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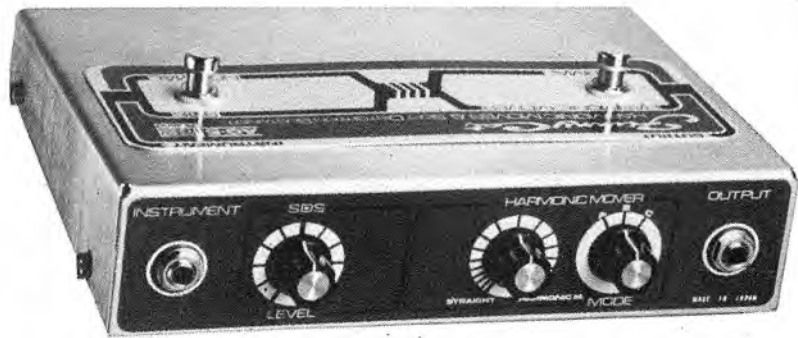


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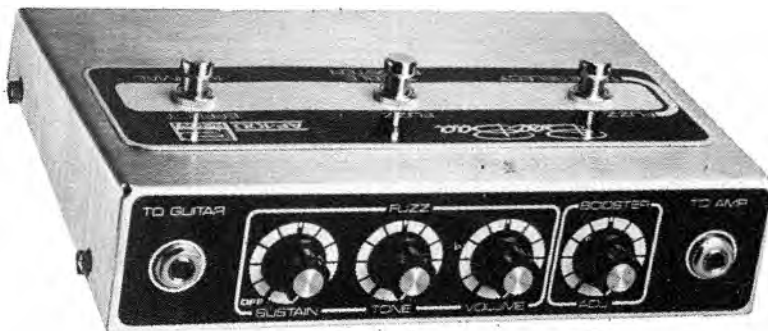
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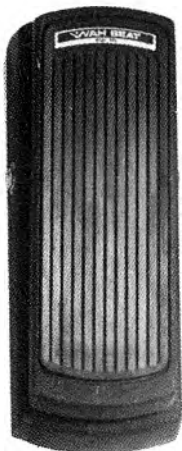
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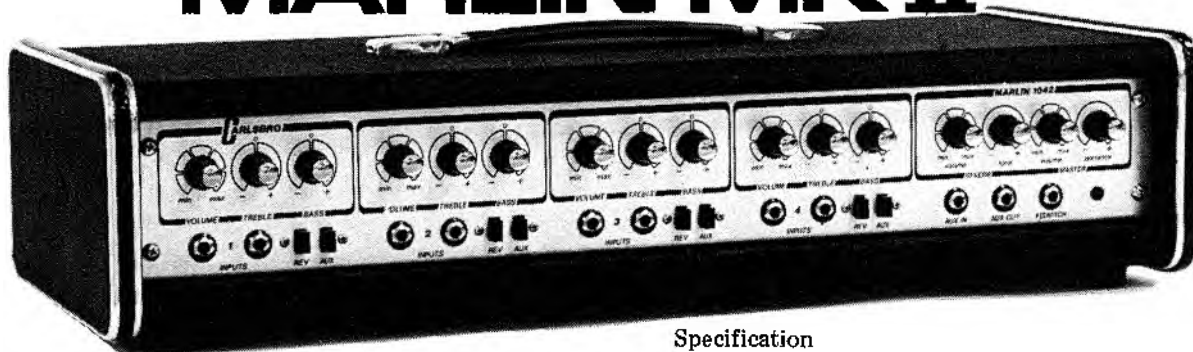
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Power response	-0.5dB 100 watts 4 ohms 30Hz — 15KHz
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Output impedance	0.056 ohms

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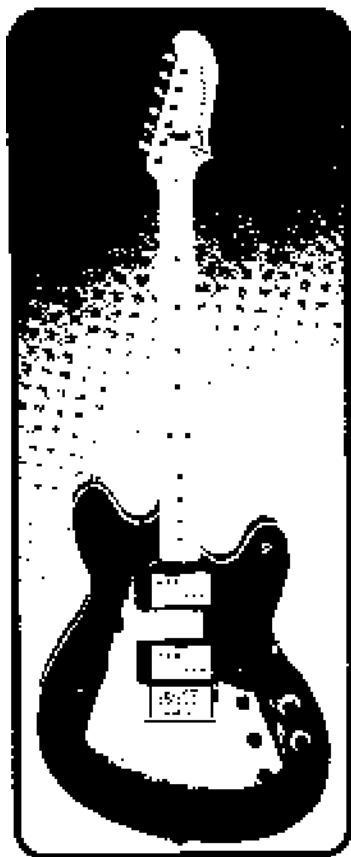
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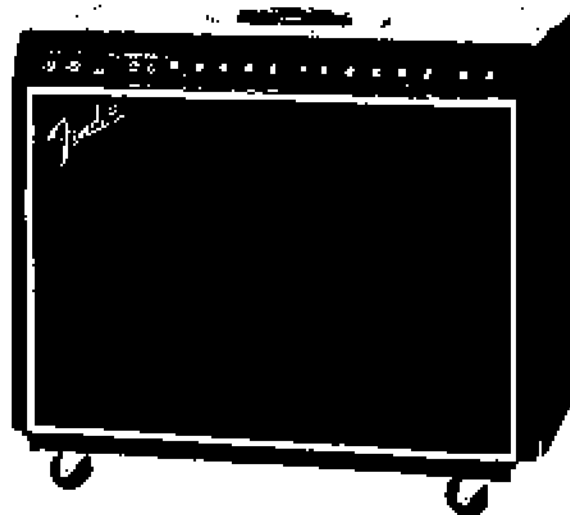
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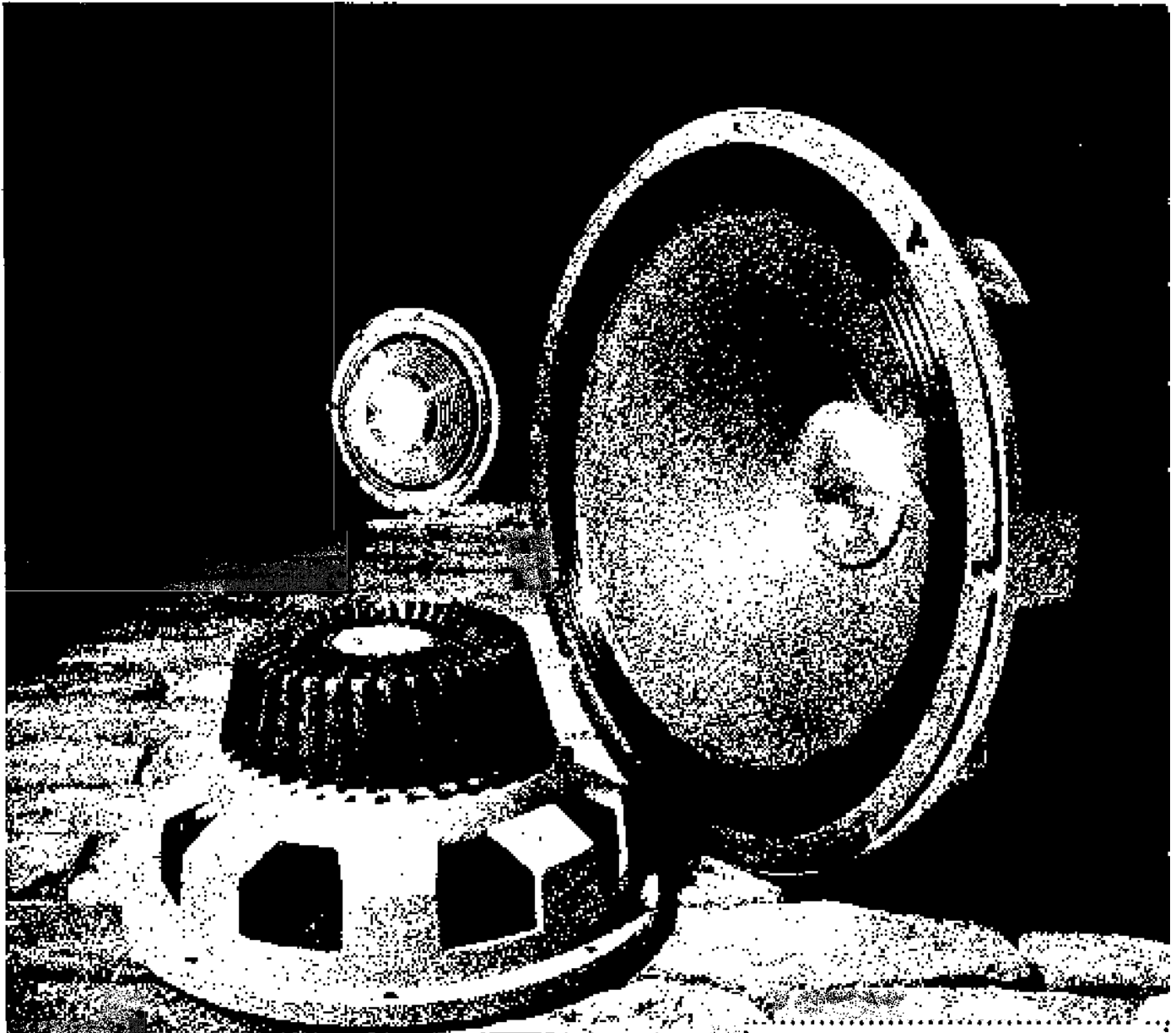
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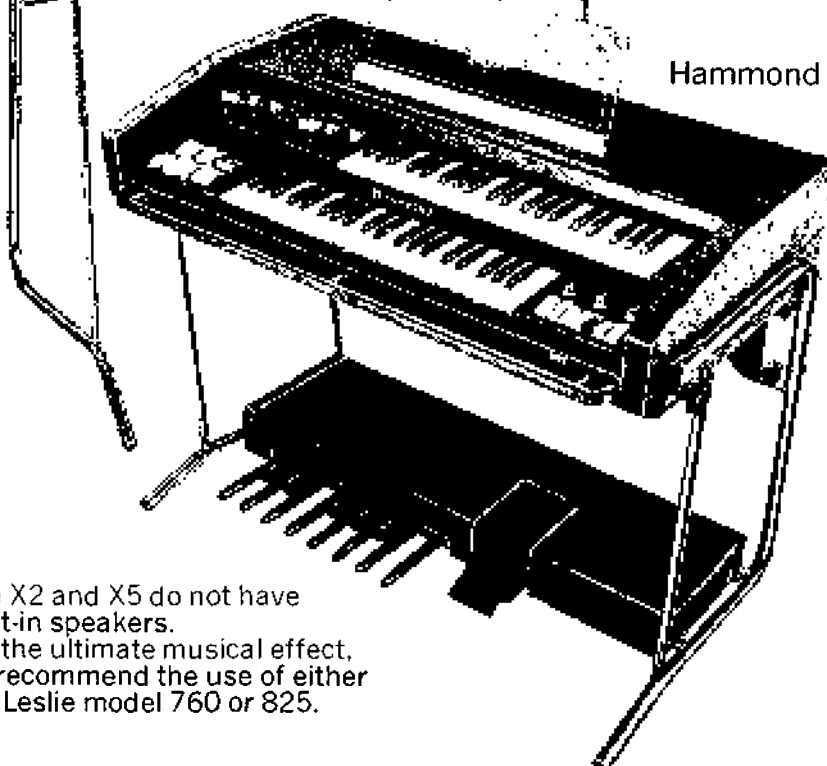
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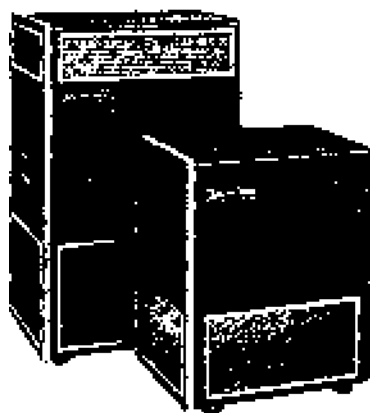
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MUSICIAN AND RECORDING WORLD  
No. 107, 1976

**INTERNATIONAL  
Musician  
AND RECORDING WORLD**

International Musician & Recording World  
17 Tavistock Street, London WC2E 7PA  
Tel: 01-836-5061

Welcome American musicians!  
This magazine reaches large  
numbers of you beginning  
with this issue and we hope  
you'll like it.

International Musician has  
been distributed in Europe  
and The British Common-  
wealth for the last 12 months  
but this is the first issue that it  
has been distributed via New  
York.

Over the next few months,  
we're planning to include far  
more American editorial  
material, but International  
Musician originates in London  
and it's really a commentary  
from these shores. You'll see  
that we test equipment and  
instruments in greater depth  
than any other magazine, but  
we ask you to understand that  
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for yourself.

If you have any trouble,  
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— the address is on this page.

Thank you for reading  
International Musician, and we  
hope you'll continue to do so.

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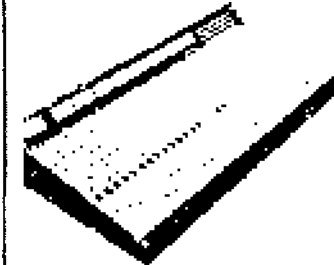
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# LETTERS

edited by  
Eamonn Percival

Dear Sir:

Having only obtained the May, July, and September copies of your fantastic magazine, I cannot compliment you on the other issues; but if they were as good as the ones I have read, congratulations. Being "Down Under": it is great to be able to read what's going on overseas first-hand. Could you please send me any information on the Arbiter Auto-Tune Drums talked about by Carl Palmer in the July issue. Are Auto-Tune drums available in Australia?

G. Gutteridge  
Chevron Island  
Gold Coast  
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Australia.

*We are arranging for information to be sent to you and at the moment, we don't think the drums have yet become available in your part of the world. It seems likely they'll be there in the next few months, so regular enquiries at your favourite music shop will keep you in touch. Thanks for your comments on the magazine and we hope you'll be able to get it without too much difficulty.*

Dear Sir:

I am, I think, a competent musician and, like many others in this big cruel world, am I short of brass? Yes! When I see those Martin P.A. set-ups, those Fenders and Gibsons and those Rogers, I can't stand it. Please let us have some info on cheaper gear, but good stuff like Antoria, Ibanez etc and the amps to go with it. There's got to be good gear somewhere which doesn't need to be bought on a mortgage.

We need info on fuzzes and wah pedals too, and what about cabinet designs? Help us budding chisellers to make our own reflex bass bins, horn loaded bins and that sort of thing.

Brian Bromley  
Selly Oak  
Birmingham

*See Stephen Delft's Monitor Cab ideas in this issue.*

Dear Sir:

I am 14 and very serious about my guitar playing. I am thinking of forming my own rock band but I'm not quite sure how to go about it. I want to get an amp but how many watts do I need and should I have any accessories? I've got a Shaftesbury Strat Copy with a maple neck No.1073. I would particularly like to know what year it was made in.

Chris Michael  
Tottenham  
London N.15

*To start with your last question first: Shaftesbury strats were only on sale last year, so it seems likely that the guitar was made at the end of 1974 or the beginning of 1975. It's hard to know the size of amp you'll need, as it depends on the type of band you're going to form. A good starting point is also a combo like the AC30 or the new Marshall 30 watt combo and if you've got a little bit more money, then go for a 100 watt job like the HH, Marshall or Yamaha combo. You'll probably find it easier to work with combos, although you're likely to find separates cheaper on the second-hand market.*



Arbiter Auto-Tune drum kit: available in Australia?

Dear Sir:

I am a competent carpenter and have a first-hand knowledge of electrics and am determined to build myself a good Telecaster copy. The problem is that I lack any suitable specification on construction, wiring, etc.

Can you put me in touch with someone who can supply me with them?

J. Hoadley  
East Ham  
London E6.

*No such specifications are published in a complete form, unfortunately. A Telecaster copy has to be exactly that - a copy. Try and borrow or hire an original, take your measurement and make the drawings from that. The individual parts are available to make up the electrics and that's also a case of copying. There are people who have plans for this job, but they're usually concentrating on knocking out copies themselves and aren't anxious to pass their information on.*



Shaftesbury Strat: How old?

Dear Sir:

I own a 1975 Gibson Les Paul Deluxe and I am thinking of buying an HH IC 100 amp.

A friend of mine has an IC 100 combo and my Les Paul tends to make it crackle a bit, especially when I play hard. Could this be because my guitar is too powerful, or does the amp have a defect?

Melvyn Hiscock  
Stubbington  
Fareham  
Hants.

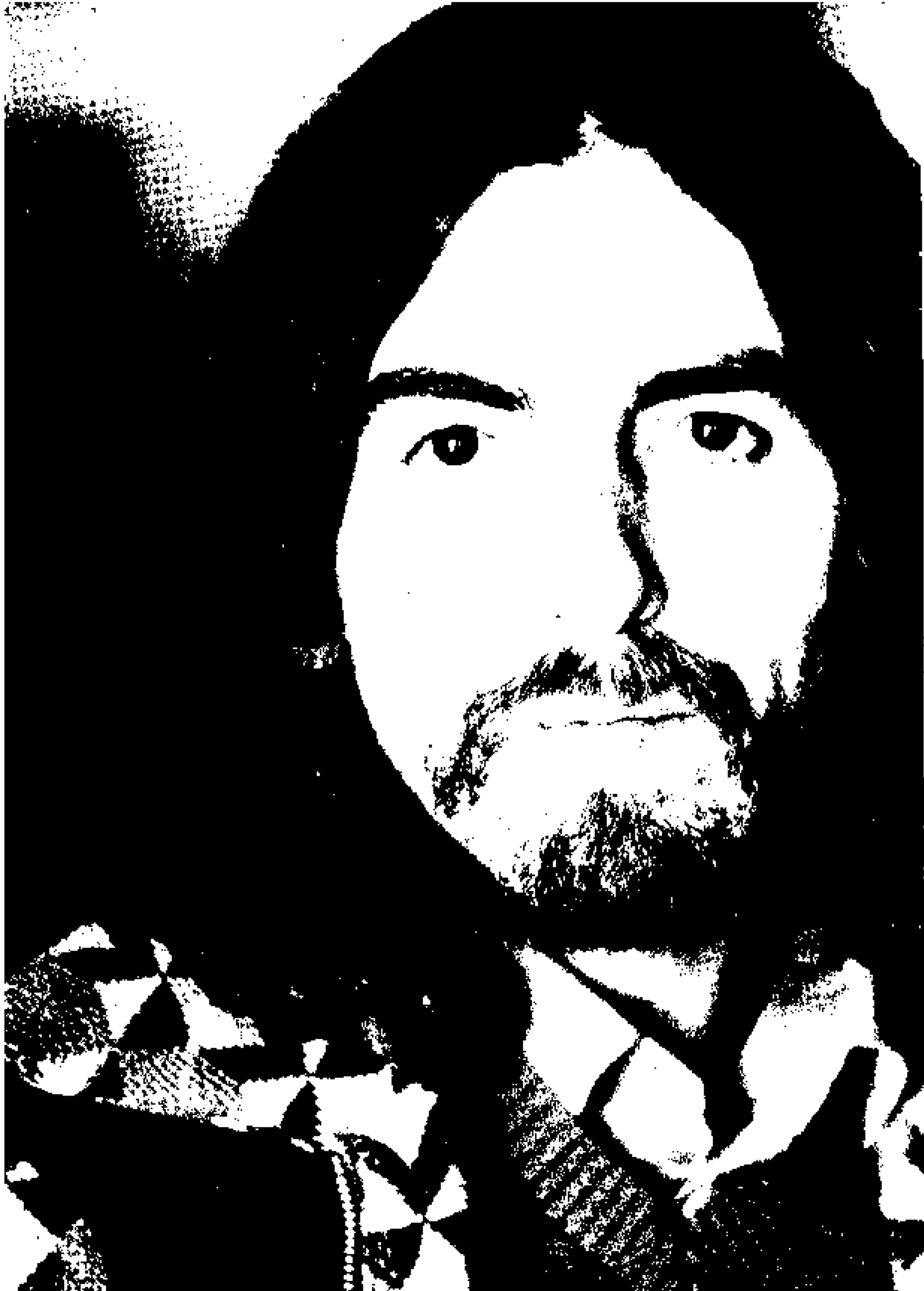
*It's hard to know what you mean by a crackle and without hearing the guitar and amp set up, it's hard to know exactly what the problem is. We suspect that you're right about overdriving the amp's input stage. Gibson's are renowned for having a high output and if you turn your guitar full up and play hard, you certainly get some very peculiar sounds. The only answer in this combination is to turn the guitar down and to turn the amp up.*

Dear Sir:

I am about to buy a new guitar and the one I've got my eye on is an SG copy with a Bigsby type tail-piece. Is this liable to put the guitar out of tune if used a lot?

Dave Smith  
Sunnybrow  
Crook  
Co. Durham.

*The only way to find out is to try it. If you're buying the guitar, the person selling it should allow you to have a go before you take it away and a few hefty goes on the arm should reveal whether or not the arm pulls the strings out. Most tremelo arms do cause strings to go out of tune and it really is a question of degree. Allow for the fact that the strings may be new on the guitar you try and tune them up a couple of times before you decide whether or not the tremelo is affecting things.*





# GEORGE HARRISON

George Harrison is 33. He made his recording debut at 18, part of a backing group of "Beatles" for Tony Sheridan, the sessions taking place in Germany with composer-bandleader Bert Kaempfert as producer.

That's fact. Eighteen months later, following local Liverpool interest in "My Bonnie", one of the singles emerging from those sessions, Harrison and the slightly re-named Beatles were in London auditioning for Decca.

Also fact is the snippet that George Harrison employed his dark-brown Merseybeat tones to sing Sheik of Araby in the Decca studios. New group manager Brian Epstein insisted the Beatles would be bigger than Elvis Presley.

Decca, in its wisdom, disagreed and instead signed Brian Poole and the Tremeloes. Other record companies disagreed with the Epstein Theory. And another six months passed before the group passed, at long last, a test session which led to a contract with EMI.

On October 5, 1962, the first single, Parlophone R4949, came out—"Love Me Do", backed with "P.S. I Love You". By the following mid-February, EMI had a number one single on its grateful hands—"Please Please Me", featuring dramatic spasms of the George Harrison guitar.

The parade of facts turn into history. EMI was good for the Beatles. And the Beatles, for sure, were good for EMI. The split came for the group—the last British appearance together was in May, 1966. A sad fact.

But the four individual Beatles continued putting their product through EMI, under old contracts. Even though George Harrison set up his own Dark Horse Records in mid-1974.

But George Harrison is now the first ex-Beatle to break with the EMI set-up. In a gesture of confidence, executed with old-style Beatle flamboyance, he announced that his personal recording future would be with his own label, Dark Horse, which he set up in partnership with A&M.

He arrived in Cannes in his own private jet, unannounced but instantly noticed, and explained his philosophy.

*continued on page 20*

"There have been offers from other big-name companies for me to sign, and I sifted them over. They provide the security, not to mention the money. But I figured I had to show confidence in my own set-up. So it's a risky business?"

"Let's just say that I'm some kind of Kamikazi pop star."

But Harrison, sporting a slight but immaculately clipped beard, was deadly serious about his personal recording philosophy.

"I see my own label as a continuation of the original concept of Apple. There was a time when Ringo Starr and I wanted to buy up Apple, to get it back on its original lines. But then it seemed logical to get more involved in my own set up.

"So I've signed a three-to-five year deal with my own company and the first album, which I'll produce, will be out in the summer.

"Sure, Dark Horse has had only one hit so far. But the Splinter single of "Costa Fine Town" was only the start. It's an active company and I'd back it to do well, even if I wasn't involved at all.

"All my recording life has been with a really big organisation. Now I like the idea of an independent back-up for my own product. Through Dark Horse I've got a really good relationship going with A&M, with Herb Alpert and Jerry Moss, and I can't see anything spoiling it. Anyway, as I said, I've got this Kamikazi instinct right now."

But Harrison's philosophy, developed with his long spells under the influence of the Maharishi Mahesh Yogi, has long been deeper than most in the recording industry. He is determined that his label won't sign on talent and act just for the sake of a safety-in-numbers belief.

"We'll stick to a few, and we'll work hard on them. No act we sign is going to get hidden away."

So Harrison adds another aspect of music life to his list—guitarist, singer, producer, songwriter, now businessman. His on-disc songwriting debut was on the Beatles' second album, *With The Beatles*—his contribution was "Don't Bother Me". He accepts that he was a lazy writer early on.

But he kicked in "I Need You" and "You Like Me Too Much" for the *Help* album, and had two more—"Think For Yourself" and "If I Needed Someone"—on *Rubber Soul*.

He upped his quota to three for *Revolver*—"Taxman", "Love You To" and "I Want To Tell You". His *Electronic Sounds* experimental album came out in May, 1969. From *Abbey*

Road, he took his "Something", and it was a big hit.

His contribution to *Let It Be* created more interest in his writing talents—specially "For You Blue", the other being "I Me Mine". And on to the really big single breakthrough with "My Sweet Lord", a world-wide hit in early 1971. He also wrote "Try Some Buy Some" for Phil Spector's wife, Ronnie.

Now he wants to spend more and more time on what he regards as the "backroom" areas of his life. He agrees that his name and status will do no harm when it comes to promoting the signings to his own label later on.

Jiva is a band he discovered. It's a new four-piecer from Southern California and its album on *Dark Horse* is a debut production. They come from the Los Angeles club circuit. And Harrison says: "The name of the group tells at least part of the story. It's from a Sanskrit word which means 'that which breathes'. In other words, the band is very much alive."

The band comprises Mike Lanning, singer; Mike Reed, drums; Thomas Hilton, lead guitar and singer; and bassist James Strauss. They brought in Stewart Levine for the first album as producer—he's worked with the *Crusaders* and *Minnie Riperton*.

Harrison said: "When I get the time I go out on genuine talent-spotting exercises, and this is one band I'm proud to have found. They are positive musicians and get a lot of influences from the 1960s as well."

Attitudes is another apple of Harrison's eye. Group features Jim Keltner, drummer who has often played on Harrison sessions, and with John Lennon; guitarist Danny Kootchmar, long associated with Carole King and James Taylor; bassist Paul Stallworth, for a while with Sly and the Family Stone; and David Foster, keyboards and arrangements, who has also worked closely with Harrison in the past. Debut album: *Ain't Love Enough*.

Says Harrison: "So okay, just mark me down as a founder member of the Jim Keltner fan-club."

And another *Dark Horse* signing is *Stairsteps*, four real-life brothers from Chicago. There were five of them, their father, Clarence Burke, being a member. Now he manages the team. They've been going quite a while—Curtis Mayfield recorded the group in the 1960s, and they had a big seller with *Ooh Child* in 1971.

Says Harrison: "I got Billy Preston in to co-produce the boys, along with Bob Margouleff, who in turn has worked closely with Stevie Wonder.

*Stairsteps* can make it, in both single and album markets." Add in his old mate Ravi Shankar, and *Splinter*, and Harrison completes his team. For the time being...

The ex-Beatle is also at least knee-deep in marketing technique. "As a label, we're keen to find out which country really needs what. Each country has different musical needs—you can't just flood the whole world with the same product. We want to cater for individual territorial needs." But then George Harrison always was the most business-like of the Beatles.

It's impossible to meet any former Beatle without getting into the vital question of whether the group is ever going to get together again. Huge-money offers have been made by US promoters for just one concert: the last, and biggest, was for a flat \$15 million fee for the four on a one-night gig, preferably at Shea Stadium, near New York, and scene of an historic Beatle concert years ago.

Without getting in too deep another promoter said he believed he could go up to 15 million in pounds sterling, and added that if everything panned out the show could be worth £75 million worldwide, what with television and closed-circuit cinema rights, plus merchandising.

Harrison certainly doesn't rule out the prospects but he's not happy with the way he has been projected in the various rumour-theorising situations so far. He said: "The way it comes across is that there is Paul and John and Ringo, and they are all very much together and there's this fly in the ointment called George Harrison.

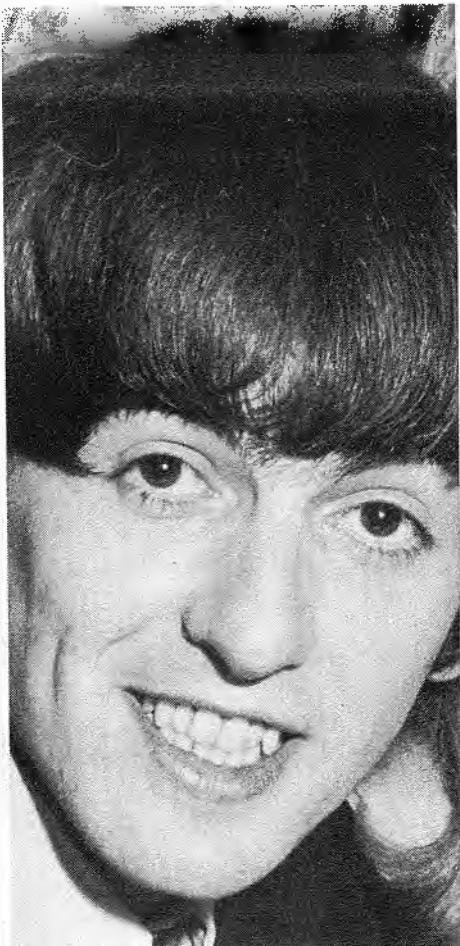
"It's put over that I'm the one who is always missing when the talk is on. What I want to say is this: if Paul, John and Ringo get together in a room somewhere, I just hope they'll invite me along."

There are problems, naturally. If the Beatles reformed, they'd need substantial rehearsal time. John apparently has expressed the view that it was a mistake for the Beatles to have split so decisively in the first place, but he's busy with recording, as is Ringo, whose new album is from Los Angeles sessions, and as is Paul with *Wings*, who tour the US right through to mid-summer this year.

Harrison added: "I really do object to being made the odd one out. It's not like that at all: I'd be quite happy to get together with the others for talks."

So George Harrison gets on with his self-imposed task of learning the business side of music. He stresses: "There's no way I'll be diverted from

# HARRISON

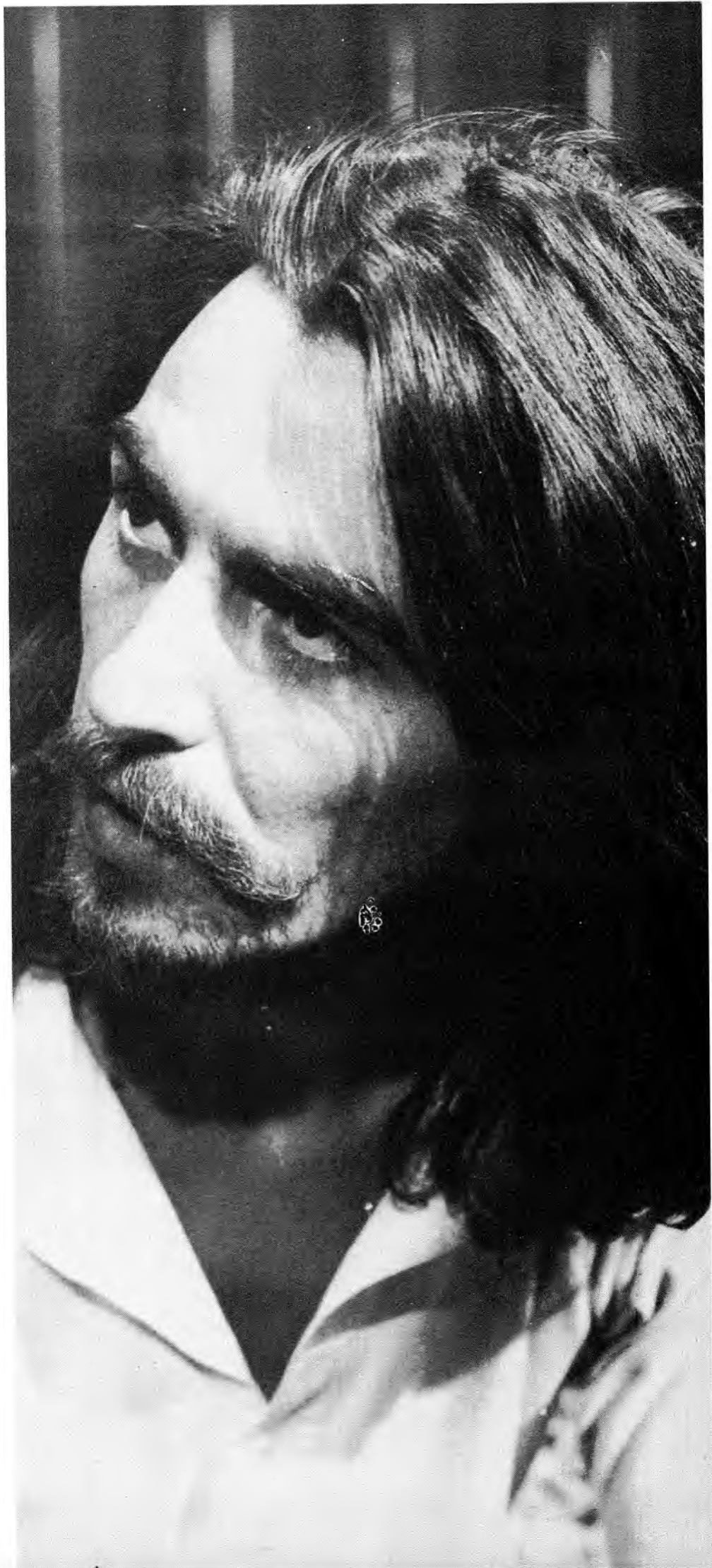


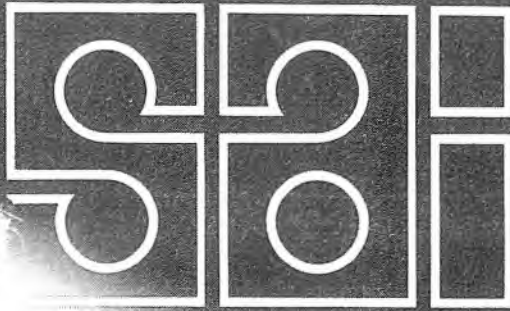
my real job, which is that of being a musician. Apple was a dream which went sour, but I've learned a lot from the mistakes we made then."

He rides along with natural progressions in music—both in the technical recording field and in the sound itself. He admits he still leans backwards in personal taste, though—he has always been very much into Tamla material, and Smokey Robinson and Stevie Wonder will excite him greatly.

But he doesn't play Beatle records. He feels that is a useless exercise in nostalgia. However he believes the group always played it fair with the fans, by working hard and touring incessantly. "And the fact is that there were a lot of limitations in the studios at that time. Like four-track recording and so on. But the Beatles were certainly a value-for-money group, all the way."

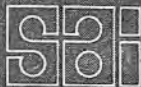
All that happened in the past 15 years helps George Harrison when it comes to running his own operation. With Jonathan Clyde as general manager, the ex-Beatle is confident that Dark Horse can be internationally successful. Its ambitions are more musical and corporate—built on lines described by Harrison as "small but good."





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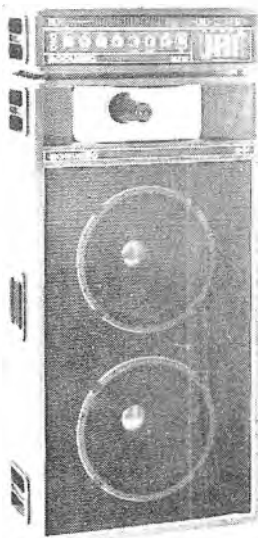
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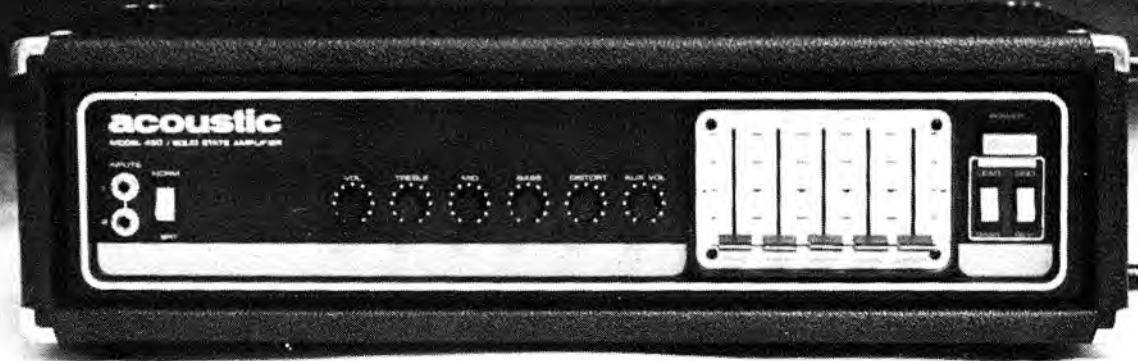
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Sole Manufacturers:  
JAMES HOW  
Industries Limited,  
20 Upland Road,  
Bexleyheath Kent.  
Tel: 01-304-4711

TEST ON: *HH Multi Echo*  
 DATE: *February 1976*  
 PRICE: *£145.70 Ex VAT*  
 TEST BY: *Bruce Gibbs*



## INTRODUCTION

Until very recently, HH Electronic of Cambridge did not make any form of echo chamber and so it is with great interest that we investigated the first generation of their echo effects units. They have marketed two different models in order to meet differing requirements. One of them has a single playback along the tape's length to vary the echo delay-time and the other model, the Multi-Echo, has four separate play-back heads, in addition to a record and an erase (bias) head.

The HH Multi-Echo is a sophisticated solid-state tape-loop electromagnetic delay line system with many useful refinements. It offers the facility of creating a stereophonic "Echo/Original" spread of sound and to properly mix two input channels with another input line from some other system, for example, a mixer unit.

On the front panel of the unit there are two input jack sockets, each with its own volume control and a shared Treble control. On the rear panel there is another input intended to be used with the Send output of an amplifier or mixer unit. All three input sources may be used at the same time which can add an extra couple of channels in effect to an external unit (see page 3 of H/H handbook, Dia 4)

The Multi-Echo is capable of generating a variety of effects using a single loop of special recording tape which runs in a newly designed loose-box cassette or cassette tray. It is driven by a synchronous induction motor through a small flywheel and a pinch-roller. The manufacturers claim a tape life of 300 hours, which we think is a realistic estimate of the performance one would expect. During the sound-check, we observed no malfunction of the tape cassette or mechanical drive system. We took

the matter of tape life tests up with H/H and they informed us that they had a tape on test for approx. 1500 hours, and that 300 hours was extremely conservative rating.

There are four playback heads which give delay times which are equally spread. (see the performance chart) One thought that occurred to us is that, were the heads unevenly spaced, the repeat facility would introduce a far more complex range of effects than it does at the moment.

Each of the heads is controlled by a push-button selector switch which gives one a total of 15 possible echo effects. Another four buttons control the repeat facility, which recycles the sound back to the recording head and attenuates it so as to widen the effectiveness of the facility. With these buttons also brought into play, a maximum of 240 effects are available, though some of them are so alike that they are virtually indistinguishable from each other.

To further refine the effects, a volume control is fitted for the echo and another for the repeat facilities. Both of these effects have a common Bass and Treble control which enables one to vary the tone of the echoes in comparison to the straight input signal.

The output facilities are as sophisticated as the other section. There is a return socket on the rear panel which carries the mixed and combined inputs and echo signals back to the power amplifier or mixer unit.

This is for use with the send/return facility that many amplifiers have. In addition, a second mixed signal + echoes output jack socket is located on the front panel. Adjacent to this is another socket, marked 'Echo Out' which carries the recorded echo signal only. If



**Introduction continued** the "Echo Out" socket is used, it automatically deprives the other two Output sockets of any echo signal, and a clean feed only is available. This enables a stereo P.A. system to be set-up with echo on one side and a clean signal on the other side of the system.

The mains power is introduced via a non-reversible Euro-plug which is located at the rear of the unit. Next to this is a 1 amp and a 115/220 volts power supply voltage selector. The system will work satisfactorily from 50/60Hz. mains supplies.

There is no speed correction on the mechanical motor drive system, so the delay times will be slightly shorter if it is used on a 60Hz. power source, but the full range of effects will still be available.

The A.C. mains is controlled by a rocker type mains switch which has a built in red neon indicator light. In addition to this light, the entire front panel is made of a special electro-luminescent rear-lit assembly which lights up all the knob calibrations and titles. This is very useful when one is working in a badly lit club.

## CONSTRUCTION

The unit is built into a rectangular metal chassis which is formed from two steel end plates and extruded aluminium front and back members which are designed to act as heat-sink and panel mountings. This assembly is strengthened by the addition of a flat motor mounting panel which is in the horizontal plane. The various parts of the box section assembly all work to give the whole assembly great rigidity which protects the components extremely well.

There are three resin bonded Glass-fibre printed circuit boards in the Multi-Echo. One carries the power supply and Bias Oscillator, one the "repeat" amplifiers and the third the remainder of the circuitry.

Many professional quality components are used and the general standard of workmanship is extremely high. The P.C.B's are all clearly marked (announced) This helps avoid manu-

facturing mistakes and saves a lot of service engineers time. (and your repair bills should reflect this fact)

The wire loops, colour loaded cables and general tidiness should make service work easy.

The external panels are not the main strength of the unit but do give the chassis sections added strength and are made of thick black ABS plastic with a grained finish. They are easily cleaned and will take hard wear and tear.

The ABS end cheeks double as handles and can be used as rack-mounting glides. They are retained by a pair of large knurled screws at each end. The Multi-Echo comes with a very comprehensive handbook, a plastic travelling cover, a separate correctly colour coded 3 core mains lead and a spare loops of the special quality 1/4 inch tape, which is about 15 feet (4 1/2 metres approx.) long.

## PERFORMANCE

Parameter	RESULT	TEST CONDITION	COMMENTS
Straight Channel Maximum Gain	5.9dB.	Volume control @ max.	
Background Noise	Less than 10 microvolts @ output.	Wide-band noise	
Distortion	Less than 0.02%	T.H.D. @ 1KH. with 1 volt o/p.	Negligible
Frequency Response	Below 10Hz. to 9.8KH.		Predictable from components in the circuit.
Tone Control	+ 17dB. to - 16.8dB.	Treble @ 10KHz.	Good
Echo Channel Delay Times	78 mS. 160 mS. 244 mS. 328 mS.	@ 50Hz. mains	Almost identical to the manufacturer's specification.
Frequency Response Bass Control	72Hz. to 11KHz.		Measuring accuracy ± 2dB. approx.
Treble Control	22dB range		
Treble Control	26dB. range		
Wow & Flutter	Negligible		Also OK on aural test;

No signal to noise ratio could be measured owing to the presence of the BIAS oscillator signal. A subjective aural test showed that the background noise level is so low that it presents no significant problem whatsoever.

## CONCLUSION

I liked the HH Multi-Echo very much indeed. It does what the specification claims it will do, has no nasty habits and is extremely well made. The quality control of HH's test and inspection section must be exceptionally high as the standard of workmanship in a product invariably reflects the quality level at which the

inspection section will pass it. This system is so well built that I think it will, acquire a reputation for being one of the most reliable Echo units available. It is considerably cheaper than many competitors products and should, as a result, become one of the biggest selling echo chambers on the market.

TEST ON: *Acoustic Amp 450 Lead & Bass*  
 DATE: *February 1976*  
 PRICE: *£305 Ex VAT*  
 TEST BY: *Bruce Gibbs B.Sc.*



## INTRODUCTION

The Acoustic Control Corporation of California produce a full range of sound equipment which includes amplifiers, amp tops, mixing consoles and speaker systems. Their popularity in America is considerable but they have remained relatively unknown here, owing to the competition offered by British products. The model 450, on which we report, is a guitar or bass amplifier top with a rated output of 170 watts r.m.s. The distinctive features are: the inclusion of a five band graphic equaliser; a filter switch for selecting either lead guitar or bass amplification; and an extra volume control which can be set to a "rhythm" volume and selected with a foot switch to change from the rhythm to the lead level.

The front panel carries: two input sockets of

different sensitivities; a bright/normal switch; main volume control; distortion effect control; normal bass, middle and treble control, auxiliary volume, five band graphic EQ, "bass/lead switch, illuminated off/on switch and the "mains ground" switch which is common on most American equipment.

The back panel has two speaker output sockets; a slave o.p. socket which is independent of the volume control setting; a "line" output which is controlled by the volume control; an accessory in/out socket which permits effects units to be added in line; and a foot switch socket. There is also a fuse, a retained mains lead with clips to wind it on when not in use, and a convenience mains outlet socket.

## CONSTRUCTION

The construction takes the normal form for amplifier tops. The chassis is rigid assembled of four deep "U" sections which are the front panel, back panel and two end pieces. This chassis slides into a vinyl covered wooden sleeve with an overall size of 24¾ in. by 12½ in. by 6¾ inches high. There are feet on the bottom and on the right hand end and a very sturdy, deeply recessed handle on the other end. The case corners are protected with metal caps and the front and back panels are both deeply recessed to protect the controls, cable holder and other bits and pieces. A plastic moulding frames the controls and holds a separate fascia for the graphic equaliser at a different level to the main control panel, giving an attractive "3D" appearance.

The electronics are constructed on three glass fibre printed circuit boards. The pre-amplifier is on one board with all components, including the control pots, directly mounted on the board. The graphic equaliser has a board of its own and the third board is the output amplifier. The quality of components and workmanship are good. All components are correctly

mounted except for three, which from a production line modification to the pre-amp printed circuit board. Soldered joints and wiring are of a good standard and cable clips have been used to keep all wiring tidy and in place.

The mains transformer is a fair size and is wound for use on 107, 120, 214 or 240 volts, 50 or 60Hz mains supplies. The handbook gives clear instruction on setting the mains voltage but the case has to be opened to make the change. Markings on the back panel suggest the unit is wired for 120V only. This is very misleading. The mains wire is wrongly colour coded for European use.

Protection against transient spikes on the mains supply is provided with voltage dependent resistors. This is a very good practice which is not usually used on our home produced equipment.

The fitting of a mains earth polarity reversing switch, which connects one or other side of the mains supply to earth via a capacitor is a piece of American tradition which has doubtful value and questionable safety.

## PERFORMANCE

*The distortion is far higher than one would expect from a transistor amplifier but it is mainly second harmonic and so does not sound unpleasant with guitar. In fact, many people prefer a little second harmonic distortion to the clean sound.*

*The tone controls work quite well, but the top two channels of the graphic E.Q. have less range than the maker's spec. The middle control*

*can be used as part of the graphic equaliser because it fits in the centre of the two octave gap between the third and fourth channels.*

*There is a marked tendency for slow rate limiting to occur in the pre amplifier, particularly when the bass/lead switch is in the bass position. This could be the reason for not getting the full spec. performance from the top two E.Q. channels.*

	RESULT	TEST CONDITION	COMMENTS
Power OP	240 watts r.m.s. 182 watts r.m.s.	@ 10% THD 4 ohm load @ onset of clipping 4 ohm load	Rated at 170 W. r.m.s.
Distortion	1.8% 2% 2.1%	@ 170 watts @ 20 watts @ 2 watts	Total harmonic distortion at 1KHz. with 4 ohm load.
Tone Control Range	-16dB. + 17.5dB.	Bass at 50Hz.	Good, but mid and treble are less than makers spec.
	15dB. swing	Mid at 400Hz.	
	-20dB + 13.5dB.	Treble at 10KHz.	
Graphic E.Q.	-16.5dB. +16.3dB.	@ 70Hz.	The two highest channels are giving less range than they should.
	-17.7dB. + 16.0dB.	@ 140Hz.	
	- 16.8dB. + 15.3dB.	@ 280Hz.	
	- 11.0dB. + 10.5dB.	@ 1100Hz.	
	- 5.7dB + 8.0dB.	@ 2200Hz.	
Sensitivity	I.p. 1 17.5 mV. I.p. 2 54 mV.	For 170 watts r.m.s. output at 1KHz. Tone controls flat.	OK.
Residual Noise	- 89.8dB.	Volume at minimum, Tone controls flat referred to 170 watts r.m.s.	Very good.
Noise referred to I.P.	1.9u V (-114.5dBm.) 5.8u V (-104.7dBm.)	Ref. I.p. 1 Ref. I.p. 2	Very good.
Capacitive load test	OK	10KHz. square wave	
Short circuit test	OK	2 minute short circuit	

## CONCLUSION

*Acoustic Control Corporation have been well established in the United States with their leading brand of amplification products for a number of years. The 450 lead and bass amplifier maintains the company's reputation for quality, although there are one or two points that we would like to see improved on the test sample.*

*The rotary tone controls and graphic equaliser worked well but did not quite meet the manufacturer's specification at the H F end of the graphic equaliser. This, however, could be a component fault requiring service attention.*

*Having both rotary and graphic tone*

*adds cost to the unit and we cannot see the practical significance of both for the player. The mains input wiring really needs changing over to the European standard; however, U.K. agents may in fact be doing this as a matter of course.*

*The amplifier is quite expensive by U.K. standards but it is extremely nicely presented and well made. The handles are well situated for convenient carrying.*

*Finally, an excellent handbook is supplied with the amplifier and a good service contract. The details regarding the service guarantee and contract can be discussed with any U.K. agent stocking Acoustic equipment.*



# Antoria 345 Copy Model No. 2457

Retail Price £153

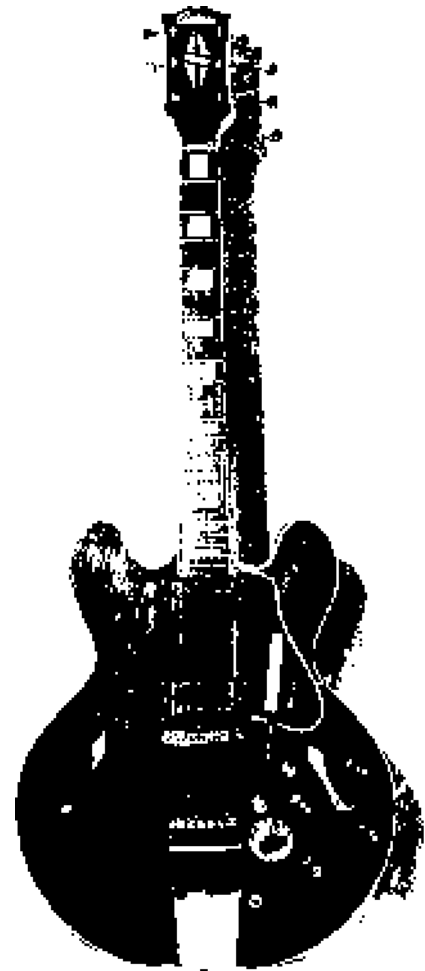
This is in most respects a quite outstanding guitar. There is, I feel, little which can be said in its favour which does not implicitly criticise recent examples of what it copies. With the exception of details about the edge bindings, the finish is superb. The neck is maple, straight, and rigid. The machine heads work well. The pick-ups appear to have the right sort of magnets and the right sort of windings to sound like what one expects from reasonably good Gibson Humbuckers. The bridge and tremelo tailpiece are, in small ways, improvements on the originals, and the gold plating appears to be second only to those parts which Gretsch make themselves. The tone-filter switch does not do exactly the same job as that fitted to the original, but it is acceptable, and the various tones are arranged in a more logical order than those on some originals I have played. It may be that the tone filters are correct, and the pick-ups not quite right yet, but the difference is so fine that I find it difficult to be objective.

I have recently been measuring Japanese pick-ups for a future article on Humbuckers, and it is interesting to note that some they are making now come closer to old pick-ups than to new ones. If Japanese makers have now got the designs right, the deciding battle will be over reputation and quality of workmanship. That could be rather interesting.

I see little point in quoting measurements: they are all copied from the original with reasonable accuracy, and the neck and fretting are so accurate that the real lower limit on the action is how hard you play, and how far you want to bend strings. I can think of only two or three of my customers who would not be satisfied by this neck in its present state.

The back of the neck is slimmer than most, and to be objective, is in no way a replica of Gibson necks as I like to remember them. It is, however, graceful and comfortable, and the usual comment from passing friends and customers was " \* \* \* ", what a fast neck"! The expletive varied a little, but reaction to the neck was unanimous. (In fact, while the guitar was waiting for review, it sold itself to the owner of a Firebird who picked it up out of curiosity, played it for half an hour and is coming back for it next week.)

At this price, the guitar must have been produced by some sort of machine-aided team of workers and with the few exceptions I shall mention later, they have every reason to be proud of their work.



# Shergold Masquerader

Retail Price £112.50

Unfortunately, now that I know they can do it, I shall expect the same standard of workmanship and design suitability on other models from the same company — and they could start by putting solid tops on all their better Les Paul copies!

My dislikes are: The decorative binding is badly finished around the neck joint; the facing on the head is too thin and so the head binding joins the neck binding at an angle, between the nut and the first fret (Although this looks ugly, it is not in itself serious, but a strong facing on the head will often make repairs easier and less noticeable if the guitar should fall over and crack the head/neck area); the screw holding the tremelo arm becomes loose very easily; the design of the control knobs is not appropriate for this model of guitar; the greenish-yellow dial behind the tone filter switch is possibly the worst looking feature of the entire guitar, when placed next to real gold plate on the tailpiece. (It should be replaced with either gold plated dial or something innocuous such as matt black with engraved white numbers).

While I will accept imitation pearl for fingerboard inlays, I will not accept perfectly good rosewood, dyed black, when the maker must surely know that many potential customers will take it to be ebony.

The fingerboard is correctly described as rosewood, but there still exists a possibility for misunderstanding and I am not happy about it. This situation is not exclusive to Antoria guitars and applies to many of the better Japanese guitars on sale.

This guitar is made by Jack Golder for Barnes and Mullins and if you think you recognise the shape of the head — yes, he used to make That One too! The well made neck has a maple fingerboard fitted with beautifully polished frets and black position dots. The edges of the fingerboard are bound with black plastic in which there are small white position dots. The truss rod adjustment is unusual, and sufficiently well hidden to discourage neurotic fiddlers — it took me two days to find it! The body is made of obeche with a pretty sunburst finish and the guitar is also available in other colours.

The Masquerader is fitted with two multiple-sound pick-ups designed especially for Shergold. These claim an output level of three volts, and although I have not made precise measurements, they are certainly very powerful. Each of the two pick-ups has two coils wired to their own selector switch on the control panel: combining these coils in different ways gives each pick-up three different tones. There is also a master three-way switch to select one, the other, or both pick-ups. The number of possible tone combinations from this arrangement must be very large. The output of the guitar is further controlled by single tone and volume knobs.

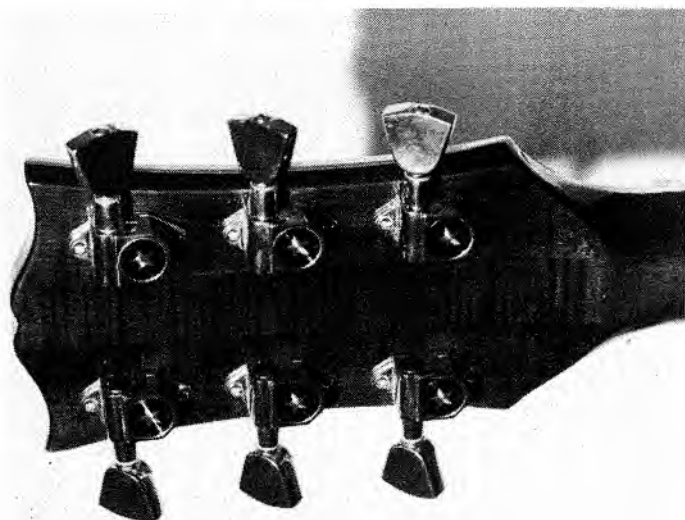
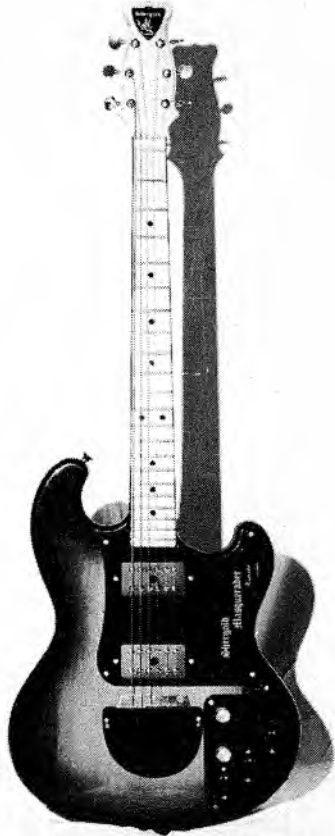
*Stephen Delfr*

There is a very comfortable handrest over the bridge, which provides individual action adjustments for each string. Unfortunately, the octave adjustments control pairs of strings, and it is not possible to get the intonation quite perfect. However, under the low action conditions which can be achieved with my sample, this problem almost disappears. It would be much more significant, if for some reason you wanted a rather higher action. To be fair, this problem also occurs on some well known and popular American guitars.

This guitar in many ways seems to follow in the honourable tradition of the Burns Bison, and should provide a possible alternative to Strats and S.G.'s, particularly for musicians living outside London who have less access to good second-hand guitars. I would prefer different knobs on the

switches and controls, and tone and volume controls which can be turned more easily. I should also like to see the tone control moved a little further away from the pick-up selector switch. As with many guitars these days, there appears to be some variation in neck accuracy, so check this carefully. Here are the measurements: Scale Length, 650 mm; string spacing at bridge, adjustable, set to 52 mm; string spacing at nut, 35 mm; fingerboard width at nut, 40 mm; action as supplied, 1.5 mm treble E/2.0 mm bass E; lowest possible action under our standard conditions, 1.3 mm treble E/1.8 mm, bass E.

This guitar was supplied adjusted to a pretty good standard, and if it is typical, the Masquerader might be of interest to small, general music shops who are not familiar with the adjustment of electric guitars.



## IN BRIEF

# Revo 30 Leslie Simulator

Retail Price £209

The Revo 30 is a most remarkable fully electronic simulation of a "Leslie" organ sound cabinet. It is manufactured by the Roland Corporation of Japan and imported into the U.K. by Brodr Jorgensen (U.K.) Ltd.

If one looks closely at exactly what a "Leslie" sound cabinet does, one finds it creates three distinctly different modifications to the original signal sent to it. (1) A tone filter cuts off any high treble or very low bass. (2) A rotating element (the Leslie Paddle) creates a Doppler type of frequency-shift. (3) The "Leslie" paddle and rotating horns (on some models only) bounces the sound around the room in a repetitive and orderly manner.

The Revo 30 simulates all of these effects with astounding accuracy using some very sophisticated electronic circuitry and state of the art techniques to do so. An active filter reproduces the exact frequency response of a valve amplifier model "Leslie" with treble horns (but without a reverberation channel). This effect is further enhanced by using specially designed loudspeaker cabinets which have a carefully designed wooden panel directly in front of the loudspeaker and a narrow aperture all around the outer area. This causes the sound to be diffused and to display non-directional characteristics which make pinpointing the loudspeakers position in the room virtually impossible.

By using the latest solid-state integrated circuits available, Roland have generated a real-time delay unit which can create a variable (and controllable) frequency (pitch) variation.

In order to reproduce the bouncing of sound around the room, the Revo 30 has two (stereo-phantic) outputs which are used WITH the organ's own built-in loudspeaker to produce a three channel sound.

By panning the various frequencies between the loudspeakers and giving them varying amounts of phase-shift, the Revo 30 can move the apparent point of origin around the room. The organ's own loudspeaker is used because, even on a genuine "Leslie" speaker, a fairly substantial amount of sound travels the direct route from loudspeaker to listener.

The Revo 30 is accurate in its "Leslie" simulation in even more ways than those already mentioned.

When one changes the speed switch on the Revo's control panel, it causes the speed of modulation to gradually increase or decrease over a period of several seconds, in exactly the same way a "Leslie" speaker's rotating paddle slowly picks up or loses its speed of rotation.

The bass and treble are modulated separately so as to simulate a separate loudspeaker and treble horn working together, at the same speed but in different directions.

The Revo 30 was tested in a variety of places, including my home and some gigs. I can recommend it, or one of its bigger brothers, to anyone who wants a "Leslie" sound without the problems of a mechanical unit. Electric motors and bearings do wear out and become noisy.

Musicians who travel a great deal will have come across the problem of foreign power supplies being at 60Hz. Electric motors designed to operate on a 50Hz supply will either run too fast or not at all on a 60Hz mains source. The Revo 30 will run on any frequency of power supply without any problems at all.

The quality of workmanship and materials used are such that they would do credit to any manufacturer and the fact that this machine has no moving parts means that its reliability is very good indeed.

In order to simplify connecting-up the Revo, Roland have introduced a new type of spring loaded terminal which uses bare wire ends instead of plugs on the loudspeaker cables.

The signal input is via normal mono jack sockets and the mains power is fed directly into the machine via a correctly colour-coded three core mains cable. The system has a 2A mains fuse on the input side of the mains transformer and two more fuses on the secondary side, thus ensuring that it is fully protected from short circuits.

The front panel sports an input volume control, an LED overload indicator, a modulation depth switch and a three position speed switch which is labelled Stop, Slow, and Fast, which corresponds with the Leslie cabinets Off, Chorale and Tremulant.

It may take awhile for musicians to overcome their love of the traditional "Leslie" but I would strongly recommend anyone planning to buy an organ sound



\* ALL PRICES EXCLUSIVE OF V.A.T. \*

cabinet to have a look at the Revo 30, Revo 120 and Revo 250 before they do any buying, as I think the Revo systems are as good as the Leslies as far as tone is concerned, and indeed give better distortion figures and will be more reliable, in addition to the other advantages to the travelling musician I've already outlined.

The cabinet work is first class and, although the Revo is not a cheap product, it certainly represents good value for money.

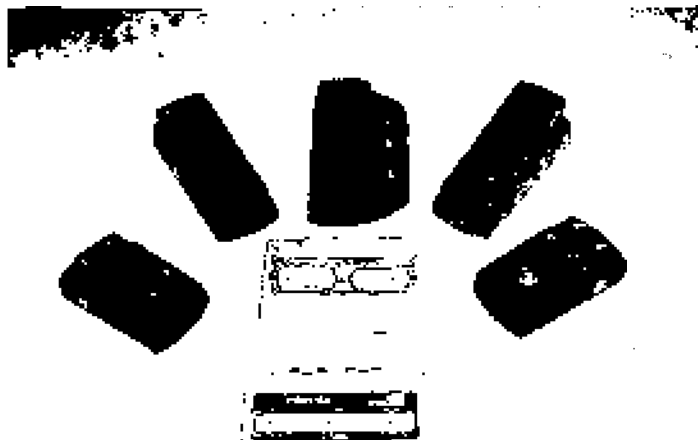
## Roland Effects Pedals (Various)

Brodr-Jorgensen kindly lent us the complete range of Roland Pedals to play with. Effects pedals have become an important part of a guitarist's set up and an increasing number of keyboard players are inserting them between instrument and amp.

Perhaps the most interesting item in the Roland pedal range is the dual-function pedal, the Soft Distortion Sustainer and Harmonic Mover. This pedal is housed in a strong anodised steel case with two wide-spaced foot buttons placed sufficiently far apart to eliminate the chance of hitting the wrong foot-switch. The pedal is quite wide, sits firmly on any surface and doesn't ask the user to chase it around the floor.

The usual on/off switchings is incorporated in the input jack socket and merely plugging in switches on the 9v.- powered miniaturised circuit. Three rotary controls are provided on the front of the unit. These govern SDS level, the degrees of harmonic movement and the choice of harmonic movement effect.

SDS is, as the name suggest, rather likes a very soft fuzz box. It would be the perfect unit for a Fender player who wanted to pretend he had a Gibson for a couple of numbers. The distortion doesn't produce unwanted feedback effects.



The Harmonic Movement is the most interesting of the effects produced in the entire range. It increases overtones existing in the signal (octaves and harmonics, for example), mixes them up with the original signal and produces some of them in phase and some of them out of phase. The end result can be varied considerably. Choosing "A", "B" or "C" mode controls the balance of overtones and harmonics against the original signal and it is difficult to describe the aural signal produced by this unit. There's a strong similarity between the wah-wah pedal in attack, with the extreme end of a powerful fuzz unit filtered to lose the rough edges thrown in for good measure. This effect is not so freaky that it's hard to find a use for it; I would imagine most guitarists would find at least a couple of solos in a set that seem as if they were written for this effect.

The effectiveness of the unit depends on the output of the guitar, so a little experimentation is needed with the guitar's volume control to produce the best sound and it's an interesting note that this effect unit works with diminishing signals only, and thus electronic organs are suitable sources.

## RCF TW200

Retail Price £166.51

Perhaps the most important breakthrough in P.A. systems has been the bin and horn crossover set-up. This set-up, now almost obligatory for touring bands, has the dual advantage of having long throw power capabilities, combined with anti-feedback characteristics. This high-frequency horn and lens unit is typical of the top quality professional sound reproducers now marketed.

Manufactured in Milan, this horn has a power handling capacity of 100 watts and despite this type of horn's usual description (high-frequency), the unit is built to carry all signals over 1000 Hz. This system produces the ideal arrangement, leaving the 12in. and 15in.

cone-drivers free to woof out low frequencies and the horns to handle the middles and upper frequency ranges. It's always these frequency area that are first to cause feedback. The curve of the exponential horn is specifically designed to throw frequencies properly without directing useless frequencies at random angles which can cause feedback problems. One problem, however, is that this highly directional sound satisfies only a small part of a large audience. After the sound has issued from the perfectly curved horn, a dispersal system is needed that is as mathematically correct at the horn if it is to provide wide angle coverage without eliminating the anti-feedback qualities inherent in the horn.

To this end, RCF provide a large "lens" that bolts onto the front of the horn mouth and directs the mid and high frequencies downwards and sideways in carefully controlled bands.

In practice, we found that the fittings of this lens to the horn did produce a slight increase in feedback susceptibility, but the increase in coverage more than compensated for this. The subjective difference between the horn with and without a lens was remarkable and without a lens, two or three horn units would be needed to produce a similar coverage. A slight increase in power was needed with the lens in place to get similar sound pressure levels but no change in sound quality or characteristics was noticed.



For bands who haven't had the chance to try out a separate horn and bin system, it is worth discussing the differences noted when first using a horn of this type.

As with all horns, the RCF reveals harmonics and overtones that remain unknown to column users. Even tacking a horn of this type onto an existing column P.A. set-up offers dividends in top response and the only extra required is a crossover unit. With this type of P.A., a passive crossover unit is usually fitted and this little box of tricks revives the output from the amp, splits it into high and low frequencies and then feeds the signal separately to the bass speakers and the horns.

In professional set-ups, there has been a massive swing towards electronic crossover units which allow the signal to be split into frequency bands before power amplification takes place. This allows a fine degree of attenuation and equalisation on each section.

The sectoral horn system is here to stay and this RCF horn and lens units is a fine example of high power professional units.

## SSH VDF Super Pedal Synthesiser

Retail Price £80 inc P&P

I'm not too sure about the term "synthesiser" as it is applied to this pedal. It is more of a "box of tricks" than a synthesiser. Mains-operated, the pedal consists of four sections: Volume, Fuzz, Filter and Modulation. The controls for these sections are laid out on the front of the unit with their respective foot-switches located underneath the section indicator light. The pedal itself takes up the left-hand corner of the unit, and, if no section is switched on, this acts as a volume pedal only. The Fuzz section incorporates intensity, volume and soft/hard controls and, as such, works effectively enough.

The Filter section has a bit more to it — intensity, volume, high and low frequency cut-off controls. The intensity control will increase the resonance, the volume control increases the volume of this section, and the frequency cut-off is determined by the high and low controls. In addition to this, the actual filter frequency is controlled by the foot pedal and can be varied through the frequency range, which itself is pre-adjusted with the high and low cut-off settings.

When the Modulation foot-switch is pressed and no other section is in operation, a Vibrato effect is obtained. The intensity is controlled by the pedal and the speed by the modulation control. When the Modulation and Filter sections are used together, a rotating speaker effect is produced which is tolerable but not altogether convincing. The provision of individual volume controls for each section enables you to set each section to the required level without affecting the other sections.

In addition this, any one or all of the sections can be used, together or separately. As far as design goes, it's neatly and economically laid out, but I would have thought the pedal itself would have been better positioned on the right-hand side of the unit, or even separated entirely from the control section.

The SSH VDF pedal, I suppose, will appeal to some people but I cannot see how they can justify a retail price of £80 for what is basically three effects units linked to a volume pedal.



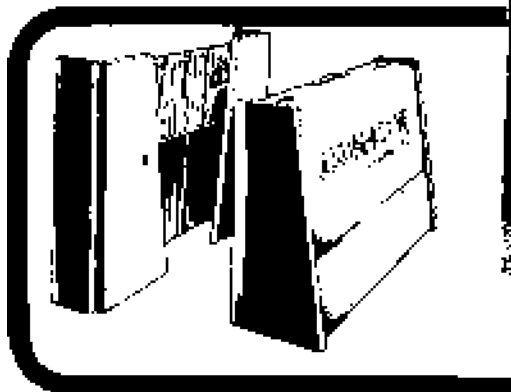
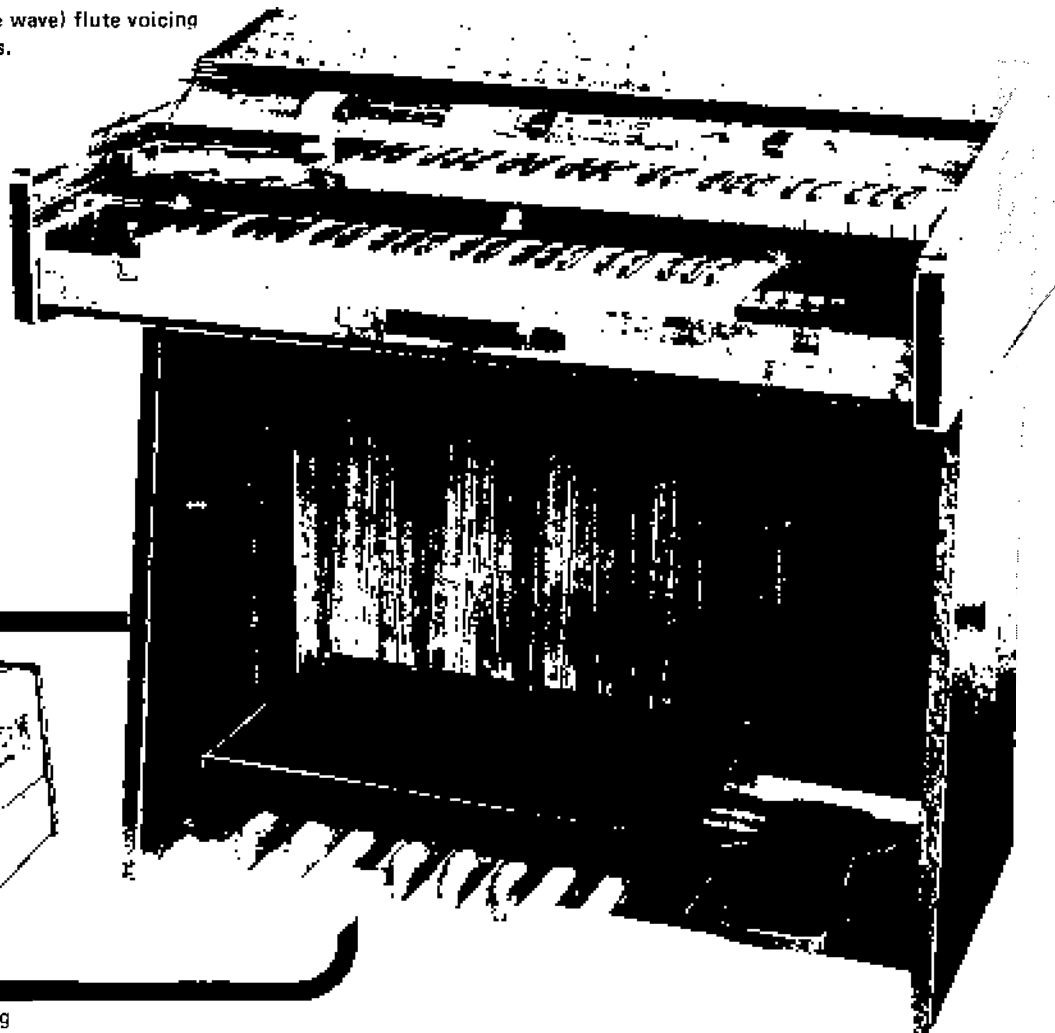
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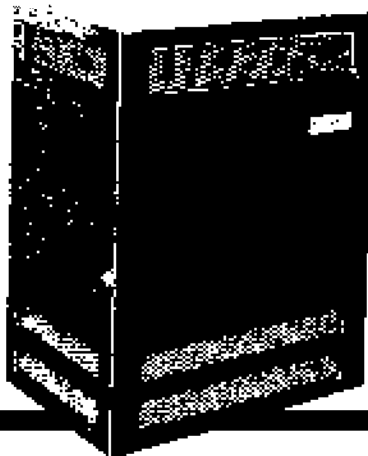


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# KEYBOARDCHECK

TEST ON: *Keynote Consort Portable*

DATE: *February 1976*

PRICE: *£637.96 Ex VAT.*

TEST BY: *George Gibbs*



## INTRODUCTION

*This relatively new model has been available for approximately six months. It is a Sine-wave instrument incorporating harmonic drawbars as the main tonal control systems and claims to have the fastest assembly time of any portable organ now on the market.*

*I have not tried every single model currently available but I can say, in support of this claim, that it is the quickest of any I've seen so far and very simple into the bargain.*

## UPPER MANUAL

*49 Note (Four Octave) keyboard which has a nice light touch. The keyboard contacts are used to control a large collection of diode*

*switches under the notes; thus, no contact problems will be encountered on this instrument.*

## Upper Manual Voices

*Six pure flute tone drawbars, voiced at 16ft., 8ft., 5-1/3ft., 4ft., 2-2/3ft. and 2ft. give this organ a reasonable range of tone colours. This range can be extended by means of a harmonic filter control which enables one to add-in a most unusual "spike" to the sine-wave forms. The tones that can be generated cover the bright end of the reed family of "pipe organ" voices and give a very pretty string tone. The absence of treble drawbars is more than adequately compensated for by this facility.*



### Upper Manual Percussions

Two percussion voices, in the 4ft. and 2-2/3ft. registers, enable one to duplicate the "Jimmy Smith" type of sound to perfection. They have a switch which can select between short/long decay times and another control which can switch the key-click and faster attack time of the U.M. drawbars in or out. This effect is called "Soft ATAK".

### Upper Manual Sustain

This facility works only on the 4ft. drawbar and gives a lovely bell-like sound. This can be used in conjunction with the other drawbars to give some very attractive effects.

### LOWER MANUAL

This is also a 49 Note (Four Octave) keyboard, also using diode switching and off-set one octave downwards compared with the U.M.

### Lower Manual Voices

Four pure Flute tone drawbars voiced in the 8ft., 4ft., 2-2/3ft. and 2ft. registers. The "Harmonic Filter" control, previously mentioned, also operates on the lower keyboard, so the tonal range available is wider than the number of drawbars might at first suggest.

### PEDALBOARD

The pedals are housed in the lower section of the instrument and comprise a standard 13 note Bass Pedal-board made of wood and a single swell (Volume) pedal which has two channels to control the bass and keyboards separately.

### Independent

### Bass Output

An output jack socket is provided for the bass, which is why the swell pedal is dual channel.

### Bass Sustain

Sustain is available on an Off/On switch and the decay time constant is preset. The bass pedal-board is connected to the upper unit by means of a Paignton multipin connector of high quality and very durable design. These plugs are standard NATO electronic components and are easily obtainable almost anywhere in the world, should a replacement ever be required.

### EFFECTS

### Vibrato

The Vibratos can be selected to operate at any one of three levels and are common to the entire instrument. They give both pitch and volume variations.

### Reverberation

Again, this effect is common to the whole instrument and can be chosen at two levels.

### CONSTRUCTION

The organ is built almost entirely in wood and chipboard and is the only portable, except the now obsolete and too heavy "Split" Hammonds, which has a console appearance. Whether or not you like the appearance of this cabinet is a personal choice best left to the individual buyer.

The top half is built in a fairly conventional

way: plywood covered in vinyl leather-cloth with some parts made of chipboard. I was not overly enamoured with the two metal bands which serve to protect the edges of the end-cheeks, but I think they will do what they are supposed to do very well indeed.

The removeable lid, which protects the keyboards during transit, is made of thick plywood and covered in vinyl. The locks were not overly strong but would serve to establish beyond doubt that some one had forcibly opened the instrument and are thus a reasonable deterrent.

### Lower Unit

Here lies the controversy. Most portables have metal legs and strengtheners, while the Consort has a wooden assembly. It is well made and strong and its finish is neat if inexpensive.

On the back of the lower section, a carrying handle has been cut out of the panel which makes it easy to carry.

### Output Sockets

The organ and bass outputs are jack sockets located at one end of the swell pedal assembly inside the wooden "Console" and out of sight of the public. The swell pedal, which is connected to the upper unit by means of a 5 pin DIN plug, and the bass pedals all fold up on a long "piano-hinge" into the lower assembly and the endpieces fold around the front to enclose them. The whole thing can be clipped shut for travelling by means of two knob-screws which can be stored into two specially prepared storage fixtures which should ensure they don't go astray when not needed.

### Music Rack

A simple plywood music rack with two small pins to hold it onto the organ top is provided.

### CONCLUSION

This organ has a very pleasant sound and is ideally suited to playing jazz or pop or, indeed, theatre music. I liked its tonal characteristics very much indeed and it feels very pleasant to the touch. The internal construction is more spread-out than on most portable organs, but this could help make it easy to service and the extra space it uses is available because, according to Jerry Symons and Steve Radford, whose brainchild this is, they wanted a shelf on top of the organ large enough for any electronic piano or synthesizer to sit in safety.

The carrying handle on the front edge of the top unit is a common design used on many amplifiers and does enable one person to move the organ on his own, always assuming he's fortified himself with a Guinness or two first.

My thoughts on the Keynote Consort are that, as an instrument, it is nice to play and such a simple machine that it should need very little service work if it is used reasonably sanely.

The design of the lower section is robust, does not wobble or twist and its aesthetic appeal is, as always a matter of personal taste.

If you take careful note of its price, you will see that it is very exceptional value for money and is indeed already said to be selling well. □

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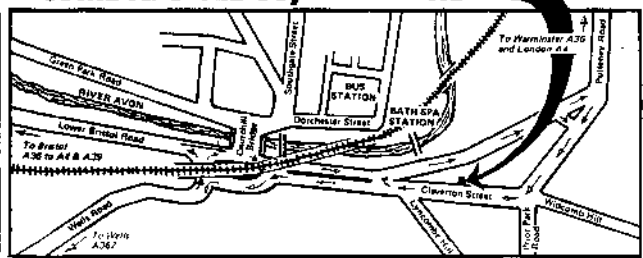
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# DRUMCHECK

TEST ON: *Gretsch Black Hawk Kit*

DATE: *February 1976*

PRICE *£600-93 Ex VAT.*

TEST BY: *Bob Henrit*



I bought my first Gretsch kit in 1962 and as I remember it was one of the first in the country. The guy with Nero and the Gladiators had the first one, Tony Meehan had the second and mine was the third or fourth. When I first bought it, I used it constantly for cabaret with Adam Faith because of its small size and its inherent wooden sound with few overtones; it was ideal for a use where tonal quality and not volume were the consideration. Don't get me wrong: Gretsch drums certainly have plenty of volume too, but the rule with them is the bigger the drum, the bigger sound! Because of its quality recording sound, eventually my beautiful little Gretsch set was consigned to the studio and used for sessions for the next ten years.

One morning, I happened to glance at it in the studio with plaster all over its batter heads, with pieces of sponge stuck to and inside its bass drum with all its non-batter heads removed and I thought: this is no life for a self-respecting drum kit. It must deserve better than this. I reluctantly decided to sell it. At this time it was terribly difficult to find parts for American drums and Gretsch were certainly no exception to this rule. I found I had to write directly to the New York factory to get any results at all. Nowadays, I understand the situation is a lot better. Baldwins evidently now have a very large stock of spare parts in the country.

Since 1883 (or so the old Gretsch badge tells me), Gretsch drums have been manufactured in America by the Fred Gretsch Company. They were produced in Brooklyn for many years but after a fire recently, they transferred drum production to Cincinnati, Ohio. During the 'fifties and early 'sixties, they reigned supreme as the jazz drum set. Most every body in small group modern jazz has used a Gretsch set at one time or another. Their pinpoint sound was perfect for modern jazz, where every instrument needed to be heard clearly; separately, even though it was played ensemble. In this environment, the overtones of Ludwig or Slingerland were unacceptable. For big band jazz the opposite was true, exactly what the drummer needed was the overtones — sound of Ludwig or Slingerland.

Of course, there are exceptions. It really wasn't until the

emergence of Joe Morello that anything other than Gretsch was used for small combo applications.

I remember Chico Hamilton in the film "Jazz on a Summer's Day" playing his single-headed Gretsch kit with beaters. It absolutely floored me because up until then, the only single-headed kits I had seen were the very cheap John Grey, Beverley or Olympic-outfits made in England. Here was an expensive American kit with single heads that sounded fantastic. I once read in Downbeat (which I'm sure I bought mostly for the drum adverts) that Chico Hamilton had just taken delivery of a new Gretsch outfit in Cadillac-Green, with completely gold-plated metal ware. My mind boggled at the thought. I recently met Chico in the Percussion centre in New York but just didn't seem to be able to steer the conversation around to my "teenage fantasy" kit. The Gretsch logo was also the inspiration of much awe in me. I distinctly remember scratching it on my desk at school.

Gretsch, like all the other American Companies with the exception of Ludwig, were taken over in the early 'sixties by a big corporation. Although in Gretsch's case it wasn't too bad, since they were taken over by a musical company, Baldwins the piano people. The other companies fared less well, being taken over by a magazine, a television company, and even a South American cement business.

As you can see from my opening paragraphs, I have had a love affair with their "Great Gretsch Sound" over the past 15 years or so and was really pleased to be given the opportunity of evaluating the product.

The set in question this month was the Black Hawk which, according to the catalogue is made especially for rock'n'roll. It's a double mounted tom-tom set which in my catalogue is pictured with Gretsch's new foot pedal and hi-hat stand but the set which I unpacked had the old pedals with it. I checked up on this with Baldwin and it appears that the newer heavy-duty pedals will be coming into this country very shortly. Strangely enough, I couldn't find the cymbal stand they supplied anywhere in the latest Gretsch catalogue. Very curious.

## Bass Drum:

This 22" drum had a six-ply electrically bonded hardwood shell with Gretsch's unique matt-grey, slightly absorbant interior finish. This coating produces a slightly warmer sound which I think particularly suited to more modern rock applications. The bass drum doesn't boom, it simply has a beautifully rounded compact sound, ideal for miking up. I tried this drum without its front head on and the sound was very punchy, yet well defined and very suitable for recording. The 22" drum is fitted with 20 nut boxes, tympani type tuners and claws. These spring-loaded nut boxes are ostensibly the same as before, although not quite the same to my jaded eye. Gretsch's claw-hooks are more solid than any other manufacturer's, because they're pressed from heavier gauge steel.

The drum has disappearing aluminium spurs which

haven't changed for at least 15 years. They don't look at all substantial with their very flimsy wing bolts, at least not by present standards. However, the company have ingeniously devised a small fitting which screws to their spurs and converts them into double-spiked models. This fitting goes some way towards making up for the weakness of the spurs themselves. An adjustable strip damper is fitted to the bass drum devised long ago by a drummer called Jimmy Pratt. This device relies on a parallelogram principle to adjust its pressure against the playing head and works well, although nowadays its activated by a less attractive thumb-screw than before. All the latest sets have chromed metal counter-hoops inlaid with glitter plastic which are quite substantial and don't colour the sound of the drum like some of the other manufacturers metal rims do.

## Tom-Toms:

The 12 x 8, 13 x 9 and 16 x 16 tom-toms all had a very clear, solid, wooden sound which hasn't changed at all over the years. This is due, I believe, to the counter-hoops which Gretsch favour. All drums are fitted with these single-flange, beaded-edge, die-cast hoops. (It would be an interesting experiment to fit some of the brighter sounding triple flange hoops to a Gretsch kit to see what difference it made).

All the tom-toms have double padded adjustable dampers fitted inside, one for each head, which work well enough

when new although on my old set they used to rattle no end. The floor standing tom-tom had an out of shape hoop so fitting its head was a little tricky, but no real problem. The central heads on some of the tension screws were slightly oversize which meant that they key supplied didn't fit too well. Gretsch tom-tom legs are very curious affairs. They don't have the spread of most other manufacturer's but instead have a 15 degree bend at their bottom two or three inches. These legs actually touched the bottom rim of the

drum which would cause few problems on the stage but could make for some nasty rattles (and looks from the engineer) in a recording studio.

The floor tom-tom is the last of the drums to use Gretsch's old style "Diamond Plate" leg or cymbal arm holder. This unit was the cause of much discontent in my youth because basically it's a block with a hole tapped in it

which can therefore strip itself. This meant that the block had to be replaced and 13 years ago these cost £3 each — so God only knows what they would cost now. Still, since they only use it on the legs these days, I don't suppose it has to take too much strain. The two smallest drums both had a hexagonal rod fixed in it mounted to them to receive the tom-tom holder, but more. More of this later.

#### Snare Drum:

The metal shell drum I inspected was not the latest one that I saw in America which has ten lugs but I understand it's expected here very soon. (I have a sneaking, unfounded suspicion that ten lugs give a better rock'n'roll sound than eight). Anyway, the seamless spun brass snare drum has a very jazzy sound which would be perfect for some of the more esoteric modern applications. It's not as crisp as a Ludwig or a Rogers but it has its own unique sound, contributed to greatly by its single flange hoops. I'm sure it has thousands of aficionados all over the world. The rim shot is very strong but somehow a little unconvincing and very 'fifties sounding. It's a very solid sound but to my mind not bright enough for heavy music. The single flange cast rims just don't ring in the same way as do the multi-flanged varieties. It's a 5" shell model. (Gretsch only make a 6½" wood shell drum) with a milled head in the centre which I presume is only a decorative feature, since there's no way it could strengthen the drum. Internally, it has a rounded bearing edge (reverse flange) and in common with other makes, a shallow shell deviation at the two snare positions instead of a snare bed. The snare drum too has a double padded damper for its batter head and Gretsch updated unique cast snare-strainer. The snare tension is activated by a knurled thumb-screw on the rear snare bracket which is placed inconveniently opposite the on/off mechanism. This means that unless you play with the strainer at your right

knee the snare tension mechanism is inaccessible. The snare throw off has a curious cam swivel action that moves it away from the drum and is held in the on position by a flimsy spring. This is an improvement on their previous model, which needed a slight tap to finally push its cam home, but I would never be able to get used to its un-positive action. It never felt like it was really locked home against its two rubber bumpers. I tried removing these bumpers and the mechanism then made a noise as it locked into position which psychologically made me feel a little better. To be honest, I tried my damndest to dislodge it while playing but it wouldn't budge.

My test drum had a 20 strand "Responso" snare which made a lot of difference to the sound. I tried a 42 strand snare drum in the shop and the 20 strand snare has far and away the most modern sound. The snare is attached to the on/off mechanism by a thin but strong piece of plastic — I think Gretsch were the first to use this and it really works very well.

Gretsch fit a key holder as standard to all their side drums which is a good idea as long as you don't lose the key. The holder is made specially for the Gretsch key and nothing else will fit.

The drum itself needed very little work on it to produce its optimum sound — just a couple of turns on the snare head was enough.

#### Accessories:

As I mentioned earlier, the Black Hawk set was not completed by the stands stipulated in the catalogue. This could be a direct result of the fire at the Brooklyn factory but no one seems to know for sure. I understand that some of the present day equipment is being made by the famous old firm of Walberg who at one time made the stands and pedals for most of America's drum companies.

Gretsch's well tried and very positive floating action bass drum pedal was standard for this set. I was expecting to receive the new pedal which I used in America but unfortunately it didn't arrive in time. However, since it's the latest thing I'll tell you what I know about it. It's exactly the same principle as the old one but it's been updated a little with the addition of another adjustable expansion spring on the left-hand side of the frame assembly, and the substitution of a plastic strap instead of the old very serviceable leather one. Since the old pedal worked perfectly well I think these new innovations could be "Gilding the lily" a little. It has a two-piece cast aluminium foot plate with a ball bearing action, an adjustable stroke, and slightly adjustable lateral beater position. These double springs work on twin arms which return the beater to its start position after the stroke is completed.

The hi-hot stand was not the Gretsch "Monster" which I expected or at least nor the monster I have in my catalogue, although there are certain similarities. It's an adjustable-spring centre-pull model on a tripod stand which thoughtfully comes with not one but two large size adjustable aluminium spurs mounted on each side of the frame assembly. These adjustable springs and spurs are a big new first for Gretsch. The whole stand was surprisingly heavy, especially since it doesn't look like a very substantial mechanism. The action works well but since it doesn't have its spring sheathed in nylon and still has a metal (instead of heavy plastic) footplate strap, one can't expect it to have a terrifically smooth action. Still, I'm sure these omissions on Gretsch's part are reflected in their price. They've recently designed a new top cymbal clutch which honestly makes me say is "as hear as damn it" the same as Rogers and works just as well. I personally preferred Gretsch's original one.

I'd hate to trust any expensive cymbal to the dubious care of one of the flimsy cymbal stands shipped from America with the test kit. As I said, I couldn't find them in the

catalogue but presume they too are made by Walberg. The stand is very much like one of the cheapest Japanese varieties but with a few face-saving refinements. It has three single piece legs which pivot and lock on to a not particularly substantial cast base. The top of each tube has a reasonable turned block fixed to it with a flimsy height retention screw tapped into it. The cymbal playing angle is handled more or less by a workable cast, spring toothed ratchet.

Gretsch now have a new double tom-tom holder. It seems to have taken a leaf out of Camco's book and Slingerland's and half a leaf from Roger's. The stand has a pressed steel rectangular box section carrier which screws onto the bass drum shell — not I must say, in a forward enough position. Two holes drilled into this carrier locate two long pieces of 1" diameter metal tube whose vertical height adjustment is held by two screws slightly larger than drum key size tapped into the carrier. At the top of each of these tubes is a tapped metal plug which has two holes drilled into it at right angles, to locate a piece of hexagonal bar. This bar too is held in place by a slightly larger than drum key sized screw. (It's a real drag, this screw situation, because the spanner they supply to lock these nuts is eminently loseable and since the drummer has nothing else in his armoury to fit these, he would have to resort to his pliers!) The bar fits into a hexagonal shaped hole in a nylon ball which is set in the tom-tom shell itself and held between two rings, the inner one being bolted to the shell and the outer one merely located on two screws. So we tighten up the ring in two places (one inaccessible with two drums close together) with our drum key this time and thus we hold and control the angle of the tom-tom (adjustable by rotating the ball) and also its lateral position (fixed mainly by friction as far as I can see.)

Unfortunately, the two hexagonal bars touch each other in the middle of the fitting where they emerge from their tubes; this makes a modern, really close tom-tom set up impossible. This fault could be cured at the factory if the holders fitted to the tom-toms were repositioned and staggered one above centre and one below. The biggest drawback as far as I can see is the fact that because of its weird design, it has to be completely dismantled for packing away. This makes set-up just that little bit more time consuming and this is something I feel we could all live without.

#### Conclusion:

All in all, the drums looked good, they have a "funky" no nonsense image. The drums themselves don't seem to have changed over the years, which is good, and the stands and fittings don't appear to have changed over 15 years either, which is bad.

Modern drummers demand and need much more substantial equipment-support systems. Nevertheless, if you want a Gretsch kit for its indisputedly beautiful compact sound I'm sure you could put up with the shortcomings of its stands

# PA SYSTEMS BY KEN DIBBLE

At the end of the first article of this series, (in the November, 1975 issue of IM,) it was shown that it was necessary to split the pre-amplifier and power amplifier sections of a normal P.A. amp into two separate components, a mixer and slave amplifier, in order to provide flexibility in system design and to ensure system stability when long microphone and loudspeaker cables would otherwise be necessary. Although it was not stated at the time, most such mixers in fact consist of far more than just the pre-amplifier section of a P.A. amplifier, as the opportunity was taken to provide a multitude of new facilities not previously available in a normal straight amp. This resulted in the appearance of some very complex pieces of equipment.

Certainly, a mixer, however complex, is in the first place a pre-amplifier whose main function is to process the signals fed to it so that they are suitable for feeding to the slave amplifiers and then to the speaker stacks. The main difference is that where a P.A. amp usually has a single pre-amplifier with several inputs fed to it, a mixer consists of a separate pre-amplifier for every signal source fed in, so a ten input mixer will have ten separate input pre-amplifiers, each with its own separate set of tone or "equalisation" controls. A host of other controls are also usually provided, and these will now be discussed in conjunction with Fig. A which shows the control layout of a typical ten input channel P.A. mixer.

1. Channel Fader. This is quite simply the volume control for the input channel, and is used in just the same way as a normal volume control on a P.A. amp.

2. Pan Pot. The great majority of mixers on the market have at least two output groups, in other words, they can be used as a stereo mixer. The Pan Pot serves a similar purpose to the stereo balance control on a domestic stereo

system, by "placing" the sound from this input channel on either the left or right, or somewhere in the centre of the stereo sound field. Using this control during a performance enables a given mike to be panned from one side of the stage to the other for effect purposes.

3. Echo Send. This is really another channel fader using a normal rotary control instead of a sliding control, except that instead of feeding a signal to the mixer output, it feeds a separate signal to a special output on the mixer which is connected to an echo or reverberation unit to enable special effects to be introduced into the system. By fitting such a control, the desired effect need only be applied to some of the inputs at a time, the other inputs remaining unaffected. On some more complex mixers, two or more echo send controls may be fitted to each input channel to enable a choice of effects to be introduced as required.

4. Foldback Send. This is almost identical to the Echo Send control, except that it feeds yet another special output in the mixer, to feed foldback speakers on stage (as discussed in part 3 of this series). Again, by using a separate control for each input, only certain channels need be fed to the musicians on stage, depending upon their particular needs.

5. Bass. This forms part of the channel equalisation. Usually, the Bass control operates at around 100 Hz and allows about 12dB of cut or lift at that frequency.

6. Middle. This equalisation control usually allows about 12dB of lift only at a frequency somewhere in the mid band region. The actual frequency used varies from one manufacturer to another, but 1 KHz, 2.8KHz are common points. Some of the more elaborate mixers may have two middle controls operating at different frequencies, or alternatively, may have a switch to select the frequency at which the control operates in addition to the middle control it-

self. This facility is particularly useful in certain larger halls, where, due to acoustic conditions, all the middle seems to be just sucked out of the system.

7. Treble. Still part of the equalisation circuit, this control operates in just the same way as the Bass control, except that it operates at a frequency of around 8 or 10KHz.

8. Channel Gain. There is often confusion among musicians over the difference between the channel fader and the channel gain control. The purpose of the gain control is quite simply to regulate the level of signal fed into the input channel. It is important to realise that it is just as easy to overload input pre-amplifiers as it is power amplifiers (this is fully covered in part 4 of this series, by the "black box" analogy). This control serves just that purpose by allowing the incoming signal to be reduced so that the input is not overloaded and therefore, does not generate distortion.

On some mixer designs, this control changes the input characteristics of the pre-amplifier itself so that it can accept larger or smaller input signals instead of regulating the signal. Either way, the effect is the same and it is a most essential control, and must be used properly.

9. Pre-fade listen switch. This is usually abbreviated to PFL and permits the programme to be monitored through headphones for balancing purposes before the main fader is brought up to feed the programme to the P.A. Its operation is usually completely independent of the setting of the main fader.

This is of course only a typical input module and is not intended to represent any particular make or type of mixer. Most manufacturers have their own opinion about the controls that it is desirable to provide and design their products accordingly, sometimes

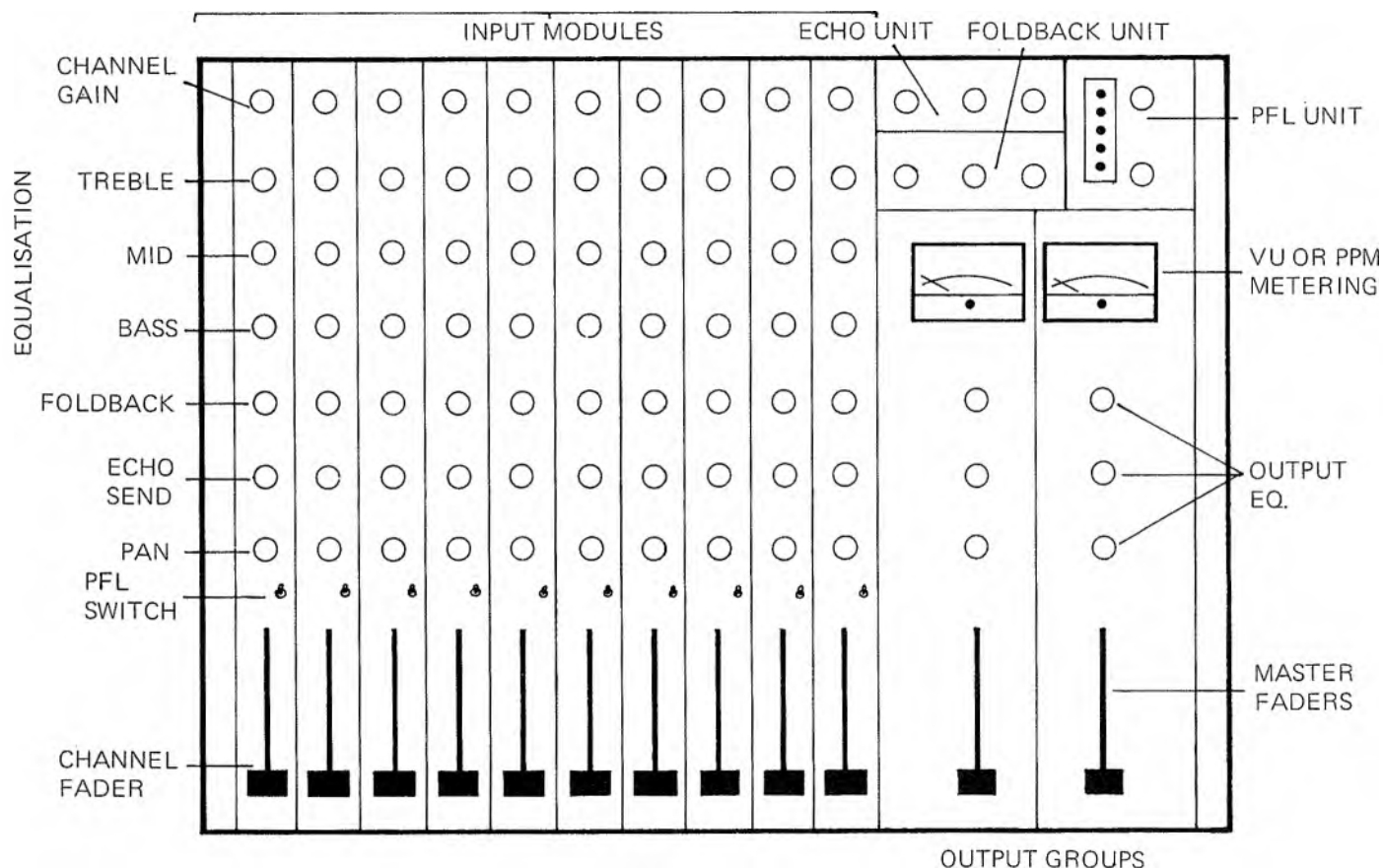


Fig. A A typical, simple ten-into-two desk showing layout of controls (see text)

providing more facilities than those described here, and sometimes omitting some that they might see as superfluous. The requirements of the band using a mixer is also likely to vary depending upon the sophistication of its act and the technical competence of its road crew, not to mention considerations of cost.

So far, only input modules of a mixer have been considered and this is only half the story. Once the incoming programme has been processed, it is fed to the output groups and to various auxiliary units to provide the overall control of the system. The functions of these are described below.

1. Output groups. These usually consist of the master faders, master equalisation controls and either VU or PPM's (Volume Unit or Peak Programme Meters) to monitor the level of signal being fed out to the power amplifiers. The number of output groups provided will depend upon the function required of the desk, but two will be necessary for a stereo system, four for quadrophonic, and possibly others for special purposes. The expressions often heard of a "ten into two" or "sixteen into four" desk refer to the number of inputs feeding into the number of outputs. If more than two output groups are provided, it will usually be necessary to also provide routing switches on each input module, to enable the output from each input to be routed to the required pair of output groups. It is also usual with a four group desk to find a quadrophonic pan pot fitted, to enable the output to be panned around the room, much like a stereo balance control, but operating in two dimensions instead of one. On some mixers, compressors or limiters are incorporated into the output group to control

the peak excursions of the programme and prevent clipping, in either the mixer itself or the power amplifiers.

2. Foldback Unit. The output from all the foldback send controls on the input modules are combined together at the foldback master unit. Volume and equalisation controls are also provided for overall control of the programme fed to the foldback loudspeakers on stage.

3. Echo Unit. Here, the output from all the echo controls are combined for feeding out to the echo or reverb unit, and sometimes, a master echo send control may be fitted. Provision will also be made for the return signal from the echo unit, to be mixed back into the signal routing within the desk, usually via an echo return level control, and further equalisation.

4. Monitor Unit. This unit consists of a small amplifier to drive a pair of headphones for audible monitoring of the various functions of the desk. The amplifier is fed from a switch bank enabling either the PFL switches on the input modules, the echo send or return circuits, the foldback feed or any of the output groups to be selected at will for checking for proper operation or for balancing up purposes.

5. Jack Field. As the name suggests, this is literally a field of closed circuit jack sockets and almost all signal routing within the mixer is done via the jack field. Its purpose is to permit absolute flexibility in the application of a mixer by allowing almost any signal line to be broken and further treatment or processing to be applied outside the desk, and to allow the signal routing itself to be altered to suit prevailing requirements.

All input and output connections on a respectable professional mixer will be Cannon XLR-3 type connectors, and in many cases, all such connections will be duplicated in a multiway connector so that the "back panel" of the desk can be duplicated on stage in the form of a stage box, into which all microphones and amplifiers will be plugged. It is usual for the mains power unit of such a mixer to be a separate item, in order to avoid the hum problems that might otherwise be present if the mains transformer and other supply components were located in the close proximity of the circuitry within the mixer housing. With the increased use of toroidal transformers and integrated circuit stabilisers, this is becoming less of a problem, and gradually, power supplies are being incorporated into the mixer main frame.

The technical performance of a mixer has got to be good. It is the very heart of the P.A. system, and any small short comings here will prove disastrous at the receiving end of a 10,000 watt P.A. Rather than go into mixer specifications here, it is suggested that readers refer to some of Bruce Gibbs's Soundchecks on various mixers that have appeared in this magazine in recent months. These will not only show the parameters that govern the performance of a desk, but Bruce's comments will serve to illustrate the order of figures that are acceptable, and those that are not so good.

Having now covered, albeit in a very basic form, the main basic items that go to make up the P.A. system, next month we will consider the actual cabling up of a P.A. rig, including the use of XLR type connectors, multiways and the like.

# BEVERLEY AND AYEDIS ZILDJIAN THE SOUND OF SUCCESS



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By Eamonn Percival



# MICK GREEN

*Seventeen years ago, a record called "Please Don't Touch" entered the British charts. It was performed by a group called Johnny Kidd and The Pirates, one of the few really original rock 'n' roll bands in England. They were to enjoy considerable success with follow-up singles like "Shakin' All Over", "Restless", "I'll Never Get Over You" and "Hungry For Love" until, in October 1966, Kidd was tragically killed in a car crash. A young guitarist, Mick Green, was developing an instantly recognisable style during his years with the group, a style that a lot of people like Wilko Johnson (of Dr. Feelgood) were later to adopt.*

*After the Pirates, Green went on to play with Billy J. Kramer and The Dakotas, Cliff Bennett and Engelbert Humperdinck. He recently formed a band, Shanghai, and a record label, Thunderbird. Shanghai's second album *Fallen Heroes* has just been released, as has a single "Shakin' All Over" — a new version of the Pirates' classic. Here Mick Green talks about his past, present, and future.*

*What have you been doing since the Pirate days?*

Well, I was with Kidd for about three years altogether. We had a few hits and all that, and I was about 18 then. It was good because it was a 'friends' thing — we'd all known each other since we were about 11. Eventually, they all got married and I was the only single guy left and I was wandering about on my own one night on Blackpool Pier, where we were doing a summer season, and when I got in, the bass player came over and told me Robin McDonald had called me.

I called him back and he asked me if I wanted a job with The Dakotas — at that time





they were Number One all over the world with 'Little Children' — so I thought it would be a wages thing, but they said everything was split equally with the rest of the boys and they were off to Hawaii the following week. I said I'd ask Kidd, so I asked him and he was great, he said: Take it. I'd always wanted to go to the States anyway, so I played with them for about three years.

Eventually, it started to crumble a bit — they ended up doing a lot of cabaret and things like that. I didn't really want to do that, so I joined the Cliff Bennett Band and that was great. I was with them for about 18 months and it was great. We used to do little discotheques and colleges. We had a brass section and we were playing the sort of stuff I wanted to play — I was doing all the Cropper and Stax gear. It was really a fun band to work with.

Then, after that, Gordon Mills phoned me up and asked if I wanted to join Tom Jones. I said: 'How much?' And he said: 'Good wages'. I said: 'Yeah, how much?' and he said: '£40 a week'. I was earning more than that with Bennett — we were paying the roadies £40 a week! So I said No, and didn't hear any more from him until he phoned me up and asked me to join Engelbert. I said: 'Not for the same money you offered for Tom!'

Anyway, he offered good bread this time, and Cliff said O.K., so I joined Englebert. The funny thing about it was, Gordon said: 'Can you read music?'. I couldn't read a note, but I said: 'Yeah, I can read', so I got the job. *How did you get round the reading part?*

Well, I went along to a couple of his shows before I joined, and took a tape recorder along, without anyone knowing, and taped his whole act. (laughs) I took the tape home and bought his records as well and sat down and learned them from the tape. The only thing I was worried about was that perhaps he might have changed the key on the night, and I wouldn't have known. But anyway, me and Robin (Mc Donald) went along and we were so nervous because we never had a rehearsal with Enge — we just had to go straight on stage.

The first gig was Ipswich, and we were sitting there in evening suits and there was a comedian out the front, while we were sitting at the back looking at the parts. All of a sudden, the guy from the house band comes up and hands us these great, long parts and said: 'This is the comedian's play-off bit — you'll have to play it now'. So we had to sight-read it, and it was in 2/4 — really fast. The M.D. was standing there looking at me and I was just playing any notes I could think of. It just cracked me up, though. The tension had built up so much, and then something like that happens — the tears were streaming down my face, I was laughing so much. Anyway, we just bluffed our way through it all and that was it. *How long did you stay with Humperdinck?*

About four years altogether, until about 1971. It was good but it was, like, Disneyland. You can have too much of Disneyland. It was a whole big-time scene — you could send a Cadillac out to get a pack of cigarettes. It was a superstar thing really, and anyone around the superstar got involved in it as well. Enge was great. He always cared and got involved with the band.

*What did you do after Engelbert's band?*

Well, we had a band called Shanghai, but it was completely different. We brought over an American bass player and keyboardman, and a coloured singer called Chuck Bedford. There were so many different directions in the band.

We could play virtually any style well, but you need a common feel. If you listen to the first album on Warners, nothing really hits you. It's all different things. Anyway, Chuck decided he wanted to go back to the States, and it was getting a bit tricky with the work permit situation, so he went back to the States. I was sitting at home one day and I suddenly thought: 'What's Bennett doing?' He's got to be one of the best voices in the world, right? So I phoned him up and he was a bit down at the time, but I persuaded him to come along to do a few gigs and it worked out great. We just took it from there.

*Were you ever tempted to 'come back' in a blaze of publicity with Shanghai?*

No, not at all. We played it very low-key and I prefer it like that. The whole band are a kind of low-key band. If we can't enjoy ourselves playing without worrying about what the press are saying, then I don't think we'd bother to do it.

*How do you see the band's direction now?*

Well, the directions are still pretty far apart, but it's more valid now somehow. There's a track on the new album called 'Solaris' which has things like a Bach classical piece in the middle and sea-effects on a synthesizer. We can do all that and then do 'Shakin' All Over' and still sound like the same band.

*Are you still playing a Tele?*

Yes, it's one of the later ones with one Fender humbucker on it. It needs a couple of things doing to it because it's a 'straight-out-of-the-factory' job, but it's good. I had a Gibson Les Paul, but there wasn't enough attack in it. I mean, you can't really beat the attack on a Telecaster. I looked around at a lot of old ones, but I couldn't find a good one. A lot of people are always going on about the old, pre-CBS ones but I think you've just got to be lucky. They made rubbish guitars before CBS took over and they made good ones. You've got to test them. I never go on a guitar by the age. I found this one and it suits me very well. It also goes well with my amp, which is a Fender Twin Reverb.

*What guitar strings do you use?*

Well, at the moment, I'm using Ernie Ball's. I tend to vary from Ernie Ball's to Fender Rock 'n' Rolls. I don't have them too light. 0.10 is light enough for a first and then gauged down from there. I don't like them too light, especially for the way I play. It's a very rhythmic, chordy thing. I hit them pretty hard, so if they're too light, they tend to break easily with me.

*Not long ago, Dr. Feelgood's Wilko Johnson was singing your praises very loudly. He would be the first to agree that his style owes a lot to the sound you were getting with the Pirates years ago. Why do you think that style has come back into vogue?*

I don't know if it's vogue or what. I mean, I think Wilko's tremendous. I think, basically, if Wilko stood still and had long hair and jeans, it wouldn't be quite as effective. That band is basically an image band. Musically, they're capable, but they're basically an image group. Like The Who, if they didn't smash their gear up and tear about, they wouldn't have done it either.

*What other guitarists do you listen to?*

Well, obviously Burton. I like Jerry Reed and all the Blues mob — B.B. King and all that. I don't just listen to guitarists, because there are a lot of them about. I go home and listen to a lot of things. I just usually stick any album on. I don't really listen to anyone in particular.

*During the latter half of the 'Sixties, when Hendrix and Clapton reigned supreme, were you ever tempted to plug into a stack and blast away?*

No.

*You don't use a fuzz box or any effects pedals?*

No. I find I get all the distortion I need from the Twin when it's wound up, with the dual master controls. I tried an MXR Phaser out, but the frequencies on the notes were altering so much, I couldn't get the same response from, say, the second string as I could from the bass strings. I just couldn't handle it.

*Do you change your equipment for the studio?*

No, I use exactly the same stuff. The new album was mostly recorded straight off. On the first, we used a hell of a lot of overdubs, but the new one is mostly third or fourth takes. *Do you play any other instruments?*

Basically, no. I'm thinking of getting a piano actually, mainly for writing songs at home. I think it's a nicer instrument to use for writing. You can get a lot of different things on it, if you're only used to playing a guitar. I also think a drum machine is very good for writing, especially if you're writing just with a guitar. It's difficult to envisage a rhythm pattern behind you if you're on your own. You might imagine a rhythm kicking away behind you, but because there's nothing there, you tend to fill in the gaps with the guitar rather than leave them out.

*Do you read music now?*

Yeah. I did read well up to the time I left Enge, but that was about four and a half years ago. I was pretty good — usually second time through.

*How did you learn?*

Well, for a kickoff, I did eight hours a day practising on the road, and also I learned a lot from a guy called Richard Tattersall. We did a three-month BBC series with Enge, and we'd get everything. There'd be Sarah Vaughan's music and you'd turn over and there'd be a twelve-page dance routine part. He taught me to read with my feet — like, the toe down is the first beat of the bar. You count with your foot. You can't read without counting if you're part of a rhythm section.

*Talking of rhythm, you have a very distinctive, clean rhythm style. Do you prefer playing rhythm more than lead parts?*

I do enjoy the chord side of playing. It's what I've always done. I've always been more of a rhythmic player than a 'screecher.'

*Do you enjoy playing the smaller clubs and pubs?*

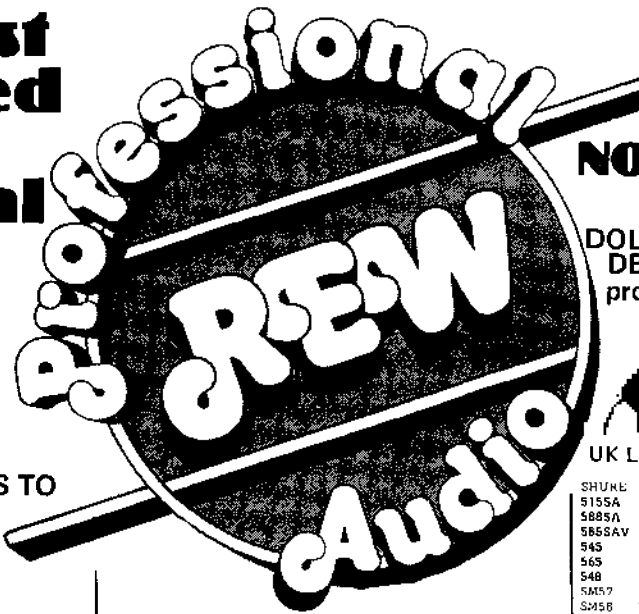
I do at the moment. I think it's good for us and we always seem to go down well with the audiences. A lot of bands go into a small club and drag along 300 bins and a giant monitor system and a mixer and a guy at the controls. We don't do all that. We've just got a Shure P.A. None of the amps or drums are miked up at all. It's all straightforward. When we do a big place — like we did a Leo Sayer gig at a large college and we had to use their P.A. and the guy on the mixer didn't have a clue what the numbers were. He didn't know who was doing what, and we might as well have not used it all. We could have gone on with our own gear and got a better sound.

*Finally, where do you think the future of the band lies?*

Well, we'll keep working here obviously but I think there's a market for us in the States. Apparently, there's a lot of interest in the band over there so we'll just have to see how it goes.

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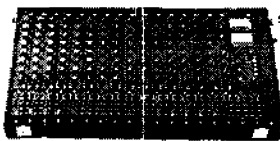
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# STUDIO DIARY



**AIR RECORDING** . . . Robin Trower recorded a studio album and mixed a live album which had been recorded in Sweden, with the engineering done by Robin Emerick . . . Jeff Beck was recording with engineer Denny Bridges . . . The Seekers were in . . . Olivia Newton-John was mixing an album with producer John Farrar and engineer Mike Stavron . . . Steeleye Span were working on an album with producer Mike Batt and engineer Mike Thompson . . . Stockhausen was recording with Steve Nye engineering . . . Nazareth were in with engineer John Punter . . . Roxy Music recorded with engineer Steve Nye . . .



Trower Recording at Air

**CBS Studios** . . . The Pretty Things were filmed and recorded for The Old Grey Whistle Test and for an American radio programme . . . Pilot were recording for London Weekend Television . . . A Tammy Jones album was mixed with producer Robin Blanchflower and engineer Dick Palmer . . . Tony Bird was recording an album for CBS with producers Tom Wilson and Larry Fallon and engineer Bernie O'Gorman . . . The Walker Brothers were recording for London Weekend . . . New World were recording for EMI with producer Mike Smith . . . Sailor were recording . . . The Black Abbotts were recording for HC Entertainment with producer Barry Mason and engineer Steve Taylor . . . Swingle II were recording with producers Ward Swingle and Terry Edwards . . . Stuart Gillies recorded a single for EMI with producer Mike Smith and engineer Steve Taylor . . . Cajun Moon recorded an album for Chrysalis with engineer John Wood . . . Hello recorded for Bell Records with Mike Leander producing and Simon Humphrey engineering . . . Doger recorded for Petal Music with producer Alan Hawkshaw and engineer Steve Taylor . . . The Bo-Flyers were recording for Pye with Ray Cane producing and Steve Taylor engineering . . . Alan Child recorded a single with producer Lem Lubin and engineer Bernie O'Gorman . . . Jimmy Jones was recording a single for Polydor with producer Eamonn Sherlock and engineer Bernie O'Gorman . . . Upp recorded an album for CBS with producer Chris Bond and engineer Dick Palmer . . .

**EDEN STUDIOS** . . . Graham Parker and The Rumour recorded an album with engineer Mike Gardner and producer Nick Lowe . . . Bilbo Baggins and Fancy recorded tracks for the London Weekend programme, Supersonic . . . Maxine Nightingale recorded a single with producer Pierre Tubbs . . .

**EMI (ABBAY ROAD)** . . . Soft Machine have been recording an album with Sean Murphy producing and John Leckie engineering . . . Cliff Richard has been mixing an album with producer Bruce Welch and engineer Tony Clark . . . The Project which Alan Parsons is producing and engineering is almost complete . . . Frank Jennings is recording a single with producer Richard De Silva and engineer Peter Mew . . . Greg Lake is producing The King Singers with engineer John Kurlander . . . Paddy Kingsland has been recording with producer Bob Barratt and engineer Tony Clark . . . The Spinners have been working on an album with Peter Vince producing and engineering . . . Dennis Waterman of "Sweeney" fame has finished recording a single with Brian Bennett producing and Tony Clark engineering . . .

**KINGSWAY** . . . Danny Kirwan was recording with engineer Louis Austen and producer Clifford Davis . . . Jail Bait were recording with engineer Geoff Claver . . . Norman Brown was recording with engineer George Sloane . . . Straps were recording with engineer George Sloane . . .

**IBC STUDIOS** . . . Keith Potger, (ex Seeker) was producing Leapy Lee for GTO Records with engineer Hugh Jones . . . Barry Ryan was recording for Ryan Music . . . Kevin Westlake was recording an album for RCA with producer Tony Meehan and engineer Hugh Jones . . . Glyder were recording with engineer Mike Claydon . . . Sue Shifren was working on some tracks for Screen Gems with producer Ray Walter . . . In the IBC disc cutting room, albums for 10cc, Status Quo and The Fatback Band were cut . . .

**LANSDOWNE STUDIOS** . . . Jonathan King recorded some songs and vocals with engineer John Mackswith . . . Marmalade, Guys 'n' Dolls and the Sweet were recording for London Weekend's Supersonic programme . . . Gerry And The Pacemakers were recording for Ammo Productions with engineer Robert Butterworth . . . The Troggs are recording with engineer David Baker . . . Casino were in for State Records with Wayne Bickerton producing and David Baker engineering . . . Jorge Ben was mixing for Island with engineer Robin Cable . . . Frank Jennings was recording Country and Western things for Island, with producer Richard De Silva and engineer John Mackswith . . . Shorty recorded for State Records with producer Wayne Bickerton and engineer David Baker . . . Chris Andrews was recording with Pit Williams producing and Wayne Bickerton engineering . . . Jonathan King produced an album for Bubblerock . . .

**THE MANOR** . . . The Hollies were recording with Alan Parson producing and engineering . . . Supercharge recorded an album with producer Mutt Lange and engineer Mick Glossop . . . The Finnish band Wigwam were recording with engineer John Eden and producer Ronnie Leahy . . . The Chosen Few recorded for Polydor with Tony Ashfield producing, George Sloane engineering . . .

**MASTER ROOM** . . . An album for George Harrison was cut . . . A Steve Gibbons album was cut . . . A Gong album was cut . . . A Slade album was cut . . . A Pretty Things album was cut . . . A Splinter album was cut . . . A Billy Connolly album was cut . . . Some singles for Jonathan King were cut . . . A Jethro Tull re-release was cut . . .

**PHONOGRAM** . . . Status Quo have just finished an album with Damon Lyon-Shaw producing and Hugh Jones engineering . . . Twiggy has recorded an album with producer Tony Ayers and engineer Steve Brown . . . Rolf Harris has recorded several new songs . . . The Opportunity Knocks band, Love Together have been recording with producer Mike Smith and engineer Steve Lilywhite . . . Chris Hill has recorded a single with engineer Steve Brown . . .

**RAMPART STUDIOS** . . . Thin Lizzy were recording with John Alcock producing and Will Reed-Dick engineering . . .

**ROCKFIELD STUDIOS** . . . Tim Rose was recording with producer Jonathan Roland . . . The O Band were recording and mixing with engineer Pat Moran . . . Van der Graaff Generator recorded an album with engineer Pat Moran . . . Motorhead were produced and engineered by Fritz Fryer . . . The Judas Priest Band were recording . . .

**ROUNDHOUSE RECORDING STUDIOS** . . . Uriah Heep have recorded an album with engineer Ashley Howe . . . Babe Ruth recorded an album with producer Steve Roland . . . Dianne Solomon recorded an album for EMI with engineer Ashley Howe and producer Steve Roland . . . Andy Mackay of Roxy Music is recording for Rock Follies with engineer Mark Dearnley . . . Coliseum II finished an album with producer John Hiseman and engineer Ashley Howe . . . Ken Gold and Micky Denne have finished the final mix of an album with producer Ray Walters and engineer Ashley Howe . . .

**SARM STUDIO** . . . David Essex has been mixing a live double album recorded during his last British tour with his producer Jeff Wayne . . . Gary Lyons engineered the mobiles for David Essex . . . Gong were recording, produced by Nick Mason for Virgin Records . . . Mr. & Mrs. Brown are recording a single with Mike Stone and Phil Wainman . . . Link Wray were recording with producer Chris Holabone . . .

# Mountain Studios Montreux

by Malcolm Green

With only hours to go and everyone furiously running audio cables and testing controls, Mountain Recording Studios S.A. went into full professional operation in time for the Montreux Jazz Festival on July 3rd '75. The studio recording of the festival and the stage P.A. controlled by the studio engineering team went without a hitch. This was the classic beginning to a highly sophisticated studio operation that developed into a great success well before its official opening on January 21st. This year famous name bands such as The Rolling Stones, Jethro Tull and Ian Gillan have been recording and mixing there for the last few months.

Located in the picturesque Swiss town of Montreux at the eastern end of Lake Geneva, the studio has been ingeniously designed inside the large ultra-modern architectural structure of the Casino building. The Casino complex is situated virtually at the edge of the lake and commands a spectacular panoramic view of the snow capped Alps towering above the southern shore of the lake. The environment must be an idyllic retreat for musicians and producers in search of grandeur and solitude to provide inspiration.

Mountain Recording Studio is the brainchild of Anita Kerr and Alex Grob two personalities very much involved in both the creative and the business aspect of music. Alex Grob has tremendous experience and knowledge of the recording business to offer studio clients and Anita Kerr, known internationally for her brilliant arrangements and production work with the Anita Kerr singers, assists clients in obtaining the best session singers and musicians for their arrangements. Both Anita and Alex co-manage the studio and John Timperley, formerly

Chief Engineer at Chappell's Studio, London, is in charge of production.

The design of the studio indicates a thorough appreciation of the need of many musicians in small to medium sized bands to work in a close personal studio environment; an environment where they can work closely with the producer and engineers and where equipment can be left and found "in situ" later, without any hassles. Mountain Recording is absolutely perfect in this respect.

The acoustic design is strictly Westlake Audio Inc. of Los Angeles and Tom Hidley personally supervised the whole installation and work programme. Jerry Mead of Mercury Electronics, Uxbridge, England, specialists in building T.V. control systems, did the interface electronic wiring and closed circuit television system. The European Broadcasting Union have commissioned Mercury Electronics to build all the T.V. control systems for the Montreal Olympics.

Westlake Audio Inc. have pulled off yet another acoustically aesthetic design with the studio and control room. Liberal use of rock-faced wall sections over concealed trapping in the control room, generous use of wood panelling and a slate floor in the studio add the required amount of reflective surface areas. Complementing this there are screened absorbant wall sections, variable trapping and active trapping in the ceiling of the studio. An area of the control room ceiling has been designed to absorb sound beams reflecting up from the mixing console fascia in order give the mixing engineer an absolutely accurate sound picture at the centre of the room and at the operational seat on the desk.



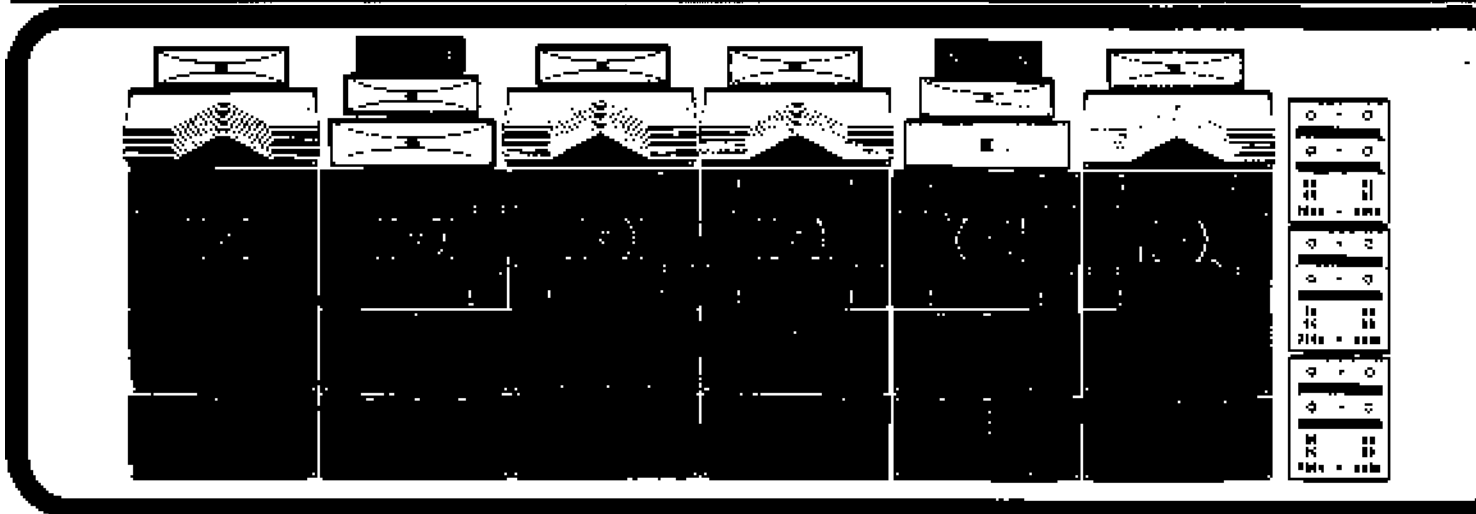
The large recording hall

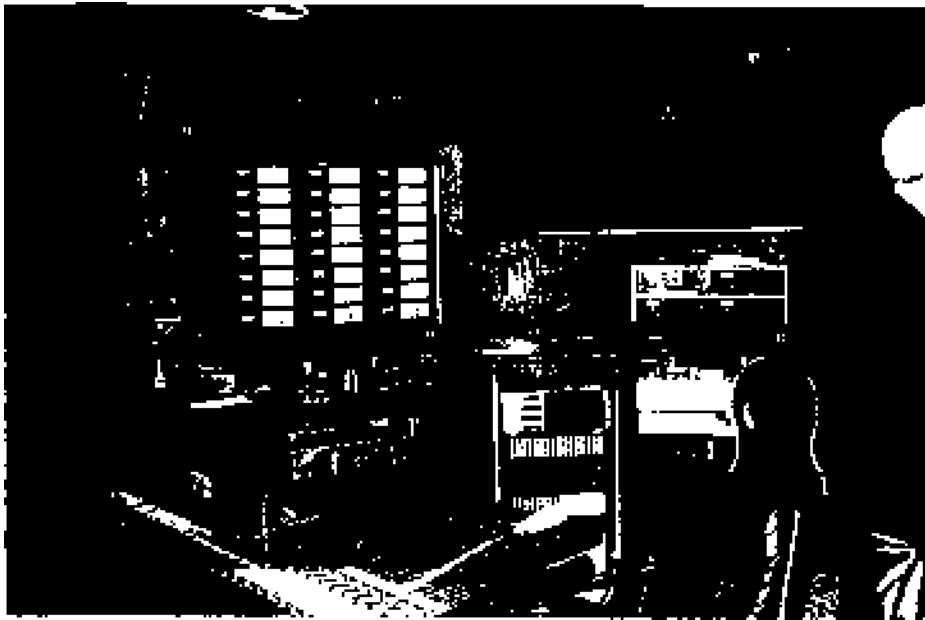


Alex Grob in the control room



Jerry Mead showing a Westlake TMI Monitor





A partial view of control room



Studer two-track machines

Westlake's Tom Hidley reckons that this is the best control room that he has designed to date with all positions around the desk and into the room giving the same monitored sound curve. Tom also installed a graphic equalisation system before the monitor amplifiers in order to make the final fine adjustments to the system and the acoustic environment of the control room.

The control room offers completely symmetrical quad control, the centre piece of which is a custom-designed Rupert Neve console with 32 inputs and 24 outputs. The rest of the equipment is to say the least most impressive: Studer machines are in force; there are two 24-track, two 16-track, one 8-track, one 4 and two 2-track Studer machines in all; 32 Dolbys, two Eventide phasing units, an Eventide digital delay unit, Universal Audio limiter compressors, Kepex units and four EMT echo plates (gold plates), as well as natural echo chambers are provided. A comprehensive selection of microphones including Neumann, AKG and Electro-Voice are there for the choosing.

Four Westlake TM1 monitors, each driven by a Crown OC300 and two Tannoy Monitors driven by a Crown DC150 (for classical music) complete the control room monitoring system. Tom Hidley's custom-built TM1 monitors give an incredible sound. Each monitor system comprises a JBL tweeter, a JBL pressure driver with a wooden horn (Westlake design) for the mid-range and two 15" Gauss bass drivers.

Within the Casino complex are two

acoustically designed large halls separated by removable screens. The large live stage accommodates up to 40 musicians and the large Casino hall can be used by orchestras of up to 250 musicians. Both the live stage and the large recording hall are linked to the studio control room by audio cable and closed-circuit television. Closed-circuit T.V. monitor screens are also linked to the studio from the control room, which is on a different level to the studio and the other halls.

Montreux is an internationally known holiday centre, and the town is famous for its hotels and restaurants. The Casino building itself has several bars, clubs and a superb restaurant to attract studio clients. Drinks and meals can be sent into the studio for clients not wishing to be distracted by the outside delights. Hotel reservations, chalet rental at reasonable prices and other personal services such as skiing trips, fishing trips and excursions into the beautiful Swiss mountains can be arranged by the staff at Mountain Recording's offices just across the street from the Casino building.

Mountain Recording are delighted to help artists and producers as much as they can in order to make travelling to the studio as convenient as possible. There is a pick-up and delivery service from Geneva Airport a 45 minute car ride away, and arrangements can be made with a private air taxi company to provide planes from Falcon Mystere 20 jets to single engine Pipers.

Everything has been taken into consideration at Mountain Recording; you can work day and night seven days a week at the all inclusive rate of £40 per hour (except tape).

Mountain Recording S.A. must be one of the most sophisticated and one of the best equipped studios in Europe today. Add to this the amenities of Montreux and a certain little matter known in England as corporation tax and income tax which does not seem to give quite the same problem in Switzerland, and you have the formula that many leading artists and producers could be looking for in the future.

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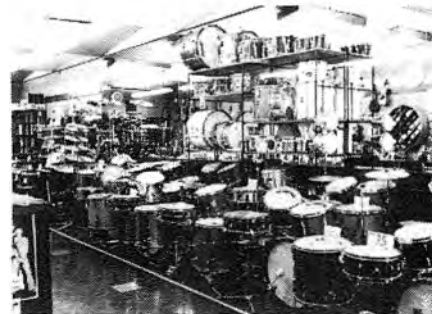
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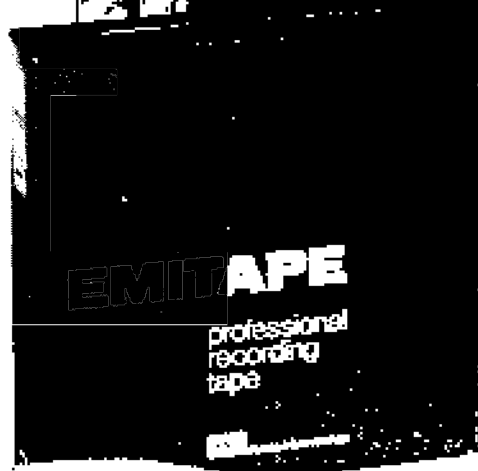
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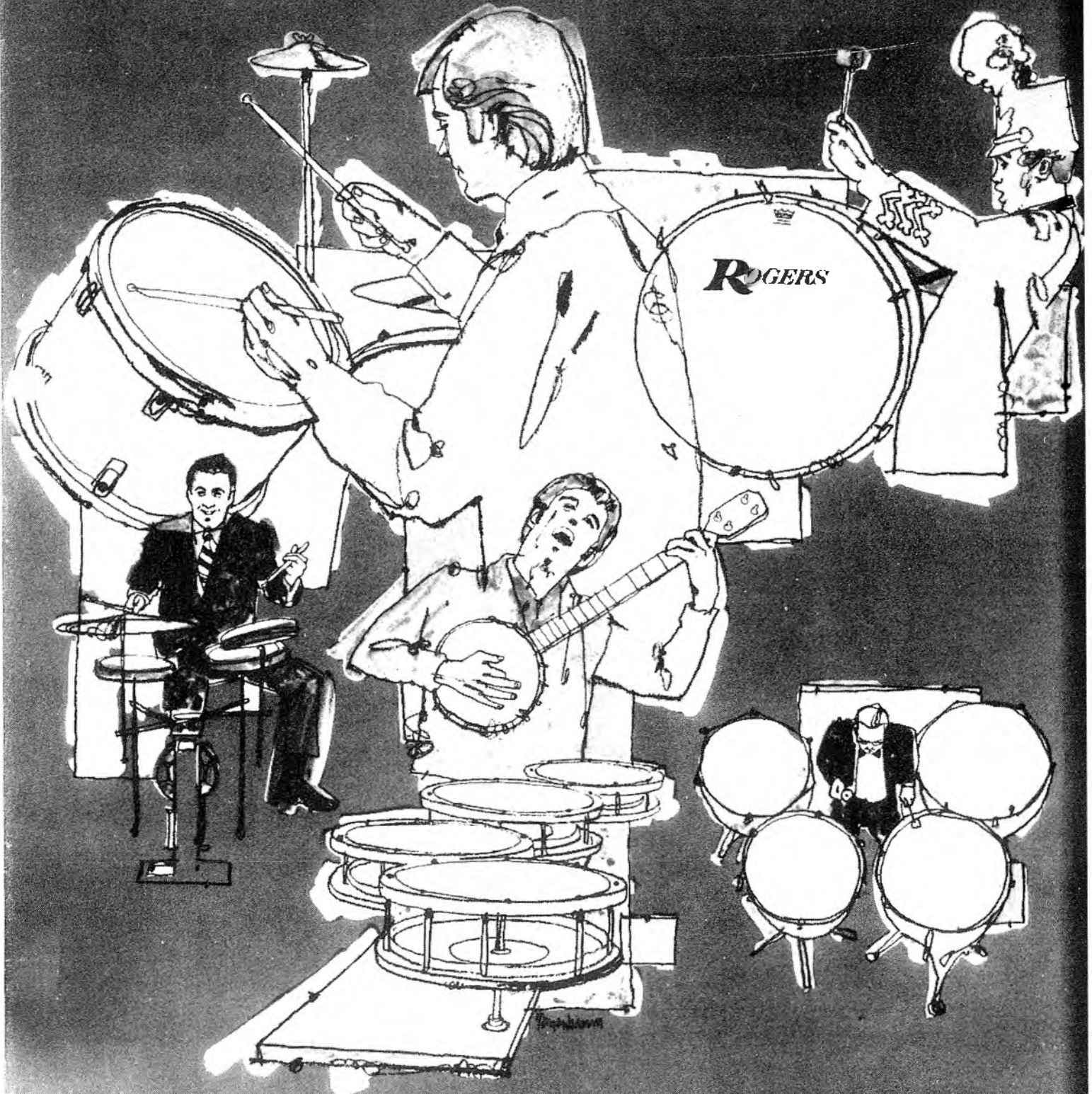
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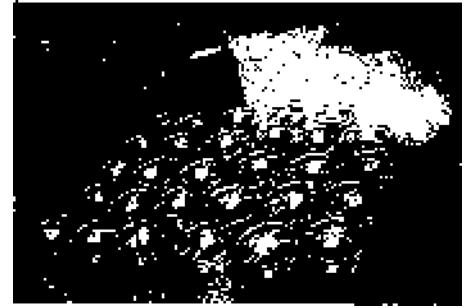


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# Bob Henrit at the Remo Factory



*Above Left: Remo packaging dept.  
Above: Assembled Foto-toms.*

and out stepped this very groovy and distinguished looking dude. He was Remo Belli himself, looking at least ten years younger than he had been when I'd last visited him 18 months before.

As we travelled through Laurel Canyon, Remo explained that it wasn't as I suspected, that drum heads were the secret of eternal youth, but instead a diet which Remo had been adhering to religiously for the past couple of years. Since I was still on a strict diet (as a result of Hepatitis) we had quite a lot in common. It would be trite of me to say that Remo's philosophy is that you are what you eat. He does feel that what we put into our stomachs effects our minds, and vice versa. He no longer smokes or drinks and claims to have eliminated all of the junk of life. He freely admits to being 48 but feels 27 and now accomplishes in 3 or 4 hours work which used to take him eight hours or so. He told me that the day before he had tried something new. He had actually fasted for twenty four hours and had drunk only bottled mineral water. The overall experience was evidently enlightening.

I asked Remo to fill me in on some of the details of his early life as a professional drummer up to his invention, in 1957. It turns out that he's been involved in drums and drumming all his life. He originally came from South Bend, Indiana, and first started drum lessons there at age ten. He was a professional musician by the time he was in the tenth grade of school. After graduating from high school, he went on the road for a while and was then conscripted into the Navy since there was a war on. He played in one of the Navy's bands and when the war ended, Remo persuaded the Navy that they really didn't need him anymore. Remo immediately headed for New York with the intention of going to the Julliard School of Music but found almost immediately that New York City didn't agree with him, nor he with it. He hitched a ride to Los Angeles and realised when he arrived that he had discovered his Nirvana. He was 19 and his total possessions were 60 dollars, his drum set, some clothes and the then obligatory musician's tuxedo.

Remo happily remembers that this was a great time for him since he had no heavy responsibilities or money and almost all he had to do was study and play drums. He started studying with a teacher named Murray Spivak and made a few gigs.

In 1955, Remo had been in Chicago working with Betty Hutton and happened to be in the Slingerland factory when a salesman from Dupont (the U.S. Chemical Company) came in to see Bud Slingerland with the hope of selling him on the idea of drum heads made from this new strong plastic sheet called Mylar. Old man Slingerland never believed in the idea at all and Remo was a gigging professional at the time, so he wasn't interested either, but the name MYLAR lodged in his subconscious. Incidentally Remo told me that this Dupont salesman went the rounds of all the big drum



*Above: Heads awaiting insertion  
companies like Ludwig at this time.*

Soon after this, our hero returned to Los Angeles and opened up a drum shop. This shop in Hollywood was called Drum City and the plastic head is a direct result of activities which took place there.

Since there was no west coast music fair, Remo's shop staged a percussion fair every year and invited drum manufacturers to send along their new products. This was not just a display for musicians and dealers, but for everyone who was interested. Each year they physically changed the appearance of the shop for this exhibition by putting in new fittings, shelves, counters and things. One year Remo was working on a large see-through room divider which he planned to mount old flesh hoops in. He went to a plastics house in L.A. called C.D. Lamourie to ask for their help. They suggested a new wonder substance — MYLAR.

Remo recognised the name, bought a piece, took it back to his shop and immediately stapled it to a wooden flesh hoop. Remo held the 14" head in his hand but didn't realise the far-reaching implications of his discovery. (Up until recently, he still had that first head in his possession but in the recent move into his new offices the proto type has been mislaid). He put this head on a snare drum with his partner Roy Hart and the plastic drum head was born and tested. At this same time in Santa Fe New Mexico, a guy called Chick Evans was also working on a drum head.

Remo along with his chemist Sam Muchnik was the originator and partner of the plastic head with perforated edge which floated in a "U" shaped channel filled with Epoxy-resin. John Rochon of Camco was the originator of another kind of plastic head which used a crimped fixing system (where the metal channel was actually squashed right against the plastic) which Ludwig now use. This process was discovered and developed first by Oscar Bayer in Zurich.

The Remo system allows better turning for the head in a more accurate way with better distribution of stress within the head. Another difference with this head is the quality of the Mylar film used. Any one of Remo's competitors order the same plastic from Duponts

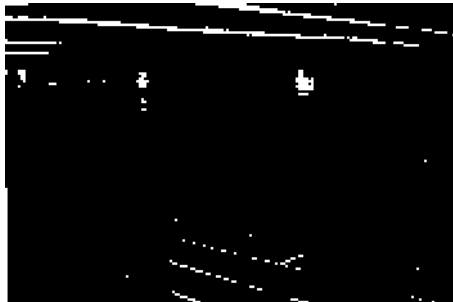
Almost twenty years ago Remo "D" Belli first stapled a piece of plastic to a snare drum flesh hoop and provided the missing fuse for the greatest musical explosion of all time. On two counts, the early 'sixties beat boom couldn't possibly have begun if Remo hadn't invented plastic non-stretch drum heads. Up until this time, the six or so drum factories in America had each been turning out about 100 drums per week. At the height of the beat boom, Ludwig were producing 4 or 500 drums per day, while Slingerland, Gretsch and Rogers made roughly the same; a grand total of 10,000 drums per week. In Japan, Pearl was up to 500 a day, Hoshino Gakki Ten and Hoshino Gakki Kogyo made 800 a day between them and at this time there were 18 other busy manufacturers in Japan. In Europe, Trixon, Rose-Morris, Premier, Sonor and Asba, as well Meazzi and Davoli were all producing their fair share. A conservative estimate of the world's weekly total at this time would be 20,000 drums, all needing heads of some sort of animal hide.

The only large source of animal hides at this time since the famous American firm Amrawco were running down their business was Pakistan. Whether or not they could have met this huge world demand is immaterial since anyone who has ever owned a Pakistani skin will tell you that it was good for just one "whack" then it was finished. It's hardly the best promise to base a multi-million dollar beat boom on, is it?

Without Remo's Weather King heads, none of these manufacturers could have kept up with the demand.

The second consideration is that, in my opinion, the sound and durability of the plastic head contributed significantly more to the overall sound of rock'n'roll music than has ever been acknowledged. Anybody can get a good sound from a drum fitted with plastic heads, providing its vaguely in tune. It's not true that a calf head will give the same results, especially not to a novice — which most of us rock 'n' rollers were in those days.

It was with all this information in mind that I telephoned the Remo drum head factory in North Hollywood and arranged a visit to the plant to look around and ask some questions. Remo wouldn't hear of me taking a taxi to the factory but said he would send a car to the Hyatt House Hotel on Sunset Strip to pick me up. Promptly at 9 o'clock, a car arrived for me



Above: U-shaped rims awaiting insertion of plastic heads



Above: Plastic awaiting insertion into its channel

but would not be able to get Remo's own specification film.

Remo Bell did not intentionally set out to make a drum head and spent no time in development. The discovery happened in March 1957 and by June 1957 the plastic heads were on the market. Remo admitted that he messed up at the start by not knowing exactly what he was doing with such a new development, but as he explained, this happens to all the best businesses at their outset. At one time he produced some heads which exploded like glass as soon as they were struck. This was due to a fault in the Mylar supplied, so really it wasn't his fault. Nevertheless, he remembers the experience as being very embarrassing at the time. Needless to say, Dupont too were also in the dark about the stress and strain factors present in a drum head.

There are lots of new developments at the Remo factory and one of them is called Fiber Skyn. This is an entirely new head which is plastic but has the warmth of a calf skin. The secret of this warmth is a lamination of Mylar and fibre glass. Some years ago, Remo experimented with completely fibre glass heads but was never pleased with the tonal qualities, whereas he was very pleased with the sound produced by his Mylar heads. The trick then was to join the two materials together but he had to experiment to find the right adhesive. At the moment this glueing is done by hand but within a few months it will be done by machine, either by Remo or a subsidiary company. The sound produced by the head is slightly unusual — at least to someone who has played plastic heads for most of his career. The fibre glass serves to mellow the sound of the plastic skin and take away some of its impact crack.

One of the reasons for the development of fiber skyn was because of the fact that lots of reputable rock drummers were switching to and preferring to play calf heads because of their sound. Danny Seraphine, Chicago's drummer, always used calf heads, as did Hal Blane (the most emulated session drummer in the States). I mentioned how I had a decent set of calf heads at home but couldn't get on with them because their sound was just not

rock'n'roll. It seems impossible to imagine Bill Cobham playing without his plastic sound, but Remo said Bill was now into Fiber Skyn.

The Remo people have been working on these new fiber skyns for every conceivable percussion application. At the moment they're working on something absolutely impossible before the advent of the new fibre glass heads. — Plastic Conga heads. He demonstrated them to me and they sounded really authentic. The development and field tests have been completed now and these new innovations will be in full production very shortly.

Another new Remo development, the improved Roto Tom was strangely enough a direct result of the energy crisis. The staff were discussing its implications since Mylar is a petroleum based product. When one of the engineers mentioned that he thought two of the metal tuning rings which press up against and tension the head on the older cycloac-rimmed wood-mounted roto toms could be used in conjunction with an ordinary metal, drum-counterhoop to make a much more resonant and brighter sounding percussion instrument. Basically, the rim of the drum is joined by its tension screws to a dished, cast-aluminium ring rather like a multi-spoked, steering wheel. The centre of this wheel is tapped and a long screw thread goes through it and is secured to a cymbal stand. The top of this screw goes up to the rim where our free-floating drum head is positioned. Inside this head is another dished wheel two inches smaller in diameter.

This ring is not threaded but instead has a blind clearance hole in its centre which locates on top of our 3/8" screw. As this centre screw is held tight at its base, believe it or not, as we turn the lower ring it forces the inner ring up against the head and changes the pitch. It's so simple its amazing.

I bought one of these drums to experiment with in New York before I went to see Remo but frankly wasn't too pleased with it. It sounded fine but didn't seem to carry too far. Remo explained the principle to me. Since it's the shell of any drum which spreads and amplifies the sound laterally, if you do away with the shell, as they had done, the sound would only go up or down. To capitalise on this, its necessary to angle the roto tom at the audience. Anyone you see using the drums will have them mounted at a very accurate angle for maximum sound projection. To really prove his point, Remo took me out onto his huge yard and asked me to stand about fifty feet away from him while he played a 14" and an 18" Roto tom. I could just about hear the drum when it was parallel to the ground but as Remo lifted it up towards me the drum suddenly came to life. I asked if he'd thought about making a detachable shell for these drums and he immediately produced one. Strangely enough it changed the sound but didn't necessarily improve it. He then showed me an interesting trick. To simulate a shell on the Roto tom it's possible to attach a piece of cloth to the counterhoop. The sound instantly changed to that of a regular single headed conventional-shelled drum.

Roto toms come in all the head sizes from 6" up to 18". Any size above this doesn't seem to be worth exploring, possibly because the rings and spokes would need to be much more substantial and might become unwieldy. More costly too, which is quite a consideration when the smallest drum costs 32 dollars in America and the largest 115.. I did notice however, that Remo's development department had some slightly larger drums with wooden bass drum counterhoops. I would hazard a guess that we'll be seeing Roto-Bass drums in the near future.

The larger sizes with tympani heads on really sound like regular tuneable tymps and because the centre screw thread is quite coarse, it's possible to change the pitch considerably with just one revolution. So far there doesn't seem to be a foot pedal to activate the pitch mechanism but I wouldn't mind betting that Remo is working on it!

Another new instrument was stumbled on by accident at the factory. Somebody, probably Merv the Englishman who assembles the 60 or 70 Roto toms produced per day, made an interesting discovery. He put a dozen or so different sized roto toms on an extra long screw and created a monster bell tree. Played by Remo with a hammer, the sound was deafening and very tuneful. Yet another Remo Belli first.

The first time I visited Remo a couple of years ago, I discovered that the company make heads for most of the drum manufacturers with the obvious exception of Ludwig. These heads were all exactly the same quality and made from exactly the same material. The only difference was in the illustrious company name which was stamped on once the heads were finished and just prior to shipment.

Naturally enough, the "beat boom" cropped up in our conversation, since it put Remo on the map and vice-versa. I made the observation that some of the drum manufacturers at that time were making sets with a lot less quality — control than before because the demand had greatly exceeded the supply. Remo said this was a problem which he too had come up against. How could a company grow and yet still maintain within that growth a certain amount of people who were interested enough to care for their product? It didn't matter, he said, whether it was my band, or his plant, or even Rolis Royce! Everybody within the the corporate structure had to love what they were doing. This of course is a difficult feeling to convey but when it works it really shows in the quality of the product.

For those of you interested in the technical aspects of drum head manufacture here's some information I gleaned. Weather King heads are made of the strongest plastic film in existence which has a tensile strength of 20,000 lbs per sq. inch on impact strength of 60 kgm per cm and a moisture absorption rate of less than 1/2% after a weeks total water immersion. It's working temperature range runs from 76 degrees to 300 degrees F.

The Remo company now make three different varieties: Weather King, Controlled Sound (C.S.) and Fiber Skyn. The Weather King's come in three different weights: Diplomat, Ambassador and Emperor, and three different finishes: smooth white transparent and coated (for British work).

The C.S. come in only one type which is the same weight as the Ambassador, but we can have either a transparent or a smooth white finish with either a black or a see-through sound centre re-inforcement. (It's also possible to buy these heads coated for brush-work with the centre spot glued to the underside.)

Fiber Skyn heads come in two weights: medium and thin. At the cheaper end of the market, Remo also makes Sound Master heads which come in only one weight, but have rims of reinforced epoxy instead of metal. Besides owning the largest and best drum head factory in the world, Remo Belli also owns a large orange grove in California where he told me he goes to relax and tend his own trees. If he lavishes half as much love on his fruit trees as he does on his drum heads, he must be producing the tastiest, juiciest oranges imaginable. Weather King oranges, now theres a thought...! □

# Guitar Renovation Part 2

Beginning last month, we commissioned Stephen Delft to write a series of articles on refinishing a guitar. Armed with a second-hand Telecaster and more than a few years of practice as a professional guitar maker and repairer, Stephen went to work. Last month, he discussed dismantling the guitar and the use of Amalgamator. This month, he continues, with a discussion of patching and colouring, and improving and protecting the amalgamated surface.

## Patching and colouring.

If the Amalgamator has melted the surface cracks together, it is almost certain that your guitar is finished with a Cellulose material, and Cellulose is probably the best material for repairs. It is also worth trying on more modern finishes which are unaffected by Amalgamator. (If it looks bad, you can always strip the lot, and there is a chance you might not have to.) However, if restoration so far has produced a bubbly or blistered surface, skip the next few paragraphs. Next month, I will cover stripping.

There are many varieties of Cellulose Lacquer, and before choosing, you need to decide whether you can use/hire/buy/borrow a suitable spray plant, or whether you are going to use brushes. You could use an aerosol spray can of paint but these generally contain some form of enamel or an oil-based varnish and are unlikely to match the old finish in colour or gloss. Spray-cans have certain uses for "cover-up" resprays, temporary repair work, and unskilled work on cheap instruments in bad condition. Even for these jobs, I would prefer the "Humbrol" spray-can outfit, which has a separate container in front for your own choice of paint or lacquer. (Try large model shops for this. Incidentally, the large cans of propellant work out much cheaper.)

The "Spray or Brush" dilemma depends on how much refinishing work you intend to do. If you can foresee more than three or four re-finish jobs in a year, and your time is of some value, it is worth your while to acquire a small spray plant somehow and learn to use it. I will be discussing various makes and types later in the series.



Masking tape and a polythene bag can seal off the body while amalgamating or refinishing the neck

Meanwhile, it is perfectly possible to effect small repairs and entire refinishing jobs with a brush as long as both brush and lacquer are suitable for this technique. My favourite for this job is a Hamiltons Perfection 1½ inch brush. Any good decorator suppliers should be able to get one for you (if they are still made) and I cannot be responsible for streaky finishes if you use any other type or make of brush. Expect to pay £2 or more.

The type of lacquer for brush application is equally critical. It should be described as Cellulose Brushing Lacquer, and one of the best makes comes from Gedge at 88 St. John Street, London E.C.1. In spite of appearing very thick, it shrinks quite a lot in drying and you will probably need about two litres for an entire guitar. Buy at least as much thinners as lacquer. (Slow thinners if you have any choice) Gedge's lacquer is colourless; if opaque colours are needed, use undercoats of Belco Brushing Cellulose and its recommended thinner. This is available in many colours as well as clear, but I much prefer the Gedge lacquer for the clear glossy top coats — it flows out more smoothly and leaves a better finish.

For transparent tints such as Gibson Cherry-red, you will need "Tinting colours" or "Matching colours" which are compatible with Cellulose. These are difficult to obtain in quantities less than five litres and you will probably need about five drops! (It is possible that Gedge can supply suitable dye crystals for their Brushing lacquer, and it would be worth

experimenting with these. Please don't try to mix brushing lacquer and coloured Ronseal!) Cellulose tinting colours are available in large quantities from Sonnebourne and Reick Marrable and Co., Morrell, Hill, Son and Wallace, and Sadolin U.K. (my preference for repair jobs). There are certainly other suppliers, but there is no company to my knowledge who will consider an order for ½ litre of each colour. (Many finishing materials are only available in large quantities.)

For replacing missing patches of lacquer, you will also need: a piece of thinnish glass about the size of a saucer; several sheets of 600 wet-and-dry paper; and an assortment of middle — quality watercolour brushes between 3 and 6, from a good supplier such as Windsor and Newton. French-polishers suppliers, such as Gedges, may have similar brushes mounted in feather quills.

If there are any dull or bare-looking patches left on the finish after the Amalgamator has dried for several days, thin the brushing lacquer 50-50 and paint it on the bare spots using quick, parallel brush strokes which hardly overlap. After about 30 minutes, repeat with freshly thinned lacquer, but place the brush strokes over the joins between the previous strokes. Don't attempt to "brush out" any uneven or missed areas. Wait 30 minutes and get them next time round. I prefer to use a brush which is between 1/3 of the patch width (small patches) and 1/10 of the width (large areas of belt-buckle damage).

Obviously, you don't sit and watch the lacquer drying. Work on a circuit of patches which takes about half an hour to complete, then start round again. When the new lacquer appears to be level with the old, hang up the guitar until next day.

You will discover that the new lacquer has sunk down considerably, leaving a ridge wherever new overlaps onto old. This ridge should be cut down almost level with 600 Wet and Dry, using a block which should be shaped if necessary to fit the guitar. Give the patch and overlap, one thin coating of thinned lacquer and leave for at least one hour to harden away from dust.

You may notice that the first material put on the bare patches is clear, uncoloured lacquer. This is necessary, and applies whether the guitar is black, green, natural, gold, or for that matter, pin-striped in a delicate pearl grey.

If the guitar has a painted finish, mix thinned cellulose paints on the glass pallett until you have the colour, and apply it in the same way as the clear lacquer. This time try to avoid overlapping, or you may find the size of the patch increasing with every coat. When the



The Tele bridge supports can be removed by starting a 3/8 inch white tap a few turns and insert a bolt and locking nut as a handle.

surface becomes sticky and the previous coat starts to tear and stick to the brush, stop and continue next day. When you think it is right, leave for an hour, cover with one thin coat of clear, and then examine the colour match in the sort of lighting under which it is most important to get an exact match. If necessary adjust the colour slightly and repaint.

When it's right, leave until HARD, carefully sand off any overlaps and continue the clear coatings as before, until the surface is level when it's hard. Paint which dries on the pallet can be revived with a little thinners and one drop of Acetone. Don't assume that white or even black — are easy. For a good white finish, it is often simpler to match as near as you can and then give an overall coat of white and several of clear. Alternatively, you may have to match the new clear top coats to the old, yellowed lacquer film, as described below for a "Natural" (clear) finish.

Clear finishes are probably the easiest to match. Bring the patch to the colouring stage as before, then place the glass so as to cover both the patch and an area of undamaged lacquer. Put a small puddle of lacquer on the glass above the patch area and look at the patch through the lacquer film. Adjust the tint of the lacquer until the patch area, seen through glass and lacquer, matches the old finish, seen through glass alone.

Make up a small bottle of tinted lacquer to match the film on the glass. Dilute the colour with clear lacquer until it needs about four or five coats on the glass to match new to old, and check before putting it on the instrument. Use this coloured lacquer until the colour matches and then continue with clear, until it is level when dry.

If the instrument has a transparent coloured finish, the method is the same as for clear finishes, but you will need to use more and stronger colours. Here it is much more important to dilute the final colour so that it is built up over four or five coats, and to avoid overlapping coloured material onto the old finish. Slight overlaps can be wiped ONCE ONLY with a clean fingertip. Otherwise, leave them till hard dry and sand off carefully. Remember to do all final matching in the sort of light under which the instrument will be most closely examined.

That was a brief guide to colour matching. It seems a lot, but unless you have a paint job



CUT DOWN amalgamated finish as far as this before applying more lacquer

like a Marine Ices Special, you should be able to skip 2/3 of the details above. In all cases, any colour added should be neither on the wood nor on the surface, but sandwiched in the middle layer of lacquer.

### Improving the surface

Rule 1: Don't start this until any repair patches and/or amalgamated areas are so hard that they will stand a thumb-nail without marking. (Probably about a week, and you may wish to re-assemble the instrument to use meanwhile.)

Rule 2: Allow the lacquer to flow on, don't try too hard to spread it about evenly. You will only lift the previous coats as well. (In other words, rather like patch repairing but on a larger scale, and not at all like painting houses or furniture.)

Tear 3 sheets of 600 wet-and-dry paper into sixths. (Hold a hard straight-edge down onto the paper and tear upwards against it. It is easier with the abrasive side downwards.) When all the pieces are put together, you should have a stack of 18 small sheets, about 80 mm by 140 mm. Weave this stack between your fingers so that it fits under fingers two and three and over fingers one and four when your hand is palm downwards. This gives a springy but fairly stiff sanding pad.

As the bottom paper wears out, it is moved to the top of the stack until all the sheets are used. Use this pad to rub down all the parts of the guitar to be lacquered. Try to remove only specks of dirt and hairs which have settled on the surface while the Amalgamator was drying out. Don't try to get the surface level — this happens in gradual stages after each coat of new lacquer.

Now place about a cupful of brushing lacquer in a lightly covered tin or jar standing in a pan of warm to hot water. This will heat the lacquer gently and safely. Obviously you should not have red-hot heaters or naked flames about while using Cellulose. It helps, however, if the instrument hangs in a room which is heated to a comfortable temperature for a few hours before you start. Rinse the brush out with thinners and dry it on clean tissues. This also checks whether the brush is reasonably clean.

Take off any dusty or hairy clothes outside the room and wear preferably well washed things made from cotton. Alternatively, cover your clothes with a clean Plastic Mac. One famous American boat painter would only work in the summer and used to strip to his Y-Fronts!

Although sanding can be done all at once, you may find it easier to lacquer one panel at a time, as with the Amalgamator. Immediately before starting, wipe down the panel with a "Tack rag" (from the better decorators suppliers). This removes all dust. Dust is the enemy of high gloss finishes and can waste a lot of lacquer, 600 paper, and time, while you rub down speckled finishes.

Now stir the warmed lacquer with a CLEAN spatula or spoon handle. It should be considerably thinner than when cold. Dip the brush in to halfway up the bristles, and start on the first panel as if you were trying to spread quick-drying treacle. Work along the grain and across the grain on alternate coats, leaving 24 hours and a light sanding between each coat. If you miss small areas, don't go back. They can be filled in with a small brush after about 1 hour. The guitar needs to hang in a still, dust-free atmosphere until at least touch-dry.

After about six coats, you can start being a bit more determined about getting the surface flat. After up to six more coats, depending on how many coats and sandings it takes to get a good surface, leave to dry for several days and then polish with T-Cut Car polish reviver, following the instructions on the can. You will get a better gloss if you re-polish with T-Cut after a few months.

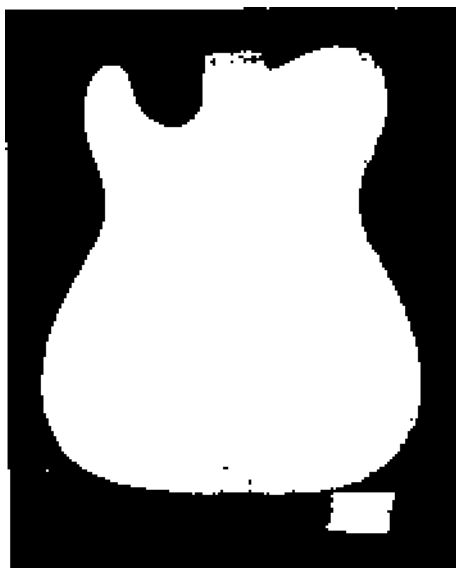
The first two coats should be flatted using the 600 paper dry. This rapidly causes the fine abrasive to clog and develop small hard specks of lacquer dust called "Corns". When this happens, it should be changed at once, as the corns can produce deep scratches, which do not show up until later. Later coats can be flatted using water as a lubricant. After the first six coats you may lightly use 400 wet-and-dry for most of the serious levelling and then go back to the finer 600 paper for the remaining coats.

Most people find it easier to protect the fingerboard and any non-removable fittings with masking tape rather than trying to paint round them. It must be proper masking tape as used by Car re-spraying shops and professional wood-finishers. A good one is made by "Scotch," and I have seen it on sale in large stationers shops.

If you let the lacquer harden on the brush, you may as well throw it away. Before and after each coat (and occasionally during, if it starts picking up dust or hairs,) the brush should be rinsed in a jar of thinners and dried gently but thoroughly on tissues. Large, super-absorbent kitchen rolls are much better than "Handkerchief" tissues.

Treat lacquer, thinners, and soaked tissues as if they were an open can of petrol, unless you want an impressive fire, and ventilate the work-room thoroughly after using lacquer and periodically while the guitar is drying. If the lacquer solvents make you stoned, drink ½ a pint of room-temperature milk — it helps. Lacquering and driving don't mix.

You can use this patching and colouring method without Amalgamator if most of the finish is in good condition. Any surface which you may later decide to lacquer over must be scrubbed first with white spirit until clean of wax and dirt as described last month. Also any bare patches which need repair should be blasted several times with a spray of Colclene T.F. and dried with clean tissues. (Colclene from Future Film, 90 Wardour Street, London W.1.) □



This is the beautiful wood grain, after stripping the white paint off the Tele

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The seeds of Dandelion were sown in March 1970, when David "Dixie" Kidd opened a small shop in Huddersfield's Wakefield Road. Dixie stocked mainly second-hand equipment in those days and also ran a mobile discotheque under the name of Dandelion Mobile Discotheques. "We had three units out regularly," he explains, "and I was also playing bass in a trio, after having played lead guitar for ten years."

Three years later, after outgrowing that first shop, Dandelion uprooted itself and moved to their present premises in King Street. At the same time Alan Hoff, who had previously been working with Dixie part-time, joined him as a full-time partner running the accounts side of the business.

"When we started," Dixie recalls, "there was nowhere around, apart from us, where you could get hold of a second-hand 100 watt amp. In fact, that's really the reason I started the shop. I had been playing since I was 14 and in that time had got to know most of the local musicians. People were always coming round asking if I knew where they could get an amp or something, and it all grew from that. I just had second-hand gear at first, and then started taking new stuff. From then on, it expanded and expanded."

There aren't many out and out rock groups in the locality. Being basically a textile and engineering area, Huddersfield houses many working mens clubs. "The whole scene around here revolves round these clubs," observes Dixie. "There is very little contemporary rock — the local Poly only holds about three concerts a year — so basically, the groups are vocal harmony, cabaret style acts. They are very highly — polished in fact, and they get a lot of work."

Local acts include The Whales, Turnstyle, Drifting and The New Jersey Turnpike, all of whom are frequent visitors to Dandelion. "There are a lot of '50's type rock'n' roll bands as well, like Ready Teddy, Twenty Flight Rock and Route 66," adds Dixie.

"They get a lot of work as well. Then there are what we call "comedy showgroups" like Huff and Puff and Wild Oats, who have a midget drummer and a bassist who wears nappies onstage. So, generally, there are these three types of groups. Bands who play their own material are very rare, because there just isn't the work for them."

Again, name bands are few and far between. Barclay James Harvest are local lads and visit the shop regularly, as does Be Bop Deluxe's Bill Nelson who is a local "hero" from Huddersfield. John Verity, another "local", had his own band before he joined Argent.

Dandelion looks small from the outside, but in fact houses three floors. The ground floor is stacked out with amplifiers and guitars. Names like HH, Peavey, Carlbro, Orange, Marshall, Fender, Laney, Simms-Watts, Ampeg, Sound City and Traynor are much in evidence, as are guitars like Fender, Gibson, Burns, Rickencbacker, Guild and CSL. The back room on the ground floor is piled high with all makes of P.A. equipment, although these are soon to be transferred upstairs to the second floor.

There are two rooms on the first floor — one houses keyboards and acoustic guitars, while the other is a very impressive drum showroom. Percussion includes Gretsch, Asba, Slingerland, Beverley and Sonor, as well as cymbals, congas, timbales, stands and assorted accessories. The top floor houses a stockroom, office and one vacant room which will be devoted to P.A. equipment.

According to Dixie, "Amplification is going crazy at the moment, and of course we're still selling a lot of second-hand gear. We do a fair bit to disco operators around here. There's a guy called 'The Ghost' who runs nearly 2,000 watts of power for his sound system. He's got 16 Gauss and Crescendo speakers and 10 Traynor horns, and all his cabinets are spaced down the hall at about ten feet intervals, so he gets a great thumping bass sound and a steady 'chip'

from the horn units. That's what I really call a sound system. He's very popular at Leeds University. There are a lot of what we call 'black sound systems' around here like that.

"The DJ's are coloured guys and they concentrate on getting a good sound. 'The Ghost' spent £1600 with us in less than 12 months. One guy spent £1088 on speakers alone. Sometimes they hold DJ competitions — they hire a hall and try to blow each other off the stage. They just turn up and up until the gear literally blows. The winner is the guy left. It's quite an interesting show! There are also a lot of black social clubs in the area so they always find lots of work. They are so much better than

continued on page 57

## DIXIE KIDD DANDELION

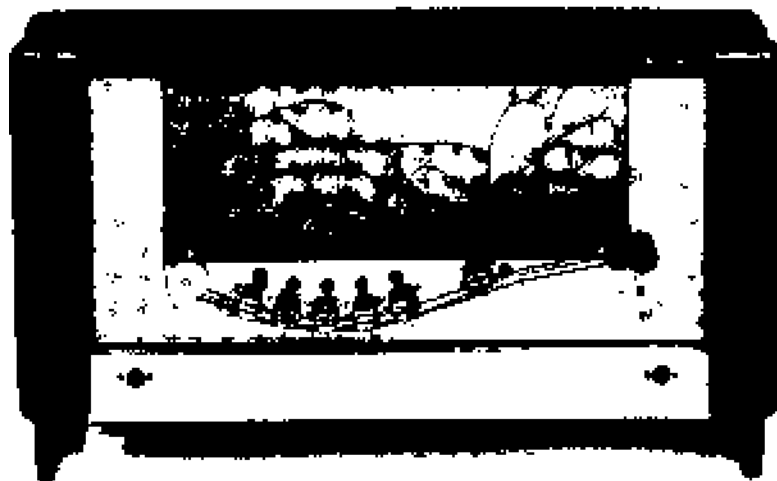


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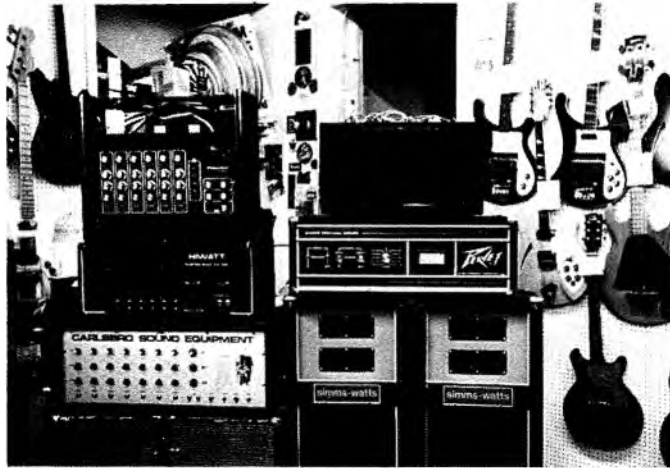
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# DANDELION



the white D J's, who seem to be quite happy with a 100 watt amp and a couple of decks."

Dixie ("I got the nickname at school, when I was a big fan of Dixieland music") is quite an accomplished musician himself. He played lead guitar for ten years, and then switched to bass. He has been off the road for a year, but is currently forming a trio to play a mixture of rock'n'roll, and pop standards.

The other two people associated with Dandelion are Paul Froggat and Paul McNab. Paul Froggat does all the repairs on amplification in his own workshop, while Paul McNab does guitar repairs, refrets and also builds custom guitars. "100% of his life is playing and building guitars," says Dixie. "For refinishing, we tend to use Coppocks of Leeds — we find they are very efficient and their work is of a very high standard."

As far as hire facilities are concerned, "Dandelion hire some gear out — mainly to groups who are just starting. We can hire out smaller P.A. systems and the odd guitar amp. That's another point — large P.A. systems are just starting to happen up here."

On the subject of percussion, Dixie finds it a bit disappointing. "We have a very good selection here, but most people tend to be guitarists for some reason. It would be nice to have a few more drummers around."

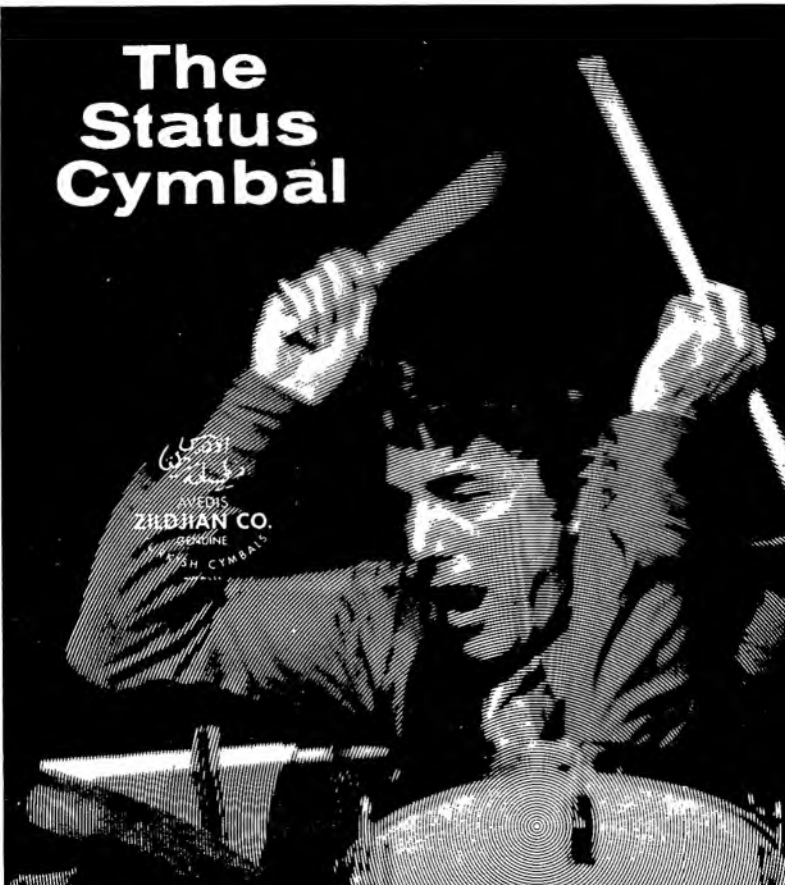
Dandelion will be staying put in King Street although, as Dixie says: "We're always looking into other areas. The main thing at the moment is to get all three floors going. As I mentioned, the P.A. equipment will be going upstairs, so we will have five rooms altogether. We'll always keep this place, even if we open another shop — just the amount of repairs we get in would make it worthwhile"

"Personal service" is of primary importance to Dixie. "Personal service and being in the shop all the time. It's no good sticking a 15 year old kid in the shop and expecting him to have all the experience and know-how. Another thing that's important to me in running a shop, is when a guy comes in for a Fender Precision, not selling him a copy or vice versa. I think we had a lot of luck in the beginning because we were in the right place at the right time."

The "right place" is, in fact, only ten minutes from the M62, and 20 minutes from the M1. Apart from geographical luck, Dandelion's growth is due, I'm sure to competence rather than luck.

"I never thought it'd get like this when I started. It was really a home business at first. It just grew and grew. I suppose it was a logical step, because I really love the music business — that's why I'm in the shop." □

## The Status Cymbal

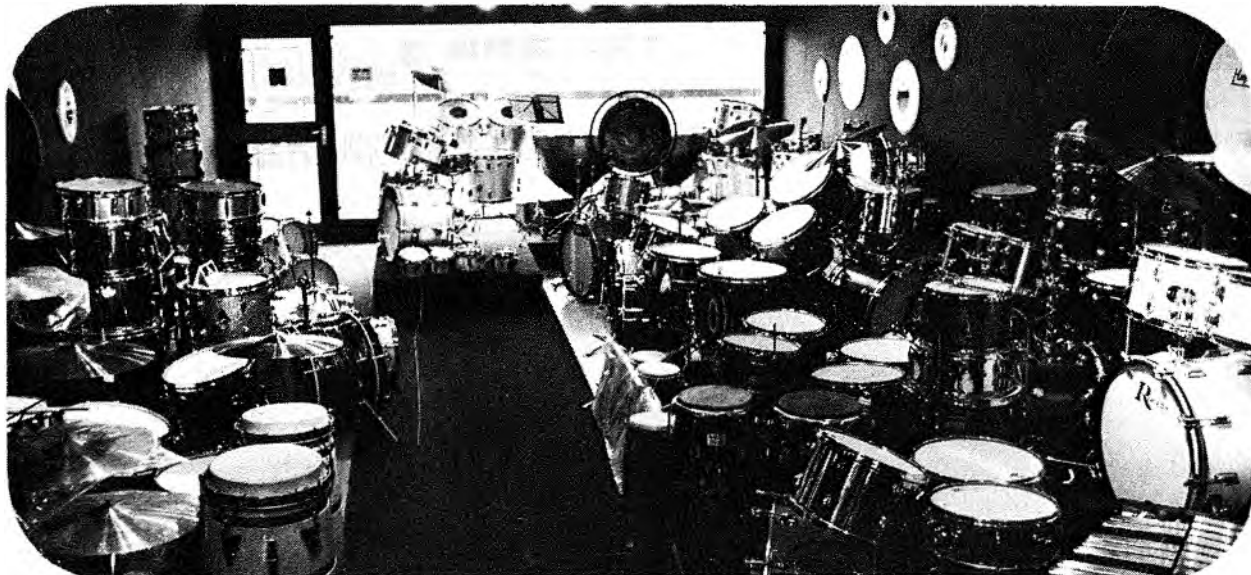


## AVEDIS ZILDJIAN the only cymbals played by Louis Bellson

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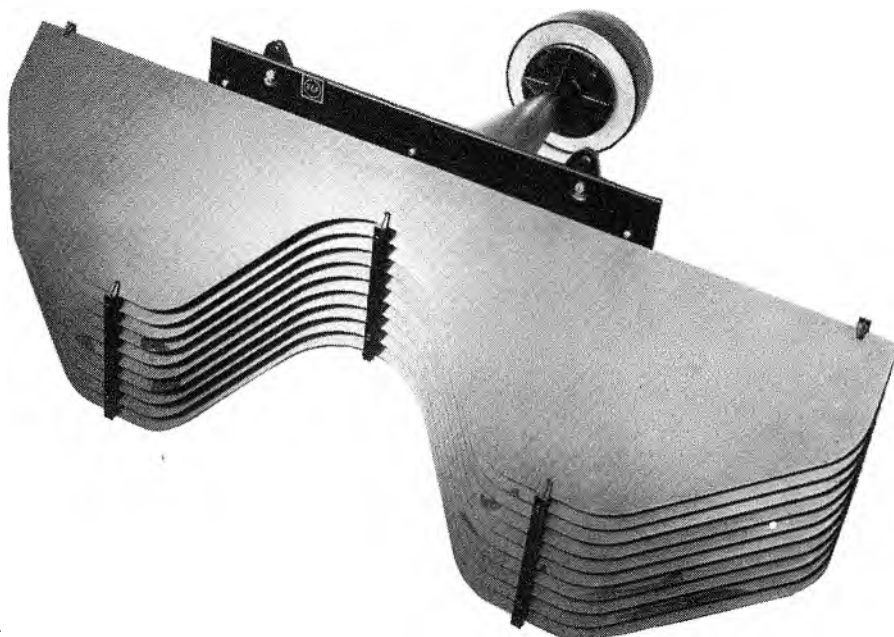
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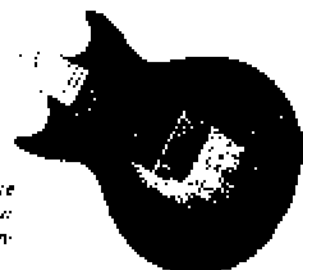
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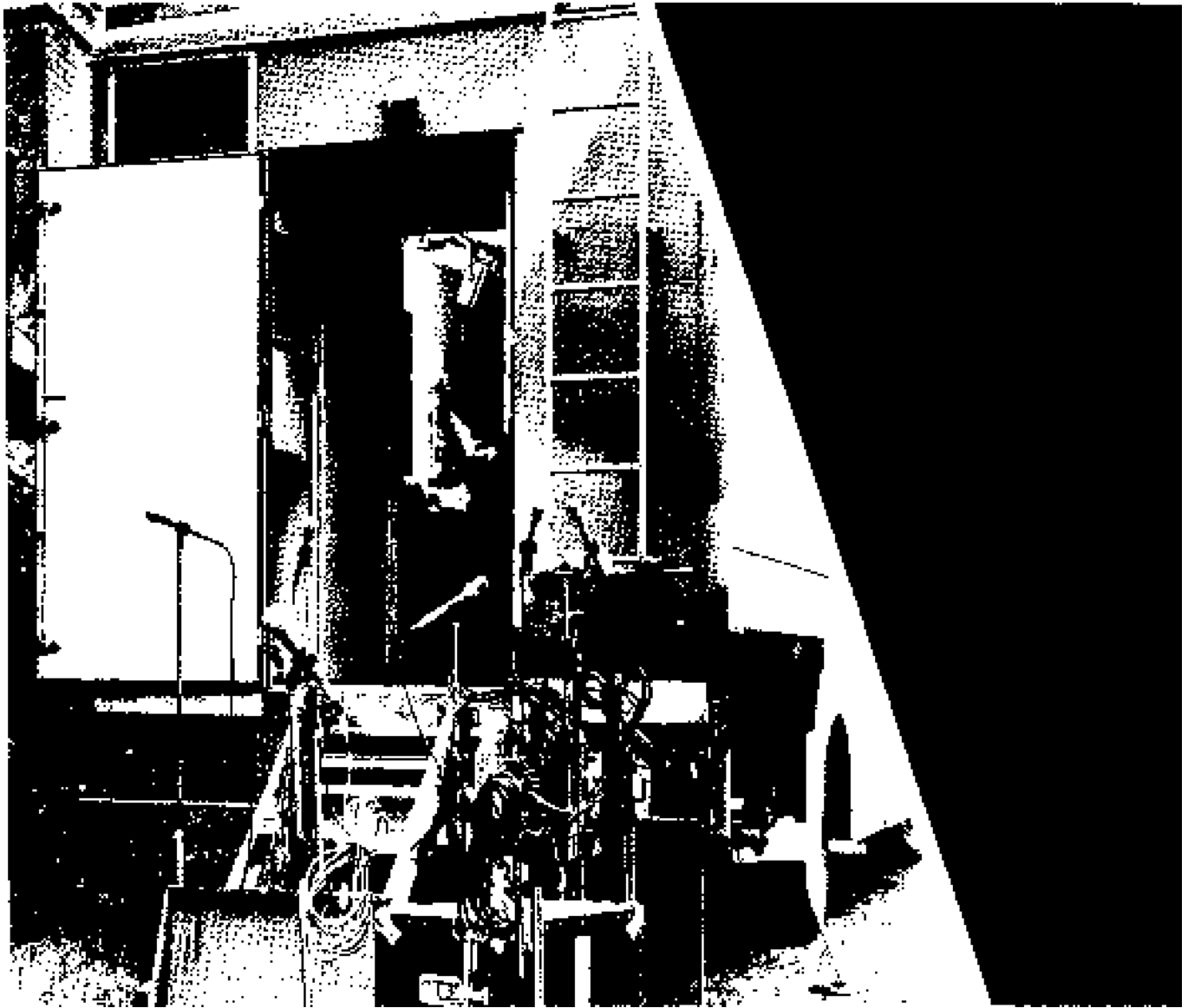


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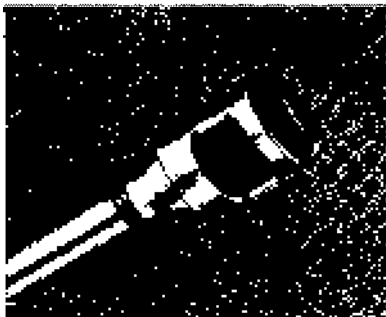
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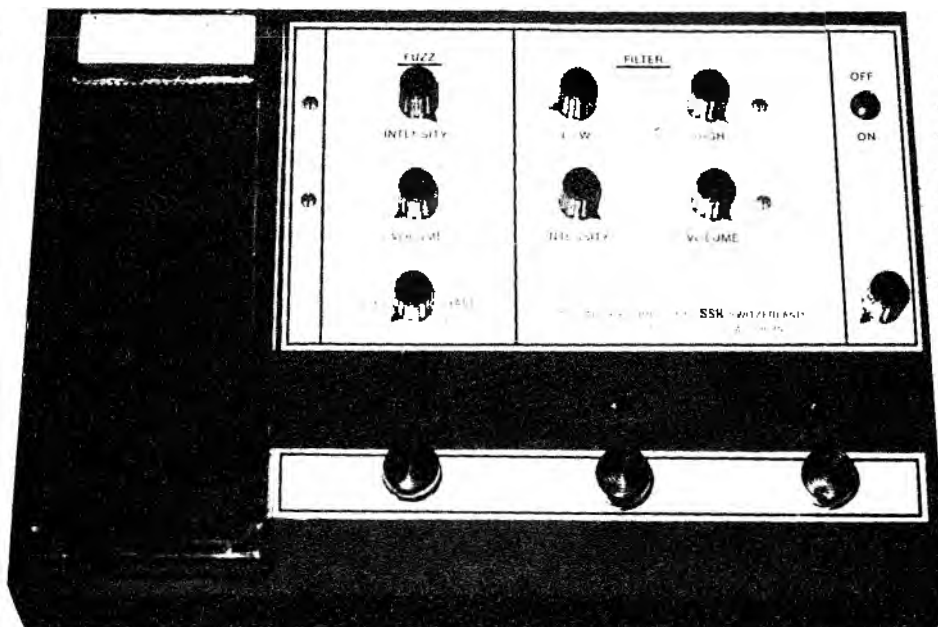
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# ALBUMS

## **Bette Midler: Songs For The New Depression. Atlantic K50212**

This album has a lot going for it. Bette Midler has an uncommonly beautiful voice. She has some very talented musicians helping her: Bob Dylan, Todd Rundgren, and Rick Derringer among many others. Moogy Klingman has produced the whole thing smoothly and with obvious affection as well as contributing bits of keyboard on different tracks. It can't be a bad production with so many good ingredients but it does miss in some place. Side one is okay, side two is most enjoyable. Side one has "Strangers In The Night", and "I Don't Want The Night To End" which are both fine and manage to counter balance the triteness of "Mr. Rockefeller". Bette Midler sings a Dylan song, "Buckets Of Rain" with Dylan but it doesn't come off as it should despite the enjoyable contrast between the Dylan and Midler voices. Side two is altogether better if you ignore part one of first track which is called "Shiver Me Timbers". That finishes with some seagull and wave noises, then straight into wildish calypso number "Samedi Et Vendredi", complete with barking dogs and tropical bird noises. Then reggae rhythm number "No Jesting" which is beautifully executed. Later on there's "Marahuana". Humorous and perfectly enunciated, an adoring song dedicated to the subject of the title, complete with violins and orchestra. The album finishes with "Let Me Just Follow Behind", a loving, love song, with Rick Derringer on pedal steel and Todd Rundgren humming in the background. Nice exit.

*Produced by Moogy Klingman, recorded and mixed at Secret Sound Studio, New York.*

Elaine Cooper

## **Lou Reed: Coney Island Baby. RCA 1035 (APLI-0915)**

There is an image of Lou Reed which I have and like. It sits inside my head and plays old Velvet Underground stuff, silly things like "Vicious", and often produces music which has a hint of brilliance. Never quite gets off the ground though. Certainly, sadly, not this time either. The majority of this album, (and it's a short album) is lyrically and instrumentally simple to the point of banality. There are only two tracks maybe worth listening to. "Coney Island Baby", the title track, is the most substantial on the album. There is some clever guitar and percussion work and the lyrics are interesting. He sings in his most mournful voice of nostalgia for old loves and childhood times but with some sort of optimism for his future. The future? There is another track, "A Gift". "I'm just a gift to the women of this world," and "It's hard to settle for second best/After you've had me, you know you've had the best". That has to raise a smile. Both of those tracks are from side two, but that's it. Nothing magic here.

*Produced by Lou Reed and Godfrey Diamond. Engineered by Godfrey Diamond. Recorded mixed and mastered at Mediasound, New York.*

Elaine Cooper

## **Agora: Live In Montreux. Atlantic T50171**

A dynamic and talented performance by five young musicians who play an intricate and dazzling style of electronic jazz laid thickly over a fluid jazz-rock accompaniment. Their music in both gimmick free and lyric free, a moving and expensive pattern of emotion, tone poems of freedom plaintiff phrases interweaving with harshly colourful and stridently climactic arrangements. This is the first time that I have listened to this band and I was very impressed with their musicianship. Originably influenced by the Weather Report, they have established their own colourful identity on the electronic music scene. Agora are totally together, they have no leader as such, each member of the band offers his talents and skill to the creative whole. The "A" side opens with a strong arrangement "Penetrasiene". The melodic guitar picking developing into an ethereal vocal and guitar section, backed by discreet drumming and urgent cymbal playing. The soprano sax of Ovidio Urbani establishes strong melodic and phrases that counterblend into a climactic overture with Mauro Mercaroni (drums and vocal) and Roberto Bacchiocchi (electric keyboard and vocal). The Serra S. Quirico suite is in two sections. It is a compelling arrangement with the unnamed movements fluidly moving together from the rock beat intro and firm keyboard statements, of Hendrix with the talented guitar playing of Renato Gasparini. A keyboard bass dialogue develops with some fine bass playing by Paolo Colafrancesco and this is expanded by the brilliant sax playing of Ovidio leading gradually to distant ethereal voices. Ethereal voices are the opening theme on the B side of Serra S. Quirico part two and the suite moves on with some dazzling sax playing weaving intricate patterns with the piano and guitar expanding the theme. The two remaining pieces on the "B" side are Acqua Celeste and L'Orto Di Ovidio. One seems to run into the other without the audience at the Montreux festival being aware of the change. Both arrangements are exciting musically and are filled with strong contrasts. Brilliant sax playing driving percussion and tympani with subtle keyboard harmonies and guitar playing put Agora in a class of their own.

*Produced by Claudio Fabi e Pier Tacchini. Engineered by John L. Timperley and Lothar A. Krause Jr. Recorded at Mountain Studio live at Montreux Jazz Festival.*

Malcolm Green

## **Lynyrd Skynyrd: Gimme Back My Bullets. MCA MCF 2744**

Heavyness is the purpose in life for these boys from the South. They've become a cult in the USA and they're much like an American version of Free. They have that same easy tightness that typifies the music of the Stones or Free. It's a simple music that deals in essentials and thumbs its nose at technical prowess or message music. That's not to say the band are untutored; they are extremely polished and turn in highly professional performances, rather they have visited the area of superior techniques and returned having decided that it's finally the music that talks and not the playing. They're as together as a band can be and it's possible to hear the easy agreement that exists between the band.

*Recorded at the Record Plant L.A. Produced by Tom Dowd.*

Ray Hammond

## **Tiger: Retreat Records RTL 6006**

This is Jim Sullivan's long awaited band album and I have to admit to a certain amount of warmth to the project before I'd even heard a note. Jim's among the finest of the guitar superheroes that Britain's produced and he's been very unlucky on missing out on the goodies like L.A. homes, Beatle wives and fleets of cars. He thought he was too old when the kids were making millions in the mid-'sixties and now he's realised that record buyers are prepared to accept good music before trying to stick labels like sex appeal on the musicians playing it. That doesn't mean Jim and Tiger don't have that quality, I know of at least one young lady who believe's he's got it in equal proportion to his stature. Jimmy Page was a contemporary of Jim's from his session man days and with Led Zeppelin, he proved that the ultimate rewards are available in the 70's for world class players and bands. Jim's trying to do his own Led Zeppelin thing in producing an album that is heavy with a capital H. Jim's trying to arrive at having a world class band by mechanical rather than artistic method's. He's deliberately picked very fine musicians to play with him and they are certainly very tight (listed to "Suzy Sliker" on side two for proof) but the material hasn't quite got the strength of "Whole Lot Of Love" and that's what it take in the beginning. The whole thing sounds a little old fashioned and the synthesizer of Dave McCrae seems tacked on to the arrangements in most places, rather than being an integral part of them. The synthesizer has an unfortunate habit of sounding like this and perhaps the only track where it sound completely at home is on "Tyger-Tyger", an adaption of the Blake poem which is a really excellent track. For guitarists who enjoy being dazzled by runs, this album is a must. There's a solo on the opening track "Lay Me" which is absolutely breath taking but, like the album as whole, it's technically perfect but lacking in any really artistic depth.

*Recorded at the Music Centre Wembley. Produced by Jim Sullivan and Derek Lawrence.*

Ray Hammond

# IAN GILLAN

When Deep Purple were in their prime, churning out classics like "Highway Star," "Black Night," and "Strange Kind of Woman," they were fronted by a singer named Ian Gillan. His clear, direct delivery and unmistakable scream gave Purple a vocal sound all their own, but when Ian split from the group two and a half years ago, he virtually retired from the performing world. Recently he's come out of hiding and is embarking on putting together a new band, the subject of this interview.

*Is your new band in the performing stage yet?*

It's really embryonic at the moment. I'm trying to find my proper identity. I'm figuring out how I'm going to be and what kind of direction I want to head toward. We started recording the second of January in Munich, Germany and we're aiming to have it released in mid-February. *Exactly who is in the group?* There are five of us, including me. Johnny Gustafson is playing bass, I've known him from Quartermass and Hardstuff but he's been around for quite awhile with the Big Three and the Merseybeats. I've known and respected John for quite some time and it's like a dream come true to work with him. Most of the other people have been playing sessions up until now; Ray Fenwick, the guitarist, has been with Spencer Davis and Maggie Bell, as well as a lot of people who I've probably never even heard about. Mike Maran, the keyboard player, has been doing a lot of sessions and he's really good. I believe he was on the road with Maggie Bell a little while back. Mark Nauseef is the drummer and percussionist, he used to be with Elf.

*What have you been doing for the past few years?*

About nine months ago I had an abortive attempt at an album which was too multidirectional to be anything. Each track on its own was nice, but it didn't hold together. There was some out and out country & western stuff, some rhythm and blues, and it confused everybody else just as much as it confused me. So I decided to start over and put together something in terms of a band, which was a change for me because before I'd always been in the position of falling into a band that was already together, and now I've really got to give myself a kick up the arse. I've really got to develop my own identity.

*I always got the feeling that while Purple were more riff-oriented, you were always more melodically-attuned. How is the new Ian Gillan band going to sound?*

Actually I'm more into rock 'n'

roll than anything else. Rock music has become almost a parody of itself in recent years. No matter how much virtuosity has come into it, it lacks the character of first-generation rock. It's become so serious that there's no humour and very little sensuality. Lyrically, the aftermath of psychedelia and flower-power is still with us. It's become very pretentious and difficult for most people to relate to, so I'm just trying to write some good rock songs.

*I take it you've been listening to a lot of Little Richard and Elvis Presley records lately?*

Actually, I've been listening a lot to old Deep Purple records to see exactly what I was doing. I want to see what kind of non-artificial connexion I can make with my old music. Aside from that, I really haven't been doing a lot of listening, not even to the radio. Consequently, I'm having a bit of trouble reorientating myself.

*What have you been doing?*

Just very ordinary, countrified things. I've been re-energizing myself, really. It's really done me good, I feel so fresh... I feel like exploding.

*Didn't you have a recording studio?*

Yeah, but I rarely went there. I just dropped by every once in a while to say hello to the engineers. It's called Kingsway Recorders and we're doing very well. I've just taken Roger Glover into partnership with me on it. *I understand Roger will be producing the band.*

That's right, and we just bought another studio right up the road. *Have you produced any bands during your absence from public view?*

I've produced no one, I've had no contract with the music business whatever, and I feel very naive again. I was starting to feel too laid back and educated during the last days of Purple, I got too serious and with the pressures and all, it just became mechanical. To look back at the situation now, my leaving has done everybody good: Purple, Ritchie, and myself have all become re-energized. They did it by changing and I did it by having a rest.

*Who are your current favourite groups?*

I don't have any. I'll tell you, I have a weird thing about that, and influences. I went through years and years of singing, and I decided from the start that what I was going to do was going to be me and nobody else. I went through a phase where I wasn't going to listen to anything at all. I was forcing everything I did to come out of me.

*Do you consider the years with Purple to be a positive experience?*

The greatest time of my life. It

was at that time in my life that I reached everything I had ever hoped for and dreamed of. The only reason I left was because it became stagnant. The albums were becoming very formulated. If we allowed it to carry on any further it would have gone entirely. The strongest ingredient we all had was energy, and it just started to burn out. We'd had our musical orgasm, if you like. *When you put together this group, did you look for distinctive musical personalities or people who could carry through with your musical personality by playing extraordinarily well?*

First of all, there was no clear cut criteria. First of all, they had to be able to play well, and secondly they had to be ballsy. As people as well as players. They had to be able to energize me as well. I work best when I'm pushed to my limits, and that means I have to work with aggressive people... and all of the people in my band are.

Bands do tend to blow out more quickly if they're based on that principle, and there aren't an awful lot of aggressive bands that stay together a long time without finding some sort of formula for it.

*How are the writing chores being handled - by you?*

I'm writing with whoever happens to be in the studio at the time. All the songs are joint efforts, written much in the same way Purple used to write, which is my natural way of writing. We tend to get a lyrical idea and work around that. I prefer spontaneous creativity, and this way we are developing some sort of identity as we write. We've written all of the material and recorded demos of it, and we'll re-record the whole thing.

*Why wasn't Roger the bass player?*

Roger's music leads him in a different direction... he's into a gentler sort of music. He also is not keen to go out on the road, and be involved in such a high-energy project. The difference between Roger and me is that Roger is the most complete artist I've ever met in my life. He's a beautiful painter, a photographer, and all that as well as being a bassist and a writer; he's well-endowed with every artistic quality I can think of. I'm more motivated by writing, performing, and working in the studio - mostly performing. I prefer to be onstage than in the studio.

Roger, on the other hand, gets a great deal of satisfaction from being in the studio and he's not anxious to get on the road again. I thrive upon audience response, and spontaneity. I don't like to have to compromise and rewrite something several times - I like to live with what I've done at a particular moment. □

# JOHN BIRCH

The popularity of John Birch guitars can be traced back to his love for the Hawaiian guitar in the early 'forties. As well as playing Hawaiian guitar, he was experimenting with different types of pick-ups, constantly striving for a better sound than was available at the time.

The story then jumps to 1966, when John moved to Birmingham. He met up with Basil Hendricks, who played pedal steel for a local outfit called the Castaways. "We did unmerciful things to his pedal steel," he recalls, "like rewiring it for stereo and fitting new pick-ups."

From here, the word spread and John soon found other musicians calling on him for repairs and modifications to their own guitars. John then took it all one step further and approached a few Birmingham music dealers, and, again, found himself inundated with work.

"It took some time to become accepted," he explained, "but about the same time I started working for all the local shops, I advertised (in the *Melody Maker*) some pick-ups I was making, but because they weren't humbuckers, nobody wanted to know, so I had to dream up a method of making humbuckers to fit in the same size cases because I had hundreds already made up."

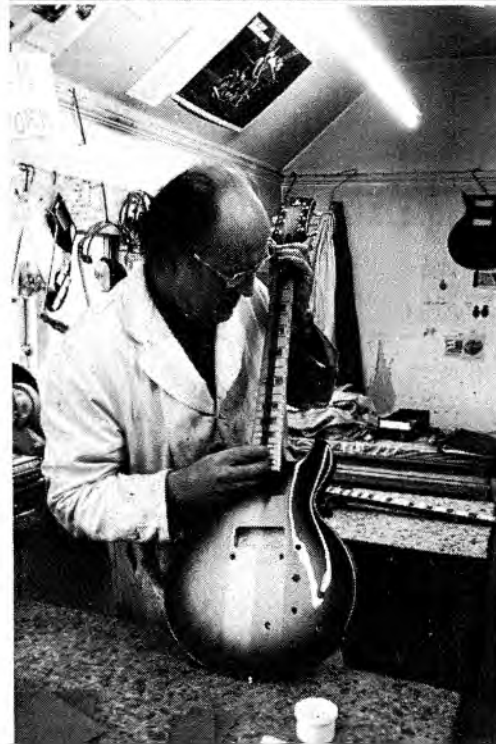
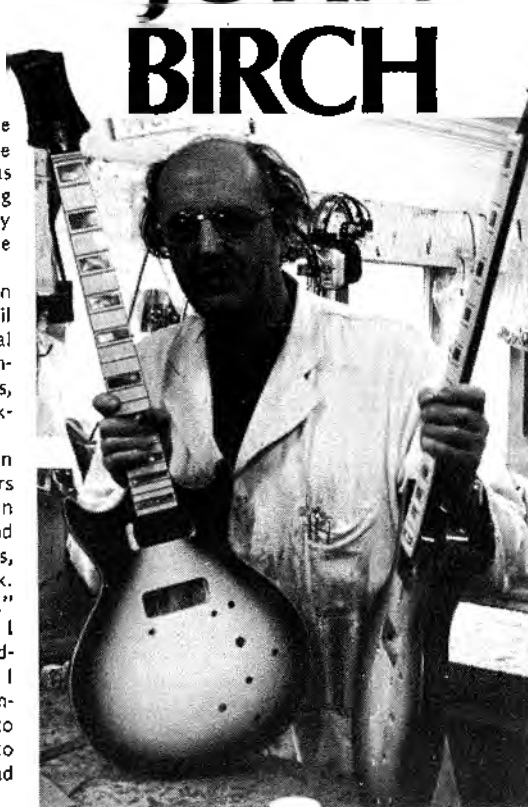
John eventually did make a humbucker, but unlike the Gibson in appearance. There was one major difference — the John Birch Superflux G had nine polepieces instead of the usual six. "This was to eliminate a loss of output when you bend a string up or down," explains John. "It forms a flexible magnet, and so if you want to alter the power of the magnet by raising the polepieces, you don't get any loss — it makes a sort of hill and dale magnet."

That carried on for two years, by which time John had perfected the idea for producing a pick-up with a double row of balance screws, giving double the standard output. He went on to experiment with other types of pick-ups, but also began to build complete guitars in 1967. "I was so fed up with all the junk I was having to deal with. Without fear or favour, I class all American guitars as rubbish, and everyone is beginning to agree with me now."

John moved into his present centre of operations in New Road, Ruberry, five years ago. Things weren't perfect at first, but he soon developed a smooth system. "After the initial period of making everything literally by hand, it gradually got to the point where we had to have specialised machines to do the job properly. We made a lot of mistakes at first. Obviously, when you start afresh to see the proper way of doing things, you've got to more or less feel your way. I settled on having the centre section of the body and the neck made out of one piece right from the beginning. I used nothing but rock maple because mahogany is the most hilarious junk to make guitars from. It's a short, random close grain that has got no way of staying in one piece. A lot of manufacturers also put the truss rod slot into the centre piece of the neck, and so the strain that has had built into it is relaxed and the neck can go whichever way it wants to."

The obvious problem with maple is getting it dry enough, so John is shortly to invest £2000 in vacuum drying equipment, eliminating the need for buying wood up to a year ahead.

John's truss rod system is another new development. "We machine the two grooves into the neck sideways — it's a split centre section — and so when the pieces are face to face, a truss rod tunnel is formed. The truss rod is put in then and the whole thing is glued up so it's buried right in the 'bowels' of the thing,



with a minimum reduction of timber so there is no loss of material to allow it to twist."

These "innovations" apart, pick-up development is going on all the time at the Birch premises. "We've now got six basic pick-ups. The Simflux was designed to replace the old SG black pick-up, the Superflux replaces the Gibson humbucker, the Hyperflux is the double-output one, the Biflux is a double-wound pair of coils with a very low impedance, the Magnum has an impedance of over 100,000 ohms but it has got a colossal amount of wire on so it has about four times the output of any other pick-up, and since then we made the Magnum L, which is a double wound coil with a frequency response of up to 15KHz as opposed to the original Magnum with 10KHz. People like Tony Iommi and Slade have all got the new Magnums on."

All these pick-ups are sealed in stainless steel boxes with epoxy moulding resin, which is heat-cured at 140 degrees centigrade, and all are completely impervious to any mechanical noise. "You can belt them with a pencil or something," John guarantees, "and all you hear is a tiny tapping noise through the speaker whereas if you did it with any other pick-up, you would blow the speaker right out of the cabinet." Because of the construction of the pick-up and casing, every Hyperflux carries a "Forever" guarantee — and this literally means forever.

John Birch bridges are also sold separately. They are basically self-designed using the Stratocaster principle of individual height and octave adjustment for each string. "We've had to replace so many Gibson bridges with these," John remarks, "and gradually people are coming to realise that when you've got such a diabolical built-in hazard with fretted instruments as the equal temperament tuning scale, you've got to have the best chance of getting a compromise. If you can get the camber of the fretboard and the camber of the bridge to match, then you've got the best chance of getting the thing in tune."

Every John Birch guitar has a stereo/mono/anti-phase switch "so you can use a mono lead at any time if you get lead trouble, by switching it to mono or anti-phase. Also, with effects pedals, you can have the effect on one channel and the straight sound on the other. By flicking the selector switch, you can have the effect on its own or the clean sound plus the effect in stereo. Actually, "stereo" is the wrong word — it should be twin-channel strictly speaking — because you don't need two stacks. A good amp with separate tone and volume controls for each channel will suffice."

Apart from the famous names already mentioned who are regular Birch customers, Queen's Brian May recently asked John to build an identical model of his own guitar. As Brian built his guitar himself, it was quite a job to reproduce it exactly. "We were working in timber to absolutely ridiculous accuracies — we had to match the neck identically to his own guitar. He fitted his own pick-ups, so we had a problem getting hold of three good Burns pick-ups, and while we were doing the second one, he borrowed a double Multiflux pick-up and we had an awful job getting it back off Brian because he was so knocked out with it."

John's future plans include moving to larger premises just up the road from where he is now. "There are eleven of us at the moment, and we're starting to feel a bit cramped. I hope that, in time, we'll be accepted as the standard for guitar making because of the ridiculous number of improvements we've made." □



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**Bowie: Station To Station. RCA APLI-1327**

There is no lyric sheet for Station to Station, so you have to listen harder. Each album of Bowie's seem to become quickly familiar. The kind of familiarity that breeds increasing respect for his onion peel layers of talent. This particular album isn't all to my sycophantic tastes. "Word On A Wing", track three, is exasperating. I can't distinguish each word, the dictation is not clear. It seems to be a fairly complex story, (ballad?), so the words are important. Musically the track is okay. A little anguished but exits on angel-like voice and church organ noises. The beginning of the first (title) track is instrumental. Air rushing noises from speaker to speaker, then in come the (very good) band and they each play bits and pieces, blending together until Bowie makes an entrance and immediately succeeds in dominating the track with his powerful vocals. The whole album seems to be very powerful, sort of rich and confident even when the words belie that confidence with lonely lyrics. Two tracks, "Stay" and "Wild Is The Wind", have had a little bit of air-play already, and they're easily the best on the album. Stay is worth listening to, just for the contribution that Dennis Davis makes with his percussion work. Each of the musicians appears to be totally together and the resulting overall tightness is awe inspiring. They almost manage to upstage Bowie.

*Produced by David Bowie and Harry Maslin.*

Elaine Cooper

**Timeless Flight: Steve Harley, Cockney Rebel. EMA 775**

Mostly a new line-up. Duncan Mackay/keyboards. Stuart Elliot, Lindsay Elliot/ Percussion. Jim Cregan/guitars. George Ford/bass. All good musicians and Steve Harley, voice, lyrics and melodies hold them together expertly, tightly and fluently. Musically, Timeless Flight is well worth listening to, you can't help being appreciative of the sheer professionalism that the band achieve. However, listening to the album, I can't ignore the fact that Steve Harley is trying to tell me, warn me, about something. Timeless Flight is an album with a message. The very first track, "Red Is A Mean, Mean Colour" is about reds under our beds. The album has quite a few "Beware", "Observe", "Pay Attention" messages scattered through it. I like Harley's vaguely adenoidal, throaty singing, and I like the overall musical sound as well but The Messages get a bit boring. It's not just into making music for us punters, he wants to talk to our consciences as well. It's all too intelligently earnest, not like your ecology songs. I can't help feeling a bit patronised. Anyway Messages aside, best track is called "Nothing Is Sacred" (everything changes). Pleasant, atmospheric instrumentals. Catch, little chorus. Oh, there's a story too, printed on the sleeve. It's about the pursuit of A Big Red Smell, guess what?

*Produced by Steve Harley. Remixed and cut at EMI Studios, London.*

Elaine Cooper

**Tanya Tucker: Lovin' And Learnin'. MCA MCF 2741**

This is the delightful country music girl who sang wistfully about the travelling salesman who comes to town. Ms. Tucker's got a really fresh quality to her voice and she has a way of expressing real emotion without resorting to overdramatic vocal styles. She's singing real material by a whole variety of country writers here and because of the current vogue for light country rock, she'll probably gain far more exposure than this type of album has gained in the past. The production is excellent and it certainly has a sound that listeners can identify with Nashville. It's good music for the car radio but a concentrated listening to the album can become a little monotonous. Several tracks stand up well individually. "Making Love Don't Always Make Love Grow" is typical of the direct, biting comment to be found here.

*Recorded at Sound Shop, Nashville. Engineering by Ernie Winfree and mixed by Lou Bradley, David Malloy and Ernie Winfrey at Sound Shop and Columbia Nashville. Produced by Jerry Crutchfield.*

Ray Hammond

**Electronic Realisations For Rock Orchestra: Synergy. Sire 9299 752**

"... and nobody played guitar" is the jibe made at Queen on the sleeve of this American album. It's another in the series of multi-track recorded synthesizer specials and despite general low sales, people seem determined to take the time and spend the money. Larry Fast seems to be the musician behind the project and he also wrote all but two of the six tracks on the album. He played every part, using a wide variety of synthesizers and logic control devices including a Mini Moog, an ARP 2600, digital sequencers, frequency shifters and phase shifters.

The end result is an album of interest to keyboard technicians but one which has little to offer musically. Larry Fast has not beaten the problem of lack of spontaneity that besets overdubbing performers, although he has tried to cram every technological recording advance that exists onto this piece of vinyl. But in the end the vinyl out flanks him and because of really bad surface noise on the pressing, the use of the QS quadraphonic mastering system and reducing via a computerised Quad desk becomes just a joke. The two no-original numbers on the album are "Classical Gas" and "Slaughter On Tenth Avenue" — the later one of the finest pieces of modern music ever written. Just how leaden this form of making music can be is revealed on this number, as all the exuberance contained in the score is stolen as Fast labours track on top of track in perfect synch.

*Recorded at House of Orange Studio, New Jersey, Mixed at Media Sound, N.Y. Produced and engineered by Larry Fast.*

Ray Hammond

**Mungo Jerry: Impala Saga. Polydor 2383 364.**

Despite numerous single hits, Mungo Jerry seem to have progressed very little since the summer of 1970 when they first made it. The opening track on this album, "Hello Nadine", is an example of this stagnation. The same lumpy bass that dominated "In The Summertime" ambles along and in the middle eight there's a high frequency scraping sound that is also uncomfortably familiar. Perhaps it's the fact that Mungo Jerry has remained dominated by Ray Dorset and that Barry Murray is still producing the recordings, although for a different label. There have been more than a few different Mungo Jerry line-ups since the first hit, but Colin Earl's still there and he contributes a track called "Too Fast" to this album. The above criticisms don't detract from the quality of this recording. It's all very professional and if Ray Dorset's writing becomes a little monotonous at times, it's partly excused by the extremely tight arrangements the band has worked up. Most of the numbers are 12 bars and lyrically the songs are a little imaginative. The most enjoyable track on the album for me is "Get Down On Your Baby". With a little in-field promotion, this track could become a disco classic displaying a particularly insidious rhythm coupled with some softly percussive bass playing. This track is recorded beautifully with perfect separation on the guitar and voice making the overall effect soft but hypnotic.

*Recorded at Nova, Air and Pye Studios in London. Produced by Ray Dorset and Barry Murray.*

Ray Hammond

**Carole King: Thoroughbred. ODE 77034**

An apt title for this album: Carole King is a thoroughbred indeed, a singer/writer of some fifteen years with a string of quality hits actually too long to mention. She's teamed here with former husband and co-writer Jerry Goffin, James Taylor, David Crosby, Graham Nash, guitarist Danny Kootch and producer Lou Adler. Something, of the same stable that made "Tapestry" but unfortunately this one's not such a winner. There are, some good moments though... "So Many Ways" — a good first track slow, poignant. I hadn't heard any Carole King for some time and it did remind me that I love her sound and the sound of the album is fine, its simple, clean and fresh. (The Taylor, Crosby, Nash track is a bargain). However, with a writer of Carole King's calibre, the songs should take precedence and this is where the album just does not work. Familiar themes — love working out, love not working out, just a bit predictable? As an album it's thoroughbred enough and it's certainly no failure (value for money, even) it's just too familiar. This maybe OK for you and if you are into Carole King it will make a nice addition but, if buying her fresh, get "Tapestry".

*Produced by Lou Adler, engineered by Hank Cicalo and Milk Calica.*

Michael Cole





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# BUZZ North East



*The North East has always celebrated its identity with a ferocity that puzzles the rest of the nation. If the industrial towns that dot the area are short on colour, they're rich in shades and tones that often elude Southern eyes. The jobs and the people are hard — people in Consett claim that Hartlepool folk eat their young — and music has always been a natural outlet for joy and frustration alike.*

*The sixties were a particularly fertile period, with The Animals and Alan Price, and later Lindisfarne established Newcastle's place for ever, with "Fog On The Tyne".*

*The North East is still alive with music; an estimated 5,000 clubs dot the Newcastle area alone, and groups can expect to pick up anywhere from £30 to £60 a night. They in turn are well served by the music industry, which is alive and well.*

The North Eastern outpost of the Kitchens Empire sits happily in Higham House, New Bridge Street, Newcastle. Kitchens have been in Newcastle for more than 40 years, but the present shop has been going for six years in October, and Con Docherty has been managing the shop for the past four years.

Con had rather prematurely

called it a day eight years ago, after a long career with the Rank Theatre Organisation that took him around the North. He met Cyril Jeavons at an organ demonstration one afternoon, and after a brief conversation, agreed to come to work at Jeavons's Percy Street Shop, literally around the corner. After three years with Jeavons, Con left to manage Kitchens.

Kitchens is more or less a traditional music shop. While we were there, a woman came in and bought a mouthpiece for her son's cornet, but there is an ample display of Strats and Premier kits, Hammond, Lowrey and Galanti organs and a good supply of amplification as well.

But the real strength of Kitchens in Newcastle is in their ability to supply the customer with whatever he needs, with neither bias nor scorn. "We're fortunate enough to have a couple of very experienced people helping us part time," Con explained.

"Mr Wilson Kinghorn, who formerly managed Kitchens, comes in two days a week, and he's very familiar with saxophones, clarinets, and violins." Mr Kinghorn can even re-hair violin bows, and you would be hard pressed to find many in the North East who could offer a similar service.

Mrs. Lilly Murray, who formerly managed Max Share Music, also come in on a part time basis. Mrs. Murray is an expert on a musical form which Con Docherty told me was peculiar to the North East and South Wales, jazz bands — "and not the Kenny Ball sort, either." Also known as kazoo bands, these jazz bands feature kazoos, brass and percussion. The players march in formation and wear fantastic costumes.

"There's been a revival of interest in jazz bands," Con continued. "If dealers would watch their own patches carefully, they might be surprised at the opportunities which are around. Jazz bands are a natural outlet for youthful enthusiasm, and the members also seem to take to the necessary discipline."

Kitchens also serve the rock community. Geoff Sugden and Roy Banks look after percussionists and guitarists respectively, and with Fenders and Gibsons in stock, and a couple of Premier kits spaced around the floor, the set-up is well laid out for

a look-around. Of special interest is the Kitchen's Musical Instrument Rental Scheme, which allows budding musicians to rent an instrument for three months before they decide to buy. If the child decides to continue, the rental fees are credited in full. Credit facilities are also available. "We sold 100 clarinets, 30 or 40 flutes and ten oboes via this scheme between last September and Christmas," Con added. We also offer tutors and sheet music."

Well rounded and working in the interest of the whole community, Kitchens of Newcastle are a good example of the wisdom of their own policy.

Despite a minor setback when Teeside Piano and Hammond Organ Centre opened in 1968, the Centre has gone from strength to strength and today keeps over 70 different pianos in stock. The setback was the failure of Newcastle star Alan Price to arrive to conduct the opening ceremony, but the tough Tynesiders survived the embarrassments to build one of the finest keyboard showrooms in the North East.

Bob Kennedy, a director of the centre, talked about his unusual piano and organ business. "The customers interested in pianos are completely different to organ buyers. Piano customers are often parents keen to give their son or daughter a good musical start or musicians of long standing who want a new instrument. Organ buyers tend to be relatively unskilled musically, have an average age of around 45 and regret the fact they didn't start playing music earlier in their lives. The organ enables them to make music in their home with the minimum of effort."

Despite a heavy accent on sales of organs for home use, the Centre also has a very healthy section dealing with the professional musicians needs. The shop usually has two or three Hammond X5s in stock and Bob welcomes the organ as a return to the true Hammond sound.

Bob claims that the centre is one of the top 12 Leslie dealers in the country and his home area is certainly a good one for the club market. Many clubs and cabaret spots feature a Hammond organ and Leslie cabinet as their main stay music maker and the

Centre has benefited greatly from the installation of such set-ups. Derek Banks is an unusually versatile musician. A brass player since he was 17 when the music of Eddie Calvert inspired him to learn the trumpet, he has added keyboard ability to his portfolio in the last five years.

As a musician gigging around his home town of Redcar (Middlesbrough) he realised that, by the end of the 'sixties, local players were not being served properly in Redcar. The result was Sounds Musical which opened in huge premises which had once been used for a furniture store in Station Road, Redcar.

Unusually, Sounds Musical covers all aspects of the instrument scene. If a band visits the



*Jeavons*

snoop, each member will find something to interest him (or her). There's currently 25 organs in stock, the main brand names being Lowrey, Wurlitzer and Thomas with the more professional types of organ like Diamond also available.

"December was a really good month for organ sales," said Derek. "Things were a little slow last year but we really had a tremendous Christmas and things have kept pretty good since then."

Orange is the big name in Sounds Musical's amp lines. Having taken on the Orange agency only six months ago, the shop has already built the range into their best seller, pushing other lines like Selmer and Marshall into also rans. "Hundreds" of acoustics are in stocks according to Derek and these range from cheap Kaye guitars through to really expensive Gibsons. In electrics, there's a good selection of Fenders and Gibsons and the shop concentrates on professional rather than amateur instruments.

To round off the vast range of instruments in stock, Premier drums have proved a very popular percussion line and a good accessories bar offers all imaginable accessories and sheet music.

The Impulse Organisation of Wallsend offer a surprising number of facilities, with something to tickle the fancy of just about anyone involved in music. Their studios offer eight-track recording and reduction and two track stereo facilities, as well as editing, dubbing and copying. The studio can offer a Hammond M100 organ and Leslie cab for hire (£4.50 per session; recording in eight-track is £12 per hour, while two track is £7 per hour) and other instruments including lead and bass guitars, are always available. Overtime rates are charged after six until midnight, 25%, and thereafter at 50%. The impulse mobile unit, with four and two-track options, is available at £9 per hour.



L-R: Con Docherty, Roy Banks, and Geoff Sugden of Kitchens



Lewis of Jarrow

"The amp market has taken a dive around here recently," said Norman. "Musicians are choosing to have their equipment 'soled in and heeled', rather than trading it in for new stuff. There's a good market for second-hand stuff, but that's hard to get hold of."

The organ side of the Music Centre business is a little quiet as well. "Our main lines are Gulbransen and National, and we've promoted a couple of showcases for the organs featuring Brian Sharp and Harold Smart. The shows kept things ticking over but both lines are slow at the moment."

Guitars stocked are the cheaper models including Epiphone and copy guitars.

Repairs are an important part of the Centre's business and in addition to looking after the service of their electronic organs the shop also undertakes amplifier repairs. Some more straightforward guitar repairs are also done but complicated jobs like rebuilding smashed acoustics are referred to specialists.

In Blackwellgate, Darlington, is the George A. Williams Music Shop. Established by George Williams in 1910, the shop is now owned by his grand-nephew, Mr. Stanley. The building in Blackwellgate was had only just been built when the business moved there ten years ago. It has a long, large modern showroom which holds a fairly representative amount of the equipment in stock. There are Carlsbro, Selmer, Yamaha and Simms-Watt amplifiers and a host of guitars including classical, acoustic and electric models.

Of the organs sold, the most popular is the Yamaha, the success of which (Mr. Stanley believes, is directly related to the) reputation it has of being reliable. "You can sell it and forget it" Mr. Stanley said. Any other keyboards or equipment which break down can be repaired in the workshops which employs two full-time engineers and an apprentice. There are also five piano technicians, all of whom have served their apprenticeship with George A. Williams and are able to repair and recondition pianos in almost any condition.

Mr. Stanley explained that almost every school in Darlington supports a brass or military type band which means that many of their customers buy educational equipment and The George A. Williams music shop has a substantial amount of such gear in stock.

Lewis Music in Bedeburn Road, Jarrow, is almost all drums. The owners Mr. and Mrs. Lewis began a business by repairing and selling old drum kits three years ago. The business flourished with the result that the Lewis's now live above their busy shop and have gladly arranged their lives around the increasing amount of work the shop brings them.

Michael Lewis has been a drummer for many years and is obviously particularly interested in the percussion he stocks, which includes Ludwig, Gretsch, Hayman, Pearl, Star and Beverley kits. There are also a selection of second-hand drum kits in stock, but drums are not all that Lewis's sell. There is a wide range of accessories as well as a selection of acoustic guitars in stock. Michael organises drum lessons for the local drum enthusiasts and also repairs drum kits for customers.

Mrs. Lewis is learning as much and as fast as she can about the business she has become involved in, and both she and her husband are surprised at the amount of knowledge she has absorbed in the few years of the shop's life. Between them, Michael and Anne Lewis have become responsible for one of the friendliest drum shops in Jarrow.

Barry McKay is the owner of McKay Sound And Music which is in Westgate Road, Newcastle. The shop is completely band orientated, has been in existence for about six years. During that time it has maintained a policy of catering almost exclusively for professional and semi-professional musicians.

The shop is run for Barry by his friend and fellow musician Colin Rowell. Despite his age, a youthful 24, Colin has been involved in almost every aspect of the musical industry. He's been on tour mixing with Stomu Yamash'ta. He's roadied for lots of bands, played in others and is very aware of the needs of other musicians. Consequently, most of the local bands are among his customers, as well as occasional visits by name bands like Yes and Rory Gallagher. Basically, McKay Sound and Music stocks high

powered amplification, drums, guitars and mixing desks. The most popular desks are from Kelsey and Orange, but Colin can also organise one-offs, customised desks, and conversations.

These are done at State Sound Services, a few yards down the same road and also owned by Barry McKay. The shop isn't huge but it's crammed full. There are Crumar keyboards, Jennings portables and Lowrey consoles in stock. The shop is a Fender Soundhouse so there's a large range of Fender and Arbiter guitars, but they also heap a selection of other guitars in stock which Barry and Colin think are good value for money.

One of Newcastle's older established music concerns, Jeavons have been in their present location for longer than Mrs. Dorothy Jeavons can remember. The present shop, however, took a great leap forward 15 years ago, when they added the first floor to their already thriving ground floor enterprise, and began to expand into records.

Mr. Cyril Jeavons has been in the music business for over 40 years, but even the briefest of chats with him would make it clear that he hasn't allowed any grass to grow under his feet. "We do very well in organs, particularly Wurlitzer," he told I.M. "We've also done very well with HH," Mrs. Jeavons added. "We were with them from the very beginning, and they really were ahead of their time. Our own engineer checked them out, and we found they went very well in clubland."

Not surprisingly, all the Summerfield ranges do well in Jeavons.

"If we're ever short of anything, we can just ring up Maurice Summerfield, and likely as not he'll personally deliver whatever we need. It's wonderful having a distributor so close to us."

Of paramount importance to the Jeavons approach is good after-sales service. A musician without the instrument he needs is little more than an unemployment statistic, and the Jeavons answer is quick repairs. Two days before we spoke to Mr. Jeavons, he had prematurely left a sick bed to repair a badly-needed accordion — and this for a musician who wasn't even a Jeavons customer.

Typically in keeping with their concern for their customers, Jeavons founded their own finance corporation, JME finance, at the time of the introduction of VAT. "We found that no finance companies really understood musicians."

"When a musician comes in," Mrs. Jeavons continued, "and wants to buy something, he wants it immediately. We don't believe in taking days and probing into people's finances to see if they're 'respectable'. We give same day clearance, and we really understand the needs of the people who come in here."



The Impulse organisation will also apply acetate discs, in discs ranging from seven inches (45 rpm, 4 minutes per side and £2.50 mono/£3.50 stereo) to 12 inches (33rpm, 24 minutes per side and £6.20 mono/£9 stereo). They can also do commercial vinyl pressings of 50 or more.

This is, however, just the tip of the Impulse iceberg. A diversified musical concern, they offer themselves as publishers, management, sound and lighting equipment specialists and advertising and publicity experts.

Perhaps the most interesting option offered by Impulse is their offer to help groups, singers and musicians become their own record company. Impulse can record, cut, package the record, and then advise artists on "every aspect of marketing the records", as well as radio and other aspects relating to promotion.

The Music Centre in Stockton was opened four years as the brainchild of local organ personality Norman Dunning. For that reason, keyboards are featured prominently along with guitars and sheet music. Amplification is a little thin on the ground at the moment, however.



L-R: Jill Richmond, Dennis Harrison and Eddie Horsman of Cleveland



Sunderland's White

Jeavons are interested in all aspects of the Newcastle music scene. Like Kitchens, they have found the North East jazz bands a small but lucrative market, and worthy of service.

With customers ranging from young children to seasoned professionals, and lines which range from the most sophisticated organs to the simplest, and yet most vital, of accessories, Jeavons continue to play a major role in serving Newcastle's musicians.

Saville Brothers is a large and well-stocked shop which stands in Kettel Street, South Shields. The original Mr. Saville opened the business as a partnership with his brothers in 1901. The actual opening of the shop was the culmination of years of effort on the part of Mr. Saville who had begun his career in the music business by selling sheet music from a knapsack. Eventually he was able to set up a stall and then open his first shop. His business is now owned by that first entrepreneur, Saville's son, Ivor Saville.

He told us that Saville Bros. have been selling cheap musical instruments and records for as

long as they've been around. The present stock of equipment is spread over two floors, with records and tapes on the ground floor and the main body of musical instruments and equipment on the first floor. There is a fair selection of guitars in stock, including Burns, Commodore, Fletcher, Coppock and Newman, Fender, Yamaha, Epiphone and Gibson instruments. There are flutes, trumpets, oboes and clarinets as well as a range of percussion and a selection of drum-kits. Ivor Saville told us that he has an account with almost every wholesaler in the U.K. and everything that's not in stock can be quickly ordered. There is always second-hand equipment in stock and Mr. Saville offers generous part-exchange and H.P. terms to his customers.

Like Dickens' *A Christmas Carol*, White of Sunderland are a three part vision; unlike that fable, White past and present are equally geared for the future.

White's past began with Bill White, literally in his back garden, producing "The standard 4 x 12 cabinets. But we wanted to do something better and we began to talk to the people who used the gear, and we've always sought to provide the unusual."

As a policy, it paid off. White expanded into amps, and became a familiar name and a cherished friend of touring professionals, who could count on reliability and service as synonymous with the White name.

White present is located at 3 Albion Place, Sunderland (just off Vine Place). The retail shop which bears the name of White is managed by affable Pete Watson.

Pete is a bass player, and has toured the Western world with bands such as Jazz Board, Quidowns and Johnny Duncan and the Blue Grass Boys. He knows the scene, and, as he explains it, "I decided that it wasn't forever, but at the same time, I wanted to keep in the business. Working in a shop (which he has done for four years) was a natural progression.

"We're all local boys, and this will always be our head office. With a tremendous number of working men's clubs, the Polytechnic and the University, there are always loads of musicians coming in, so we see a good cross section of musicians - we even have London bands coming up and working for weeks at a time."

In keeping with the White approach - the aim for the unusual - White have recently attained the local Acoustic franchise - the White shop on Albion Place is comfortable, yet alive with posters and lights which make a visiting musician feel at home. The sales are handled by Mick Wilson and Martin Cockton, both professional musicians themselves. They know the ropes, and Merv Force - with White since the beginning is in charge when it comes to repairs. The

Sunderland shop, which stocks the classiest Fenders and cheaper copies, acoustic and electric alike, is due for expansion soon. Whatever the plans, however, Sunderland will always be served by White.

White's future, as Bill White (who bears an uncanny resemblance to Richard Harris, circa *This Sporting Life*) tells it, can perhaps best be seen in Newcastle, at 48 Clothmarket. "This shop, Rock City, is really more of a retail shop than anything we've done before. We've been open for three months, and the response has been fantastic. The ground floor is all rock, with a good array of guitars and amps, and the basement is given over to keyboards and percussion."

Managed by Barry Alton, Rock City is another phase in the continuing White saga.

Managed by Dennis Harrison, Cleveland Music of Middlesbrough is in an ideal location for a music shop. Tucked almost unobtrusively into the sprawling indoor market which is the Cleveland Centre in Middlesbrough, Cleveland Music has still managed to make its mark. "With the small amount of floor space available," Dennis told I.M., "we manage to pack in enough people on Saturdays that it's necessary to roll the doors back."

The sounds that come out on a Saturday are not what you would expect to hear coming from a Teesside shopping centre, but far from receiving complaints, Dennis has actually been praised by the Manager of the Cleveland Centre. "He told me that everyone was moving around to find out what the 'noise' was all about, and that we were contributing to the traffic flow!"

The attraction? Between Dennis himself, a former organ demonstrator who can still crank out a pretty mean organ figure, and Eddie Horsman, Cleveland's ace guitarist and guitar demonstrator, teacher and salesman, the shared answer is obvious.

Add Jill Richmond, an ex-hairdresser who makes (arguably) the best cup of coffee on Teesside ("and knows more about accessories than anyone in the area," adds Dennis), and Harry Graham-Fielding, organ instructor par excellence, and you have the answer: Cleveland try.

The Teesside was aching for a young, able and versatile music shop, which is what Dennis Harrison was out to provide.

"We've been open for just over six months," Dennis continued, "and in that time we've done the business we anticipated would take us almost two and a half years."

Teesside was ripe for a change, and Cleveland supplied it: a glance at the shop tells why. The walls are covered with guitars: Fenders and Gibsons rub shoulders with Saxons and Arbibers, Kayes abound and the floors are literally chock-a-block with amps and cabs.

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Burman's

The main lines are Carlsbro. "They just can't supply enough," adds Dennis—Custom Sound and, as befits a Fender Soundhouse, Fender. Lessons are an integral part of the Cleveland approach, and Harry Graham-Fielding teaches more than 80 students a week, via the intimate and effective Riha system.

Riha find a supporter in Dennis, who has witnessed their popularity (particularly, the Riha

Syntone). "We get a van a week from Riha," Dennis added.

Pete Taylor ("an electronic whizz-kid") looks after repairs and after sales service. Like all the Cleveland staff, Pete is a professional musician and, again, like all the Cleveland staff, he aims to help rather than confuse the customer.

Typical of Cleveland's interest, both in the music scene and in their customer's welfare is their Stage Safety Unit. If a faulty plug is inserted in the unit, an alarm bell rings, a neon safety light flashes, and it is inconceivable that anyone would proceed to use the plug without a check. "These have been installed in over 300 clubs in the area, and there hasn't been any kind of electrical accident in any of them.

The Cleveland story is perhaps best summed up by Dennis Harrison. "We had a young lad come in, and he spent over £900 in five months. Then one day, his mum came into the shop. She says, 'Where's this Eddie, this man who's sold my son all the guitars and that?'"

"Eddie turned up, and she said 'I just want to thank you for making my son so happy. I've never seen him so happy as he is now, with all his guitars and things.'

How can a shop which markets happiness, in an area as musically keen as Teesside, go wrong?

Now in their tenth year, Burman Sound Equipment are tucked into the Handyside Ar-

cade, just off of Newcastle's Percy Street. The retail outlet appears small at first, but it is only the tip of the iceberg: Handyside Arcade houses Burman's cabinet and electronics workshops, as well as a total of 12 working units, and a staff of 12 which includes Greg and Margaret Burman.

Greg Burman, a musician himself who played in the Greg Burman Soul Band, began making cabinets more than ten years ago. "A friend and I started by copying, exactly, a well-known make of cabinet and before we'd even finished our first two 2 x 12's, we'd sold them."

After a short time, Greg decided to build something a little better, so. "We had Goodmans build us some loudspeakers to our own order, and that really put us a cut above everyone else."

Burmans test their competitors equipment rigorously, and they claim that "it's no match for ours."

"Our amps are designed to live up to their specifications. On a lot of the other models on the market, you can only get a good bass sound at the expense of the treble. We don't have any trouble matching the two."

As well as group equipment, Greg Burman has done quite a lot of work in installing sound equipment in the local clubs. "We've installed equipment in 50 or 60 clubs in the area, and some as far away as Barrow-in-Furness and Edinburgh." Most of the gear going into clubs is 200 watt stereo equipment.

Burman's are one big, happy family, and while they plan expansion in the near future, they are firmly grounded in central Newcastle. At the moment, they have four new products on the shelf, but are waiting to go into full production.

"This market has been a bit quiet recently, but we do have plans for expansion. I think we may have saturated the Newcastle market, so any further expansion plans will have to be directed towards other parts of the country."

Hamiltons, set in Middlesborough, heart of Teesside, have served the area for more than 25 years. The shell of that first and former shop is still visible on Corporation Road, but in keeping with their success, Hamiltons moved to Newport Road two and a half years ago, availing themselves of the more than 9,000 square feet the shop offered after alteration.

Manager Peter Newhouse of Hamiltons bought the original shops in 1966 with his brother Richard, and has continued the policy of diversified musical sales, combining records, sheet music, instruments and equipment under a single roof. The guitars range from Japanese copies to Fenders and Gibsons, and amplification may be paced by HH, but also includes most of the major brands. The Hamilton sense of responsibility extends to spares of all sorts, and their reputation in this area has brought orders from all

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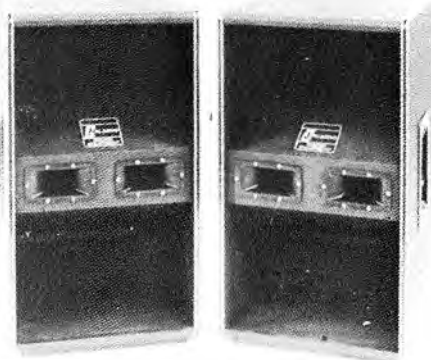
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City Music Stores

over the Commonwealth. Predictably, this thoroughness is reflected in their service: everything is checked by a technical staff (headed by Tony Atkinson) before it leaves the shop. Educating a customer is part of the Hamiltons philosophy. "It started in 1968," Peter Newhouse told I.M., "because we found that people just couldn't get teachers, so we started our own guitar courses and they've gone extremely well. We normally have about eight different classes on Saturdays. There are two teachers who take four classes each." All things to all people? Not quite, but Hamiltons feel that it is imperative to handle as many things as possible. Music shops in the area are fairly thin on the ground, and Hamiltons aim, to provide as much as they can, must be welcomed by Teesside musicians. What they don't have in stock, they'll import — from mixers

to oboes and bassoon reads, Hamiltons are ready and willing.

City Music Stores, in Gallowgate, Newcastle is a specialist shop, for non-specialists. That may seem a paradox at first, but City Music Stores, established in Newcastle since 1962, and at the present site since 1970, have kept a very clear head. Alan Wright, the shop manager and a director, explained the company's policy. "We've aimed for the home market from the start. Our customer is the man in the street who might buy an organ as easily as a caravan or a colour television, for leisure and enjoyment."

The changes in home organs since City Music opened has been remarkable. "Until recently, we've had to offer lessons along with the organs — nobody else was supplying them, and the organs were so complicated that lessons were really necessary.

"But in the past two or three

years, things have been improved, what with one finger chords, automatic bass pedals and so forth, to the point that we can literally say to the customer 'Take this instruction book with you,' and that's really sufficient."

This attitude of course begets a careful approach to service, and City Music are quick to support their sales with careful advice. "Our aim is to fit the organ to the needs of the customer." Harry Davis, the assistant manager, has been with City Music since the days of the old Dean Street shop, Mike Donaghey, a salesman and pianist who is learning the organ, and Graham himself are all prepared to answer whatever questions the customer may have.

"There are too many places outside the music business who encourage sales, just for the sake of making the sale. They don't care anything about the customer, and I'm afraid that attitude has begun to creep into the music business as well.

"I want to sell people organs that they can not only begin to play and enjoy immediately, but models that they can progress on to the limits of their talent."

City Music stock Thomas and Yamaha models, and Graham was particular impressed by the latter. "I was always partial to Hammonds, but one day a £1,000 Hammond customer came into me and said 'I tried this Yamaha

organ, it's only about £400, but you really ought to have a look."

Country Music Centre in Sunderland is also part of the same organisation. Like City Music, they are keyboard specialists but the emphasis in the Sunderland shop is more on variety, although the main lines are still Thomas and Yamaha. The shop opened in 1964, and is managed by Mr. Thompson.

Burns guitars are also part of the Wright connexion, although technically, they have nothing to do with either City Music or Country Music Centre. Graham Wright is the Company Secretary, and his father Alan is the Chairman and Managing Director. The Wrights have been handling Jim Burns' guitars for three years, although it's only in the past three months that they have actively been marketing them in the U.K.

The standard models are the Burns Flyte lead and bass guitars, although this year's Frankfurt Trade Show witnessed the debut of two new Burns models, the Artist and Mirage.

Jim Burns and a staff of ten in the South Shields, Newcastle, factory are producing 25 Flytes a week, and Graham Wright's advice is sound; "If you want to find out what a Burns guitar sounds like, go in to your local music shop, ask for one, plug in, and try." He bets you won't be disappointed.

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Summerfield of Gateshead

The Summerfield story began 76 years ago in Newcastle, with Simon Summerfield, the present Managing Director's grandfather. Initially a general importer, by the time Simon's son Charles took over, they were one of Britain's leading toy and novelty importers.

It was perhaps a curious beginning for a company like Summerfield, but the link and explanation can be found in the person of the current M.D., Maurice Summerfield.

A former professional guitarist, Mr. Summerfield found more than a career in the guitar. "For me," he told J.M., "the guitar is also an absorbing hobby. I've always been interested in the instrument historically and artistically, as well as musically."

The transition, of course, came when Maurice Summerfield began to graft the importation of guitars onto the more general structures of importing. "We had the import contacts and experience necessary, and I also had a lot of contacts from my days as a professional guitarist.

"I had a tremendous advantage, because most of the people importing guitars into this country didn't know one end of a guitar from the other. For the first time, the Japanese companies like CSL and Ibanez were talking to someone who really was interested in their product."

Summerfield went to old books and catalogues, and actually inspired the Japanese companies to produce new models which proved immediately popular. "Even through our Flying V was a copy of the original Gibson, they found that our models were so popular that Gibson eventually produced their own copy."

Tens of thousands of Japanese guitars find their way to Summerfield each year. They enter the U.K. in containers via Southampton, pass through customs, and then to Leeds and eventually Gateshead. "It takes about a month for a shipment to get to us," Summerfield told I.M.

The North East holds nothing but advantages for import and distribution in Summerfield's eyes. "Newcastle is well served by motorways, the railway network is good, and we even have our dock behind the warehouse, where we take delivery of some European exports from Rotterdam. We can get a van down to the West End of London in under six hours." Their 14 vans are constantly on the road.

Summerfield's have extensive warehouse facilities: their 58,000

square feet of space makes them among the largest musical instrument warehouses in Britain, and the high ceilings also account for a large amount of cost/effective cubic space. These capacities should prove useful: Summerfield will be soon launching an extensive marketing campaign for both Ibanez guitars and Tama drums.

"Ibanez have produced a truly outstanding range of original guitars. A lot of the Japanese companies have decided that the future of copy guitars is limited, and American players like Frankie Valli (who uses an Ibanez Twin Neck) and Bob Weir of the Grateful Dead (the Ibanez Pro) have been using the first models over the last year.

"We're going to be promoting these originals extensively in Britain, and we'll also be doing a lot with Tama drums. They've come up with a seamless snare, and we expect them to do very well in Britain."

New Direction are a five-piece harmony band who are all natives of Gateshead. They consist of: Geoff Sugden, keyboards (Hammond L100 with a Leslie 147, an Insta Piano, and a Hohner Planet, all through a Simms-Watts 100 watt valve amp); Dave Gibson bass (Fender Jazz bass); Bill Wilkinson, drums (Premier polychromatic kit with Avedis Zildjian cymbals); Derek Atkinson, guitar (Fender Telecaster Custom and a Fender Twin Reverb amp); and Rob Quinn, vocals.

They are currently resident at the Byker and St. Peter's Middle Club, playing three nights a week there and a couple of other nights a week as well.

The club scene is lively enough, and Geoff Sugden told I.M. that the area's taste, which used to favour heavy groups, is changing. "People used to want heavy groups, but they seem to be on the way out now. We do a lot of Philadelphia music, and people up here seem to want show groups."

The average fee for a band of five is between £40 and £50 a night, and the audiences vary: Sunderland is traditionally a tough and demanding audience, and, naturally enough, New Direction usually get a warm reception in Gateshead.

The next step for the band is to cut a few tapes, probably at Impulse Studio in Wallsend, although that isn't finalised. They also recently received word that they have passed the audition for Opportunity Knocks, which can't be anything but good news.

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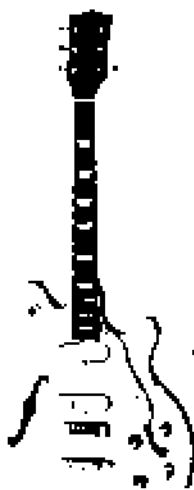
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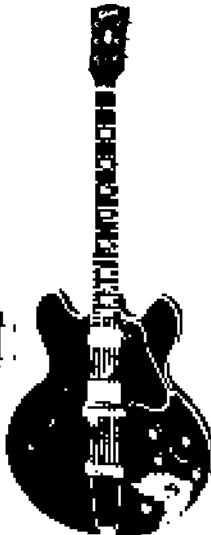
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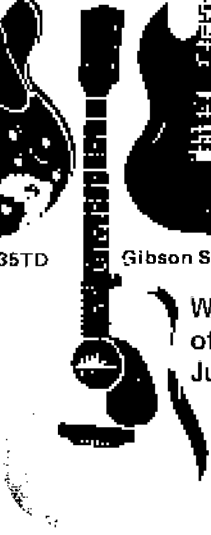
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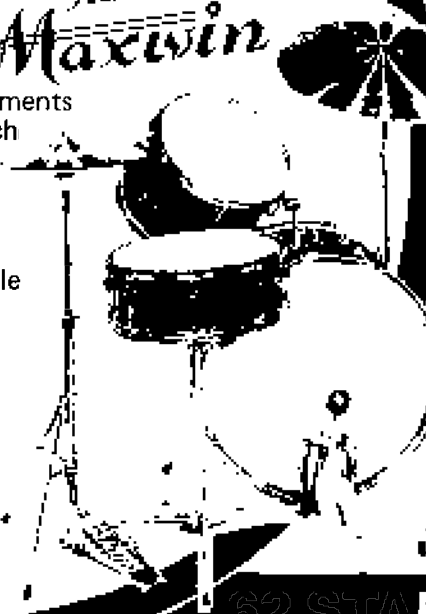
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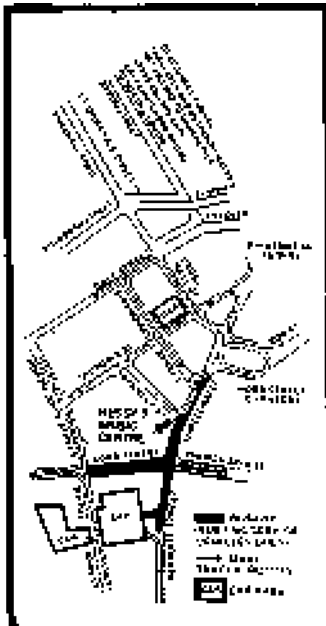
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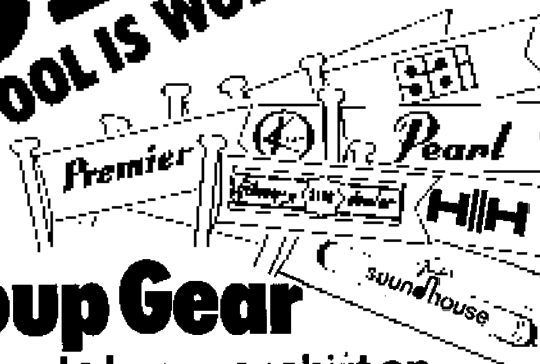
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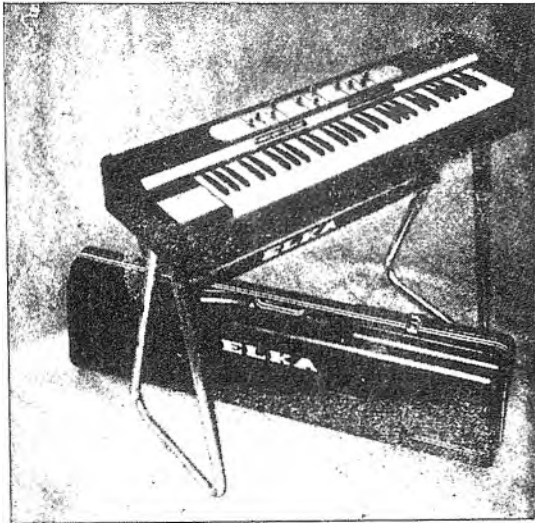
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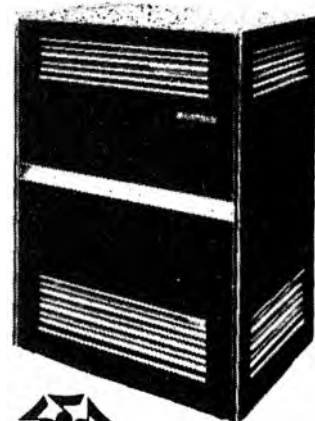
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# MUSIC NEWS

## AMII AG

AT A particularly lively Annual General Meeting of the Association of Musical Instrument Industries, held at the Russell Hotel, London, last month, much discussion before and after the meeting centered around the future exhibition site for the British Musical Instrument Trade Fair.

The business of the AGM was conducted quickly and efficiently with Roy B. Morris being re-elected Chairman and John Skewes re-elected vice-Chairman. Mr. Tupperney was elected to the position of treasurer.

After the AGM, meetings were held to discuss the handling of the trade fair in future years and the members seemed divided on their opinions as to future venues. A strong faction centered around Dennis Gillard and the Boosey and Hawkes team in favour of keeping the exhibition in the

London hotels because of the amenities, another faction including Roy Morris feel that the new conference centre at Wembley should be looked at in more detail and a third faction, which includes John Lomas of J.T. Coppock feel that the future for the Fair lies in the new Birmingham exhibition complex.

Most members were in agreement that internal security and entrance restriction should be stepped up for the 1976 fair and further investigation into a future site is to be carried out.

## EODA AGM

AT THE second annual general meeting of the Electronic Organ Distributors Association, the consensus of opinion was that the Association had achieved a great deal in its first 12 months despite the period being rather gloomy for companies concerned with marketing electronic organs. The meeting was held at the Connaught Rooms, London WC1.

President Dickie Wren (Farfisa) chaired the meeting and he and Vice President Keith Beckingham (Hammond) were confirmed in their posts half way through their elected office.

After the meeting, at which

the only major change was the resignation of John Skewes from sub-committees to concentrate on AMII duties, a discussion was held about the likely venue of EODA trade show over the next few years. Whilst a majority of members agreed that the Connaught Rooms proved very successful for the exhibition, they expressed a general desire for members of EODA, AMII and the PMA (Piano Manufacturers Association) to exhibit under a single roof and the meeting agreed that more investigation into the proposed Wembley and Birmingham exhibition sites was called for.

## Premier Palmer

CARL PALMER has recently taken delivery of a complete set of Premier tuned percussion. The ubiquitous superstar now owns Premier instruments including a Vibraphone, Xylophone, Chimes, Glockenspiel and Marimba.

Currently working in almost every field of music, including sessions with Oscar Petersen, percussion symphonists and ELP, the man will undoubtedly be recording his Premier instruments in the near future.



Photo by M.D. Gerald Dutton-Paine and Carl Palmer

## CITY MUSIC BREAK-IN

CITY MUSIC Stores of Gallowgate, Newcastle, were broken into in a night robbery. The thieves escaped with two Burns Flyte basses, one yellow and one red, and a silver Burns Flyte lead guitar all of which were on display in the front window.

The irony of the theft is that City Music Stores don't usually

display guitars in their shop window. Organ specialists, the guitars were placed there by Graham Wright, manager and also company secretary of Burns UK Ltd., in anticipation of a visit by an International Musician team, who were in the area reporting the Buzz: North East feature.

## MACINNES MOTORING

MACINNES LABORATORIES are increasing their sponsorship of motor racing this season and have announced that they are entered an Van Dieman RF76 car in the Townsend Thorenson and Brush Fusegear Championships for Formula Ford. The driver will be Matthew Argenti, who has been driving for the Macinnes Amcron team for the last two seasons. The car is being entered by the team with the co-operation of Ralph Firman of Van Dieman.

Macinnes also announced that they hope to be entering two cars in the Radio One saloon series.



The new Macinnes car

## COPPOCK CAR

JAMES T. Coppock have launched a sponsored rally for the 1976 season. The company is the first musical instrument wholesale organisation to be involved with motor racing sponsorship.

The car—a specially prepared Vauxhall Magnum with a works engine—is to be driven by well known rally driver Chris Lord and will bear an Elgam slogan.

Coppocks have declared 1976 to be an organ year and the rally car is just one aspect of their sales "drive" for the excellent Elgam range.

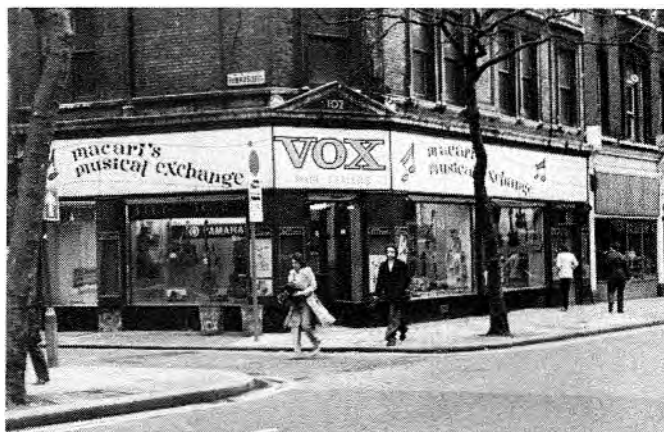
# MACARI OFFERS ROLAND

MACARI'S IN Charing Cross Road, London are offering Roland SH3A synthesisers for around £299 during March—the usual price is around £430. The offer—exclusively announced through International Musician—will end by April and as stocks are limited, prospective Roland owners are advised not to waste time.

"It's a truly fantastic price," said Larry Macari commenting on the spectacular offer. "We're able to do it because of a very special purpose and we've got to limit the offer to March."

To coincide with the focus of attention on Roland, the shop—102 Charing Cross Road—is mounting a window display of all the new Roland models unveiled for the first time at the Frankfurt Fair in late February.

The shop has a special synthesizers showroom and keyboard players can enjoy the opportunity of trying a wide selection of keyboards in addition to Roland units.



Macari's Shop at 102 Charing Cross Road

## R-M Departure

ROSE—MORRIS has announced that Derek Morris has left the company to pursue interests outside of the group. He's been with R-M for 28 years and the company offer him their best wishes for the future.

## TRICKY PICKS

Hohner have made an announcement of great importance to fussy guitarists. The Jim Dunlop range of plectrums are now available in five different thicknesses. Sizes are .46mm, .58mm, .71mm, .84mm, and .96mm, and the picks are called the "System 4200" range.

## JIM SELLS

HUNDREDS OF local guitarists turned out in the Coppul area, Lancashire, recently to hear guitar virtuoso Big Jim Sullivan hold a Fender clinic. It was all organised by SAI, the retail and wholesale organisation prominent in the North West, and organiser Malcolm Maguire of SAI declared himself well pleased with the outcome of the clinic. Fender guitars and amps, already a number one seller for SAI, improved their position still further.



Big Jim on stage at S.A.I.'s Fender promotion

## NEW GUILD

GUILD HAVE announced a new Florentine cutaway version of the D-40 flat top guitar. The instrument has a spruce top and mahogany sides and back. The neck is of mahogany and the rosewood fingerboard has mother-of-pearl inlaid position markers.

Called the D-40C, the instrument has a 25<sup>1</sup>/<sub>2</sub>" scale with 20 frets and the neck joins the body at the 14th fret. The guitar is available in a natural or sunburst finish.



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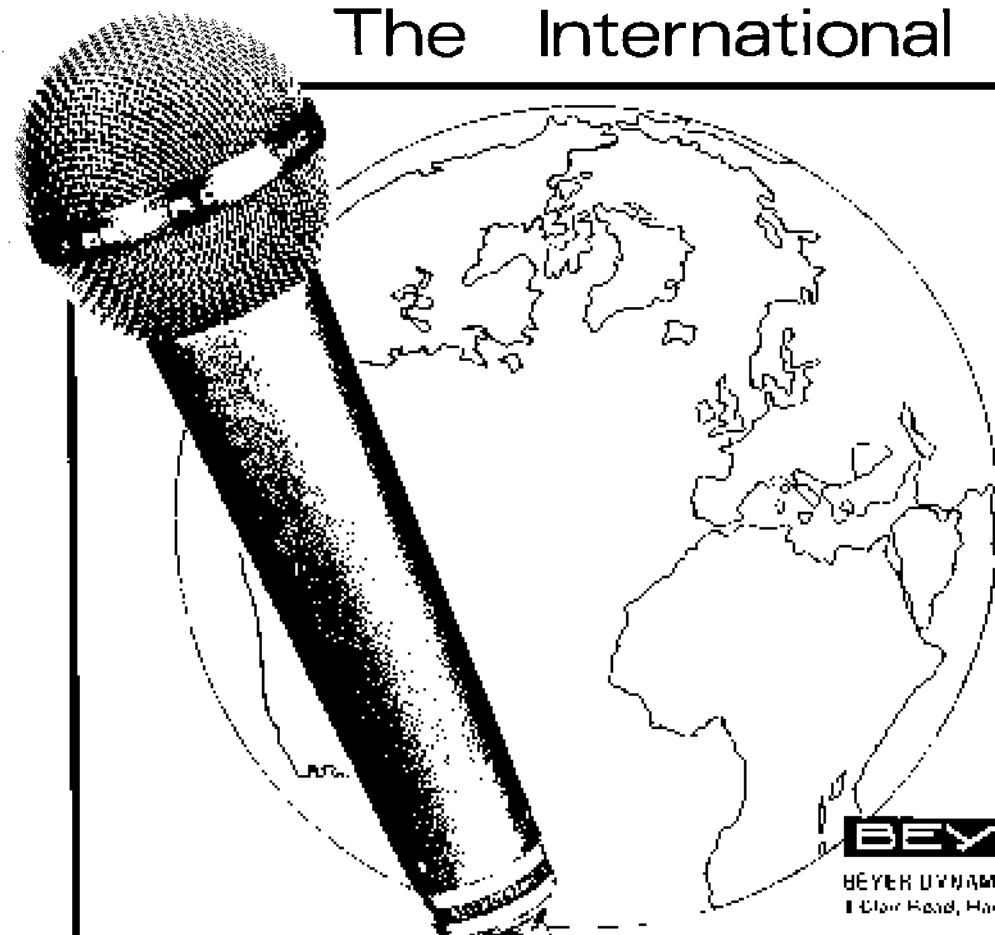
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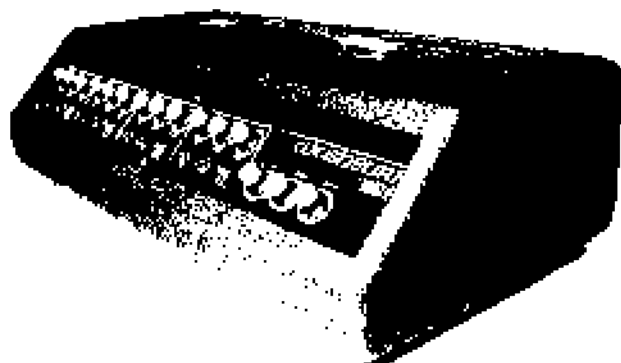
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# DEALER NEWS

## Manx Music Box

THE MUSIC Box is one of the longer established and one of the larger music shops on the Isle of Man. The Music Box is a family business and at present, the directors of the company include the entire Mitchell family: Mr and Mrs. Mitchell and their son Kenneth. The original Music Box was in Duke Street, Douglas. The latest branch opened in Strand Street a year last September.

It's a huge store spread out over three floors and a basement. One floor is devoted to educational equipment, sheet music, records, and there is also a large area with albums and stereo equipment on display. There are electronic keyboards and in the near future, The Music Box hopes to find space to open a ground floor showroom for the organs and other keyboards which they have in stock.

The building which the new branch of Music Box is housed in used to be a Boots. Major structural alterations were required before the Mitchells were satisfied that the building could accommodate the sort of music shop they wanted. The whole of the ground and first floors were enlarged and areas for a recording studio and for teaching studios were prepared. The basement was completely opened out for the first time. A low ceiling and sound proofing were added and the basement is now the home for the expansive range of

hand equipment and instruments which The Music Box keeps.

The basement is managed by Kenneth Mitchell and one assistant. Kenneth plays guitar with a local folk band and is very much aware of the problems of his fellow musicians on the Isle of Man. In the summer there is always a substantial amount of work for musicians and the island manages to support a lot of semi-professional rock and pop groups.

The basement carries a large selection of amplification including HH, WEM, Marshall, Selmer, Elgen and Laney equipment. In fact, the HH agency for the island has only just been won and Kenneth Mitchell was delighted about the added business that it would bring to The Music Box.

Among the guitars in stock are Fender, Gibson, Yamaha, Epiphone, and Antoria models. Kenneth has found that the cheaper Olympic kits are among the most popular products in his percussion range, with the Japanese kits a close second.

## Tyme Music of Hemel

IN 1970 Arrival had a number one hit with a Terry Reid song, "Friends." Three of the members went on to become part of Kokomo. Don Hume, the bass player on that single, is now running his own musical instrument and equipment shop in Hemel Hempstead. Don had always enjoyed playing guitar but after Arrival split, he found the session work he was offered becoming increasingly routine. Some thing which he'd always loved became just a job and Don decided to leave the recording business.

He opened Tyme Music in Lawn Lane in '72. Officially, there are three partners but it's Don who is in the shop most of the time. Tyme Music is fairly small, about 30ft x 40ft, but it's packed full of guitars and amplification equipment. There are Rickenbacker, Guild and a selection of

Japanese copy guitars as well as a few acoustics and the fast selling jumbos. There are no new Fenders in stock but Don does a fairly rapid turnover in old Fenders and on second-hand equipment in general. The amplification range includes Orange and Carlsbro equipment, but Don tries to keep bits and pieces of everything in stock. Tyme Music isn't in the centre of town, Lawn Lane is on the outskirts of Hemel, but most musicians in the area seem to find it worth their while to take the time.



Early Lewis visitor Paul Thompson

## MUSIC MATTERS

DOUG MACDONALD of Music Matters, believes that music matters. He has been involved in different aspects of the musical industry for many years. Originally, he worked as a design engineer for Vox. When he became redundant, he continued designing and repairing equipment for his friends and customers. The business that he was given eventually increased until it was necessary for him to find some official premises to work from.

He moved himself and his tools into 105 Belgrave Road in Welling, Kent, and continued working from there. Gradually the retail frontage of the building and the demands of his customers became too tempting to resist and the repair and manufacturing business developed into the present flourishing retail shop. After only a year, the volume of business forced him to find a shop manager and gradually two more staff to help him out.

Just when Doug was beginning to feel cramped again, the shop next door became vacant and he took advantage of the circumstances to expand his business

into the building next door. As well as selling his own electronic equipment, Doug also has all the well known equipment in stock. There is a dazzling array of Fender, Carlsbro, Marshall, Nolan, Yamaha, Arbiter, Orange, Laney, CMI and WEM amplifiers, as well as a good selection of second-hand gear. His stock of microphones include Shure, AKG, and Sennheiser, and he sells mike stands and a variety of accessories including many different strings, pick-ups and machine heads. There is an expansive range of effects and sound to lighting equipment and his stock of guitars include Fender, Gibson, CSL and Yamaha instruments and, says Doug: "All the best copies, some acoustic instruments and banjos and mandolins."

Doug hopes to expand into keyboards in the near future and he has plans for increasing the amount of equipment he has available for hire. Music Matters has four technical staff on the premises, all of whom are willing and able to help with any repairs or servicing their customers might need.

## Lewis of Jarrow March on

UNTIL ANNE Lewis met and married her husband Michael, she knew less than nothing about the music business. However, Michael had been a dedicated drummer with various bands for as long as he can remember and it wasn't long before Anne was becoming involved in her husband's work. Just after they married, Michael acquired a very old and beaten up drum kit. Between them, Anne and Michael renovated it and sold the kit at a profit. It was then that the idea of starting up in some sort of drum business occurred to them.

About three years ago, Mr. and Mrs. Lewis opened a tiny shop in Grange Road, Jarrow; they sold and repaired drum kits and after two years they were doing so well that they were forced to look for larger premises. The building that was eventually chosen had been a hairdressing salon and it took three weeks of solid work to turn 16 Bede-

burn Road into a drum shop. Anne and Michael have a flat above the showroom, a work shop a few doors down, and a room for minor repairs at the back of the building. Just after the new Lewis Music opened they were visited by Paul Thompson, the drummer from Roxy Music and since then customers have included Beckett, Warbeck, Method and Crypt.

There are always some second-hand kits in stock but the new equipment includes names like Ludwig, Gretsch, Hayman, Premier, Pearl, Star and Beverley.

Lewis Music isn't all drums. They keep a selection of acoustic guitars in stock and are glad to order specific electric instruments for their regular customers. They also keep a wide range of accessories and are willing to organise any deliveries free. Michael will repair drum kits on the premises and is at present teaching some of the local kids about drumming.

# Synthesizers

A brief introduction by Eamonn Percival and Ray Hammond

It has been ten years since the introduction of the electronic synthesizer in the U.K. and the industry has witnessed an amazing growth rate in these instruments. They were considered little more than an expensive gimmick initially — they went O.K. with Hawkind's lightshow — but musicians soon realised at least part of the synthesizer's potential as a bona fide instrument. Keith Emerson, ace keyboardman with ELP, seemed to spend half his life posing and shaking hands with Bob Moog while Walter Carlos seemed to spend half the royalties of his first album overdubbing synth parts on his second.

It is now obvious that the synthesizer is here to stay. From the first experimental prototype, it has now branched out in many forms — portable, preset, modular, variable and polyphonic. There are, perhaps, a dozen or so "big names" in synths, a few of which we cover briefly here.

## ARP

Boosey and Hawkes handle the American-built ARP range of synthesizers. One of the most popular models in this range is the famous ARP Pro-Soloist which features 30 presets and is very quick and easy to operate. The ARP Odyssey has a 3-octave keyboard and has been designed to eliminate the need for patch-cords — slider controls and switches operate the settings. The very versatile ARP 2600 can be played with or without patch cords and features a 4-octave keyboard.

## ROLAND

A relatively new name over here, Roland synthesizers come in three basic models. The SH2000 consists of 30 presets including wind instruments, strings, percussion, keyboard and special effects. Extras like touch-effect control, wow, growl and vibrato are also featured. It is basically

aimed at the home organ market and groups who don't want to get too involved with intricate settings. The SH1000 has ten presets, together with V.C.O. combinations of different wave forms. Other features include envelope control, modulation and vibrato. Until the SH2000 came on the market, it was the top seller in the Roland range. Appealing to a totally different end of the market, the SH3A has no presets — it is designed for the professional who really wants to get his teeth into synthesizers.

## WELSON

Welson are one of the newer names in keyboards — at least as far as Britain is concerned. Their synthesizer offering is called a Syntax and it's a highly portable manual model supplied with its own metal legs. The instrument marries the traditional organ specifications to the new synthesizer language and the result is that specific sounds are called after pipe lengths — 16ft., 8ft. and so forth. This type of unit seems to represent the main area of sales for synthesizer based instruments, as it offers the player widely variable sounds, but at the same times has sufficient pre-set controls for quick, on stage selection.

The Syntax is only one portable keyboard from a range of seven in Welson's catalogue, but it's likely to become important to musicians seeking a relatively inexpensive pre-set/variable synthesizer.

## Macaris

We can't mention electronic keyboards or, in this case, synthesizers without including Macari's Electronic Keyboards of Denmark Street, London W.1. Most of the models we have included can be obtained from Macari's, as they specialise in synthesizers and have a knowledgeable and intelligent staff includ-

ing Adrian Lee who takes part in the synthesizer discussion in this issue. Visit Macari's any day of the week and names like Moog, Mellotron, ARP, EMS and Davoli are always much in evidence.

## Moog

Moog invented the first synthesizer to be commercially marketed and some would say they are still the type leaders. In recent years, the accent in Moog marketing has swung away from the elaborate patchboard keyboard-controlled synthesizer and to the cheaper preset types. Despite Keith Emerson's incredibly sophisticated Moog system (the top bit of which is fake anyway) you don't really need to spend good bread to get a wide variety of sounds from a Moog model. At last year's British Trade Show, Norlin (the Company that now owns Moog) demonstrated a new Mini-Moog that has a rotary accent control which many musicians believe gets the synthesizer nearest to music it's yet been. Always a first shop on an electronics shopping spree. It's unwise to forget about Moog.

## Farfisa

Farfisa are best known for their highly sophisticated range of electronic organs. In the last couple of years, they put their IC technology to work to produce synth-type instruments and because of the quality that's accepted as inherent in Farfisa products, musicians are wise to investigate their effort at producing synthesizers. To be truthful, the instrument a company produces is really totally preset but it does offer a variety of interesting sounds suitable for specialised applications. The Synthorchestra is basically a string machine produced to compliment the organ range, but it has been so successful, it's now marketed as a separate item, it is one of the best string chimes available and for people who want to produce

precise replicas of string sections, this is the ideal instrument.

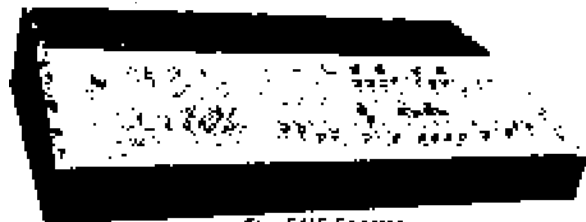
## EMS

EMS fly the flag for Britain in the synthesizer stakes. The company has been leading the field in electronic music experimentation for quite a few years and at the same time have been marketing highly commercial small synthesizers. The EMS instruments are really "pure" synthesizer, as the sounds are obtained by manual shaping the oscillating sound either by a peg board or some other infinitely variable system. Bands like Pink Floyd have used them to great effect. Less pure, but very popular, the Hi-Flier guitar synthesizer is about the only pre-set unit put out by the company.

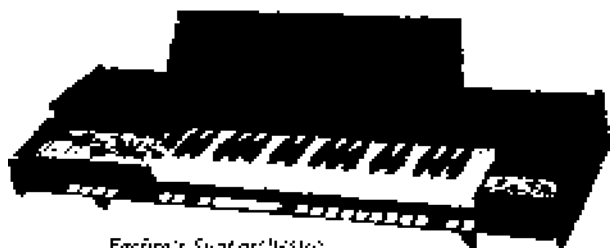
There's a host of instruments massed on the fringes of the synthesizer market. You'll see most of them at a keyboard specialists like Macari's, Western Music (in Hammersmith), the Chingford Organ Centre or the national Swan's chain, and they include instruments like the Mini-Korg a fine pre-set "organ-top" synthesizer marketed by Rose-Morris. Davoli's Davolisynth has been used to tremendous effect by bands like Darryl Wayne's Wolf and hunting around the shop there's a variety of string machines which some might call synthesizers.

To finished with a "follow that" Keith Emerson has just taken delivery of the world's first polyphonic synthesizer (or so Yamaha claims — Bob Moog might want to argue).

This is the mighty Yamaha GX1 synthesizer that George Gibbs was privileged to test for this magazine (I think it defeated him in the end!) last month which was developed at an R & D cost said to be around £250,000. The first production models cost around £30,000 each, so I'll race you to the shop.



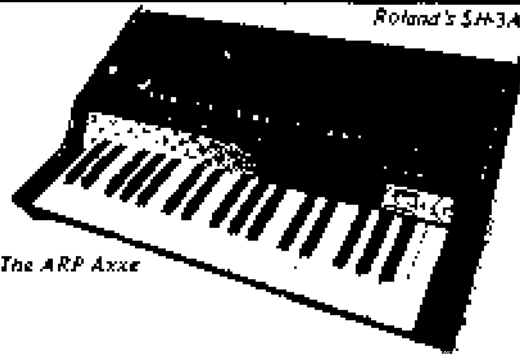
The EMS Synthesizer



Farfisa's Synthorchestra



Roland's SH3A



The ARP Axon

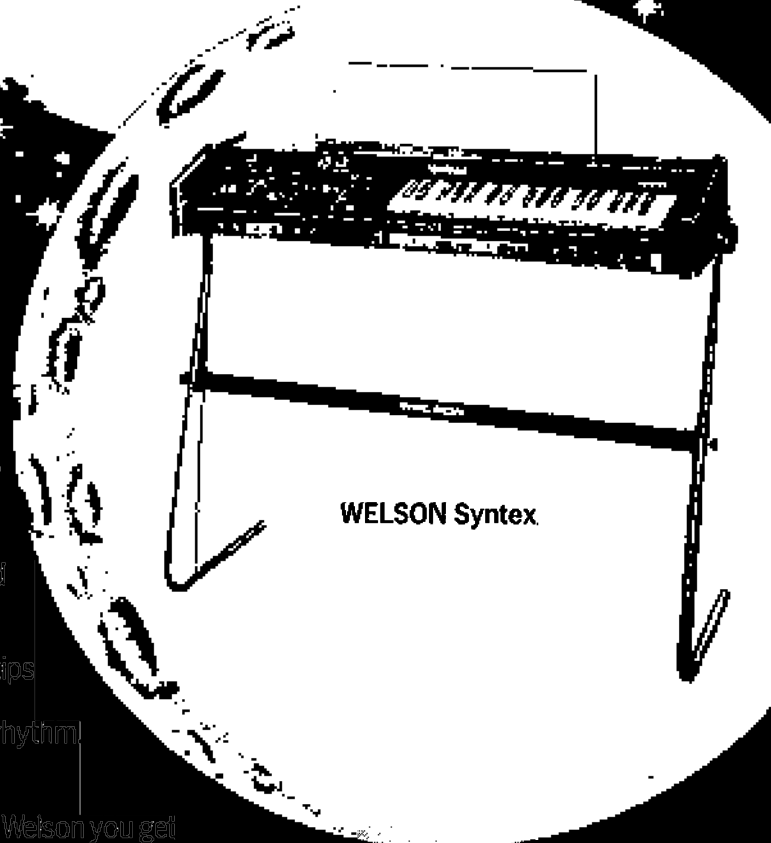
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Cost for cost Welsons are probably the finest value for money organs available.

Go to your local dealer and play one. Hearing is believing.

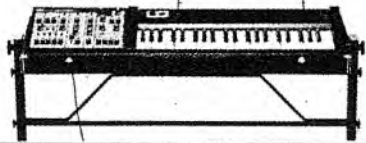


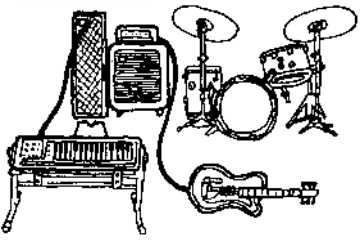
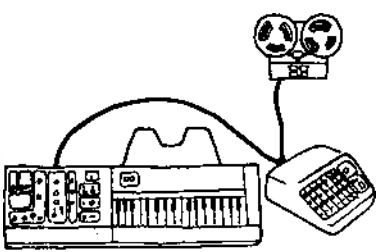
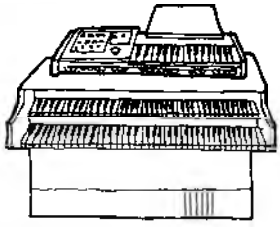
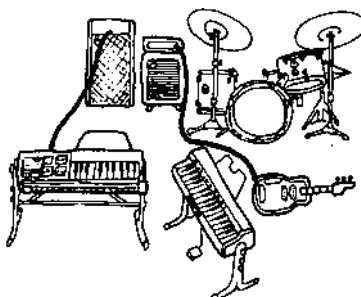
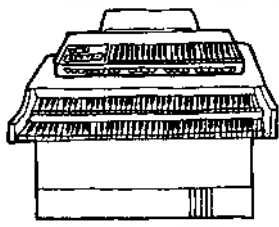
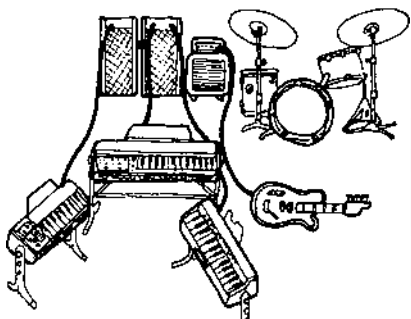
(If you'd like details write to us. We'll send you some literature and the address of your nearest stockist.)

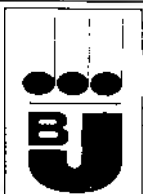
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MODEL					
KEYS					
PRESETS		Tuba Trumpet Saxophone Flute Clarinet Oboe Violin Bass Guitar Harpischord Piano	<b>Musical Instruments Sounds</b> <i>Wind Inst.</i> Violin Xylophone Tuba Bass Guitar <i>Particular</i> Trombone Hawaiian Guitar <i>Sound</i> French Horn Banjo Singing Voice Trumpet Fuzz Guitar 1 Song Whistle Saxophone Fuzz Guitar 2 Popcorn Bassoon <i>Percussion</i> Space Read Oboe <i>&amp; Keyboard</i> Planet Flute Piano Frog Men Clarinet Harpischord Funny Cat <i>String</i> Accordion Growl Wow Cello Vibraphone Wind		
FEATURES	VOICE OSCILLATOR	5 $\left[ \begin{array}{l} 32' \ 4' \\ 16' \ 2' \\ 8' \end{array} \right.$	5 $\left[ \begin{array}{l} 32' \ 4' \\ 16' \ 2' \\ 8' \end{array} \right.$	5 $\left[ \begin{array}{l} 32' \ 4' \\ 16' \ 2' \\ 8' \end{array} \right.$	PRESET ALREADY (Not Controlled)
	MODULATION OSCILLATOR	3 $\left[ \begin{array}{l} \text{M} \\ \text{N} \\ \text{8' Chorus} \end{array} \right.$	2 $\left[ \begin{array}{l} \text{M} \\ \text{N} \end{array} \right.$	3 $\left[ \begin{array}{l} \text{N} \\ \text{Chorus} \\ \text{Growl} \end{array} \right.$	
	WAVEFORM MIXING	5 $\left[ \begin{array}{l} 32' \text{ (N/N/N)} \\ 16' \text{ (N/N/N)} \\ 8' \text{ (N/N/N)} \\ 4' \text{ (N/N/N)} \\ 2' \text{ (N/N/N)} \end{array} \right.$	8 $\left[ \begin{array}{l} 32' \text{ M} \ 8' \text{ AL} \\ 16' \text{ NL} \ 8' \text{ M} \\ 16' \text{ AL} \ 4' \text{ M} \\ 8' \text{ NL} \ 2' \text{ NL} \end{array} \right.$	10 $\left[ \begin{array}{l} 32' \text{ N} \ 8' \text{ /} \\ 32' \text{ /} \ 8' \text{ NL} \\ 16' \text{ NL} \ 4' \text{ /} \\ 16' \text{ /} \ 4' \text{ NL} \\ 8' \text{ NL} \ 8' \text{ + 2' M} \end{array} \right.$	
	ENVELOPE	Envelope Selector Hold $\left[ \begin{array}{l} \text{ADSR} \\ \text{~} \\ \text{~} \\ \text{~} \end{array} \right.$	Tablet $\left[ \begin{array}{l} \text{ADSR} \\ \text{Slow Attack} \\ \text{Staccato} \\ \text{Percussion} \\ \text{Hold} \end{array} \right.$	Tablet $\left[ \begin{array}{l} \text{Repeat} \\ \text{Long Sustain} \\ \text{Hold} \end{array} \right.$	
	NOISE	White/Pink	White/Pink	Preset "Wind"	
MAIN USE	Ⓞ In a combo style  Ⓞ For recording 	Ⓞ On an electronic Organ  Ⓞ In Combos 	Ⓞ On an electronic Organ  Ⓞ In combos with the other keyboards 		



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# MONITORING: SYNTHESIZERS

*Synthesizers are not so much a controversial topic, as a complicated, often confusing, and always fascinating subject for musicians and manufacturers alike. With this in mind, J.M.'s Eamonn Percival brought together representatives from every area of the world of synthesizers: Dave Roberts, representing the Norlin Corporation (who now own Moog) and a fine guitarist in his own right; Tony McPhee, also a guitarist, who has recently been deeply involved with synthesizers; Adrian Lee, Macari's principal synthesizer expert; and Allan Townsend, Boosey & Hawke's expert on the American ARP synthesizer.*

E.P. *What problems did you encounter when synthesizers first came on the market?*

A.T. I think the major problem was getting people to accept them as instruments. Not only that, but a lot of people were, and still are, fairly ignorant of how a synthesizer works and what it will do. I'm actually setting up a series of "clinics" at the moment, so that people can come along and see a demonstration, and then ask questions and find out all about them. A lot of dealers sell synthesizers, but many of them don't have an idea of how they work. With these clinics, not only keyboard players will be there; they may bring along someone else from their own band or perhaps a girlfriend so we won't get too technical. That's the thing - you get too technical and a lot of people get scared off in a way. They're afraid to ask questions. The whole idea is to educate the audience, but in a straight forward way.

D.R. We've got an awful lot of work to do enlarging the world of synths. As Alan said, education is one of the most important things at the moment. That, and going on to make new things.

A.T. Then again, it's not everybody who wants to take the time out to get into this and to study it. I think that one possible solution, and I don't know if this is practical or possible to develop, but I can see a need for a synthesizer which has the benefits of both preset and variable operation, in as much as the guy who goes out on a gig can preset his own individual sounds, so that he doesn't sound the same as everyone else who has the same synthesizer, and a variable synthesizer. He can go out on stage, press the knob and he's got his own special sound, so that he can do it quickly. Or, if he doesn't want to get into setting up his own sounds, his music dealer could do this for him. That's one step that I'd like to see, which would bring the synthesizer that much nearer a lot more people.

E.P. *Tony, how fast do you think audiences are growing up with the musicians who use synthesizers? Do they know or care what's happening?*

T.Mc. Well, I think presentation is all-important in that area. To me, all music has got to work emotively, no matter what type it is. You can watch people thrusting around a stack of synthesizers onstage - it can look effective. What I really disliked, was the term



*Dave Roberts of Norlin (left) and Allan Townsend of Boosey & Hawkes*

'electronic wizard'. It really screwed me up, because these guys are not electronic wizards. It's this awesomeness that's built up around the synthesizer. In some ways it should be knocked down, and in some ways perhaps it shouldn't.

D.R. You'll find generally an audience will see Keith Emerson or Rick Wakeman surrounded by keyboards and nine times out of ten they'll think "Jesus, look at that lot - they've got to be good!"

E.P. *Are you saying it's easy to impress an audience just by the amount of gear?*

D.R. It's like anything else. It's easy to baffle people with science. But it's all presentation - it's all part of it, like scenery in a theatre. Whether a performer will use every voice on a tab synth or every facility on a modular system is another matter. Whatever, it's still interesting to see people work on synths and work around synths.

E.P. *Adrian, from the sales side, do you find people are generally ignorant of synthesizers when they come into the shop?*

A.L. Well, there is a certain amount of people who are perceptive. They read and they come into the shop to get genned up, and they're usually receptive. Then, there are guys who come in and ask unbelievably silly questions. The thing is, they're not silly questions if you don't know.

A.T. That is it. I think we probably take it for granted. It's not up to us to criticise these guys. It's up to us to help them.

A.L. Exactly. I think dealers could help a lot more than they do. A guy will go in to a shop to look at a synth, and the dealer will literally baffle him with terms like ADSR and VCO's through a voltage-controlled filter and things like this.

T.Mc. It could be broken down so easily. I already had a knowledge of electronics, but it really is very simple. There's the source and the treatment and really you just have to think logically about it. When you look at a synthesizer and you think of the sound you want to get - it's there.

D.R. Interrupting just a second, Tony. You say it's a sound that you want to get, or is it a sound that you come across? Or is it a mixture of the two? Is it more by luck than judgement, or is it a sound that you particularly want?

T.Mc. Well, it's difficult to explain. When you start using ring modulators, your harmonic construction goes haywire. You're not talking about pitch anymore, you're talking about frequencies. You're not talking about the music you know, you're talking about the construction of music you don't know. That's the strange part of synthesizers.

E.P. *What about straightforward preset synthesizers?*

D.R. Well, with these, you appeal to the guy who doesn't want to get too technical. He wants to enlarge the capabilities of his main keyboard. He can buy a reasonably priced synthesizer and add a whole new world of voices, without having to chop his organ in and spend a lot more on an expensive organ.

A.L. I think you've got the best of both worlds with a preset. Especially a preset synth with a filter, because you can get the thing on stage and change sounds with the flick of the switch.

D.R. That's where education comes in again. Once that guy has learnt that synth inside out, then there's room for him to move on. It's easier to explain to him the finer points of something a bit more involved.

*continued on page 92*

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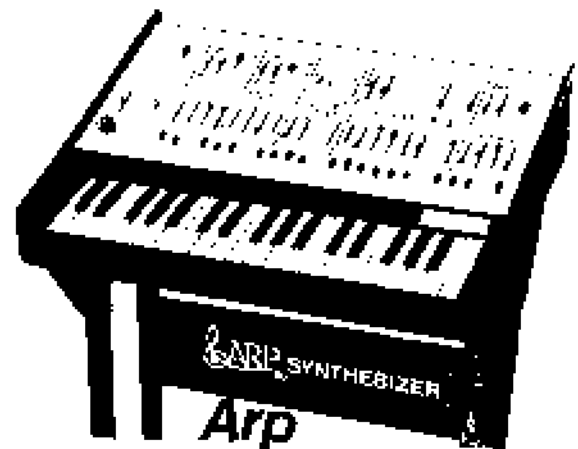
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# ROLAND SH-3A



usual price £400 +VAT  
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### Performance Versatility

The SH-3A is capable of selecting sounds produced at the voltage controlled oscillator, and converting them to one of three wave forms in any of five octaves. An 8' chorus has also been incorporated greatly enriching the quality of produced sounds.

Slide controls are extensively adopted, making for smooth operation. Knobs installed on the ADSR and LFO, etc. have wide ranges of operation, allowing delicate working and diverse sound production.

2 Low-frequency oscillators (0.2 ~ 20 cycles) are provided as LFO with interlockings with Vibrato, Grown and Tremolo clearly set on the panel.

Further, as new functions, Sampler Effect and a Portamento Off Switch have been added to even further increase the versatility of the SH-3A.

44 keys of SH-3A can raise or lower notes by one octave via Transpose switch; depending on the VCO setting, it is possible to cover a 9-1/2 octaves.

Roland's new SH-3A synthesizer is designed for jazz, rock combo and as a keyboard accessory.

Please send details of (tick which)  
ROLAND  MOOG  YAMAHA  ARP   
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# MONITORING: SYNTHESIZERS

from page 89

E.P. *What problems have you come across, Tony?*

T.Mc. Well, I think you've got to draw a very heavy line between live performance and studio work. It's mainly a question of time. I'll talk about the 2600 because that's the one I know and use. It offers you more than the preset models and you can spend time on it and get whatever you want to get.

D.R. I think another interesting point about synthesizer technology is the application to other divisions of the musical industry: the application of the synth to the portable organ; the application to guitar players - a lot of guitarists now are experimenting with guitar and synthesizer combinations. The world of synthesizers can be applied to most forms of music these days, which is the exciting part.

E.P. *Tony, how do you feel about guitar synthesizers?*

T.Mc. The thing is you just use the guitar as the tone source, and then treat that. Like the EMS Hi-Fli - it shouldn't be called a guitar synthesizer. A synthesizer is a treatment - it's all your pedals in one box.

D.R. There isn't, what I would call, any one specific instrument synth. You can use any instrument with a pickup on it to trigger the synth. So it's really not a guitar synth, although people were searching to apply the world of synths to a guitar player because the guitar was possibly the most popular instrument being used.

T.Mc. I personally don't believe there's anything really new under the sun. I think it's just a variation on things that already exist. The thing is, a Hi-Fli is easier to have than six pedals with all the noise they each add to it.

A.T. The factories are wising up to make it easier. The earlier synthesizers tended to be technicians' instruments and studio instruments. The latest updates are more angled towards the musician. I think this is where it's going rather than the boffin angle. Like the Moog ribbon bender - O.K., we've been able to bend notes for a long time on synths but now it's easier. Things like the new 2600 keyboard that has a delayed vibrato which is musically more pleasing, and the interval lapse, whereby playing any interval and pressing a little button, any note you play holds that same interval.

E.P. *What would you like to see happen in the near future?*

D.R. I'd just like to see more people educated into the use of synths. It's got to come, and I think everyone's doing all they can in the form of clinics, in the form of educational programmes and things like this. It's been fairly hard for a lot of the dealers around the country who have to sell directly to the public to accept. A lot of people are very traditional. A lot of keyboard shops who have been used to just selling pianos and organs - obviously it's very difficult for these people to attune themselves to the world of synths. Synthesizers generally are not cheap things to buy - we accept that, but they are being used more and more.



Adrian Lee (background) and Tony McPhee

E.P. *As a player, do you feel you're still learning things about the synthesizer, Tony?*

T.Mc. (pauses) Well, I don't wish to appear big-headed but I think I could go up to any synthesizer and, apart from any minor gadgets, I think I could work it because it is so basically simple.

D.R. We probably underestimate people's abilities to grasp what's going on, from what you're saying, Tony. As you say, it isn't very difficult but I think from the term "synthesizer" right the way up to the application of the various controls - this is where it gets difficult. I still think it's educating people into that.

T.Mc. Yes, it's a bit like when you walk into a telephone exchange. But, basically the bigger synthesizers have just got more of what the little ones have. It all depends on how you use it. It got so pissed off with trying to get a decent bass drum sound and a decent snare drum sound, I went to the synthesizer and got the perfect bass drum sound and the perfect snare drum sound. The bass drum sound was easy, but the snare drum was a bit more difficult, because there's a lot more involved.

E.P. *Do you think the synthesizer will ever replace standard instruments like guitar or drums?*

A.T. I don't think synthesizers are intended to replace any particular instrument. It's just something that can enhance a standard sound.

A.L. What about string synths? People are going into studios and using a string machine instead of the Philharmonic. They just plug it in and off they go.

A.T. Yes but did they actually use the Philharmonic before, or did they just do without the sound?

A.L. Well, the fact is that a lot of people *did* use orchestras or string sections, but they

don't have to now. The string synths are featured on a lot of Top Twenty records.

D.R. I personally don't think it will replace string sections as such.

T.Mc. No. Live strings have got a certain ambience.

D.R. It's like automatic percussion - that is never going to replace a drum. You've got the rhythm thing going behind you but there's no feel.

E.P. *Dave and Tony, you're both guitarists. With all the latest developments in synthesizer technology, will they ever replace the guitar?*

T.Mc. No, no.

D.R. I'll tell you what - on the Moog synths, you've got a ribbon controller. You can get a note and bend it up, and when you take your finger off the ribbon, you come down to the original note. You can bend it, drop it or whatever. Now, it's going to be a keyboard player who uses it, not a guitar player. I heard a demonstration disc that we did and there's a guy playing a synth on there and using a ribbon or something similar and it's almost a guitar sound, but remember it's a keyboard player playing it. But then again, we're talking about one particular guitar style - the bluesy, bending thing. What about a country picker or something like that?

A.L. Until you get poly-Moogs with about a million ribbon controls!

D.R. Well, getting back to that, I think it's a thing that we'll see this year. It's a culmination. It's the next step - the next natural step, because everybody says 'Well, what about a polyphonic synthesizer?' We've all had that thrown at us. I think it'll be a sort of natural progression in the world of synths. Where it's going to go is going to be very interesting - to see how it will emerge and to see what new things are going to be done with them.



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# HOME RECORDING

## TECHNIQUE

Home recording has spelled the end for many small demo studios. Technology has benefited man by giving him cheap, miniature electronic packs that can be stitched together to make T.V.'s, video machines, amplifiers, organs or tape recorders. The end result is that for around £150, the musician can record himself at home with acceptable results.

Getting the best from this equipment in domestic surroundings takes a few hundred hours of trial and error. Here we hope to pass on techniques discovered by others and instantly improve home demo quality.

Elsewhere in this Home Recording feature, there's a list of tape machines—all capable of producing recordings of acceptable quality. There's no way of avoiding this expense.

You don't necessarily need good monitor speakers, although they help; you don't need a powerful replay amp. After the machine, the most important item is definitely the microphone. Shure stage mikes usually operate well in a recording role. Don't try and use a cheap mike; skimp in this area and the whole thing's ruined.

A small mixer is next on the list but the big problem here is noise. High frequency hiss is the greatest single problem in domestic recordings. Cheap equipment can often produce intrusive hiss above 8 or 9 kc and, although the recordist is happy to overlook this during the honeymoon period, it always turns out to be the final criterion by which demo quality is judged. The quality of recorded sound can often depend on the engineer, but there's little he can do to eliminate a hiss produced in the recording chain.

Allen and Heath produce a good quality small mixer that is reasonably quiet, and we recently discovered that a stage mixer by MM Electronics has signal-to-noise figures good enough for demo recording. A minimum figure for signal-to-noise for a recording mixer would be -90dB and it's not hard to find small mixers with a better specification than this. In general, avoid small mixers made for stage use. With certain exceptions, like the one mentioned above, these units are built with considerations other than component noise in mind and, in a recording application, the user will quickly tire of fighting gain levels to cover high frequency hiss.

Experiment with the tape machine. On many, the VU meters are only a guide to signal strength and slavish attempts to keep the needle out of the red

will only result in a low signal on tape and subsequent hiss intrusion. The needle on the VU meters must have an average position just short of the red section and sudden transient jerks into the red are best ignored. In a professional set up, limiting systems deliberately control the dynamic range of incoming signals until a relatively narrow dynamic band width is achieved but, at home, peaks can be ignored up to a certain point.

If you've got even a mediocre stereo system, use the amp and speakers to listen carefully to the signal you've put on tape. Raise the recording level until you can hear distortion creeping in, and with a few trial runs, you can arrive at an average VU indication for maximum signal without intrusive distortion. If your set-up is a little hiss-heavy, you might prefer to get maximum signal even if it means minute distortion rather than lower the level and let the hiss in.

Close miking is the only technique that will work in domestic recording. One of the major problems is surrounding acoustics and obviously the "deader" the better. All the obvious dodges like draping blankets over clothes horses to make separation booths are marginally helpful, and do try to record in a carpeted room. The closer you get with the mike, the less the external acoustics will worry you, but the sound tends to become more unnatural. If you are prepared to take time, try recording in different parts of the room on consecutive tape sections and then run through, listen to the selection and decide which mike placing sounds the best.

Patience is a greater virtue than technical skill in achieving good recordings with domestic and semi-professional machines. Only repeated recordings of the same track will result in good-quality work and there is always the danger of getting a mechanical performance.

Most domestic demos are recorded on stereo machines. This means that if more than four instruments (count voice as an instrument) require recording by an individual, a degree of sound quality will be lost. For example, guitar and voice can be laid on track one, provided some system of mixing the two signals is available. If only another couple of tracks are required, they may be recorded directly onto track two and the inter-track balance adjusted on the stereo playback amplifier. If still further overdubbing is required, the second set of instruments should be recorded onto track two with a copy of the first recording from

track one. At the end of the process, track one has the now redundant initial recording and track two has the initial recording plus the two new instruments. Obviously, at this stage, a mixer becomes really important, although some tape decks do have a control which governs the line input volume as well as the microphone input mixing.

This means that on track two the mic input can accept the two new signals and the line input (which has an independent volume control allowing the first recording to be mixed with the new signal entering the mic input) can receive the signal from track one.

Using this method, several overdubs can be built up, although as each one of the tracks is copied onto the other, some quality and signal strength is lost. After two or three "bounces", this leads to a fuzzy and hiss-laden sound.

A reasonably good mixer does help with this problem and obviously, equalisation facilities (which assist in eliminating top-end hiss) are a great advantage.

Until 1968, four-track recording of records had been the peak for professional studios for a few years and *Sergeant Pepper* was recorded four-track. In the last couple of years, a few machines designed for semi-professional use have been marketed. The Teac 4-track leads this field, and this machine is now in common use in small home studios. The Dokorder is a similar machine but a little cheaper, and follows hard on the Teac's heels. The obvious advantage of these machines is that four tracks can be recorded independently and then mixed over and over again, until the engineer is happy with the balance.

A particular advantage is that when three tracks are full, two tracks can be mixed down onto the vacant track, leaving two tracks free again. This process can not be repeated indefinitely, but a couple of "generations" will not do any serious harm to the sound quality, provided care is taken to get the maximum signal onto each track.

In subsequent articles on recording, both two and four track recording techniques will be discussed in more depth. Your enquiries regarding home recording are invited and should be sent to the Editor.

### Home Recording List of suggested equipment

Tape Decks (see overleaf)

#### Mixers

Allen & Heath  
Alice  
Audio Developments  
MM Electronics

## MACHINE

### Dokorder 8140

2/4 Channel tape deck.

Price £389 + VAT 25%



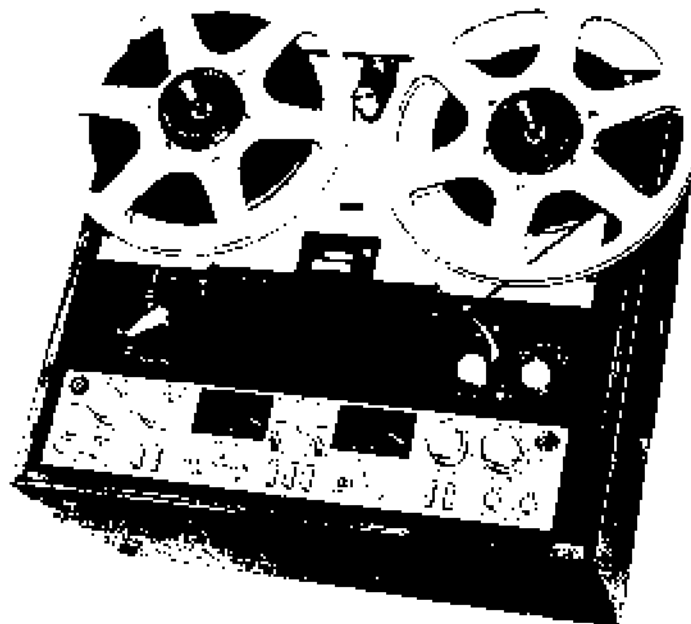
The Dokorder 8140 is an extremely versatile machine for a (comparatively) low price. It can be used for making discrete four-channel recordings or playing back pre-recorded quadrophonic tapes. With a flick of the "mode" switch, it is instantly converted for straight forward two-channel stereo recording and playback. Within the context of this feature, we looked at the 8140's capabilities for four-channel recording.

The obvious advantage over a normal stereo machine is that, with the 8140's Multi-Sync function, you can overdub tracks individually and in perfect sync with each other. If one of the initial four tracks needs to be re-recorded, the other three remain unaltered.

In addition to this, there is a Sound-On-Sound switch so tracks can be "bounced", effectively expanding the number of tracks beyond the basic four, and eliminating the need for external "patching". Situated beside the S.O.S. switch is an echo control to enhance acoustical reverb. The tape heads incorporate molybdenum permalloy cores making them reputedly more wear-resistant than ferrite heads. The tape transport section is solenoid-operated and is therefore extremely smooth-handling.

There is also a pause switch which locks the machine in record mode for accurate editing. When the 8140 is used as a "home studio", this facility is very useful when you start recording as it eliminates the need to press the Record and Play buttons simultaneously. The Monitor section has four push-buttons (Front Right and Left, Back Right and Left) for tape/source listening, enabling you to compare any or all channels during recording.

Naturally, there are separate playback controls for each channel (both mic and line) and mic and line Record level controls for each channel. Signal to noise ratio figures are good (better than 58dB) while wow and flutter figures are less than 0.07% at 7½ inches per second. The actual four channel operation is quite simple—plug a microphone into the Front Left channel and record, wind the tape back and, while monitoring the Front Left, record on the Front Right channel. This procedure is



## Ferrograph's 10½" Reel Recorder Super Seven

Super Seven recorders are developed from the Series 7, which they replace, and amongst many important innovations is the capacity for taking 10½-inch professional spools. Designed and manufactured in Britain, these advanced stereo machines have a range of facilities which will appeal to the professional user and to the serious home recordist.

Sixteen versions are available to suit particular requirements: half or quarter track; 15, 7½ and 3¾, or 7½, 3¾ and 1⅞ in./sec; with or without power amplifiers and double loudspeakers; with or without Dolby noise-reducing circuits.

Full technical details are in a colour brochure, available on request. Meanwhile, here are some salient facts.

All spool sizes up to 10½"  
3 heads, 3 speeds.  
½" tape, half or quarter track.  
Option of Dolby B on both record and replay.  
Large illuminated VU meters read input, output and bias.  
A-B comparison switch for each channel separately.  
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Mic and line mixing on both channels.  
Low level, 600 ohm and headphone outlets.  
Individual track selection.  
0.1 second start; can be remote controlled.  
Electrical tape tensioning.  
Continuously variable spooling speed.  
Voice operated switch optional extra.  
Wow and flutter: less than .08% peak-peak at 7½ in/s.  
Frequency response: 7½ in/s, 30-17,000 Hz +2dB.  
Maximum output per channel: 10 Watts RMS into 8-16 ohm loudspeaker.  
Amplifier distortion: less than 0.25% RMS at all levels up to 10 Watts.  
Signal to noise ratio: unweighted including hum, better than 60dB (ref 2% distortion).  
Bass Control: continuously variable up to ±15dB at 50Hz, +20dB at 20Hz.  
Treble Control: continuously variable up to +10dB at 10kHz, -15dB at 20kHz.

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requested through the Gate List and higher volume using the telephone handset will all four channels and for

If after receiving four separate checks on all four channels, you still want to add a couple of more, this can be done effectively by using the Navigation Sound switch. The advantage of this is constant using the S.C.T. facility, a head record could be checked without any non-normal playback and three tape taking a step further, you can play or sing at four tape parts without adding four more tapes or less.

When buying the 7502, I've noted a slight error on the front face & front left channel has no tape wound and this might also occur on one hand (back left) and then double record & play over the 5.7.5 speed, and also occur on the fourth (back right) all came out normal and were then checked. When onto a Sony 757 Super tape deck. This of course is an economy one more than adequate.

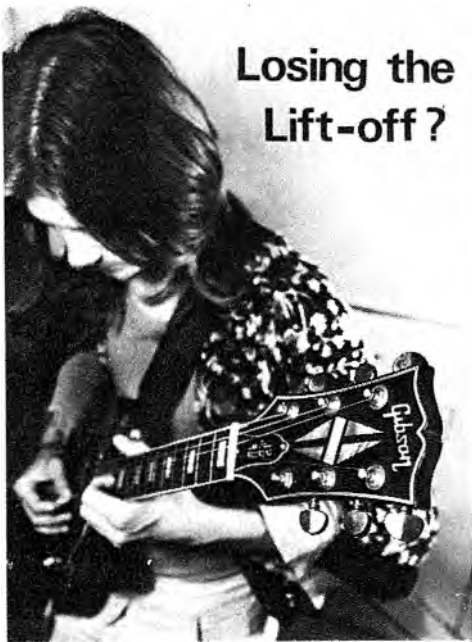
In the case of economy, say a four-speed deck, the headphones are enough to check tapes and a direct mixer, the four channels could be very economically used in a recording studio or for a job and not a very satisfactory one, but could be easily obtained. There are only two obvious limitations to the 7502. The reel capacity is 7" and the tape speed is 3 i.p.s. and 7.5 i.p.s. so a 7.5 speed or a tape recorded at 15 i.p.s. could not be played on the machine. However, the 7502 will accept a tape with a reel capacity of 7.5" and a tape speed of 15 i.p.s. At the time of going to press, however, no price had been set for the machine.

All in all, we found the 7502 a bit of a very good machine at a very realistic price. It is also one of the best machines we have seen. However, the Dolby noise reduction system of the 7502 and speed of 7.5 i.p.s. V.T. It has a plastic rubber shoe which feet and slightly different feet, but not necessarily in a conventional

MODEL	PRICE(EX VAT)	TAPE SPEEDS			REEL SIZE		RECORDING SYSTEM		AUTOMATIC SOUND-ON-SOUND	FREQUENCY RESPONSE(Hz)	SIGNAL TO NOISE	NO.OF HEADS	DOLBY SYSTEM	COMMENTS
		3%	7%	15	7"	10 1/2"	2-channel	4-channel						
AKAI 1722L	£151.92	✓	✓		✓		✓			30-21,000	50dB	2		Includes amp and speakers.
AKAI 4000DS MkII	£138.00	✓	✓		✓		✓		✓	30-23,000	56dB	3		
AKAI 4000DB	£196.40	✓	✓		✓		✓		✓	30-23,000	55dB	3	✓	
FERROGRAPH 7502*	£360.00	✓	✓		✓	✓	✓		✓	30-17,000	60dB	2		Very nice machine
TEAC A-3340S	£598.00		✓	✓	✓	✓	✓	✓		25-22,000	55dB	3		Superb
SONY TC377	£143.96	✓	✓		✓		✓			30-25,000	55dB	3		See review
SONY TC645	£212.92	✓	✓		✓		✓			30-26,000	56dB	3		
SONY TC756-2	£333.29		✓	✓	✓	✓	✓			30-25,000	59dB	3		
PHILIPS N4419	£312.00	✓	✓		✓		✓			40-25,000	50dB	3		3 Motors
PHILIPS N4415	£189.00	✓	✓		✓		✓			40-22,000	48dB	2		Domestic in design.
PHILIPS N4502	£180.00	✓	✓		✓		✓			40-22,000	48dB	2		
GRUNDIG TK545	£140.00	✓	✓		✓		✓			40-18,000	54dB	3		Domestic in design.
GRUNDIG TK745	£169.60	✓	✓		✓		✓		✓	40-18,000	54dB	3		Odd styling.
TANDBERG 10XD	£556.00	✓	✓	✓	✓	✓	✓		✓	30-26,000	72dB	4	✓	Very good spec.
TANDBERG 9100X	£330.00	✓	✓		✓		✓		✓	30-26,000	64dB	4	✓	
DOKORDER 8140	£389.00	✓	✓		✓		✓	✓		25-26,000	58dB	4		See review
DOKORDER 7140	£349.00	✓	✓		✓		✓	✓	✓	25-25,000	58dB	3		"Economy" version of the 8140.
REVOX 1102 †	£369.00	✓	✓		✓	✓	✓			30-20,000	66dB	3		These are the two standard models other permutations are available
REVOX H-1102 †	£409.00		✓	✓	✓	✓	✓			30-20,000	66dB	3		
BRENELL Mk6	£350.00	✓	✓	✓	✓		✓			40-20,000	56dB	3		

\* As well as the standard 7503. The Ferrograph series 75 "Super Seven" range also includes versions with Dolby, 15 i.p.s. speed or both.

† These are the two standard models - other versions are available with 15 i.p.s., Dolby, amplifier etc.

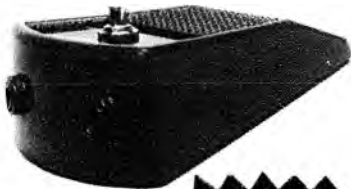


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Every lead guitarist knows the problem, however good your equipment you can still be defeated by the acoustics. Bad acoustics or the need to keep the volume down can prevent you from getting the sound you want, losing the bite and the ability to get the high notes lifting off into harmonics.

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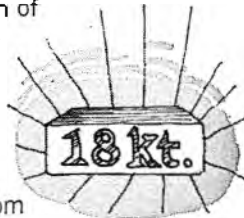
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# THE GOLD-PLATED RELIABILITY FACTOR

In this age of planned obsolescence, unreliable performance and shoddy workmanship are almost taken for granted. But there are still a few exceptional products that are built to last and one of them is the Revox tape recorder.

Revox dependability is a combination of many factors, but perhaps the most important of them is advanced engineering.



Borrowing from space age technology, Revox gold-plates all of the electrical contacts on its plug-in circuit boards, relays and rotary switches. The result: every one of these movable contacts, the ones that usually cause most of the problems, can be depended upon to perform well for the life of the machine. Obviously, gold plating is considerably more expensive than conventional tinning, but Revox thinks it's worth it.

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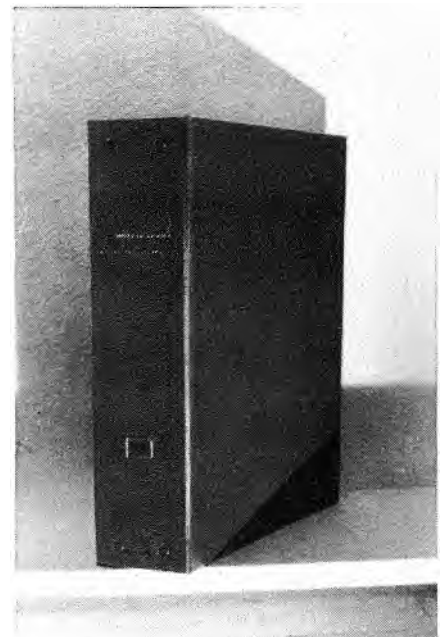
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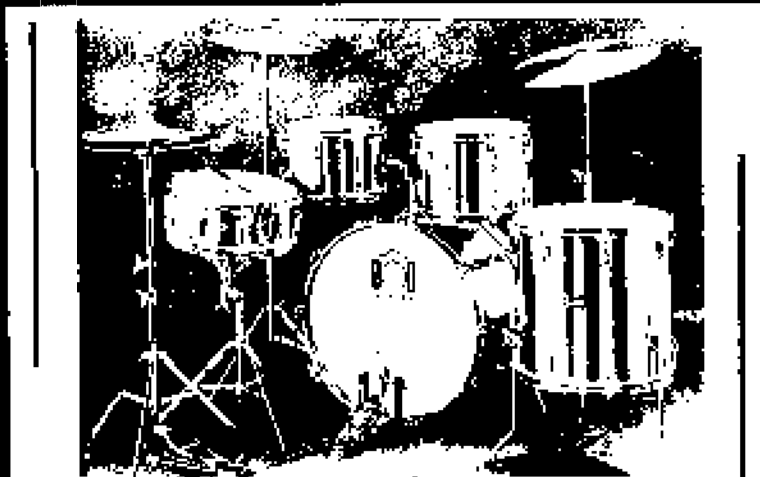
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Modular system consoles built to no compromise recording and broadcast standards.

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# MIXER SURVEY

## Acoustic

Well known for their amplifiers in this country and the States, Acoustic also offer a number of mixers. The 850 boasts eight channels, each with variable volume, treble, bass and reverb, and master VU meters, volume reverb and bright switch. The 870 P.A. mixer offers six channels with individual LED overload indicators, and an in/out stand-by switch. A five section graphic Eq is provided in the master controls.

The 889 is a 12 into 3 portable mixer, with an aim toward incorporating the features necessary for live mixdown in sound reinforcement. It includes individual pan controls on each line channel, and the monitor output is split for main monitor and sub monitor signals.

Top of the range is Acoustic's 890 mixing console, which combines the portability needed for live use with studio quality. The components are arranged for relatively simple operation, and it boasts 16 inputs, 3 outputs, graphic Eq, cue controls, stereo output, and LED's.

## Acoustic Research

Acoustic Research handle Teac and Tascam equipment in the U.K., and they market a 6/4 mixer here, ideally designed for use with the Teac W3240S recorder. This is based on the professional range, and boasts four button channel assignment switching for panning, filtering at 100 and 200Hz, a high cut filter at 500Hz, mic/line attenuation, a bus input facility for linking up a second mixer.

Although the current model doesn't offer VU meters, there are plans afoot to include VU's in the near future.

## Allen and Heath

Covering all areas of the mixer market, Allen and Heath offer a complete range of mixing consoles, from a six-channel stereo to a 24-channel multi-group mixer.

The Quasi range are low cost and semi-modular, with high or low inputs terminated on XLR connectors, and boast three-band equalisation, echo, foldback, pan and equalised line returns.

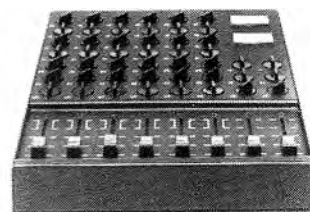
The Minimix system is a comprehensive range of units which interconnect to allow a versatile mixing system. The Minimixer is a six channel stereo unit, and its facilities include three-band equalisation, echo, foldback, pan and two equalised line returns.

The Pop mixer is a 16-channel, stereo modular P.A. console, available in any configuration, and is adaptable to any P.A. system. Its facilities include three band Eq, two stage monitor outputs, echo, pan, solo, and headphone monitoring.

The Mod II mixer is designed to fulfil all the functions of a multi-channel recording studio. It boasts 24 inputs, eight outputs and 16 monitor returns, full synch

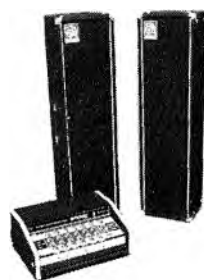


Amek 15/4/2



Allen and Heath Minimixer

Ampeg SR6 system



facilities plus comprehensive equalisation on all channels, three auxiliary outputs, and panning on all inputs.

## Amek

The Amek X series is designed to meet the need for a high quality, comprehensive mixing facility in instances where economy is an important factor. Semi-modular in construction, the input channels are in blocks of four and the outputs in groups of two. The modules are removable, and include input, echo and monitor, stereo output group, and power supply unit. Controls available on the X1001 channel input module include gain, equalisation, treble, presence, bass, auxiliary foldback send level control, pre-fader, echo send level control and post fader, and standard four output routing switchable to either output groups one and two or three and four.

The number of channels available range from four to 24, into either two or four outputs, and it is possible to provide subgroups into the outputs.

The Amek S/M series is designed for multi-track recording work where ultra-high quality is the principle consideration, although output modules are available for live performance mixing. The S1001 microphone input channel module boasts Switchcraft XLR inputs, mic amp with a rotary (continuous) gain of 60dB, equalisation in/out switch by rotary control, two echo send and two foldback level controls, routing via pan pot with thumb-wheel switches—two on each channel—and Audiofader channel output fader. In P.A. applications, it is possible to route the channels to subgroups as required. The M2001 mic input channel module is similar, but offers a more extensive Eq facility.

## Ampeg

Marketed in the U.K. by Boosey & Hawkes, Ampeg amplification

Canary 10/4 console



includes the SR6 sound reinforcement system. The front panel offers six inputs with individual channel bass and treble controls featuring numerically graduated volume and reverb controls. The master control is also numerically graduated.

## Canary

The Canary 'B' range of mixers come in three stock sizes: 12, 15 and 18 channels. These are all designed to be used with P.A. systems. The main features available are VU meters on each channel and a headphone monitor. They are all self powered. Three band tone controls offer adequate changes to enhance any input, while the 18 channel mixer has tone controls on the foldback.

The 12 and 15 channel models are fitted with internal reverb with echo sends on each channel and a master echo return. The newest model in the Canary stable is the 10/4 mini studio mixer available in early April. This offers 10 inputs, high and low impedance, three band tone controls, input gain control, foldback and echo sends, channel routing switch, PFL button, pan fader and channel fader. Monitoring is done through a switch with access to all four outputs, foldback, PFL and echo return. Four large VU meters are fitted and an external power supply is included. Each mixer has a sub-mixer socket to expand it to 20/4 by adding a ten channel sub.

## Davoli

The Clubman 50 from Davoli offers six channels with separate controls on each for treble, bass, reverb, gain and slider volume. It has a "Hammond long type" electronic reverb unit and master volume and equalisation, and is designed for small groups with limited transport facilities.

The Mixer 6 has six channels with 12 inputs, and individual

controls on volume, treble, bass and echo control, with separate facilities for echo, halo and reverb.

The Stereo Mixer F has 12 channels with five outputs, individual controls for sensitivity, treble, bass, echo and volume, two independent output channels for stereo connections, four master volume controls (2 master A and 2 master B) and separate echo controls for both master groupings.

The Mixer 12/5 is top of the Davoli range, with 12 channels, 16 inputs, four master outputs, two monitor outputs, a headphone output, individual treble, bass, presence, and reverb level, as well as two master switches, balance control and a slider volume control. It also features four slider output level controls and VU meter overload indicators.

## E.S.E (Binson)

E.S.E. of Maidstone market the Italian-made Binson range of mixers. They range from six to 16 channel mono models, all of which include built-in echo, switched impedance selectors, treble, volume and bass control on each channel, and separate echo on each channel.

Some of the models come with built-in 100 or 200 watt amplifiers, and the price range rises from £800 to £1,235.

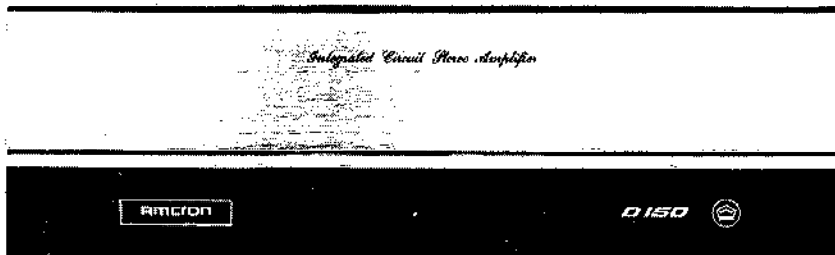
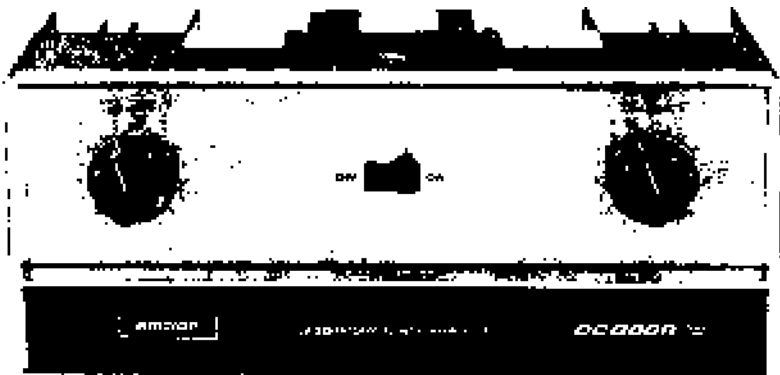
## Hill

Hill offer four series of standard production modular consoles. The standard channel module offers continuously variable gain control, treble, presence, middle, bass, foldback, auxiliary send, echo, stereo panoramic control, a three position toggle switch controlling channel mute, channel on and pre fade level, and a master fader.

The A series output groups have their own individual output module fitted with the standard four-band equalisation, P.F.L. switch and fader. It is possible at a later date to upgrade the A series consoles to the standards of the B series, by adding channel meter modules and XLR connectors.

The C series is orientated towards recording, adding a mic/line level select switch on each input channel. The D series is especially designed for sophisticated P.A. applications, and, while based on the circuitry of the A, B, and C series, also incorporates Hi and Lo pass filters, three frequency band selection on the presence control, two post-fade sends, four output channels, fed from the input channels via four centre off switches, and 100 mm wire wound professional faders.

Hill also do a range of non-modular mixers, which are portable and designed to combine simplicity with reliable economy.



## Invest wisely in Amcron

Insist on buying outmoded 100 watt slaves and you're taking a chance of throwing away at least £200 when the band's success demands more sophisticated amplification.

Invest your money wisely — with an Amcron amp, you won't have to go to the bank when your band takes off.

*The M600*, While maintaining the exact performance standards of the DC300A produces 750 watts (monaural) into an 8 ohm load, and 1350 watts into a 4 ohm load. Built for durability and trouble-free operation, the M600 includes built-in cooling which permits continuous full power operation. R.M.S. Power Response +1, -0dB DC -20 KHz at 600 W into 8  $\Omega$  +1, -0dB DC -15KHz at 1 KW into 4  $\Omega$  Hum and noise (20Hz to 20 KHz) 120 dB below 600 W into 8  $\Omega$  Typ.

*The New DC300A* will give up to 500 watts from one channel; with distortion lower than 0.05%. Hum and noise is below 110dB below 150 watts, and the DC300A is now able to operate into loads as low as 1 ohm. Power Response +1dB, -0db DC - 20 KHz @ 150 watts into 8  $\Omega$

*The new D150* offers up to 180 watts from each channel or 330 watts as a mono amplifier. Again very low distortion and rugged construction make the D150 ideal for smaller PAs and fold back systems. The Power Response of the new D150 extends from DC to 20 KHz.

*The VFX-2* provides continuously variable filters which can be used to perform either crossover or band pass functions. The dual channel unit employs two filters per channel, each continuously variable from 20 Hz to 20 KHz. Filter rolloff is at a fixed 18 dB/octave.

Setting both low and high pass filters in one channel to a common frequency provides a two-way crossover at that frequency.

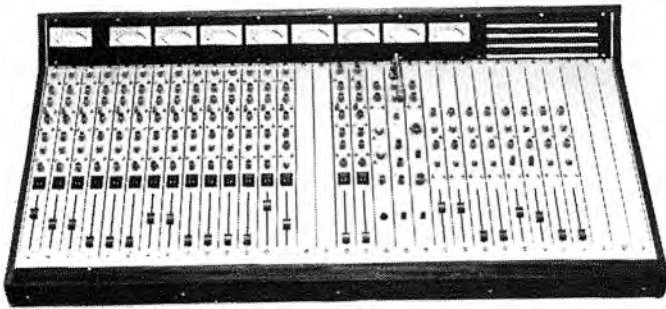


For full details contact

# AMCRON

Sole Agents:  
MACINNES LABORATORIES LTD.  
Macinnes House,  
Carlton Park Industrial Estate,  
Saxmundham, Suffolk, IP17 2NL,  
Tel. Saxmundham 2262 2616

Midas 8-track mixer



**ITA**

Industrial Tape Applications make a 10 into four mixer which is equally suited for the accomplished mixing engineer or the progressive musician. It features bass, middle and treble equalizers, echo send, foldback, channel faders, four limiters, four volume controls for the monitors, echo return and input and output sockets, conveniently located on the rearward sloping back panel.

Modular in construction, the estimated replacement time of any channel, group or power supply is less than 20 seconds.

**Kelsey**

Kelsey Acoustics have just finished the first model in their new MK III, series 2 range of

mixers. The new model offers 24 channels, with 20 mic channels and four return channels. These are in turn switchable into four sub groups, or straight into the master, allowing six mixing channels. The series two offers three band equalisation (switchable), faders with 18dB cut and lift, quad switching — into one of five quad pan pots, and then into four quad outputs. In addition, each mic channel has two auxiliary sends, switchable to four positions each. Each mic module has stereo pan pots.

Kelsey specialise in custom jobs, and they also offer a 12 channel monitor mixer.

**Macinnes**

Macinnes have recently entered

the Mixer market with two flight case type mixers, a 16/2 and a 16/4. Macinnes claim that the mixers offer most of the facilities absent in comparable units. They boast mic/line switching, two echo sends, two foldbacks, HF lift and cut, pre-fade listen, panning and routing.

The mixer, prices include a multi-core cord which maintains its flexibility at 0 degrees centigrade, and they are fitted with four Canon in-puts. The Macinnes mixers are designed to work with Amcron power amplifiers and the proven VFX-2 dual channel crossover/filter, as well as any comparable high quality equipment.

**Midas**

Midas produce three main ranges of modular system mixers to cover the specific requirements of broadcast, recording and sound reinforcement applications.

The approach adopted is to design a basic mixer of full recording specification with a versatile range of modules covering applications ranging from classical music recording to live sound reinforcement. This is the portable range system and has bass, presence and treble equalisers with switched presence frequencies and a bass cut (high pass) filter

of 18db/8ve slope. Penny and Giles faders type 1820 and bell standard VU meters are fitted as standard. PPM meters to BBC specification, LED level indicators, and a precision crossover and limiter module are available as standard options.

The studio range modular system offers modules incorporating parametric equalisers, 8 or 16 track routing, conductive plastic track faders (Penny and Giles type 1520) and full monitoring facilities. The state of the art specification, the ergonomic and compact format, excellent component specification and craftsmanship, and the sensible cost appeals to many discerning organisations including Angus McKenzie facilities, Bob Auger Associates and the Norwegian Opera Company.

The most elaborate recording productions may be achieved with the Midas comprehensive studio range modular system. 16 track consoles are operational at T.P.A. recording (London) and Pepper Recording (Australia). On order for Relight Productions (Holland) is a 32 input 24 group output console with dual parametric equalisers on all input channels, shadow light button routing, quadrophonic mix-down and comprehensive monitoring facilities.

continued on page 105

**THE SENSATIONAL NEW**

# CANARY 10/4 Mini Studio Mixer

269A Haydons Road, Wimbledon, London SW19  
England Telephone 01 947 0677

**INPUTS**  
MIC, 200 ohms balanced  
Sensitivity — 39 dBm  
ECHO, 600 ohms unbalanced  
Sensitivity — 20 dBm

**OUTPUTS**  
4 LINES & FOLDBACK  
+ 10 dBm at 600 ohms balanced and unbalanced  
ECHO, + 2 dBm at 600 ohms unbalanced

**SIGNAL TO NOISE**  
— 79 dBm (below zero level)  
equivalent input noise — 120 dBm

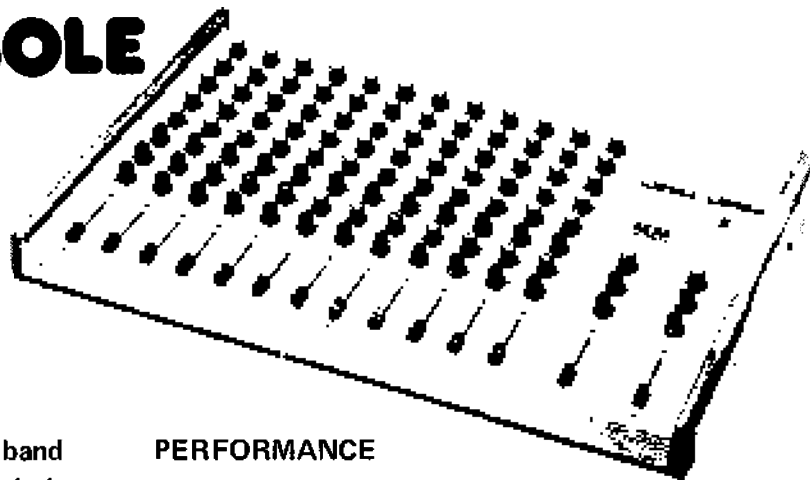
**DISTORTION**  
0.07% at 500 Hz

**TONES CONTROLS**  
(Channel & Master Foldback)  
TREBLE ±12 dB at 10 kHz  
MIDDLE ±7 dB at 500 Hz  
BASS ±12 dB at 30 Hz

**MAXIMUM GAIN**  
60 dB

**TERMINATIONS**  
JACKS

# 12 CHANNEL STEREO MIXING CONSOLE



The MM Electronics MP175 with 4 band equalisation giving 12 DB cut and boost at frequencies: 100 Hz; 600Hz; 2 kHz and 10 kHz.

Continuously variable pre-fade foldback and post fade echo.

Stereo headphone amp incorporating VU metering.

## 12 CHANNEL EXPORT MODEL

Flight case mounted, 12 channel stereo Mixer.

### Featuring:

Standard input/output XLR sockets.

Black facier with white lettering.

White 'C.P. Case' type flight case, with black trimmings. Internal regulated power supply with Toroidal mains transformers, thereby alleviating any mains pick-up problems.

### PERFORMANCE

Noise reference to input — 123 dBm

Hum ref input (with internal power supply) —122 dBm

Distortion better than .05% typically .01%

Overhead level at 22 dBm all outputs buffered

£250 Retail

We are announcing a new super

## 16 CHANNEL MIXING CONSOLE

In the Low Cost range of Mixers.

Featuring on each input channel:

4 band equalisation

Foldback & echo.

Pre-fade listen & peak programme indicator

7 way Graphic Equalisation on each output.

2 way Electronic Crossovers & Stereo Headphones. Monitors switchable between the main output & pre-fade listen bus.

Connectors: Jack sockets standard with optional XLR. The unit is fitted with a sophisticated power supply, giving a performance above that of the majority of Studio Equipment.

*8 channel Stereo Mixer 16 channel Stereo Mixer 12 channel Stereo Mixer  
These stereo mixers are on similar lines to MP 175 12 channel.*

Currently provisions are being made to manufacture Graphic Equalisers, Guitar Amps and Combos. Details will be released in the near future.

For further details contact TONY GIPP  
(0223) 66559.

# MM ELECTRONICS

French's Mill, French's Road, Cambridge (0223) 66559





MM 12-channel stereo mixer

**MM Electronics (PA:CE)**

MM Electronics market two basic mixers. The 6 channel mixer amp (WA600/2), offers inputs with six separate, individually mixed channels, and an output of 150 watts RMS. The channels boast individual treble, middle, bass and echo send controls, in addition to master echo return and fader controls.

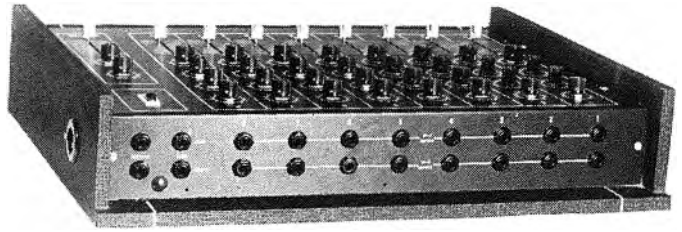
The rear panel includes six jack inputs with individual hi/lo sensitivity switches, two speaker jacks, one echo send and one echo return socket, one slave and one monitor jack, and two heat sinks.

The 12 channel stereo mixing console (reviewed in I.M., December, 1975) offers 12 mixing channels of semi-modular construction with high and low impedance switching, channel gain control, four band equalisation, foldback, echo, pan and channel faders. The master output groups incorporate a fader, stereo headphone monitor, fold-back volume, echo send with volume control and analogue V.U. meters.

**Orange**

Orange Musical Instruments do two basic mixers. The six channel professional mixer is compact and

Roost SSR8 mixer



easy to use, boasting an input attenuator, gain, bass, middle and treble controls on each channel. The overall sound is governed by a master volume, bass and treble control, and there are outputs for either slave or tape recorders. The rear of the unit boasts a jack socket to allow linkage with another six channel mixer, totalling 12 channels.

The 15 channel stereo mixer offers individual channel controls, twin inputs per channel, stereo pan pots, echo send control, internal reverb, treble, middle and bass controls, a foldback and monitor control, pre-fade selector, input gain control, channel faders, and stereo line, monitor and return faders.

**Peavey**

The 800 mixer from Peavey is a portable eight channel mixer designed for sound contractors and

travelling groups. Each channel features variable negative feedback, and low and high equalisation, and monitor send control. Master controls include high, middle and low equalisation, and effects/reverb send.

The 1200 offers 12 channels with line or mic input capabilities on each channel. The monitor, reverb and effects send controls have pre and post capability, and there is an individual stereo pan control. The master section of the 1200 features slide level controls for left and right mains and monitor as well as low, mid and high equalisation, level, return and pan control.

Peavey also market the PA 400, PA 600 and PA 900 mixer amplifiers, which offer individual volume and reverb, bass, treble and effects giving, and master volume, reverb, bass, middle, treble, and effects for optimum balance of the entire system.

continued on page 106

# pop ~ mixer

**16 CHANNEL STEREO PA MIXER**

**INPUT CHANNEL:**

Gain control, treble middle bass, monitor 1 and 2, echo, pan, solo, slider fader.

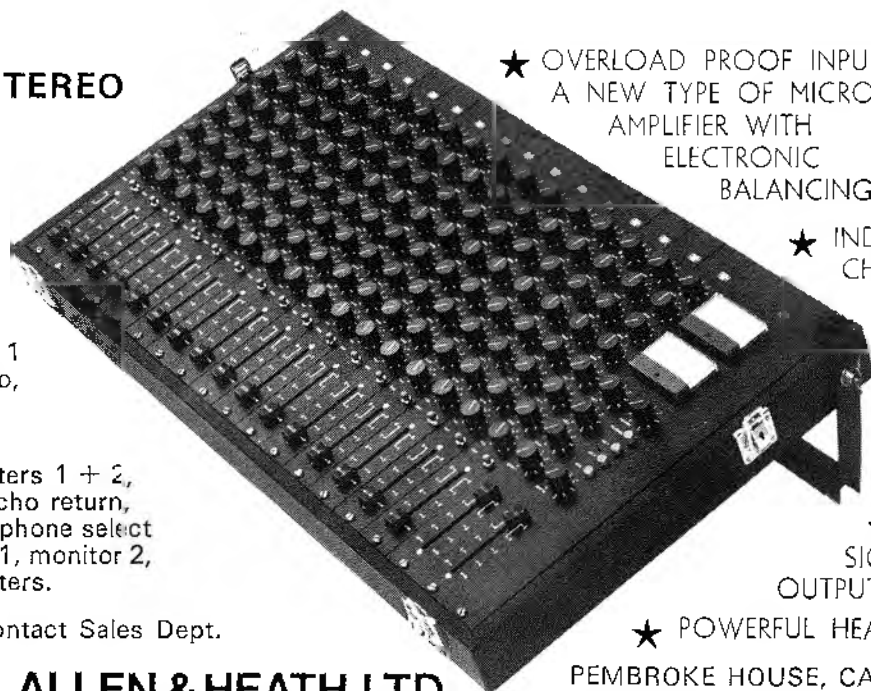
**OUTPUT CHANNEL:**

Stage monitors, masters 1 + 2, echo master send, echo return, headphone gain, headphone select to talk back, monitor 1, monitor 2, solo, stereo, VU meters.

For further details contact Sales Dept.



**ALLEN & HEATH LTD**



★ OVERLOAD PROOF INPUTS FEATURING A NEW TYPE OF MICROPHONE AMPLIFIER WITH ELECTRONIC BALANCING

★ INDIVIDUAL CHANNEL MONITORING AND METERING

★ TWO SEPARATE CUE OR STAGE MONITOR CIRCUITS

★ HIGH LEVEL SIGNAL ON ALL OUTPUTS

★ POWERFUL HEADPHONE AMP

PEMBROKE HOUSE, CAMPSBOURNE ROAD, HORNSEY, LONDON, N.8. Tel. No. 340-3291.

**R.S.E.**

Midland Sound, Ltd. of Rugby now handle the R.S.E. range of mixers. The smaller of these systems incorporates 10, 15 or 20 channel input desks, of exceptional quality for desks of their price range, and are considered part of a relatively high quality sound system incorporating three-way horn loaded loudspeaker cabs, crossover modules and power amplifiers, and the top of the range also includes horns and acoustic leses.

M.S.L. are keen to contact anyone currently using R.S.E. so that they can build up a record of systems now on the road.

**Roost**

Based in the seaside town of Southend, Roost Amplification produce a wide range of amplification and sound equipment. Chief among their mixers is the SSR8. A low priced portable mixer featuring high and low impedance units, echo send, individual bass, middle and treble controls on each channel, and slider volume controls.

The unit's master controls include volume and echo send and return controls.



*September Sound 10/2 mixer*  
**Rose-Morris (Marshall)**

The Marshall 2050 P.A. mixer is a solid-stage mono mixer available in versions ranging from nine to 15 channels. A semi-conductor mixer of modular construction, it uses i.c.'s and each channel may be individually replaced. The controls include reverb send, treble, bass and volume faders, and the master board offers reverb faders, volume fader, and four low impedance outputs. The monitor board offers headphone volume, and stage monitor volume faders, and headphone and stage output sockets.

The Series II 12 Channel Stereo Mixer is also solid-stage and offers full stereo facilities. The unit comprises a headphone monitor module, echo and reverb module with echo send and return volume controls, foldback output module with presence control, stereo output module with presence control, panning facilities and master V.U. meters.

The channel output is controlled by slider volume controls and pan pots, and each channel boasts separate V.U. meters for pre-fade monitoring.

**September Sound**

September Sound Equipment do four series of mixers, ranging in complexity from relatively economic models to top quality mixers. Series 1 offers anything from 10 to 20 inputs, and individual gain, treble, bass, and foldback or echo on each channel. Like all the September mixers, it is available in either black vynide or, at additional cost, teak.

The Series 2 mixers offer the same controls, with foldback 1 and 2 controls, as well as the facility to mix foldback on stage, and talkback.

Series 3 is the first of September's top quality ranges. Each channel has gain, presence, treble, bass and middle controls, four-band equalisation, two foldback sends, echo send, pan faders, and talk back.

Last but not least, the Series 4 mixers are much the same as the Series 3 range, but offer the flexibility and chances for growth offered by plug-in modules.

**Simms-Watts**

Simms-Watts market two mixers. The Hammond Reverb Mixer Unit is a four-channel unit with indiv-

continued on page 108

**RSE**

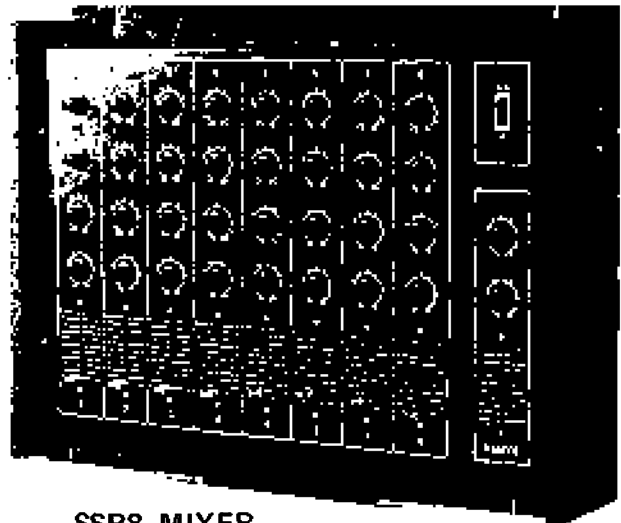
**P.A. is back!**

This superbly engineered equipment is now being built at Rugby from the original blueprints and components. Full servicing facilities for existing RSE systems are available, as well as Hire and Sales of complete systems

Contact Ken Dibble or John Grindle for more information

**MIDLAND SOUND LTD.**  
57 Albert Street, Rugby, Wark's  
Tel: Rugby 71419

**ROOST**  
Sound Equipment Ltd.



**SSR8 MIXER**

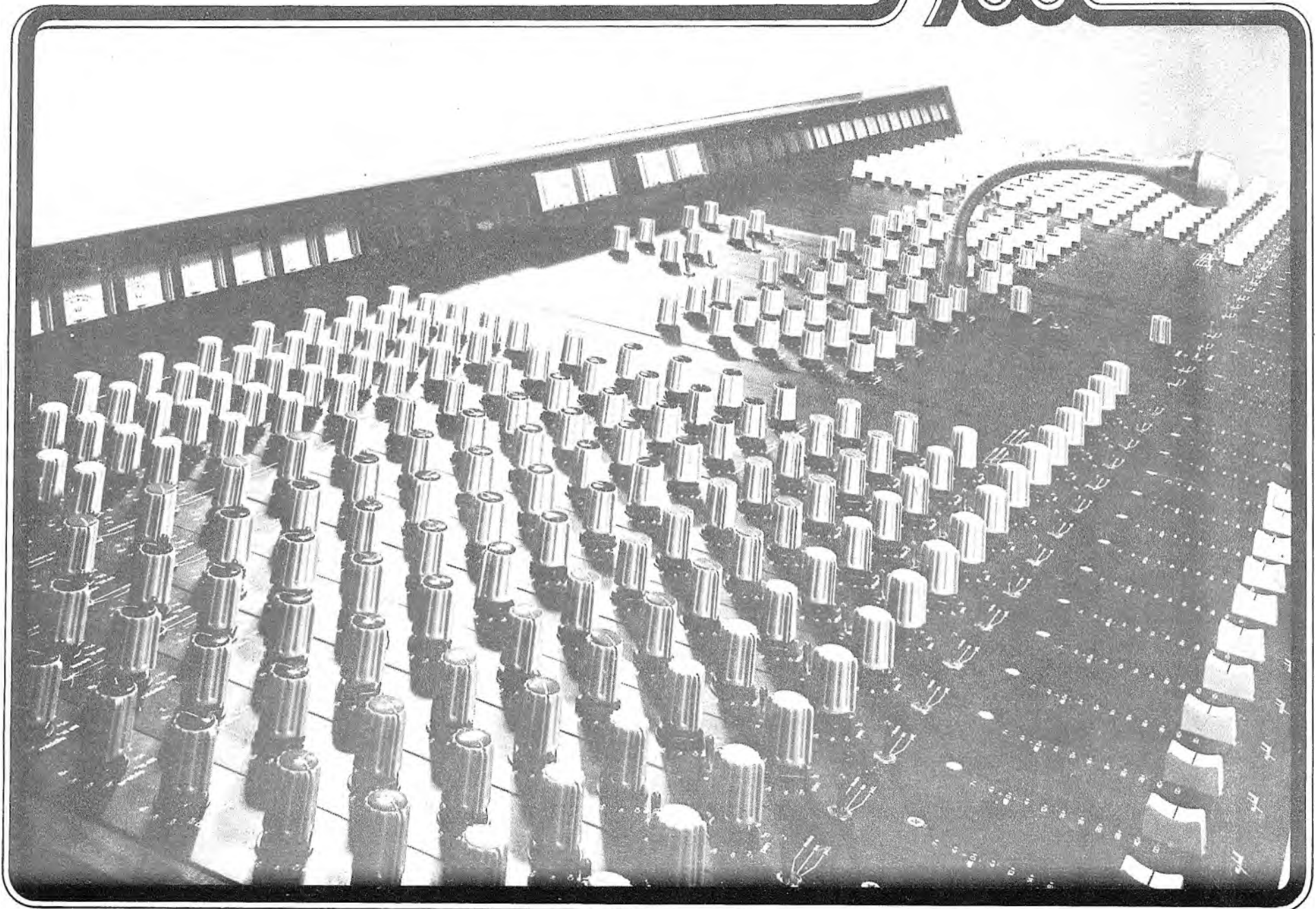
Portable low price 8-channel mixer featuring Hi and Lo impedance inputs, slider volume, echo send, bass, middle and treble controls per channel. Master volume and master echo send and return controls.

MUSICMARKET, 1 Berlin 21 Alt-Moabit 83	BERLIN
JUFFERMANS ENTERPRISES, 235 Waymouth Street	ADELAIDE
PEAT (Wholesale), Chapel Lane, Parnell Street	DUBLIN
TONIK MUSIK, Torget 6, 953 00 Haparanda,	SWEDEN
ACCUTRON, Oulo,	FINLAND

and from the manufacturers at:  
UNIT Q. STARLINE WORKS, GRAINGER ROAD, SOUTHEND-ON-SEA  
Telephone: (0702) 613232

For those of you who need something a little special.  
Genuinely 'Custom Built' by MALCOLM HILL ASSOCIATES  
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*hill*



idual volume control on each channel, and master reverb depth and reverb tone controls. It also boasts a remote control foot-switch socket and can be used with any instrument, either as a pre-amp mixer by connexion to the front of the main amp, or by in/out sockets on the rear of the main amp, thereby blending reverb into full mix facility on the main amp.

Relatively new from Simms-Watts is the Vocal Blender, a 100 watt P.A. mixer amplifier, designed to offer studio balanced sounds to live performances. Six channels, each with individual slide volume control, rotary bass, treble and presence controls are offered. A master slide volume controls the built-in 100 watt slave amp, as well as giving automatic and simultaneous control over any number of connected TSL 100 slave amps.

Master echo/reverb and monitor controls are also offered.

### Sonifex

The B1000 six channel portable studio mixer from Sonifex is designed for small studios, theatre and educational markets. Each channel contains a microphone amplifier with continuously variable gain control, high and low frequency equalisation, faders,

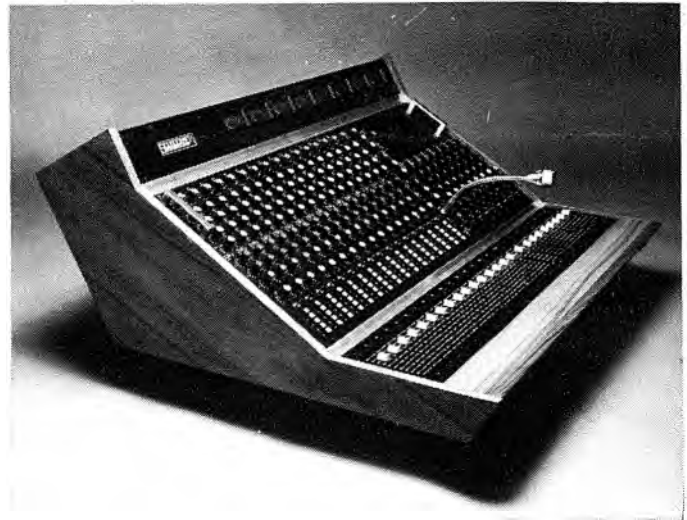
pre-fade listen and post fade auxiliary and echo send control, as well as master balance and fading. There is also a monitor selection switch.

### Soundcraft

Renowned for their MK 4 modular range of mixers, Soundcraft have also recently unveiled the Mark 5 range. The older line is best represented by the "Twelve into Four" console. Designed for use with a four or eight track tape recorder, the teak cased console incorporates 12 input channels and four output groups, four output limiters, and full monitoring facilities. Each channel has individual gain, treble, presence middle, bass, foldback, echo, on/off, pan (between groups one and two, and three and four) and slider faders.

Master controls include switchable limiters, four output V.U. meters, four-channel stereo monitor mix, and the possibility of genuine quadrophonic effects by routing the echo send to a quad pan pot, and injecting the four pot outputs into four channels.

Soundcraft's "Sixteen into Eight" mixer is non-modular and offers 16 and eight-track recording and remixing facilities, by use of the direct monitor switch on the input channels.



Soundcraft 16/8 mixer

The input channels feature separate mike/line inputs, continually various gain, four band equalisation with two frequencies of bass, cut, three cue sends, channel mute, on, and on and P.F.L. switch, long travel conductive faders, and pre or post fade direct line out to special orders. The outputs include adjustable limiters, monitor return inputs with tape/source switches, three cue sends and pan control.

The new Mark 5 modular range of desks offer up to 32 input channels and 24 outputs, and promise full studio facilities, including comprehensive equalisation and channel routing facilities. Each output channel has its own limiter with LED read outs, showing the degree of limiting.

From March, series II Mark II will be available. This offers 4 cue sends and a variable high pass filter on each channel.

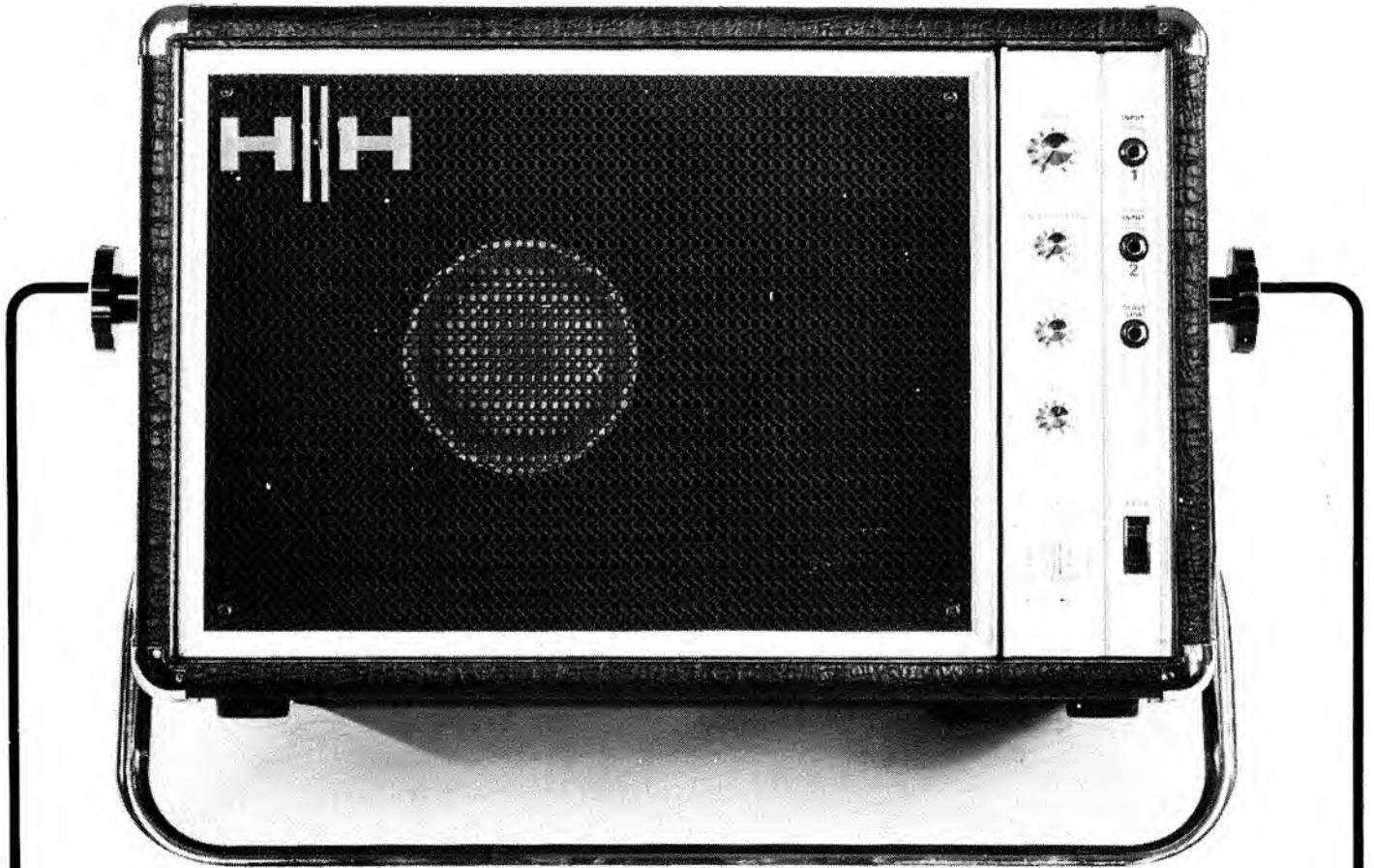
continued on page 111

# Soundcraft-Series II



5-8 Gt Sutton Street London EC1V 0BX Tel: 01-251-3631/2/3 Telegrams: Soundcraft LDN EC1  
Systems & Technology in Music Inc., 2025 Factory Street Kalamazoo Michigan 49001 USA Tel: (616) 382 6300

# When did you last hear yourself on stage?



*Monitor Combo:* At last performers will be able to hear themselves as clearly as the audience using the new Monitor Combo. No longer need they play or sing in isolation not knowing the overall effect. A new 100 watt (R.M.S.) amplifier combined with a high powered version of the H.H. Dual Concentric speaker produces the logical answer to on-stage monitoring. Increased confidence is the result of the performer's ability to hear an accurate sample of the audience sound. Each individual member of the band has immediate access to volume, bass, treble and a very useful anti-feedback control. The adjustable chrome steel handle is ideal for both altering the tilt and protecting the speaker grill in transit.  
H.H. quality and unbeatable value. Price £134.46 + V.A.T.

*Monitor Extension:* Designed to be used as an extension of the Monitor Combo amplifier, it contains the same high powered Dual Concentric speaker. Price: £68.98 + V.A.T.

## H/H Sounds a lot better

### Full Range available from HAMILTONS of Teesside



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Please send me details of the Monitor  
Combo and other new products

NAME .....

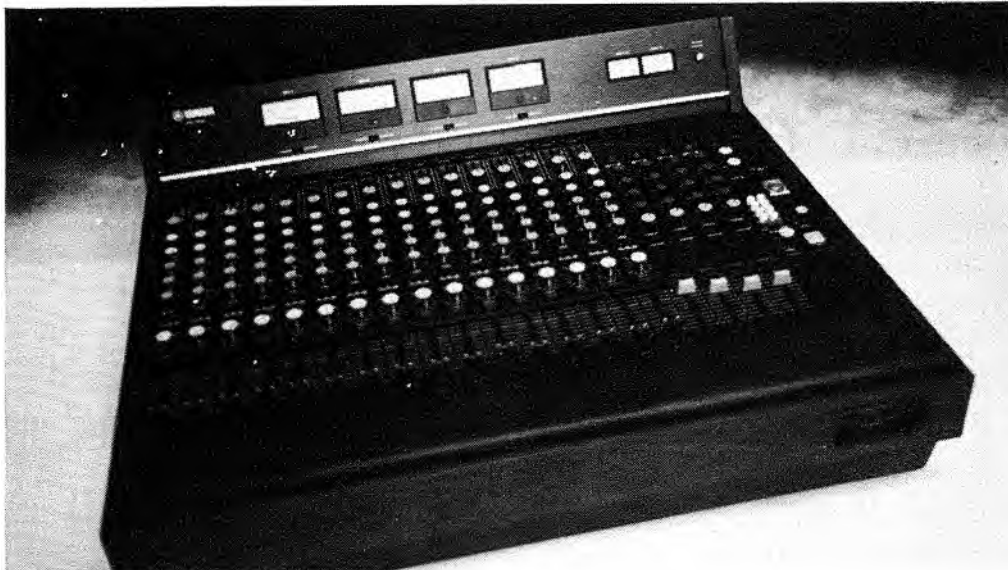
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.....



*Our finest product to date - the S/M series.  
Shown here in 16/8 format, part of our supply to a  
studio complex near Bordeaux, France.  
contact Nick Franks and Graham Langley on 061-928 8688  
Let us solve your mixing and sound problems -*

*AMEK, 8 Stockport Road, Altrincham, Cheshire WA15 8ET, England*



Yamaha PM1000  
Traynor

Handled by Wing music of Bromley, the Canadian firm Traynor manufacture several mixers. Their eight channel mixer features individual bass, treble, reverb and volume on each channel, as well as master reverb and volume, two normal and two monitor output jacks, a reverb footswitch input and a carrying case.

Traynor also do a 24 channel

mixer, the MK-24.

**Trident**

Two basic series of mixers constitute the Trident range of mixers. The A series is designed for multi-track studios requiring sophisticated systems, such as graphic 16 frequency equalisation on each channel, four independently controllable headphone circuits, six push-button selected echo groups and dual scaled V.U.

and P.P.M. metering selection.

The B series offers the studio quality found in the A series, but with some concessions made in consideration of economy. Fully modular in construction, the B series, making it possible to construct a console pre-wired for any future expansion plans.

All the Trident console come with a one year guarantee and faulty modules are said to be repaired on a same day basis.

**Turner**

The TPM modular series and the TPS non-modular series are the basic ranges of mixers offered by Turner. Both are equipped with full sub-grouping, monitor and intercom facilities. Each mixer in the series offers up to 24 channels.

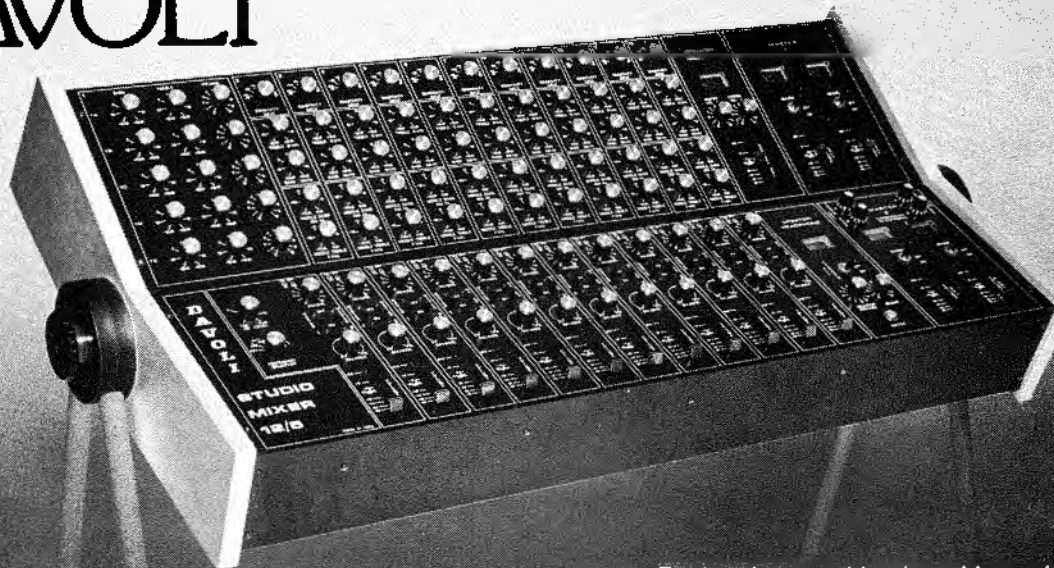
Of particular interest is the non-modular TPS 16/2, which is equally applicable in medium sized studios or mobile recording and live mixing. It offers 16 channels, stereo sub-group and master, three band crossover, two foldback-echo systems, a talkback system and comprehensive audio and visual monitoring.

**Wem**

Of particular interest in the Wem line of sound equipment, the Stereomaster live mixing console is designed to meet the needs of pro musicians and sound engineers at live concerts. Each input incorporates Switchcraft D3M socket low impedance inputs, meter input V.U. meters, level controls, treble, middle and bass equalisation, pre-fade listen, reverb send, channel mute switch, fold back, and a slide fader. Outputs include left/right stereo outputs, three foldback outputs, echo/reverb control section, headphone monitor and talkback.

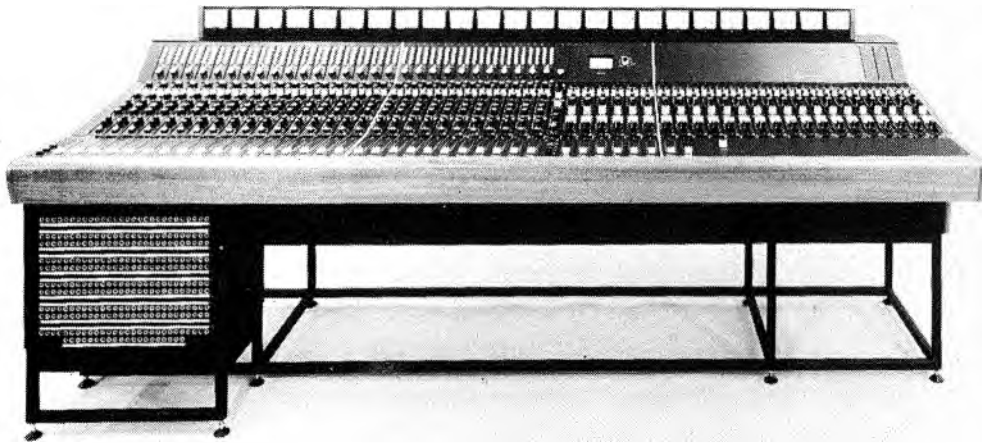
continued on page 112

# One of the extensive range of P.A. units available from DAVOLI



For brochures and local stockists write to

**DAVOLI U.K. LTD 859 Coronation Road London NW10**  
**Tel. 965-8646/7**



Trident B Range console

**Yamaha**

The Japanese firm of Yamaha are well established in the competitive mixer field. The PM-400/300 system offers eight input channels with a stereo output system. Each channel offers tone and volume controls for regular left/right output, and a stereo echo output system.

The PM-200B also offers eight channels, each with individual reverb/echo switch and continuous reverb/echo, volume, treble and bass controls, as well as master reverb, echo and volume controls, VU meters with range

switch, and a hum-free power switch.

Central to Yamaha's YES 1300 mixing system is the EM-130, a six channel mixer with individual input jacks, a mic/guitar line selector, continuous volume, and bass and treble controls.

Of particular interest from Yamaha is the PM-1000 mixing board. A 16 channel mixer, it offers four channels sub in, four PB in, and one for talk back, with 4 x 2 for line out, four for monitors, four for echo, one for talk back out, two for phones, and four for master out.

The PM-1000 boasts large VU meters for master/monitor and small VU's for echo. Its dimensions are 34 1/4" x 34 1/4" x 11".

**Zero 88**

The St. Albans firm Zero 88 manufacture a range of low cost professional quality blocks which can be combined in various ways to easily build mixers.

The modules recommended for mixing applications include: the VE1.1, a virtual earth mixing amplifier which enables any number of signals to be taken via the resistors to the input with no interaction between signals; the

TTB.1, which provides the necessary circuitry for bass and treble lift and cut; the EA1.1, which provides the necessary amplification and Eq required for magnetic pick-up cartridges; the TM2.1, which offers middle tone control; the LA1.1, a general purpose amp with variable gain; and the LA1.3, which offers low output impedance with an eye toward driving unbalanced directly or unbalanced lines via a transformer.

These units (with some additional components) used in conjunction can constitute a number of mixers.

**Zoot Horn**

Zoot Horn do a number of ranges of mixers, and chief among them is the PMR II Audio mixing consoles. This series is available in a number of options, all of which include a 600 ohm balanced input impedance, gain controls on both microphone amplifiers and line amp, and four-band Eq.

The models available in this range include a 10 channel stereo P.A. mixer, 12/4 track recording mixer, a stereo music/program mixer, a 16/8 track recording mixer, and a dual mixer, which offers eight channel P.A. and three channel stereo mixer.

# CUSTOM SOUND CS 700D

**COMBINATION AMPLIFIER.**

**Features:**

- : Twin Reverb
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- : Output to Slaves
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- : Inset grab handles



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## THE WHO

Hammersmith Odeon  
21/22/23 Dec. 1975

"Watching and listening to the clarity of the vocals over the faultless P.A., Daltrey's torrid confidence as lead singer par excellence; to the evermore sophisticated drumming of Moon; the rock like foundations of Entwistle, and the free ranging guitar of Mr. Townshend. Here was some of Pete's best guitar playing, clean, dramatic chords, echoing forth with an electrifying majesty.  
*Chris Welch, Melody Maker, December 27th 1975.*

## CAT STEVENS

Bingley Hall  
Friday Dec. 12th 1975

"The sound is full and rich and quite ballsy."  
*Chris Salewicz, New Musical Express, December 20th 1975.*

## FRANK SINATRA

Royal Albert Hall  
Friday 29th May 1975  
6,000 Seats

"And the best show of the lot was Sinatra's. The orchestra were a joy to hear; whoever took care of his equipment should have sold his secret to . . . . ."  
*Paul Gambuchini, Radio One, June 1975*

## FRANK SINATRA

The Royal Albert Hall  
Thursday 29th May 1975  
6,000 Seats

"The voice by which a generation has lived and sometimes died, getting better all the way, aided by the best P.A. System I've ever heard."  
*The Sunday Times 1st June 1975, Derek Jewell*

## BAD COMPANY

Orange, France  
August 1975  
10,000 Seats

"They stopped the show and there were 10,000 witnesses to prove it. The enormous 24,000 watt P.A. need hardly have been there (it was wisely used way under power to give the best sound I've heard since I don't know when.)...  
*Sounds, August 23rd 1975*

## ELTON JOHN

Watford F.C.  
May 1975  
50,000 Seats

"He went through a selection of his oldies, plus a surprisingly good version of Lucy In The Sky with Diamonds. The backing band were tight and responsive, no doubt helped by a superb sound system."  
*N.M.E., May 1974*

## ELTON JOHN

Randwick Race Course  
Sydney, Australia  
March 1974  
50,000 Seats

"Although there were quite possibly a few people amongst the huge crowd who could not have seen the stage, I'm even prepared to bet they didn't mind that much, because the sound was excellent."  
*Record Mirror, March 1974*

## ELTON JOHN

Watford F.C.  
May 1974  
50,000 Seats

"The sound was excellent, Elton's piano as clearly as if he were playing in your own front room."  
*Sounds, May 1974*

## THE BLUE JAYS

The Royal Albert Hall  
Wednesday Dec. 10th 1975

"Still, their new compositions stood up well: 'I Dreamed Last Night' and 'My Brother' were presented with one of the best sound reproductions heard in this cavernous venue."  
*Ray Coleman, Melody Maker, December 20th 1975.*

## PAUL SIMON

The London Palladium  
Thursday Dec. 11th 1975

"Obviously, if you've got the best musicians, you're going to make sure they all can be heard properly. I have never heard better sound quality at any concert. It was all too beautiful, all faultlessly executed, so that it was a bit like sitting at home in front of the Bang and Olufson of like having dropped in on a stateside recording session."  
*Bob Woffinden, New Musical Express, December 20th 1975.*

## LYNYRD SKYNYRD

Hammersmith Odeon  
Wednesday Nov. 12th 1975

"Not having seen them live before, I was pleased to find that they lived up to expectations both visually and sound-wise. In particular they get full marks for being the first American band I've seen to have a P.A. suitable for British-sized venues. Their power came from the orchestration and execution of their songs rather than from over-amplification."  
*Tony Mitchell, Sounds, November 15th 1975.*

## TANGERINE DREAM

Royal Albert Hall  
Quad System 1975  
6,000 Seats

"Three men, I told myself, shouldn't be able to press knobs and produce such wonderful textures, such a stunning, often beautiful wall of sound."  
*Melody Maker, Ray-Coleman 1975*

## JACKSON FIVE

The Empire Pool, Wembley  
November 1972  
8,000 Seats

"A top class P.A. System ensured that the Group's music could be heard above the deafening screams and the harmonies were beautifully audible throughout."  
*Melody Maker, November 18th 1972*

# PRICE SCANNER

Compiled by Elaine Cooper

ALL PRICES ARE WITHOUT V.A.T.

*I.M.'s Price Scanner aims to be the most comprehensive guide to the retail prices of musical instruments and equipment available.*

*All our new retail prices are exclusive of V.A.T. and while we have taken exhaustive care to ensure that the prices are correct, we'd be obliged if you could let us know of any alterations, additions or deletions necessary. Unfortunately we have to disclaim responsibility for any problems arising out of any inaccuracy in this price guide.*

## SOUND EQUIPMENT

### AMEK

Prices on Application only

### AMPEG

GUITAR COMB	115.00
VT40 50w valve 4x10" spkrs	342.59
VT22 100w valve, 2x12" spkrs (Altec Lansing)	401.85
G212 120w 2x12" spkrs 5/8"	404.63
G410 120w 4x10" spkrs 5/8"	448.07
G412 120w 4x12" spkrs 5/8"	478.70
BASS COMB	
R115 120w 1x15" spkrs 5/8"	359.26
B410 120w 4x10" spkrs 5/8"	420.37

PIGGYBACKS	
B-155 60w valve 1x15" spk	423.15
B-15N 30w valve 1x15" spk	342.59

AMPLIFIERS	
HDSVT 30w valve	459.26
JHDV48 100w bass	292.59
Valve B	
HDB25B 55w bass	250.00
valve B	
HDV4 100w g valve G	325.93
HDV2 60w g valve G	305.56
HDV6B 240w solid state s/s	339.81

HOLLAND EFFECTS UNITS	
RE201	237.58
AD50	37.08
AF60	22.20
AF100	20.37
AG5	26.78
AP2	32.41
AP5	67.70
AP7	50.45

HOLLAND AMPLIFICATION	
PA80	180.56
PA120	276.85
JC80	233.74
JC120	317.44
C2030	105.90
C2038	111.10
C2538B	121.34

### CANARY MIXERS

B SERIES MIXERS	
12/1	496.00
12/2	573.00
15/2	697.00
18/2	856.05
30/4	531.00
FREIGHT CASES	
12 ch.	31.00
15 ch	38.75
18ch.	44.00

A SERIES CUSTOM MIXERS	
20/6/2	2860.00
16/8	2900.00
24/2	1700.00

CROSSOVERS	
2 way stereo	68.19
3 way stereo	79.04

### CARLSBRO

VALVE	
60 TC	109.00
100 TC	144.00
60/5 P.A.	123.00
60 P.A. Reverb	137.00
100/7 P.A.	163.00

### S/STATE

Stringray Mk II	115.00
Stringray Super Mk II	144.00
Stringray Combo	168.00
Stringray Super Combo	217.00
Bass Combo Amp	257.00
Bass Combo Super	
Amp	295.00
Marlin	153.00
Slaver	92.00
Scorpion	96.00

### SPEAKER UNITS

4x12" B.L. 120w	153.00
1x18" 100w	107.00
Bass Bin 2x12"	149.00
Bass Bin 1x15"	135.00
Mini Bin 100w	130.00
2x12" P.A. 80w Pr.	121.00
2x12" P.A. 120w Pr.	155.00
2x12" 1 Horn 80w Pr.	157.00
1x20w Pr.	191.00
2x12" 1 Horn 240w	210.00
Horn Unit (2) Pr.	107.00

### CBS/ARBITER

GUITAR AMPS	
Dual Showman Rev. 2xJBL D-130F	674.00
Dual Showman Rev. 2xJBL D-140F	695.75
Top	393.25
Dual Showman Rev. Enc.	321.90

MUSICAL INST SYS.	
G-32 200w	256.03
GB 38 400w	453.00
BF 36 300w	305.79
B 36 300w	285.89
B 4B 400w	405.82
B 36MF 300w	346.59
B 49MF 400w	455.05

SOUND REINFORCEMENT SYSTEMS	
L48CF 500w	418.25
L48CFD (L48CF with horn ext. op.)	517.77
L48DD 2000w	1027.84
RMH 1 100w	293.84
M 36 300w	375.00
M 48 600w	430.69
HMF 4 200w	413.31
HF 6 100w	244.09
MLT 4 250w	306.79
PZ 12 35w	181.87

### CHINGFORD ORGAN STUDIOS

Solton Cabinet	425.00
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### CITRUS LTD.

Statefine II Kansas, st.	346.00
Statefine II Iowa st.	430.00
Statefine II Texas, st.	524.00
Statefine II Delaware, mono	230.00

MODUL ES	
SMP505 Star Mix. Pre/Amp	117.00
MMP303 Mono Mix. Pre/Amp	98.00
PE50 65 w amp	44.00
P100/100 Star Amp	98.00

### CLEARSTONE

CM1	24.00
2x15 Lrd cab 120w	122.21
2x15 Rb cab 120w	118.62
2x12 Ld cab 50w	97.50
1x18 Rb. cab 100w	96.81
4x12 Ld. cab 100w	129.00
4x12 Bs. cab 100w	129.00

### PA CABINETS

2x10 col 60w Pr.	100.11
4x10 col 120w Pr.	142.26
Horn cab	81.57
2x12 col 100w Pr.	158.57
1x18 col 150w Pr.	127.87

### SOLID STATE

50w L&B	116.84
100w L&B	127.67
50w PA	118.84
100w Met. PA	153.50
2x12" P.A. 120w Pr.	155.00
2x12" 1 Horn 80w Pr.	157.00
2x12" 1 Horn	191.60
1x20w Pr.	191.00
8 Ch Mxr.	257.41
50w Combo Amp	173.05

MIXERS	
Clubman 50	TBA
Clubman 100	TBA
Message 50	180.00
Mixer B/100	350.00
Mixer B/200 + Echo	550.00
Mixer 12/100 Echo stereo	699.00
Mixer 12/100 Prof. Rev. stereo	999.00
Mixer 12 + 5 stereo	1099.00
12 + 5 Multicore	280.00

SLAVE AMP	
200w mono.	150.00
100 + 100 stereo	165.00
200 + 100 elect. X/over	389.00

PA CABS.	
DK35 2x10"	TBA
DK100 2x12" + 2x4"	135.00
Tweet	
DK120 1x15 + 2x25 Horns	120.00
PA/B/160 8x6"	120.00
Twin cab	
Dual 100 2x12 dual concentric	125.00

### ELECTRO VOICE

AC100	62.78
AR150	32.78
AR400	18.50
AR500	18.50
FC100	34.69
FR160	37.78
HC400	12.29
M253	203.00
1923M	33.50
1923	21.50
1928C	21.50
1928R	21.50
1928T	29.49
1929	34.09
1929T	32.29
PA12	15.59
PA12-45	16.39
PA12F	18.50
PA30A	22.39
PA30A-45	24.00
PA30AT-2	30.39
PA30AT-7	30.39
PA30R	24.19
PA30RT-2	34.09
PA30RT-7	34.09
PA30R-45	24.00
844A	30.98
847A	37.79
848A	56.19
72.50	72.50
Musicaster IA	83.50
Musicaster IIA	83.50
Supercaster	89.00
Eliminator I	259.33
Eliminator II	220.00
FM C5 1st horn	19.44
FM C5 2nd	19.75
FM C5 3rd	21.30
SSH Distort. booster	37.96
SSH Phase-fitter	52.78
SSH Vfd super pedal	82.41
SSH E-1 diff pedal	66.67

### PA CABINETS

1x18 100w	100.11
4x10 col 120w Pr.	142.26
Horn cab	81.57
2x12 col 100w Pr.	158.57
1x18 col 150w Pr.	127.87

F.A.L.	
Minsirel	24.75
Muestro	45.00
Bass Fiesta	55.00
Phase 50	45.00
Super 50	63.00
Phase 100-2	72.00
Super 100	76.80
Model 120-6	89.60
P100 Slave	42.00
P200 Slave	53.00
FAL 50	33.00
FAL 100	55.00
PA 200 Cals.pr	136.00

FARFISA	
RSC 350	558.46
RSC 180	323.07
OR 200	487.69
TR 70	220.00

### FELDON AUDIO

All prices subject to currency adjustment.	
EVENTIDE CLOCKWORK FL 201 Flanger	321.00
DDL 1745M Dgln. delay Line	2400.00
2826 Omniprs.	325.00

### PANDORA

A-DBO-1 80 & 9m/sec. di-1 op/t.	1450.00
Additional delay modules	232.00
Additional output modules	261.00
(Thu above equipment is also available for hire)	

### ORTOFON

G0741	7285.00
D5S731	3695.00
D5S732	3160.00
STL732	365.00
CPS741	2750.00
SM721	440.00

### FM ACOUSTICS

E2-E4 Network	55.56
m housing	38.89
E2-E4 Network 3-way	57.41
D5 Driver	52.78
D4 Driver	52.78
D2 Multicell driver	52.78
FM C35 15 cell horn	281.48
FM C8 HF horn	28.70
FM C7 ESThn	19.75
FM C5 EST hn	21.30
SSH Distort. booster	37.96
SSH Phase-fitter	52.78
SSH Vfd super pedal	82.41
SSH E-1 diff pedal	66.67

### HORNS

1212FX100w FM	230.59
1212GX200w Gauss	190.74
1315H 100w FM Rb	114.81
1315S200w	
Gauss Rb	156.48
1317X200w Radial	131.48
1323X200w6 cell	173.15
1336X400w 15 cell	303.70
1345X200w HF.	104.63

MONITOR SYSTEMS	
Combo	134.46
Extension	68.98

ECHO UNITS	
Single Staling Hd.	134.85
Multin Head	145.70

### HOHNER

AMPLIFIERS	
GA2	31.81
GA3	35.83
G40R	75.87
GSOR	88.06
GB012B	71.85
GB015B	83.47
1500B	115.44
1500B	60.19
1500B speaker	59.26
PAS505	83.47
SM500 Mixer	83.47
SC4 10H speaker	83.47

### SPEAKERS

M8 QB"	3.01
M10 L10"	15.23
M10 M10"	6.81
M12 L12"	21.76
M12 N12"	15.51
M12 O12"	8.24
M15 O15"	44.07
M15 L15"	28.56
M18 N15"	19.26
M15 O15"	10.56
M600 Horn	8.10
M1200 Horn	27.96

### MILES PLATTING

V.50	89.53
V.50 S Spkr.	71.30
V.100	109.57
C.50	148.47
PA.50	103.48
PA.50 S PA Spkr	120.37
PA100	123.15
PA 100S PA Spkr.	199.07

### ZENTH

CD60SD	26.40
Z3	17.60

### JASMYN ELECTRONICS

PROFESSIONAL POWER AMPS	
ICR40 series	
800w 4ch. P.A. standard	298.00
4 meters	64.00
4 peak-reading LED arrays	44.00

<b>SPEAKER ENCLOSURES</b>	
EXSVT 240w B x 10"	333.33
EXB4B 240w 2x15" Alphas	510.18
Double folded horn	510.18
EXB25B 120w 2x15" spkr	170.37
Base reflex	170.37
EXV4 120w 2x12" spkr	241.67
Infinite baffle	241.67
EXV2 120w 4x12" spkr	238.89
Ducted reflex	238.89
EXV6B 240w 2x15" spkr	275.93
Active ducted port	275.93
<b>OUTFITS</b>	
SVT 300w amp/tpw	1124.07
8 x 10" encl.	1124.07
V-4B 100w bass amp/folded	802.78
horn encl.	802.78
V-25B 50w bass amp/2x15"	448.30
bass reflex encl.	448.30
V-4 100w/tpw 4x12"	811.11
encl.	811.11
V-2 60w gamp/4x12"	545.37
ducted reflex encl.	545.37
V-6B 240w amp/2x15"	816.74
ducted port encl.	816.74

<b>PA EQUIPMENT</b>	
SRE 120w/8x5ch mix	100.93
amp & 2 spkr coils.	100.93
CSRE Mixer	373.15
A120 Slave	202.78
S4B Columns	163.69

<b>JOHN BIRCH</b>	
PENETRATOR	85.00
12" Crescendo	106.00
15" Bass	140.00
15" Crescendo	170.00

<b>BOSE</b>	
Bose 1800 AMP	550.00
A. 800 spkr/eq.	420.00
A. 800 spkr/add-on	360.00
Bose 800 eq	60.00

<b>BOOSEY &amp; HAWKES</b>	
AMPEG	
VT40 60 w.vl.	311.11
VT22 100 w.vl.	364.81
G2 12 120 w. 6/s	367.59
G4 10 120 w. 4/s	409.26
G4 12 200 w. 6/s	436.11
B1 15 120 w. 6/s	326.85
B4 10 120 w. 6/s	301.48
B15 S 60 w.vl.	417.59
B15 N 30 w.vl.	311.11
HDV1 300 w.vl.	417.59
HDV4B 100 w. vl.bs.	226.67
HDV25 5 55 w.bs.	225.93
HDV4 100 w.vl.	295.37
HDV2 60 w.vl.	277.76
HDV6 B 240w.	
6/s	308.33
EXSVT 240w	302.78
Bx10	
EXB4 B 240w.	463.89
2x15	
EXB25 B 120w.	156.48
2x15	
EXV4 120w	220.37
4x12	
EXV6B 240w.	217.59
2x15	
SRE 120 w. PA.	250.93
com.	
CSRE Mixer	637.04
A120 Slave	338.89
548C ols	184.26
8845 15w	149.07
8876 30w	49.80
9872 50w	73.62
110 12	112.12

<b>BRØDR JØRGENSEN</b>	
ROLAND RHYTHM UNITS	
RHYTHM BOXES	
TR33	108.48
TR330 c/w + amp	106.76
TR55 port	116.84
TR66 auto arranger	114.82
TR77 comb. selector	
and variation	194.45
ROLAND REVO SOUND	
SYST.	
Revo 30	209.00
Revo 120	439.83
Revo 250	645.54

<b>QUAD Rev 4 x Fender</b>	
12"	505.80
Quad Rev. 4 x JBL	726.00
D-120	487.65
Super Six Rev 6 x JBL	849.45
D-110F	451.00
K-100	517.00
Super Twin 180w	433.20
Twin Rev. 2 x Fender	539.70
D-120F	424.75
Bandmaster Rev. 2 x Fender	542.10
12"	542.10
Bandmaster Rev. 2 x JBL	554.70
D-110F	554.70
Bandmaster Rev. Amp	187.55
Top	373.90
Bandmaster Rev. Enc 2x	373.90
Fender 12"	373.90
Super Rev. 4 x JBL	559.05
D-110F	559.05
Prop. Rev 2 x Fender	228.70
10"	171.85
Vibrolux Rev 2 x Fender	127.05
10"	75.06
Deluxe Ray 1 x Fender	67.80
10"	
Princeton 1 x Fender	
10"	
Vibro Champ 1 x Fender	
8amp. 1 x Fender 8"	

<b>AMPES</b>	
CS 700 A 150 w	
5 ch. PA Mixer/Amp 160.50	
CS 700 B 150 w	
Twin Reverb	133.50
power slave amp	97.50
CS 700 bass master	120.00
150 w	
Monitoring	
CS 712 w 50 w	45.00
wedge mon.	
CABINETS	
CS 7 DH dble horn	58.50
box	
CS 7212 100 w	66.00
2 x 12" PA col	
CS 7212 H 100 w	84.00
2 x 12" & horn	
CS 7215 150 w	117.00
2 x 15"	
CS 7215 S 200 w	180.00
2 x 15"	
CS 7215 A 300 w	285.00
2 x 12" Altac	
CS 7115 75 w 1x15" mini-	93.00
bln PA/Disco	
CS 7115 A 150 w 1x15" altac	117.00
mini-bln PA/Disco	
CS 712 S 100 w 1 x 12"	180.00
& 2 horns	
CS 7412 200 w 4 x 12"	135.00
P.C.A.	
Eliminator bass bin	195.00

<b>CERWIN VEGA</b>	
AMPES	
A1800 400w + 400w	450.00
(led meters)	
A1800 7 400w + 400w	560.00
VU meters + LF/HF	
c/over	560.00
A3000 700w + 700w	795.00
Led meters	
A3000 7 700w + 700w	895.00
VU meters + LF/HF	
c/over	895.00
A3000/RS 850w + 850w	1085.00
Stab. P/s	
P.A. SYSTEMS—	
COMPLETE WITH AMPS	
900W 3 way system	
35-1800 Hz	
+ 2 amps x 4 ch	1718.00
1800w/2 cols 3 way	
35-1800 Hz	
+ 4 amps x 8 ch	3295.00
2800w 4 way sys	
32-2000 Hz	
+ 2 amps x 4 ch	2796.00
5600w 2 cols 4 way	
32-2000 Hz	
+ 4 amps x 8ch	5291.00
11,200w 4 ch + 4 col array	
725 stn. 35w	120.00
135 Phase rev	150.00
735 Bass stan.	TBA

<b>DAVOLI</b>	
INSTRUMENT AMPS	
LOB 50w	160.00
LOB 100w	250.00
CDMD AMP	
J6 5w	TBA
725 stn. 35w	120.00
135 Phase rev	150.00
735 Bass stan.	TBA
INSTRUMENT CABS	
880 2 x 12" 80w	105.00
880 BS. 1 x 15" 80w	105.00
B150 4 x 12" 150w	145.00

<b>PUBLIC ADDRESS SYSTEM</b>	
PA100 Vocal Amp/8 x	476.75
Fender 8"	317.05
PA100 Amp Top	254.10
100, Enc	239.60
50, 2 x Fender 15"	373.90
50, 2 x JBL D-140F	482.80
50, Amp Top	194.85
50, Enc 2 x Fender	209.35
15"	301.30
10, 4 x Fender 10"	482.80
10, 4 x JBL D-110F	482.80
Musicmaster Bass.	106.50
1 x Fender 12"	

<b>AMPLIFIERS</b>	
PAI variable	17.00
10w	42.00
15w	52.00
25w	74.00
50w	100.00

<b>AMPLIFIERS</b>	
PAI variable	17.00
10w	42.00
15w	52.00
25w	74.00
50w	100.00

<b>J.T. COPPOCK</b>	
ELGEN	
100w id.	115.27
100w bs.	115.27
100w ster.	127.31
100w ster. slv.	104.62
100w PA.	119.90
100w PA. slv	80.09
50w c/p	80.09
50w combo w/rev	159.25
50w bs. combo	137.07
fld. hn. cab FH10A	194.44
50w bs. combo	155.74
fld. hn. cab FH100A	188.05
1x15 cab 150w	148.29
4x12 cab	114.81
4x12 cols. pr.	177.31
2x12 cols. pr.	113.42

<b>ELKA-ORLA</b>	
SOLID STATE AMPS	
Universal 50	215.88
Universal 100	242.05
Universal 200	352.57
Reverb III	91.56

<b>ROTATING SPK. CABS.</b>	
Ekatone 810PR	397.42
(100w R.M.S./rev)	
Ekatone 61PS	497.21
(200w R.M.S. stereo)	
Ekatone B15SR (200w	528.83
R.M.S. stereo)	

<b>EPICENTRUM</b>	
2 x 12 Col. br.	113.85
1 x 12 Reflex ATC	
Reflex + hf hnz pr.	143.75
2 x 12 Reflex bin	197.75
1 x 12 Mid hn	139.00
1 x 12 Mid hn	62.10
ATC	109.25
2 hf horn unit	27.60
4 hf horn unit	48.30
2 hf horn add-on	39.10
WEDGE MONITORS	
W12 50 W	85.00
W12JBL 100 W	125.00
W15CH 100 W	280.00
JBL	375.00
W15 RH 200 W	
JBL	

<b>MODULE SYSTEM</b>	
Small bs. hn.	120.75
ATC	149.50
Demountable bass	109.25
horn	126.50
Lower mid horn	126.50
ATC	126.50
Upper mid + hf	750.00
horns	
Complete spkr. system	
1000w	

<b>E.S.E. S.EQUIP.</b>	
1002 N/S	224.75
1005 AP200	187.94
1006 S/L200	157.28
1007 PA200/R	204.50
1010 PA100C	133.00
1011 PA100S	133.00
1012 PA60TC	83.03
1013 PA60S	83.03
1015 B200	225.00
1018 FH200	225.00
1022 S120	165.00
SPK R. CABS. VLT. REGS	
30w Col.	97.00
60w Col.	166.00
120w Col.	253.50
60w Col.	126.00
100w Col.	215.00
60w Col.	149.00
100w Col.	162.00

<b>DALLAS</b>	
AMPLIFIERS	
100w ster.	186.75
100w ster.	293.50
50w ster. trans.	281.50
100w ster. trans.	318.75
6 Cha. Mk.	210.00
8 Cha. Mk.	234.00
6 Cha. Mk.	223.50
4 Cha. Mk.	187.00
4 Cha. PA Mk.	231.00
6 Cha. PA Mk.	262.00
8 Cha. PA Mk.	275.50
10w Slv.	161.00
10 Cha. PA Mk	635.00
16 Cha. PA Mk	761.50
100w Comb.	336.50
200w Comb.	393.87
100w Amp & Cab	427.00
200w Amp & Cab	487.50
100wB Cha. Mk.	618.67
200wB Cha. Mk.	658.00
100wB Cha. Mk.	668.00
200wB Cha. Mk.	685.50

<b>MALCOLM HILL ASSOCIATES</b>	
MODULAR DESKS	
16/2 A series	600.00
16/4 A series	755.00
16/2 B series	780.00
16/4 B series	940.00
16/2 C series	1100.00
16/4 C series	1380.00
16/8 C series	1840.00
16/4 D series	1540.00
16/8 D series	2020.00
24/16 F series	5100.00

<b>NON-MODULAR DESKS</b>	
M102 10/2	230.00
M102 B 10/2	400.00
M162 16/2	350.00
M162 FC 16/2	700.00
M162 B 16/2	550.00

<b>POWER AMPS.</b>	
IC106 S	70.00
100 W/8 ohms	
IC116 S	
100 W/16 ohms	70.00
IC204 S	
200 W/4 ohms	110.00
IC206 S	
200 W/8 ohms	110.00
IC404 S	
400 W/4 ohms	180.00
400 S	
400 W/2 ohms	180.00
IC802 S	
800 W/2 ohms	300.00

<b>HORNS</b>	
JBL2420	
H.F. radial	190.00
JBL2492	
M.F. radial	280.00
BINS	
B15 15" 200W	145.00
GAUSS reflex	
ZORTIN 16"	199.00
MARTIN GAUSS	

<b>H.H. ELECTRONICS</b>	
POWER AMPS.	
TPA100D	107.80
TPA50D	77.00
AM/8/12	58.00
TPA25D	67.20
TPA25D 19"	67.20
TPA25D-M	58.00

<b>AMPES</b>	
1/C 100 ld.bs.org.	137.94
tw/rev 100w	
1/C 100-S rd.bs.org.	111.60
100w	

<b>PA. AMPS.</b>	
MA100 5 ch./rev.	138.72
100w	
MA100-S 5ch.100w	119.34
S130 sl.amp. 120w	99.90

<b>UNIT P.A. SYSTEMS</b>	
100w radial hn	99.20
115bs compact	100.75
1x15" 100w	

<b>COMBINATION AMPS</b>	
1/C100, Twin Rev.	206.15
Tremelo + Sustain	
75/100w	
1/C100-S, Sustain	189.10
75/100w	

<b>INSTRUMENT SPKRS.</b>	
412BL kd bs.org.	155.00
4 x 12", 200w	
215BL ld bs.org.	
Twin ported reflex	
enclosure, 200w	165.85

<b>IC320SERIES</b>	
300w 2ch. P.A.	139.00
Standard	

<b>IC110SERIES</b>	
150w single ch. P.A.	86.00
Standard	

<b>STAGE MONITOR AMPS</b>	
IC110W spkr./amp/combo	159.00
150w amp 12" spkr	
+ horn	

<b>GUNTER AMPS</b>	
IC210G 200w toneboost	159.00
q-override	

<b>SPEAKERS</b>	
Mini bin (100w)	145.00
1 x 15" + 1 horns	

<b>THE MAXIPA SPEAKER SYSTEM</b>	
Maxi bass bin (200w)	185.00
1 x 15" Gauss	
Maxi-midrange Bin (200w)	169.00
1 x 12" Gauss	



12052 Slave	69.50
12067 AP50	87.20
12032 H100 opt.	84.00
12052 2 x 12 Horn	135.20
12063 2 x 12	108.80
12057 Tri-Tone cab	124.00
12055 2 x 12 cab	68.00
12052 2 x 12 Horn	77.60

### SISME/GODWIN

126 PA 200w	528.00
120 PA 100w	389.00
182 PA spkrs.	137.00
225 PA spkr.	212.00
186 Monitor box	133.00
192/5 el amp spkr	319.00
226/S el amp spkr	395.00
186/S el amp monitor	317.00
SM300 organ Leslie	354.00
SM300 Leslie	777.00
SM3000 Leslie	1038.00
SM100 Leslie	493.00

### SOLA SOUND

Buckaroo 7w	26.41
Mighty Atom	22.73
Col/Snd Compact	34.25
Power Pack 15	50.60
Power Pack 3D	77.27
Base 30	69.18

### SOUNDCRAFT ELECTRONICS

MIXER CONSOLES	
16/2 (Mk.2)	1000.00
12/4 (Mk.2)	975.00
16/4 (Mk.2)	1120.00
Mod Cons.	P.O.A.
Court./JBL Spkr Systems	P.O.A.

### SOUNDOUT

HE1c.50w	54.00
HE2c.100w	84.00
DL3.100w	37.00
DL6.100w	102.00

### THEATRE PROJECTS

ALTEC	
1204 50w	435.00
1238 B 50w	420.00
1218 A 50w	400.00
1215 A 150w	225.00
1225 A 100w	400.00
1207 C col. 75w	263.00
1211 A col. 50w	185.00
1217 A col. 75w	317.00
612 C spkr.	70.00
828 B spkr.	105.00
815 LF/HN	140.00
815 A LF/HN	68.50

MONITORS	
9844 A 30w	440.00
9845 A 50w	530.00
9846 B A 100w	530.00
9849 A 60w	320.00

AMPLIFIERS	
9440 A 2X 225w	735.00
9477 B 130w	320.00

### TOP GEAR

Prices to be announced	
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### WHITE

LW50 G/B/k-b amp	
70w	139.50
LW100 G/B/k-b amp	
120w	158.55
CM30 G. combo 30w/60w spks	196.65
CM30 Combo/trv.	213.00
PA100 6ch. 100w	149.22
PA150 6ch. 150w	168.99
PA200 6ch. 200w	189.00

POWER SLAVE AMPS	
PS100 100w	106.92
PS150 150w	119.43
PS250 250w	148.50
PS300 Stereo	185.22

ENCLOSURES	
A200	157.58
A150	215.63
A150H	263.73
A250	277.50

PA ENCLOSURES	
S50 1x 12" 60w	53.85
S100 2 x 12" 120w	84.82
S150 1 x 15" 100w	174.21
S200 4 x 12" 240w	157.65
M50 1 x 12" 50w	61.74
H50 Ht. 50w	66.45

### CONCERT RANGE PA ENCLOSURES

B12	196.20
B15	240.12
B30	398.58
H100E	135.23
H100V	187.23
T70	171.48
L100	314.85

### MONITOR ENCLOSURES

M100/12 100w	130.77
M100/15 100w	127.86
M200/15 200w	184.98

### MIXING DESKS

DB 8ch. mono 8ch.	185.79
DB D/ix mono 8ch.	229.80
D16 stereo 16 ch.	870.00
D24 stereo 24ch.	1275.00

### WING TRAYNOR

COMBOS	
YGM-3, 30	90.00
YGM-4, 40	111.00
YGL-3.90w	196.00
YBA-2B, Bass 30w	90.00
YBA-4.50w	141.00

AMPS	
YBA-1, 50w Bass	89.00
YRM-1, 50w	111.00
YBA-1A, 100w Bass	120.00
YGL-3A, 100w	141.00
Monoblock 325	225.00

SPEAKERS	
YS-15P, 15"	81.00
YF-12, 12"	102.00
YF-10, 4x10"	102.00
YC-8 10,8x10"	170.74
YC-6 10, 6x10"	128.00
Y-2 12, 2x12"	96.00
YF-12, 4x12"	138.00
YCV-18B, 18x18"	252.00
YCV-215, 2x15"	252.00
YCV-212, 2x12"	159.00

P.A.	
YVM-2, 30w	69.00
YVM-3, 30w	90.00
YVM-4, 4ch.	158.76
YVM-6, 6ch.	188.00
YPM-1, 100w	90.00
MX8, 8 ch.	179.00
MX15, 16 ch.	T.B.A.

### W.M.I.

AMPLIFIERS	
CM 8	15.69
K 66	27.73

### CBS/ARBITER

Rhodes Suitcase Piano 88	1191.30
Rhodes Suitcase Piano, 73	1038.40
Rhodes Stage Piano, 88	811.80
Rhodes Stage Piano, 73	691.90
Super Satellite Power Spkrs.	731.50
Rhodes Piano Bass	399.30

### CRUMAR LTD.

HAVEN ORGANS	
200	548.00
201	654.00
202	996.00
203	1196.00
A250	1106.49

CRUMAR KEYBOARDS	
Multiman	462.00
Multiman P board	45.00
Stringman	369.00
Organizer	395.00
Jazzman	305.56
Brassman	320.00
Compacstring	230.00
Compactrass	212.00

### J.T. COPPOCK

ELGAM ELECTRONIC ORGANS	
244	445.37
244C	504.62
237	300.00
237C	361.11
2049C	152.77
245	281.48
249R	325.00
610	249.00
610R	298.14
3048 DL	188.81
3048 DLR	239.88
1049	145.37
1049	112.86
1037	87.88

ELGAM ELECTRONIC PIANOS	
Gypsy	310.18
Portable	184.25

### DALLAS

ORGANS (ELECTRIC REED and ELECTRONIC)	
Chord	30.00
Chord	44.00
Little Duchy Electronic	47.00
Electronic Chord	123.00
Electronic Chord	143.00
Electronic (rhythm box)	229.00
New Chord (Pet)	26.00
Orgatron L	24.00
New Chord (Pet)	22.50

### DAVOLI

ORGANS & SYNTHS.	
K249	575.99
K217	749.99
Z205	2299.99
Devolisint	225.00

### ELECTRIC PIANOS

Group	750.00
Baby Grand	850.00

### ELKA-ORLA

CHICAGO	
37/12	98.66
Chicago 45	100.62
Tiffany 3/6rhy	114.77
Tiffany 4/6rhy	117.99
Companion P37/12	
6 rhy	128.96
Companion P21/6rhy	132.09
Companion P37/12/6rhy & auto bs. acc.	149.38
Companion L5/6 rhy	136.82

### HAMMOND

SPINET	
Dolphin 9622K	540.00
Dolphin d/ix 9422K	700.00
Coquer 712J	1020.00
Phoenix 1222	1355.00

CONSOLE	
Monarch 16122	3195.00
Grandie 11122	3995.00
Regent 4172	3995.00
Concorde 2107	4797.00

PORTABLE	
K-5	412.00
X-5	1088.00

KEYBOARDS	
Multiman	462.00
Multiman P board	45.00
Stringman	369.00
Organizer	395.00
Jazzman	305.56
Brassman	320.00
Compacstring	230.00
Compactrass	212.00

### HOHNER

KEYBOARDS	
Mini KORG 700	300.93
Mini KORG 700S	356.48
Clavinet D6	323.56
Pianet N	221.39
Combo Pianet	173.98
Hi Piano	212.27
Bass 2	125.93
Electra	462.04

ORGANS	
Organel 41	223.89
Organel 40	386.33
Organel 240 RA	539.95
Organel 440 S	735.46
Consul	328.43
Weekend	432.96
President 3	488.70
Organelta 1	66.44
Organelta 2 D/L	123.44
Organs 249/249K	180.88
Organs 354	238.34
Organs Stool	10.88

### KENTUCKY ORGAN

Challenger	710.42
Explorer	955.60
Adventurer	1191.67

### EKO ELECTRONIC CHORD ORGANS

3160 Tivoli 18R	127.20
3213 Tivoli 12	88.00

### EKO PORTABLE ELECTRONIC ORGANS

3208 Tiger	228.00
3206 Tiger	280.00
3206 Tiger 61	280.00
3207 Tiger 61 R	319.20
3202 Tiger Duo	340.00
3204 Tiger Duo R	380.00
3212 Tiger Duo A	399.20

### MOOG CONSOLE ELECTRONIC ORGANS

3025 Cantorum 44 R	399.20
3032 Domus 37(A)	424.00
3034 Domus 44(A)	516.00
3002 Majestic Auto CT	1196.00
3003 Coliseum e.p.	1328.00
3003R Coliseum	1340.00
Rhy + Trans	1359.20

### LOGAN CONSOLE ELECTRONIC ORGANS

10.022 Weekend	559.20
10.050 Holiday	719.20
10.051 Holiday 400	940.00

### ROSE-MORRIS

GEM ELECTRONIC KEYBOARDS	
297 1/2 keyboard	726.65
Dual Manual organ	726.65
TBA Dakota Synth	550.95
Dual Manual organ	550.95
291 Caravan spgle man	104.00
290 Europa spgle man	79.20
3 octave	79.20
282 Jumbo Gam part. 4 oct	140.00
293 Jumbo 61 5 oct	164.00
198 Jumbo 61/trv unit	236.00
199 Combo piano	184.50

LORENZO ORGANS	
285 12bs	67.42

MINI-KORG SYNTH.	
260 Model 700	300.90
281 700S	349.95
542.25	542.25

### SELMER

LOWREY ORGANS	
Tecnic Genie	590.00
Genie 44	839.20
Genie 88	1147.00
Theatre Genie 88	1252.80
Genie 95	1412.00
Theatre Genie 99	1524.00
Holiday/Genie	1596.00
Orchestral Holiday/Genie	1569.40
Symphonic/Genie	1568.00

### SELMER ELECTRONIC PIANOS

Spindard	193.51
"P"/20w	227.20
"PR"/Rhythm Unit	268.00

### SELMER CONSOLE ELECTRONIC ORGANS

49R Console	78.40
49R Console	439.20
49RL Console/Space	516.00
Sound	367.20
37R Console	367.20

### KENTUCKY ORGAN

Challenger	710.42
Explorer	955.60
Adventurer	1191.67

### SELMER PORTABLE COMBO ORGANS

49 Dble Man. 98k	343.20
49R/Rhy. Unit Dble. man. 98k	398.00
37R/Rhy. Unit Dble. man 74k	295.20

### CORDDVOX COMBO ORGANS

CDX-0652/Moog syn	773.61
CDX-0642/2 man 98k	535.20
CRD-0810/spkl man 12bs/37rhy	139.20

### MOOG CONSOLE ELECTRONIC ORGANS

3025 Cantorum 44 R	399.20
3032 Domus 37(A)	424.00
3034 Domus 44(A)	516.00
3002 Majestic Auto CT	1196.00
3003 Coliseum e.p.	1328.00
3003R Coliseum	1340.00
Rhy + Trans	1359.20

### LOGAN CONSOLE ELECTRONIC ORGANS

10.022 Weekend	559.20
10.050 Holiday	719.20
10.051 Holiday 400	940.00

### PRIVILEGE 400S

1216.00	1216.00
1248.00	1248.00
1312.	

PERCUSSION/GUITARS

<b>SUPERCLASSIC TOM-TOMS</b>		
8 x 12"	61.47	
9 x 13"	64.25	
10 x 14"	65.66	
12 x 15"	69.86	
14 x 14" Floor	83.92	
16 x 18" Floor	92.18	
18 x 18" Floor	106.18	
18 x 20" Floor	123.34	

<b>CLASSIC BASS DRUMS/SPURS</b>		
14 x 20"	118.73	
14 x 22"	127.13	
14 x 24"	135.49	
14 x 26"	145.28	

<b>SELMER</b>		
<b>PEARL PROF. DRUM OUTFITS</b>		
Dyna-family 22"		
Wd-fgls	575.92	
Dyna-family 22"		
Wd-fgls Satin	618.51	
Dyna-family 24"		
Wd-fgls	590.74	
Dyna-family 24" Wd-fgls		
Satin	636.11	
Full-dimension 22"		
Wd-fgls	393.51	
Full-dimension 22" Wd-fgls		
Satin	368.00	
Full-dimension 22"		
Fibregls	439.81	
Full-dimension 22" Fibregls		
Satin	470.37	
Full-dimension 22"		
N.P. phen	412.03	
Full-dimension 22" N.P. phen		
Satin	441.66	
Full-dimension 24"		
Wd-fgls	401.85	
Full-dimension 24" Wd-fgls		
Satin	430.55	
Full-dimension 24"		
Fibregls	444.44	
Full-dimension 24" Fibregls		
Satin	475.00	
Full-dimension 24" N.P.		
Phen.	416.66	
Full-dimension 24" N.P. phen		
Satin	447.22	
Soundventure 22"		
Wd-fgls	381.48	
Soundventure 22" Wd-fgls		
Satin	404.62	
Soundventure 22"		
Fibregls	454.62	
Soundventure 22" Fibregls		
Satin	479.62	
Soundventure 22" N.P. phen		
Phen.	415.74	
Soundventure 22" N.P. phen		
Satin	439.81	
Soundventure 24"		
Wd-fgls	392.59	
Soundventure 24" Wd-fgls		
Satin	414.18	
Soundventure 24"		
Fibregls	464.81	
Soundventure 24" Fibregls		
Satin	485.18	
Soundventure 24" N.P. phen		
Phen.	425.00	
Soundventure 24" N.P. phen		
Satin	444.44	
Reckit 24" Wd-fgls		
Satin	360.18	
Reckit 24" Wd-fgls		
Satin	375.00	
Reckit 24" Wd-fgls		
Satin	360.18	
Reckit 24" Wd-fgls		
Satin	375.00	
Reckit 24" Wd-fgls		
Satin	375.00	
Reckit 24" Wd-fgls		
Satin	400.00	
Reckit 24" Wd-fgls		
Satin	375.00	
Reckit 24" N.P.		
Phen.	365.74	
Reckit 24" N.P. phen		
Satin	407.77	
Powermate 22"		
Wd-fgls	317.59	
Powermate 22" Wd-fgls		
Satin	334.25	
Powermate 22" Wd-fgls		
Satin	387.03	
Powermate 22" N.P.		
Phen.	339.81	

<b>SWING STAR OUTFITS</b>		
S-50S	260.74	
S-5	339.95	
S-4	196.76	
S-04	186.57	

<b>W.M.I.</b>		
<b>TAMBOURINES</b>		
TH.81	1.81	
TH.102	2.73	
TH.104	3.47	
TS.106	4.58	

<b>BONGO DRUMS</b>		
B.65	4.12	

<b>DRUM KIT</b>		
D-3	74.03	

<b>CMJ</b>		
Custom 6	109.96	
Custom 4	122.76	
Salisbury	109.95	
SG2 S	42.05	
SG10 B	51.41	
ST300	41.05	
SG10 B	64.42	

<b>HASHIMOTO CLASSIC</b>		
G100	38.72	
G130	44.18	
G160	51.41	
G200	57.79	
G250	68.68	

<b>J.T. COPPOCK</b>		
<b>DOBBO</b>		
Hnd. Dg.sq.nk.	163.89	
B/grsd.nk.	163.89	

<b>NATIONAL DOBBO</b>		
36 HndEng	263.88	
33 D.Dia.etch.	231.48	
30 Gd.enam.	175.00	

<b>HAWAIIAN</b>		
2390 Gtr.	21.75	
2981 O./In	42.61	

<b>ANTORIA CLASSICAL</b>		
361	30.09	
RA2	31.02	

<b>ANTORIA CLASSICAL</b>		
2839	39.35	
2840	45.37	
2841	47.22	
2850	39.81	
2855	52.70	
2858 slo.grd.	94.44	
F2871 Filmco.	94.44	

<b>YAMAHA</b>		
3551 S	120.83	
3552 S	133.33	
3558 S Jbn	119.91	
3550 P.Grd.		
concert	86.11	
3550 S.Grd.		
concert	88.89	

<b>KLIRA</b>		
Westbury	54.79	
310 Elec	58.93	
30D Blc	68.19	
Blue Hill 6	58.78	
Blue Hill 6	52.17	
SMB Solid	80.13	
SM9 Solid	90.57	
355 Bs.	76.86	
149 Classic	27.61	

<b>GUYATONE STEEL</b>		
HG91	20.66	
HG306	55.52	
HG188 C	85.71	

<b>GIANNINI GUITARS</b>		
Classical - Nylon	25.85	
Classical - Nylon	29.70	
Classical - Nylon	42.35	
Classical - Nylon	61.70	
Classical - Nylon	64.36	
12 String Jumbo	64.35	
6 String Jumbo	49.50	
6 String Jumbo	53.35	
6 String Jumbo	44.00	
6 String Jumbo	53.35	
6 String Jumbo	55.00	

<b>DAVOLI</b>		
<b>GHERSON</b>		
LZFR Mahog./Gold	112.00	
G2 Nat./Chroma	97.50	
G2 Bass Nat./Chroma	110.00	

<b>LANDOLA</b>		
6 STRING		
V65 Folk	33.80	
V66	36.40	
V70	38.50	
V71	39.48	
E200	45.52	
E211	51.24	

<b>12 STRING</b>		
V69	43.54	
V73	53.48	
E231	67.90	

<b>FLETCHER COPPOCK &amp; NEWMAN</b>		
<b>KIMBARA</b>		
ACOUSTICS		
N105 Cls.	28.39	
N106 Cls.	27.73	
N107 Cls.	28.66	
N178 Cls.	35.09	
N29 Cls.	43.06	
N108 Cls.	55.51	
N75 Cls. w/cs	76.20	
N76 Cls w/cs	95.30	
ME 20 TS	39.58	
PM 302	41.25	
SA 200	40.37	
SE 2 B Bass	36.81	
SE 2 S	26.81	
SG 2 S	37.36	
SG 10 B Bass	43.10	
SG 22	37.45	
SG 22 V	54.03	
SG 2000	64.03	
SP 1	25.74	
ST 30	51.76	
ST 300	85.19	
TF 200 N	52.31	

<b>ELECTRICS</b>		
N114 Solid Blk w/cs	90.80	
N115 gold	90.80	
N116 sun	90.80	
N117 nat.	90.80	
N118 mahog.	76.40	
N120 white	105.60	
N121 nat.	114.40	
N123 Bass. sun	105.60	
N124 Nat.	114.80	
N125 stereo Bass nat w/cs	171.20	
N126 Bass nat	111.20	
N128 Solid nat w/cs	107.20	

<b>CONCERTR</b>		
SK 614 N	14.77	
HK 200	20.28	
WK 599 SH	30.37	
FK 599 F	30.65	
FK 299	25.50	

<b>RESONATA</b>		
N87 classic	17.58	
N89 Classic	23.15	

<b>VICTOR GARCIA</b>		
N189 Spanish	22.92	
N189	23.04	
N127	26.76	

<b>LORENZO</b>		
N98 Student	12.92	
N11 Cls.	14.12	
N99 Cls.	17.55	
N110 Filk	13.84	
N102 Fil.	22.84	

ALL PRICES ARE WITHOUT V.A.T.

<b>HOHNER</b>		
<b>ECONOMY</b>		
5000	8.89	

<b>MUSIMA</b>		
1612 N	13.56	
1612 S	13.24	

<b>RESONATA</b>		
730 class.	16.43	
731 class.	18.15	
732 class.	22.73	

<b>MORIDAIRA</b>		
841 class.	20.83	
842 class.	24.86	
843 class.	27.22	
845 class.	36.25	
848 class.	50.46	
847 Jbn.	41.67	
848 Jbn.d/I.	54.30	
849 12 str.jbn.	53.61	
850	73.61	
855/F301 Fk.	35.42	
856/F303 Fk.	46.57	
851/WB13	88.81	
852/WB1030 Jbn.	46.84	

<b>HONDA</b>		
H130	24.95	
H150	24.95	
H165	27.13	
H160 12 str.jbn.	31.94	
H175 Jbn.	27.41	
H180 Jbn D/L	29.35	
H200 Folk	29.44	
H210 Jbn.	31.93	
H220 12 str. jbn.	41.67	
H305 Class.	14.12	
H310 Class.	21.39	
H320 Class.	27.92	

<b>ELECTRIC</b>		
AT2T	27.92	
FB 1W Bass	60.74	
FT 2T	30.06	
JB 200 Bass	74.50	
LE 200 Bass	74.49	
-big 23R	79.77	
LP 200 G	72.36	
LS 200 C	54.77	
MB 200 Bass	54.77	
ME 20 TS	39.58	
PM 302	41.25	
SA 200	40.37	
SE 2 B Bass	36.81	
SE 2 S	26.81	
SG 2 S	37.36	
SG 10 B Bass	43.10	
SG 22	37.45	
SG 22 V	54.03	
SG 2000	64.03	
SP 1	25.74	
ST 30	51.76	
ST 300	85.19	
TF 200 N	52.31	

<b>SAKURA</b>		
C.136S	64.82	
C.113A	16.67	
N30 FK	38.40	
LS25-B	35.20	
LS2GDS	44.00	
F.339R	39.36	
F.340	32.41	
MG.25	27.78	
C132S	41.67	
TD.10	25.00	
TG.20	27.78	
TG.30	30.56	

Powermate 22" N.P. Phen. Satin	357.40
Image creator 22" Wd-shls	278.70
Image creator 22" Wdshls Satin	295.37
Image creator 22" Wd-fgls	278.70
Image creator 22" Wd-fgls Satin	295.37
Image creator 22" Fgls	312.03
Image creator 22" Fgls Satin	320.85
Dyna-Max 22" Wdshls	191.66
Dyna-Max 22" Wdshls Satin	210.18
Thunder King 22" Wdshls	222.22
Thunder King 22" Edshls Satin	239.81
B Bros concert, T.T	300.00
B Bros concert, T.T Satin	325.00

**SEPTEMBER**

16/2	170.00
12/2	199.00
14/2	230.00
16/2	255.00
18/2	289.00
20/2	320.00
<b>SERIES 2</b>	
10/2	206.00
12/2	240.00
14/2	275.00
16/2	308.00
18/2	343.00
20/2	380.00
200w Slave	L.B.A.
Custom built amps	P.O.A.

**SHURE**

VA302 E6 Vocal	
Mixer	
VA302 F6 Sc Control Console	596.02
VA300 S Spkr. Cols	364.67
VA301 S Monitor	144.73
Speaker	91.20
VA305 HF Speaker	56.83
PM300 E6 Booster amp	151.11

**SUMMERFIELD**

852D B5 spurs	74.07
852E B5 spurs	85.19
852A B5 spurs	91.86
852B B5 spurs	99.54
853A LI TT	54.63
853B FI TT	59.26
853C FI TT	64.81
853D Snare	74.07
857A Snare	57.40
858A Snare	52.78
857B Snare	40.74
858D Snare	43.51
8512 TT	34.72
8513 TT	36.11
8514 TT	41.86
8515 TT	45.37

**TAMA ROYAL STAR DRUM**

QUITITS	
7917	365.74
7925	296.30
7924	261.11
7955	284.25
7954	272.22
7905	384.29
7804	332.40
7904	217.59
<b>DRUMS</b>	
7520 B5 snare	59.25
7522 B5 snare	69.44
SA7520 B5 snare	60.18
SA7522 B5 snare	69.44
TD7820 B5 snare	100.00
TD7822 B5 snare	107.40
7534 FI TT	41.66
7535 FI TT	44.44

<b>BOOSEY &amp; HAWKEY</b>	
<b>DI GIORGIO</b>	
No 16 Signoria	36.25
No 28 Classic Classic	43.52
No 36 Belmont Classic	66.22
No 30 Amazon Classic	59.92
<b>TAKEHARU</b>	
GT230A small	49.00
GT 308 small	49.00
GT 96	32.30
GT 120	37.00
GT 180	49.00
WT 100 jumbo	36.35
WT 200 jumbo	50.90
<b>VITTORO</b>	
570 small	11.80
575 Full size	18.45
2851 Full size	14.60

**CBS/ARBITER**

<b>FENDER SOLID BODY ELECTRIC</b>	
Jaguar	293.00
Jazzmaster	280.00
Sitarocaster/trem.	232.00
Sitarocaster	200.00
Telecaster d-lx	251.00
Telecaster d-lx/trem	271.00
Telecaster custom/Bigsb	196.00
Tram	234.00
Telecaster stan	180.00
Telecaster stan/Bigsb	
Trem	225.00
Bronco	112.00
Musicmaster	103.00
Mustang	182.00
<b>FENDER SEMI-SOLID</b>	
Telecaster thinline	234.00
Telecaster thinline/Bigsb	268.00
Sitarocaster Semi acoustic electric	372.00
<b>FENDER F SERIES ACUSTIC</b>	
CLASSIC	
FC-10%	33.00
FC-10	36.55
FC-20	44.70
FC-30	57.25
FC-40	65.25

<b>STEELSTRUNG</b>	
F-16	42.85
F-35	54.80
F-45	55.95
F-55-12	68.10
F-65	68.20
F-75	87.15
F-85	115.55
F-95	148.15
<b>FENDER SOLID BASS</b>	
Precision narrow neck	186.00
Precision Flatless Jazz	186.00
Jazz	273.00
Telecaster	18.00
Mustang	152.00
Musicmaster	92.00
<b>CLEARTONE</b>	
<b>MELODY</b>	
1200	34.65
1250	43.71
500	30.81
525	38.09
325	13.00
450	21.81
460	29.94
350	15.35
800	34.47
1300	39.38
<b>MIAMI</b>	
FT1	25.35
FT2	29.83
FT1 B5	32.89

888 E Gr.Wst.Elec.	72.68
2374 sem Ac Id	87.04
2371 sem-Ac bs	75.46
2370 sem-Ac Id	79.17
1752/45/mstr.bs.	39.35
1755 S/mstr II	48.15
1917 Twncst bs	47.22
1912 Twncstr.	45.37
2385 Cplr T/boy bs.	107.41
2384 Cplr d/ll	109.26
2386 L/ik	127.31
2386 Memphis ctm d/r	
2376 Dixie f2.bs.bs.	99.15
2375 Aspl	118.98
2375 N Rock/min	
Natural	97.22
2375 Ls/bst/l/h	99.81
2375 W Rock/min	
White	90.74
2375 Rock/min	
Maple fb.	86.57
2375 Rock/min	
R wlb.	81.02
2366 FLB./F/hes	
Bass	75.46
2366 BMksmn	75.46
2365 B Dixie	76.85
2365 Dxmstr.	56.33
2368 Cplr F/bt.	94.81
2353 LDX Cplr.	
Jazzmaster	69.91
l/bs.blk	69.91
2353 Cplr l/bs.	56.33
2352 C trom.	71.65
2352 d/r/ik	83.33
2352 MCplr d/r	56.48
2352 Clipper	50.00
2354 W/stk.l/bs.	80.09
2354 BW/stk.bs	70.83
2354 W/stk.nat.	77.31
2347 W/stk.m.	96.30
2336 W/stk.std.	94.00
2383 W/stk.cim	110.19
2382 W/stk.d/1	86.11
2377 W/stk.pro.	81.94
2354 SL/H.	74.54
2354 SW/sik.std.	65.28
2354 W/sik	67.78
2350 B Mem bs.	72.69
2405 Mem.orig d/1	123.81
2391 N Mem.Nat.	77.31
2351 Mem.orig.	66.11
2351 DX Mem.d/1	81.67
2351 Mem.d/1	80.09
2350 L Mem.std/l/h	77.31
2350 cim Cust.	76.85
Sid. Bst.	71.76
2350 Mem.std	71.76
2350 G Mam Custom	77.31
2357 Mr. Strad.	47.22
Vio bs.	
2355 Bg Jhn.	112.96
S.A. Mpl	
2355 Bg Jhn	
S.A. S.bst.	101.85

**DALLAS**

<b>CLASSIC</b>	
Torre Student	13.50
Torre Chick 3/4	20.10
Torre Classic	25.50
Torre Spognola	35.70
Torre Granada	54.75
<b>JUMBO</b>	
Arbiter	33.50
Arbiter	35.10
Arbiter	44.20
Arbiter XII	47.50
Arbiter	48.50
Arbiter	88.50
Martin Colletti - Small Body	10.00
<b>ARBITER ELECTRIC</b>	
E250 1 P/U	28.60
Solid	
E255 2 P/U	32.35
Solid	
E260 Solid Bass	41.75
E210 L.P. S/B	90.75
E215 L.P. S/B	
Spin P/U	101.55
E220 S.G.	125.85
E225 Flying V	117.40
E230 S.G. 3 Gold P/Ups	
Trem	105.30
E235 TV	124.00
E240 Double Neck 5 & 12 String	170.50
E245 L.P. Jun.	124.00

N103 Jmb.	27.41
N104 12 str.	28.06
<b>COLUMBUS</b>	
N197 Jumbo sun	31.95
N122 12 str.	34.36
N35 s/ac 6 str	45.20
N84 solid	32.76
N83 Bass	39.04
N113	39.68
N85 Bk.	50.36
N85 S sun	60.36
N82 3 p/u	52.75
N54 mahog.	43.80
N66 Bass	46.04
N77 sun	51.15

**FRAMUS**

<b>CLASSIC</b>	
01010	50.92
01210	69.44
01510	137.96
<b>WESTERN 6 STRING</b>	
05011 Dix 6	66.66
05810 Falcon	
0/night	118.51
05550 Falcon	
Jumbo	147.22
05710 Nashv.	
0/night	180.55
05100 Nashv.	
Jumbo	205.00
<b>WESTERN 12 STRING</b>	
06011 Dix 12	76.39
06810 Falcon	
0/night	128.70
<b>SOLID BODY</b>	
10170 FS/74	78.70
10200 S/156	127.77
11010 Nashv	
Stan.	165.74
11110 Nashv.	
Stan.D/1x	230.55
11210 Nashv.	
Super D/1x	368.51
10980 Jan Akkerman	508.33
<b>SOLID BODY BASSES</b>	
12002 J/156.2	85.18
12510 Nashv.	
Stan. Bst.	165.74
12510 Nashv.	
Stan D/1x	368.51
12980 Triumph Bass	239.81
<b>SEMI-ACUSTIC</b>	
07301 S/120	200.92
<b>JAZZ</b>	
03302 S/60	137.03
13803 AZ/10	367.96
<b>STEELS</b>	
14470 0/4	69.44
14670 FS/1000	
Single	703.70
14570 FS/2000	
Double	924.07
<b>G.M.S. PICATO</b>	
<b>ELECTRIC</b>	
ES77 Fine gau.	2.32
UL77 R.N.R.G.	2.47
77 L.G.	2.47
P780 Med.G	2.78
<b>ELECT BASS.</b>	
735 L Rod Long	6.97
735 M Rod Med.	6.97
735 L Ny.Long	6.97
736 M Ny. Med	6.97
738 L Flt. Long	6.97
738 M Flt. Med.	6.97
<b>ACUSTIC</b>	
SG 45	109.10
SG 85	160.88
SB. 35 Bass	93.64
SBL 55	136.03
SBL 75	159.09
<b>ACUSTIC ELEC.</b>	
AE 12	200.33
AE. 18	263.01

F140	40.74
D200	44.44
T260	49.07
D350	71.30
<b>TERADA ACUSTIC</b>	
G306	40.74
G307	44.44
G310	50.00
F604	47.22
FV650	60.19
FW624	50.36
FW645	90.74
<b>KASUGA ELECTRIC (NEW MODELS)</b>	
97.60	
100.80	
102.40	
104.80	
136.80	
142.40	
169.60	
214.40	
<b>ZENTA ELECTRICS</b>	
MEZO TS	23.92
<b>ZENTA ELECTRICS (NEW MODELS)</b>	
EG501	23.96
EG502	27.16
EG511	27.56
HEG506	30.40
HEG5004	38.40
HET5001	32.80
HES5000	36.40
HEP5002	42.40
<b>KEMBLE</b>	
<b>CLASSICS</b>	
G 85	33.33
G 87	37.03
G 90	40.09
G 120	45.61
G 150	50.92
G 180	61.44
G 220	72.52
G 280	89.81
GC 3 H/mudc	111.11
GC 6 H/made	157.40
GC 10 H/made	212.96
<b>FOLK</b>	
FG 75	39.30
FG 11 ON	43.57
FG 160 Jumbo	53.85
FG 170	55.12
FG 200 N Jumbo	67.22
FG 280 Jumbo, 12 st.	76.57
FG 280 Jumbo.	76.98
FG 300 N Jumbo	99.07
FG 360 Jumbo	101.85
FG 580 Jumbo	123.79
FG 1500 H/made	336.11
FG 2000 H/made	379.82
FG295	80.00
FG700S With Handmade Case	179.00
FG1000 With Handmade Case	259.00
FG1200 With Handmade Case	289.00
<b>FOLK &amp; PICK UP</b>	
FG 110 E	53.05
FG 160 E	64.53
<b>SEMI-ACUSTIC</b>	
SA. 30	78.18
SA. 60	175.90
SA. 90	221.21
SA. 75 Bass	183.84
<b>SOLIDS</b>	
SG. 30	77.26
SG. 35	93.64
SG. 40	104.52
SG. 45	109.10
SG 85	160.88
SB. 35 Bass	93.64
SBL 55	136.03
SBL 75	159.09

Shaft Gold Top	89.09
Shell.bs.	77.27
Shaftsbury 3 p/u	68.17
West 1 6 st	32.41
Wot 20 6 st.	26.74
Top 20 4 st bs	40.33
Avon 2 p/u	47.69
Avon 2 p/u 1753 cov	50.45
Avon 2 p/u	49.48
Avon 2 p/u 1754 cov	52.04
Avon 1 p/u bs	46.67
Avon 1 p/u bs	46.67
1785 cov	48.43
Avon 2 p/u bs	54.36
Avon 2 p/u bag	
1744 cov	61.33
<b>ACOUSTICS</b>	
AVATION	
Sid Bal'd. Bstr.	163.63
Sid Bal'd. 12str.	227.28
Gl Cambt Art'str.	209.09
Gl Cambt Art. 12str.	254.54
Folklore	209.09
Cls Bal'd	163.64
Art. Elec.	236.36
Country Elec.	236.36
<b>SHAFTE'S WESTERNS</b>	
Jbo.	97.26
Jbo.	114.97
Jbo.	120.03
Jbo.	147.30
Jbo.	163.67
6 str. Jbo.	28.44
12 str Jbo.	38.82
<b>OVIATION</b>	
Broadwinner sol.	279.70
Deacon sol.	332.92
Glen Cambel Ar. Bstr.	302.51
Glen Cambel	
Ar. 12 str.	370.99
Bolladeer 6 st	241.58
Pacemaker 12 st.	332.97
Clus. Balladeer Nly.st.	241.65
Folklore Steel st.	272.06
Cust. Balladeer 6st.	256.82
Clus. Nyl string	325.30
Conc. cl. nyl. string	256.82
Legend 6st. steel	313.15
Artist 6st. steel	256.35
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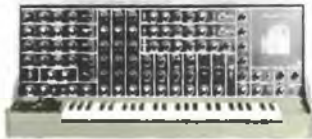


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 SM, RC, ERS, EK, Spec. PA.

## Studio Guide

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### KEY FOR STUDIO GUIDE

T	Track
Cap	Capacity
p/h	per hour
p/d	per day
D	Dolby
tf	Transfer facilities
R-R	Reel to Reel
CP	Copying
Iba	to be advised
Ka	Keyboards available
R-C	Reel to Cassette
R-Cr	Reel to Cartridge
Dc	Disc cutting
d-t	Disc to tape
OTC	Quads
M	Overtime charge
S	mono
stereo	Stereo
fcf	fully coated film
VS	Video Studio
Ac	Accommodation
ba	by arrangement
SM	Session Musicians

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RNR	Rehearsal Rooms
SL	Stage Lighting
Sc	Security
Di	Discs
CM	Channel Mixer
CTM	Concert Tour Management
PA	Public Address

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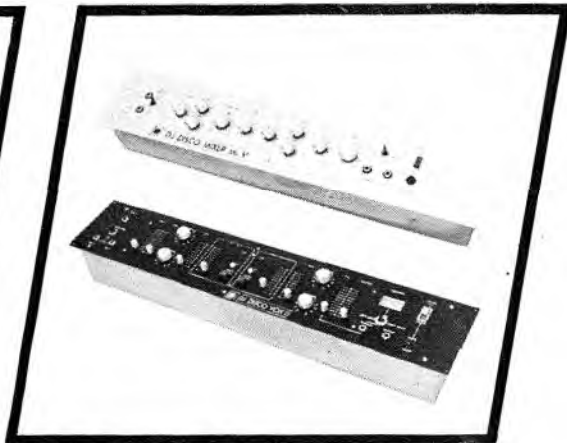
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