace; disc to disc copying. For further details contact: Magna-Techtronics or see our 1985 Yearbook.



BETACOM UNIRAC

This New Zealand company has just released the 19" Eurocard rack system which is now available in almost any configuration. Distributed in Australia by: Temple Smith Aust. P/L (03) 646 5353.



FOR SALE

Tascam 90-16 16-track 1" multi-track. Full dbx and real time remote. 10 Ampex 456 tapes - \$8,500 o.n.o. Phone: Jim (02) 519-2182.

FOR SALE

Urei Time-Aligned Studio Monitors. Bargain at half price o.n.o. (02) 331-3313.

FOR SALE

Ampex MM1100 16 Track, remote, new heads - \$13,000 o.n.o.
 CSR Series, Master Room Reverb - \$1,300 o.n.o.
 Roland DC-30 Analog Chorus Echo - \$200.
 Roland GR-500 Guitar Synth, stand and guitar - \$900 o.n.o.
 Roland Comu-Rhythm Machine CR-8000 - \$450.
 Telephone: (08) 267-4455.

WANTED

Soundcraft Series 2400 console, Soundworkshop or similar. Telephone: (08) 267-4455.

FOR SALE

Tascam M35 8 in 4 out recording desk, includes talkback module. Excellent condition - \$1,600. Telephone: (060) 24-1168 (A.H.).

FOR SALE

Otari MX50/50 Mk III 8 track with 8 channels of DBX 150. Allan + Heath Series II 16-8-16 mixer - \$6,500. Ring Bruce (03) 583-2341.

FOR SALE

dbx 900 rack with 4x 903 com/expander modules. Room for up to four more modules, eg. flangers, parametrics, gates etc. - \$1,900 o.n.o. Contact Peter (03) 859-1947.

FOR SALE

RECORDING/REHEARSAL STUDIOS

84-85 gross turnover \$124,000. Genuine enquiries welcome. P.O.A. Ph: (02) 660-8776.

FOR SALE

Tascam 38, almost new, perfect condition. Must sell - \$2,950. (02) 699-7931.

FOR SALE

dbx 180 Type 1 two track, professional noise reduction. Mint condition - \$600. Ph: (03) 428-4622.

FOR SALE

MCI 16 track - good condition - \$15,000. (03) 537-2166.

FOR SALE

Soundcraft Series II mixer. 24:4:2, includes flight case. Excellent condition - \$5,800.

2x TurboSound TMS 3. Ex demo. Brand new JBL components. New cost \$7,500 each. Sell for \$4,500 each.

2x Turbo Tms². Brand new, still in cartons - \$2,325 each including tax.

Phone: Mike (03) 598-1768 or Dennis (03) 890-9441.

FOR SALE

Dynafex single ended noise reduction system. 1U 19" rack mount - \$1,000 o.n.o. (08) 212-7053 - AI.

FOR SALE

1x Scamp Rack with power supply. Includes 2x compressors, 2x noise gates, 1x flanger. \$1,300. Ph: (02) 587 7946, 587 0694.

FOR SALE

1x Otari MX50/50B 2 track. Includes remote. \$1,700. Ph: Ross McGregor (02) 587 7946, 587 0694.

POSITION VACANT CHIEF AUDIO LECTURER

Minimum 10 yrs experience of 24-track recording techniques, including first hand experience with digital recording, both pop and classical music. Experience with the NECAM computer assisted mixing system and familiarity with all types of automated mixing. Applicant must have a clear understanding of psychoacoustics, physics and recording techniques.

Phone: Tom on (02) 699 7931



EVERYTHING AUDIO VIDEO have moved to:

59A Waratah St. Kirrawee NSW 2232 Tel. (02) 542 1767

NORTHWEST RADIO

New postal address is:

PO Box 99 Tuart Hill West Australia

News FILM/AV

KODAK DATAKODE

According to Kodak, Datakode represents a technological breakthrough through which unites chemical and magnetic imaging to give film the ability to "converse" with computers. This would substantially reduce post-production time and costs.

The Datakode magnetic control surface is a thin, transparent layer of iron oxide particles (approx. 9 billion per square inch) which is coated across the back of the film. This coating is less than 8 microns thick, but it allows recording of up to 100 bits of binary data on each frame. This will allow a uniform frame-indexing code which can be used for both film and video-tape. Kodak calls it "The most significant development in motion picture technology in the last 50 years."

PICTUREMAKER tm

PictureMaker tm, Cubicomp's new computer graphics system designed for the video and film animation market, was released this April at NAB. PictureMaker tm generates and animates sophisticated 3D scenes, while being easy to use. Since NAB, sales of PictureMaker tm indicate that it is a resounding success, meeting the needs of video production houses throughout the United States.

PictureMaker tm has a number of indispensable features:

- * Simultaneous display of over 65,000 colours.
- * Modelling and rendering of virtually any 3D images.
- * A paint program for creating 2D backgrounds and images.
- * Motion scripting, speed specification, and in-betweening for animation.
- * Titling — eight standard fonts are included.

An enhanced version of PictureMaker tm is being released at Siggraph. Important new capabilities are: texture mapping, which enables a 2D image, such as a pattern, to be superimposed on a 3D object, such as a sphere; improved anti-aliasing; translucency, for the creation of trans-

parent effects; Phong shading to produce reflective surfaces; and multiple light sources, for heightening the effect of realism in an image.

MODELMAKER tm

Cubicomp's ModelMaker tm series of solid modelling hardware and software packages was introduced this past April at NCGA. ModelMaker/500 tm, ModelMaker/300 tm, and ModelMaker/100 tm are all based on Cubicomp's 3D solid modelling software.

ModelMaker/500 tm is the top of the line, using Cubicomp's 12 bit frame buffer, producing 512 x 512 images, with 4096 colours simultaneously available from a palette of 16.8 million.

ModelMaker/300 tm and ModelMaker/100 tm are software-only packages, using commercial graphics cards. ModelMaker/300tm has capabilities for wireframe display and shaded surface rendering in 256 colours, using a 9 board, and 512 colours with the Vectrix board. ModelMaker/100 tm produces hidden line wireframe display, using the 16 colour enhanced graphics display of the IBM PC, with the Conographics board.

NEW ALTEC IMAGE

Recently, senior management from Gulton Industries Inc., visited Australia for discussions with Comstar Electronics Pty. Ltd., the Australian distributors for Altec products.

Following the two day meeting, it was concluded that Comstar would re-establish the traditional Altec name in Australia as leaders in the Sound Reinforcement field.

Gulton have pledged that they will work toward restoring Altec Lansing to the greatness it deserves, and will establish a new, and even higher, standard of achievement and innovation.

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subconsciously the viewer will find a composition built round the diagonal of the screen more dynamic and compelling than one based on horizontals.

3D INTO 2D

Cameramen, designers, lighting supervisors and directors are united in all their pictorial endeavours to use a two-dimensional medium to give the impression of a three-dimensional world. They are trying to create the illusion of the missing ingredient — depth. They rely on perspective to do this wherever possible — the fact that subjects nearer the camera appear larger than those further away. A

looking at her husband. In either case the centre of the screen is filled with a close-up of one of the principal participants is shown full-face. And finally and most importantly because one character is nearer to camera and therefore larger (as the other is further away and therefore smaller) the over-shoulder shots vividly create the illusion of depth.

In the absence of a foreground person a foreground object may be contrived to create this illusion of depth. If husband and wife were discussing her birthday present for instance, an apt introductory shot might be a close-up of the package in foreground, with the couple in the background.

be able to arrange for the senior studio cameraman to attend the final days of his outside rehearsals. Otherwise director and senior cameraman do not come face to face until the planning meeting on the eve of the studio transmission or recording day.

Lenses and composition principles apply equally to studio or location shooting. The actual shooting technique however is quite different. On location there is generally only the one camera which has to be moved successively to the various shooting positions. In the studio multiple cameras are generally used and the transition from shot to shot can be made instantaneously by vision mixing as well as by editing.

The single location camera with its tripod and collapsible base or 'spreader' on which it stands is awkward to reposition. The studio cameras by contrast, on ball-bearing mounted pedestals can be manoeuvred and repositioned easily by their cameramen over the perfectly smooth and level studio floor. This means that moving 'tracking' or sideways 'crabbing' shots or even more spectacular up/down and forward/backward 'crane' shots can all be achieved with much less preparation and complication than on location.

Even if camera movement is easier in the studio, the wise director will not indulge in it unless the move is motivated by action and content.



OVER-SHOULDER SHOTS FEATURING WIFE AND HUSBAND CENTRE FRAME RESPECTIVELY

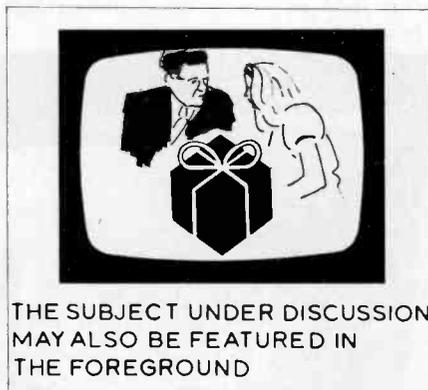
common situation in television programmes is two people talking to each other shown in a two-shot. In dramas, in news interviews, or in discussion programmes director and cameraman have to establish that A is talking to B.

Once the 'establishing two-shot' has set the scene, one can show individual close-ups of A and B, first the camera's position and the framing of the two-shot must be decided.

Alas some TV programmes which should know better, offer up two-shots not vastly different to a child's drawing. They are normally to be rejected on the following grounds: the empty centre, viewers automatically and instinctively look at the centre of their TV screens. In this case, centre screen is occupied by empty space while the two people are squeezed into the edges of frame; secondly both are in profile so that the full face of neither can be clearly seen; and finally by placing them equidistant from the camera they look flat and two-dimensional cardboard cutouts. The cameraman and director have eschewed all help which they could receive from perspective.

Now consider the over-shoulder shot, the camera is positioned so that it peers over the husband's shoulder at his wife or over the wife's shoulder

The cameraman would suggest using a wide-angle lens for such a shot which would make the foreground object larger and diminish the background figure. He would be using the slight foreground distortion which wide-angle lenses suffer from and make it work to help achieve a dramatic effect.



THE SUBJECT UNDER DISCUSSION MAY ALSO BE FEATURED IN THE FOREGROUND

LOCATION AND STUDIO

Normally the director meets the film or video cameraman with whom he is going to do location shooting long before he has the chance to consult the senior cameraman of his studio crew. If he is engaged on a drama or a major light entertainment show, he may be fortunate enough to

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