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December 1979 60p

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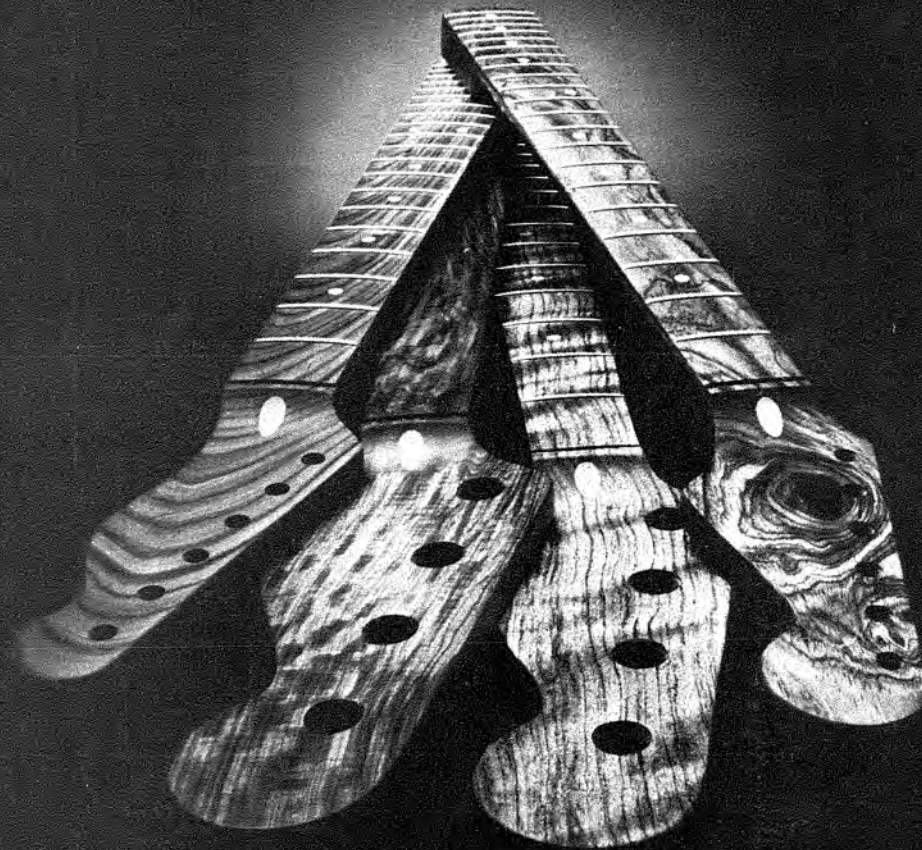
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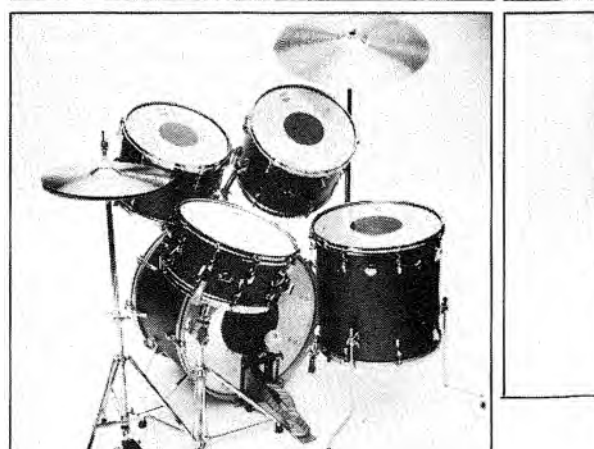
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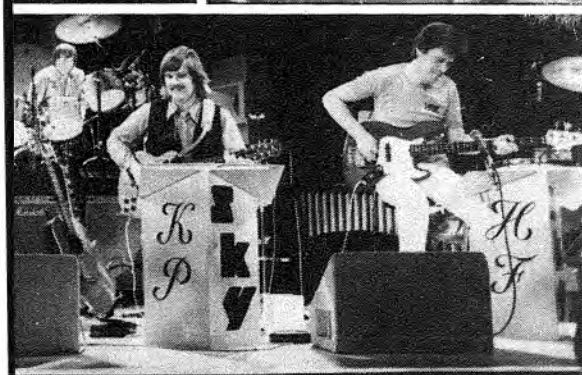
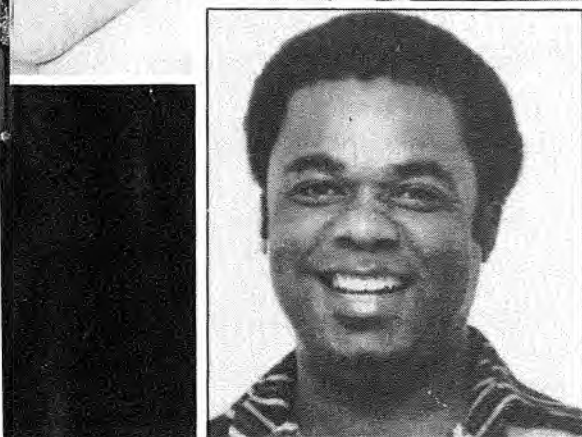
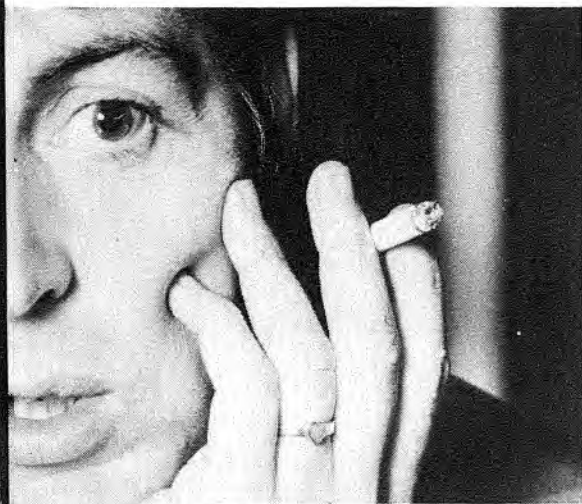
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Editorial

And so to the end of another year, and as it happens the end of a decade. To many people the Seventies music scene seemed a bit of an anti-climax after the heady days of the Sixties, but nevertheless there were significant developments like the Glam Rock period, the Punk explosion and, of course, the launching of **International Musician and Recording World**.

From its inception, the magazine has aimed to cover every aspect of music from the musician's point of view, irrespective of whatever category they may be under. The result can be seen in this issue where we have a superstar of the Sixties, namely Paul McCartney, who has remained such a potent force in the Seventies, next to a Punk star of the Seventies in Jimmy Pursey, and a good old rock and roll guitarist in Mick Moody of Whitesnake and a jazz crossover artist, Freddie Hubbard.

Whatever kind of music is played you can be sure that **IM** will cover it. This has been the case in the Seventies and will continue to be our policy in the Eighties. We will be bringing you new features, such as Ken Dibble's concert reviews from a soundman's point of view, the new drum section which will begin in January, and our studio project.

You can also expect comments on the issues which affect musicians such as the bootlegging of musical instruments, and the new proposed legislation to raise the price of blank tapes. Record companies maintain that they lose millions through having their albums taped freely, so maybe if this legislation goes through then record companies will have more money to spend on newer acts and so reverse the present recession.

Whatever happens, if it affects musicians, you'll read about it in **IM**. See you in the Eighties.



Vol. 5 No. 12
December 1979 (UK)
January 1980 (USA)

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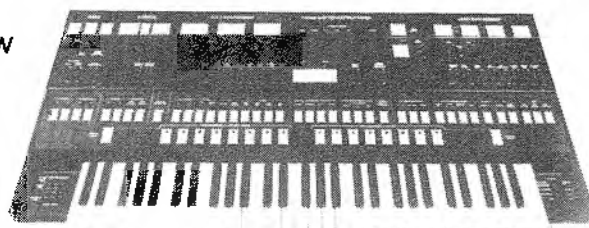
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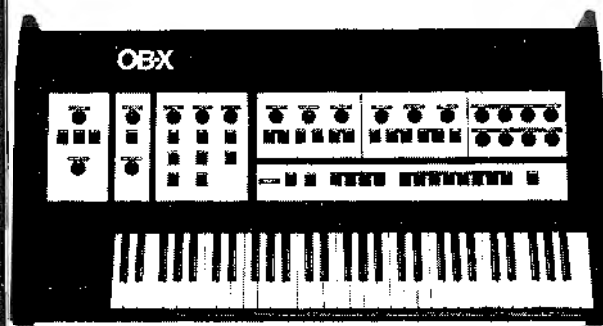
The amazing A.R.P. Quadra

Now you can play four programmable synthesizers from one incredible keyboard. The new ARP Quadra is actually four separate synthesizers in one. Keyboard players can now duplicate, in live performance, the kinds of complex layered sounds that were once only possible using multi-track recording techniques. When you play the Quadra, you simultaneously control a variable bass synthesiser, a string synthesiser, a polyphonic synthesiser and a touch sensitive, two note, lead line synthesiser. Each synthesiser is individually programmable and mixable. All four channels can be channeled through a built in phaser for dazzling, realistic concert hall animation, and 16 memories will retain the functions of each module. Quadrophonic outputs mean that each section can go through its own speaker and there are external inputs for guitars or another synthesizers. Plus four pedals: Portamento footswitch, Sequencer Hold, filter sweep pedal and polyphonic sustain pedal. The ARP Quadra is just about unbeatable value for money at £2,499.

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modulation levers, two ADSR envelope generators, two oscillators per voice and switchable 115/230 volt power. To give versatility in live performances the OB-X has the following foot control inputs: vibrator pedal, volume pedal, filter pedal, sustain foot switch, and programme advance foot switch. An optional 'roade repair kit' will expedite easy field repairs. OB-X 4 voice £2395 6 voice £2750 8 voice £2999

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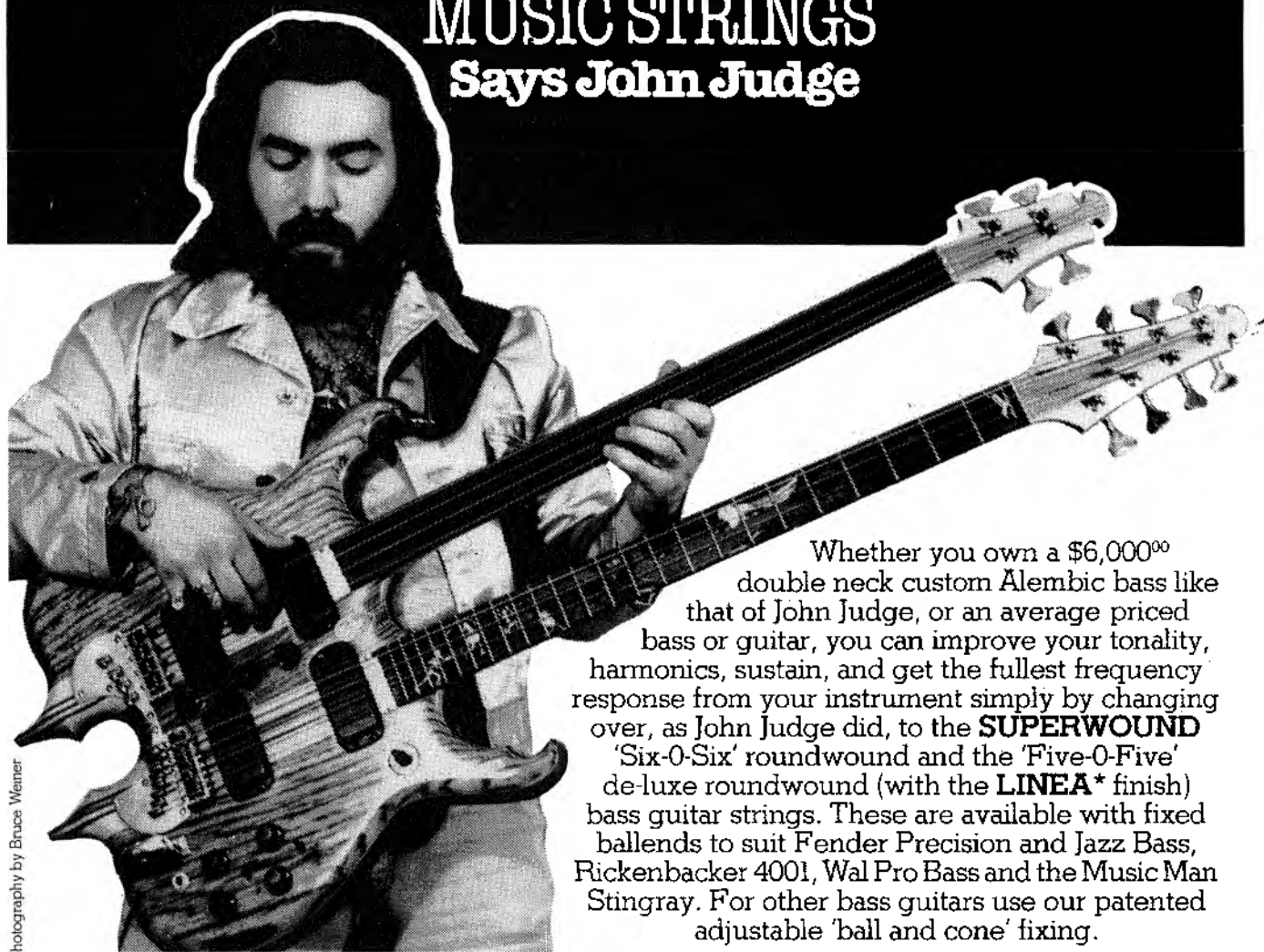
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For the Big Guitar Sound Change over to Superwound

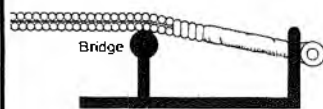
MUSIC STRINGS
Says John Judge



photography by Bruce Weiner

Whether you own a \$6,000⁰⁰ double neck custom Alembic bass like that of John Judge, or an average priced bass or guitar, you can improve your tonality, harmonics, sustain, and get the fullest frequency response from your instrument simply by changing over, as John Judge did, to the **SUPERWOUND** 'Six-O-Six' roundwound and the 'Five-O-Five' de-luxe roundwound (with the **LINEA*** finish) bass guitar strings. These are available with fixed ballends to suit Fender Precision and Jazz Bass, Rickenbacker 4001, Wal Pro Bass and the Music Man Stingray. For other bass guitars use our patented adjustable 'ball and cone' fixing.

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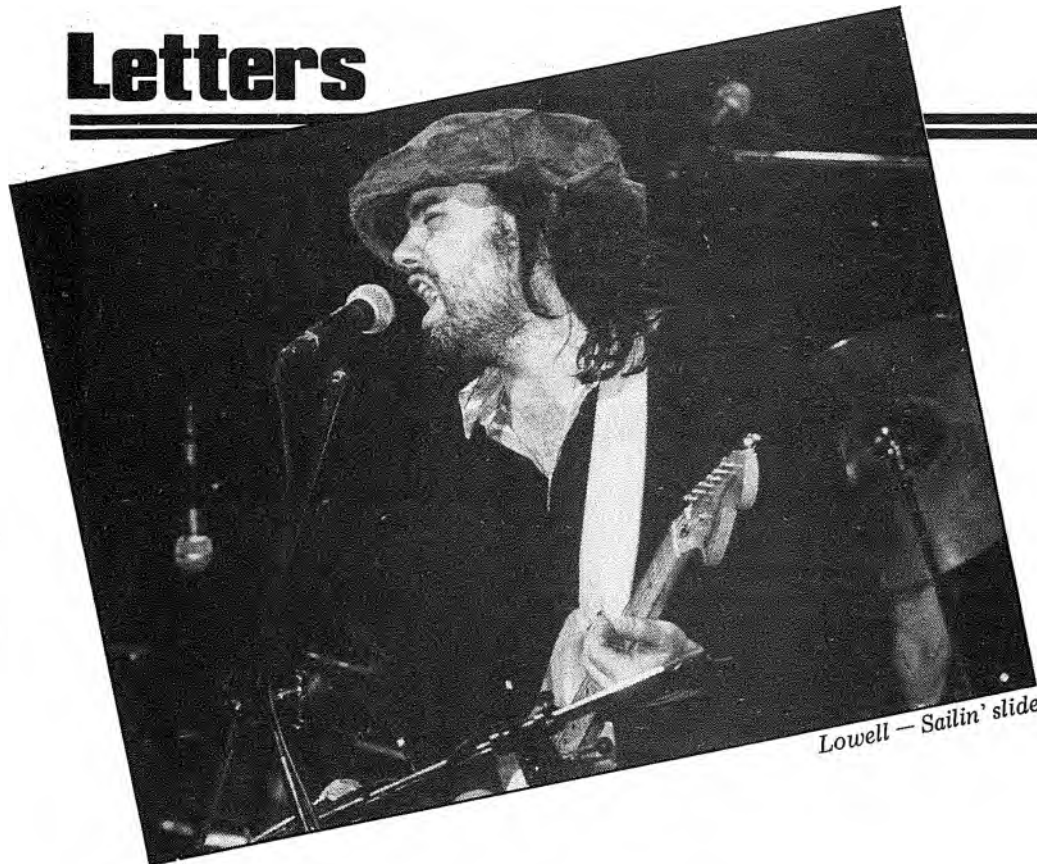
The difference between **SUPERWOUND** and a conventional string is shown in these diagrams, thus giving you the above qualities.

***LINEA.** This special finish makes a roundwound string feel smoother. It is not 'ground'. Therefore keeps its original sound.



Sole Manufacturers: **SUPERWOUND LTD.**, Morewood Close, London Road, Sevenoakes, Kent, England.

Letters



Lowell — Sailin' slide

Feat Facts

Dear Sir: Could you please tell me what kind of equipment Lowell George, the late king of the slide guitar, used on Little Feat's, *Feats Don't Fail Me Now*.

Was his guitar altered in any way and what kind of amp did he use?

Did he play with his fingers, a pick, or a mixture of both?

How did he sustain his guitar for so long (e.g. "Down the Road"). Is this an effects pedal or something to do with his guitar?

Last of all. What gauge strings did he use and what make?

The man had the love and respect of everyone who understood what he really was about, which was playing blues like few boys could and most of all, having fun.

B. Galibardy,
Bexleyheath, Kent.

He used a Marshall for bottom amplification and a Vox 100 watt for top. He played a Fender Strat with Fender F-50 strings and used a pick. He achieved his sustain with Paul Barrère by using a Dynacomp compressor and wah wah without the wah wah. In other words, he just held the pedal down without pumping it!

Roll Call

Dear Sir: I am a drummer and my friend is a keyboard player. We have both had lots of musical experience and excellent gear.

We have searched high and low for a good bass and lead guitarist who like funk, jazz rock with a view to forming a very tidy outfit. However, all the replies seem to be from W.M. Club players etc.

If there is anyone interested who is willing to work hard telephone Bob on Blackburn (0254) 673121.

Thanks for a great mag.

Bob Atkinson,
Blackburn, Lancs.

Getting it Strait

Dear Sir: I've just read the September issue of *IM*, and I was chuffed to see an interview with my favourite guitarist Mark Knopfler. After listening to the Dire Straits album *Communiqué* three times every night for the last month, I'm convinced that it has got to be the best thing since God invented Eve! However, I was a bit dismayed when nothing was said in the interview about Mark's brother David Knopfler. For my money, David contributes as much to some of the tracks on both *Communiqué* and *Dire Straits* as Mark does.

Thanks for a great magazine, I never miss it! You knock spots off the other music mags and keep me in touch with the going's on of the music biz. I would otherwise know zilch about it. Keep it up!

Nicholas Jarram,
Long Wharton,
Near Loughborough,
Leicestershire.

P.S. Can anyone please give me the address of the Dire Straits fan club?

We take your point about David Knopfler's contribution, but after all the interview was with Mark. There is no Dire Straits fan club, but if you want to write to the Press Office, Phonogram Records, 129 Park Street, London W1, they will forward any mail.

Name Dropping?

Dear Sir: I heard in conversation a fair while ago, about a firm in London with which you could register your groups name, or see if that was already in use.

If such a place exists or anything similar could you please pass on the address. Thank you in advance.

Glenn Robinson,
Norwich, Norfolk.

As far as we know the only way of registering your group is by registering as a company. There doesn't actually seem to

be any point in doing this because you cannot stop a band using your name. You can only stop them trying to pass themselves off as you. The only people we can think of who may be able to give you any information are the Musicians' Union and the address of their main office is 29 Catherine Place, London SW1E 6EH.

Musicians' Union

Dear Sir: Please could you give me information on the Musicians Union as I want to join. If any money is needed I have enclosed a s.a.e. for you to inform me how much but if it is not could you send me a membership form.

Here are some personal details: I am 17 years of age and play bass/lead/banjo/dobro for a country band, we work about six nights a week. I am semi-pro.

Mark Wilkinson,
Preston, Lancs.

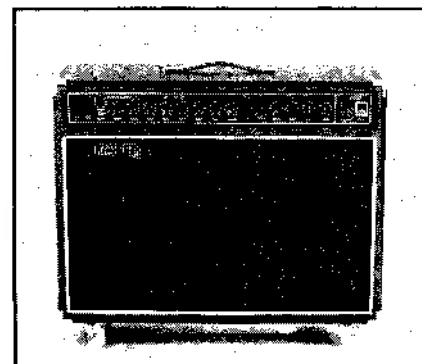
I am afraid we are not connected in any way with the Musicians' Union so I cannot send you any forms you requested. However, I will give you an address to write to them. You do not have to be a full professional musician in order to join — anyone can join as long as they pay their subscription fees! Also, as far as I know there is no age limit either. I do not know which branch you would want to join — you will have a local one — so here is the address and phone number of their national office: 29 Catherine Place, London SW1 (Tel: 01-834-1348). They will be able to tell you all you want to know.

Secure Point

Dear Sir: We read the review of the SRV/100 in the November issue of *International Musician* and we consider the comments to be fair and to the point.

Regarding the criticism of the securing of the mains lead and the mains selector switch protector these points will be corrected on all amplifiers leaving out factory in future.

E. D. Drage,
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SDD 320 Dimension Decoder, stereo, chorus, ultimate, PA embellishment	£283	£257.27
SIP 300 Guitar pre amp, high quality, total flexibility	£180	£163.64
SIP 301 bass pre amp, as above	£198.99	£180.90
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SPA 120 power amp 60W per channel at 8 ohms	£217.31	£197.55
SDE 388 digital delay, the ultimate effects unit	—	POA

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40-42 Whalley Road.
Tel: 0254 35060

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J.S.G. Musical,
108b Main Street,
Bingley,
Tel: 097-86 68843

BIRKENHEAD,
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49-51 Grange Road West.
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6 Smallbrook Ringway.
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Buzz

What's happening in the music biz

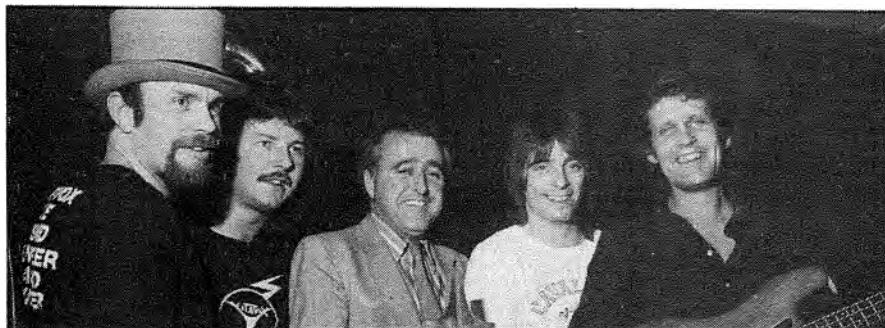
Paradox — a Success Story

Paradox, winners of the 1979 Vitavox Live Sound Award, received their inscribed silver and rosewood trophy from Neil Young, joint managing director of Vitavox Ltd., during a gig at the Chequers Tavern, Tamworth.

Since winning the award in May, Paradox has achieved a growing

recognition which has taken the group out of the local Birmingham scene and onto the national circuit. They are now Diane Solomon's permanent backing group and have appeared on television with her. They are booked for her tour of Cyprus and have a heavy work schedule to return to.

The group's London managers, David Bainbridge and Derek Lawtence, have thought it best to turn down a number of offers from record companies to record a single, as they are all hoping for an album deal in the near future.



Love the Sound

"Breaking Glass", one of the largest budget British films to go into production in 1979, is a contemporary musical drama pivoting around the struggle for recognition of a rock band and its energetic lead singer whose talent and sanity is jeopardised by the machinations of the music business power structure. The film takes place over a period of two years and stars Phil Daniels — fresh from his success as a dropout Mod in "Quadrophenia". Thirteen songs have been written for the film by Hazel O'Connor and produced by top record producer Tony Visconti who serves as the film's musical director.

STA-PREST

Now here is a band that just *has* to go places. They tell us they have only been playing together for about eight months, but from the way they play, one wonders how they have managed to get themselves together so incredibly well in such a short time. There are only three of them — Ray Kingston on bass, Dick Yotk on hot lead guitar and drummer Geoff Green.

Hailing from Wickford in Essex, near Southend, they have been up in London, very effectively breaking into the London scene. As soon as they get themselves sorted out with record deals etc. which are in the final stages of completion, they will be moving into London permanently.

Recently, they played a gig at Ronnie Scott's which we went along to and, as you might have guessed by now, we were tremendously impressed. I suppose if you must classify their music it is kind of Punk/New Wave with a big difference. They are incredibly exciting to listen to, with lot of drive, and despite the rather small audience they played to, they were obviously enjoying themselves a great deal, as did everyone else there.

They ended the first set with a number which they hope will be their first single — "School Days". It is due to be released just after Christmas, and then you can all discover them! They had recorded the single only the previous month — their first time ever in a recording studio.

Bossa Nova?

Gigs Wanted: "Spam 69" will play Trad. Jazz, with a difference, anywhere in the London area. Phone 01-653 1946 for details and ask for Tim (alias Luigi Bolognese)!





Shy Sign to Wessex

Wessex Music Ltd., the Portsmouth based publishing company linked to Warner Bros. Music, have signed local band Shy to a three year contract. The current Shy line-up was formed in May 1979 and consists of:— Brian Howe (lead vocals, keyboards), Bob Snelling (guitar, keyboards), Andy Fretwell (guitar), Chris Fretwell (bass), and Graham Jessup (drums). Shy's distinctive brand of strong melodic rock has already endeared them to audiences along the South Coast and Wessex director Mike Devereux is confident that the band's writing and performing ability will rapidly win them national recognition.

For bookings or more information 'phone Mike Devereux or Roger Kennedy on (0705) 62145 (Don't forget to mention IM!).

Assisted Ascent?

Airmail, who first appeared in *Buzz* (August '79), introducing their debut single: "In A Moment/No Human Feeling" on Graffiti Records, are seeking management, so that they can develop their own brand of stark rock music more fully. They are currently handling their own management, roadying, organisation, gear maintenance etc.

Prospective managers in tune with the band's musical aspirations should 'phone Airmail on 01-340 1973.

The Biggest Record Sale in the World

As part of their "Together for Children" campaign for the International Year of the Child, Oxfam and Unicef in conjunction with Radio 1 are organising a unique event which no record collector can afford to miss.

The Biggest Record Sale in the World will take place at Alexandra Palace on Saturday 15th December 1979. It will take the form of a record supermarket containing well over 100,000 records; singles, LPs and 78s all at giveaway prices, with singles from 10p and a top LP price of 99p. In addition to this there will be an auction of collectors' records at 1pm with viewing on Friday from 1pm to 5pm and Saturday morning from 9 to 12.

While collectors are making the most of this marvellous opportunity, Radio 1 will be broadcasting live shows from Alexander Palace. There will be something for all the family with a wide variety of stalls, exciting games and personal appearances by Radio 1 DJs.

Admission will be £1 for adults, 50p children. In addition to this, the first 100,000 people to arrive will receive free singles.

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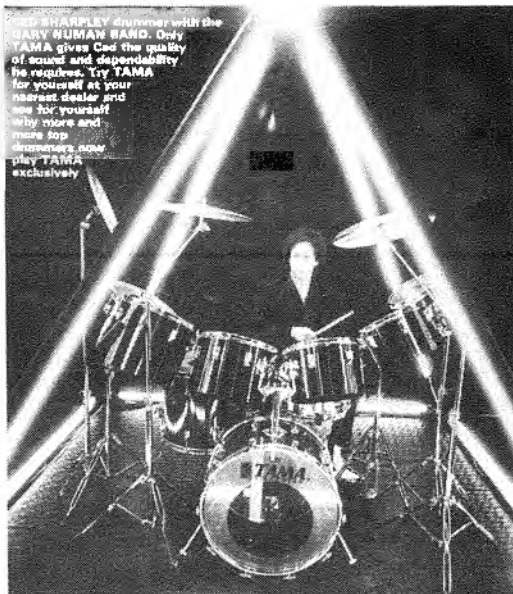
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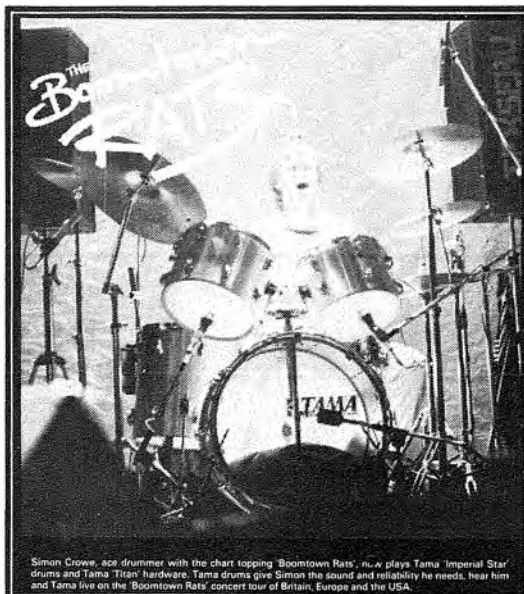
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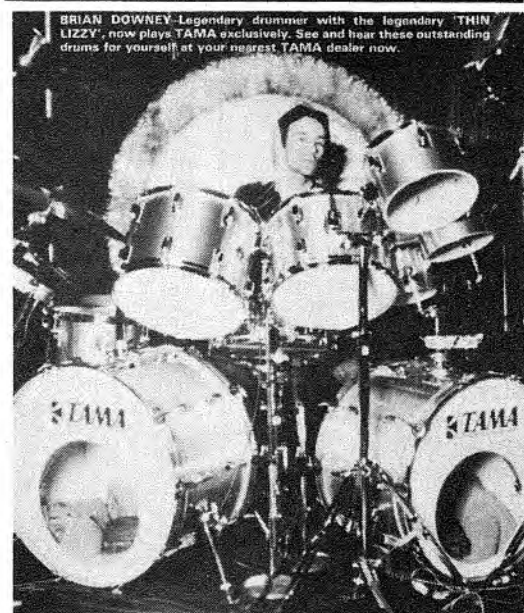
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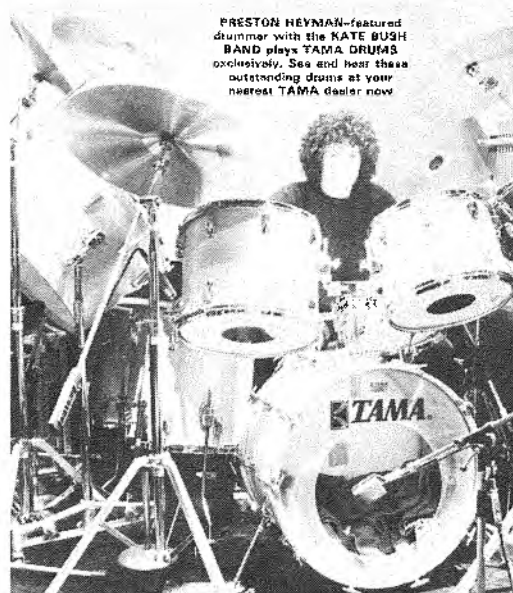
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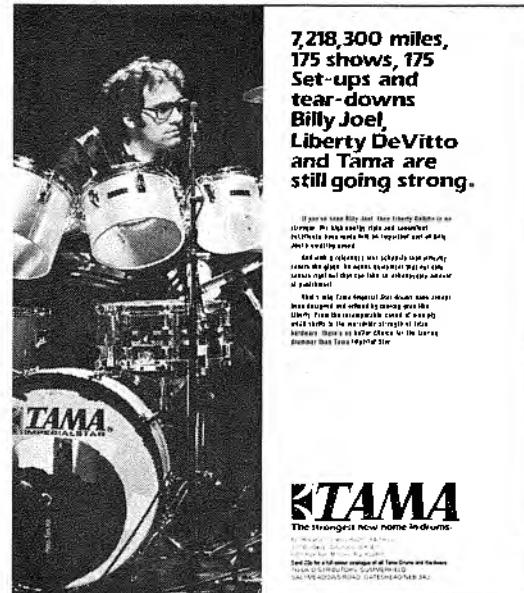
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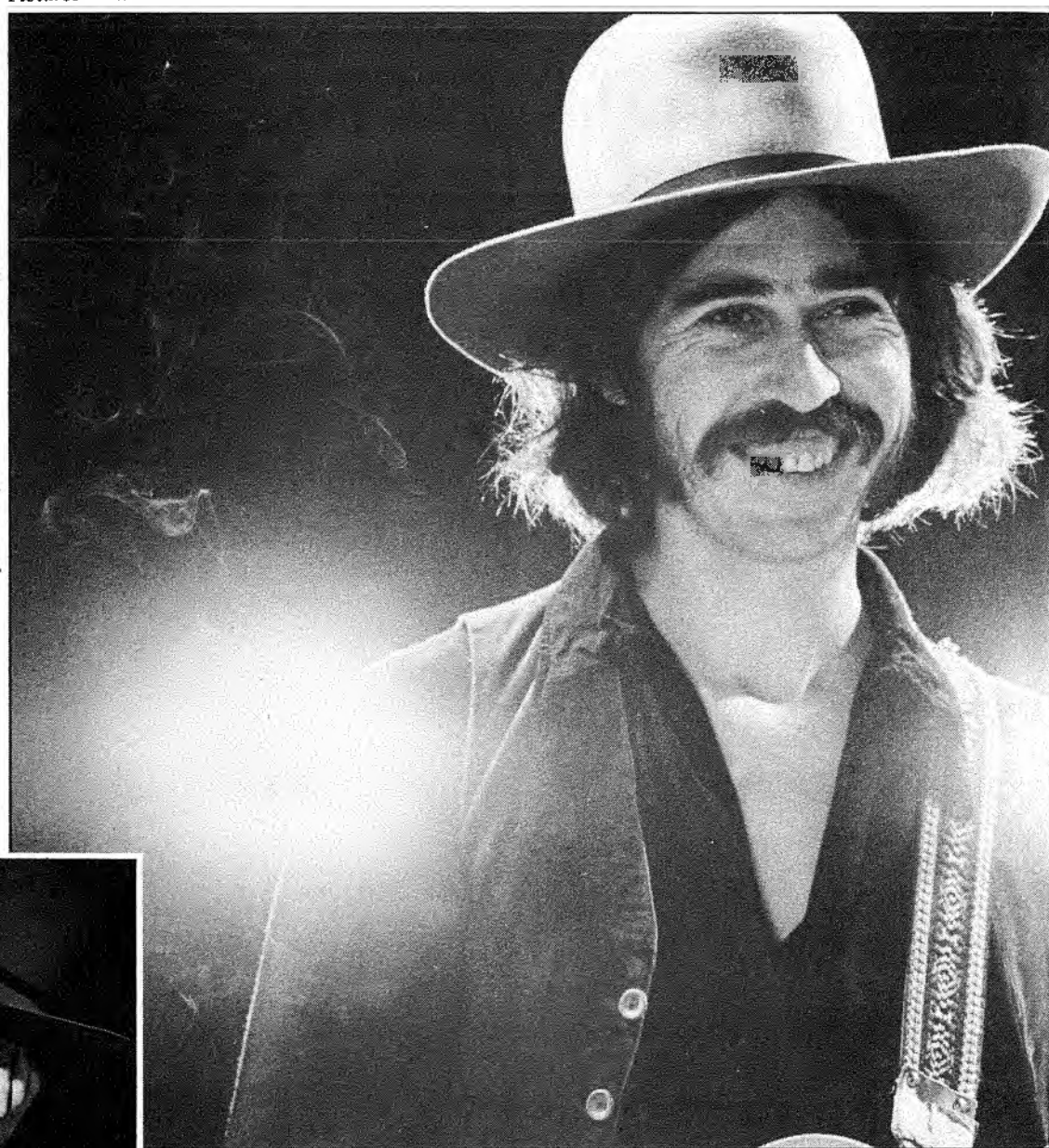
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Mick Moody's blues

The Whitesnake guitarist on smiling rock 'n' roll



Did you hear the one about the heavy rock guitarist who's hero was Segovia? No it's not a joke, there is someone strutting the boards armed with a Les Paul and a Marshall who liked nothing better than tripping out a Bach Prelude. Who is this masked man you may ask?

Well, if you go to a Whitesnake gig and look past vocalist David Coverdale, the man in the funny hat will reveal all. Mick Moody is that refugee from the classical guitar who sold his soul to rock and roll.

The Whitesnake line up contains some pretty heavy names, Ian Paice on drums

and Jon Lord on keyboards, plus Bernie Marsden on guitar. However, it would be unfair to dismiss Micky as just another loud rock guitarist — anyone who remembers the band Snafu will vouch for that.

His love for acoustic playing is just as strong as his electric leanings, and he brings a refreshing approach and attitude to a style of music which may be considered unsubtle and crude. But he insists that Whitesnake are not a Heavy Metal band. "It's a rock and roll band, a loud rock and roll band, but not a heavy rock band."

"It's not your actual riffs, it's more like a rock feel with chords — and we do smile a lot and actually enjoy it. Bernie's a great heavy guitar player and my style fits together with his because it's not so heavy, it's more a blues thing, plus I play slide guitar."

Micky certainly gives the impression of a man who enjoys his music. A cheerful Geordie (Middlesbrough actually) he has

been playing professionally for about 15 years, soaking up a host of influences and using them for his distinct guitar style.

His first excursion into the London music scene was with a band called Wildflowers which included Paul Rogers. He later played with an outfit called Tramline who recorded for Island, and was also in a Juicy Lucy line up.

Mick's inclusion in Whitesnake may have puzzled fans of his previous band, Snafu. Popular around 1973/74 they were an English outfit who were heavily influenced by American Southern States funk. It was a perfect vehicle for his playing and their first album, *Situation Normal*, was highly acclaimed.

"That was recorded in the days when you could afford to go down to the Manor for two weeks," recalls Mick. "It was only £200 a day and you could just groove all day and go in when you felt like it." When the band split up, as a result of the usual management problems, it hit him hard, having been one of the founder



members, so he took time off from the rock circuit.

"I wanted a change and so did session work and a lot of other different things. I was doing a lot of acoustic work, because I've always been into the blues, country blues, the stuff that Ry Cooder was doing with acoustic slide. I was doing a lot of folk things with producer Ian Murphy, who is with Gerry Rafferty, and did an album with Bob Young, the Status Quo tour manager and lyricist. It never sold a dicky bird but it was a lovely album."

All of which seems a far cry from the decibels of Whitesnake. Mick's involvement with the band came about through his long friendship with David Coverdale and it seemed perfectly natural for him to team up with his old buddy. Mick has always been a rock and roller at heart, and enjoys udding licks with Bernie Marsden.

"Bernie has a more English style whereas mine is more American rhythm and blues and it fits well. It's not the easiest thing in the world to play with

another guitar player, especially in a heavy rock band where you're both treated as soloists.

"It's different, say, in Dire Straits where you've got one guy playing nice guitar, like Mark who's a great player, and the other guy's strictly a rhythm player — they both know where they're at. When you've got two lead guitarists, it's a question of, 'right, let's be sensible about this — who's going to play the loudest, or whatever.' So it's a matter of leaving things out and coming down a bit saying, 'let's not be selfish, let's work together.' You do your bit there and I'll do my bit without him pushing me. It's just an enormous respect which isn't easy to find."

When it gets down to the tools of the trade, he uses what has become almost standard in the rock fraternity — a Gibson Les Paul and a Marshall amp. The Gibson is a gold top 1953 model who's P90 pickups have been replaced by PAFs. "Collectors will say sacrilege, but the P90s don't make it, they're 30 watt amp pickups and they just feedback."

The Marshall 100 watt he uses has also been slightly doctored. He tends to play with the treble controls turned up all the time so he's had the control taken down on the amp. For the studio, a Marshall 50 watt combo is the one for the job. Mick has never used more than a 100 watt on stage, and usually keeps it on a setting of about five — ideal for that old Bluesbreakers Clapton style sound.

Although not an avid guitar collector he does possess a few tasty instruments like the 1962 SG Standard which he uses for slide playing. He mainly uses G tuning on stage, E for purely solo string playing and D for certain other things. "I do a little feature on stage where I'm playing strictly on my own, going through quiet blues through loud blues to country picking — the whole bit. It's as much as you can fit into an open G tuning, which ain't easy when you're on your own."

Another favourite guitar is a 335 which is a personal favourite for studio work and "unrock" stuff but which doesn't cut through enough for use on stage with Whitesnake. He's also got a new Washburn which he rates very highly. A Crybaby wah wah and an MXR phaser are the only effects allowed in the Moody set up.

Despite his enjoyment of rock and roll, there is another side to the guitarist which is always near the surface and often wins out. The pure sound of the acoustic guitar is still his great love. "I've always played rock and roll professionally, but I've always loved the acoustic things for home."

"At home I very rarely sit down and play an electric guitar. I tend to sit down with an acoustic because I started out on classical finger style anyway, I was into people like John Fahey. It's a great feeling playing electric guitar and doing all those string bendings but there's nothing like

sitting down with just a piece of wood and six strings. If you can convey your emotions through that, you can play anything as far as I'm concerned."

"At certain times, when you're feeling a bit low, there's nothing like sitting down with a good string guitar and just playing. That vibrato you get on the bass strings is great."

Mick studied classical guitar for two and a half years but soon had a run in with his tutor. Upon being given a piece to learn he would quickly master it in a couple of days and spend the rest of the week putting in his own little bits and vibratos. This may have been the way Segovia did it, but it wasn't the way the notes were written down.

"I'd go along to a guitar lesson a week later having totally deteriorated the stuff into something else. I'd start playing da da da da (vibrato, vibrato) and he'd say, 'Stop, what's the matter, are you nervous?' I'd say, 'No Mr. Murphy, that's vibrato.' 'Stick to the music boy,' he'd reply, 'you can't come in here putting vibrato in and playing your own little bits.'"

"I said either I'm a creative musician or I'm going to be a vegetable guitar player. Like the guy coming in after me was a welder or a pipe fitter and he could play perfectly, but it was like a machine. He was very good but there was nothing personal about it. He obviously didn't listen to the classical players on records, which is what I was doing. I preferred to get into it like that and learn like my hero Segovia or John Williams."

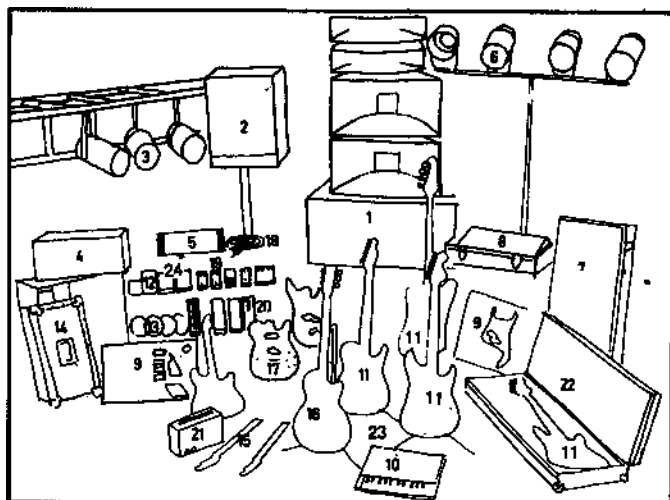
Progressing to the clubs around Durham as a semi-pro musician was good grounding, but it still brought problems for the young Moody who liked to throw in a few Chuck Berry riffs. This provoked the question, "what's all this Chinese stuff you're putting in?" which angered our Michael because his heroes at the time were Chuck Berry and Keith Richards.

That finished him once and for all with tuition, and he determined to go his own merry way from then on. This meant some unlearning of classical techniques like holding your guitar with the thumb around the back of the neck. "I mean you try playing Chuck Berry stuff with you hand around the back of the neck."

Still playing rock and roll fulfills part of his musical direction and he enjoys working with the other members of the band. In no way can it be described as hip or modern music, but then again there are a lot of people who refuse to be influenced by trends and still enjoy a good rock and roll band.

Mick makes no excuses for their music or their style. "Our influences are from 10 years ago and that's the way we want to keep it. We had one review which said, 'this is not teenage music.' Well, we're not teenagers, I mean we're all 30 odd or something, so it's not going to be teenage music, is it?"

David Lawrenson



- 1 Mega pammhögstalar för dej som behöver lite tyngre utrustning (3-väg system) bas mellan diskant från 700 watt användningsområden in och utomhus ljudanläggning samt konsertbruk när högre effekt är nödvändigt finns även många andra typer som medhörningar, diskotek-högtalare m.m.
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- 8, och flera typer av ställningar från enkla stativ till tryckluft
- 3 manövrerade ljuslöst komplett med flightcase och mixer med massor av förinställda effekter kan också skötas manuellt.
- 7, Rainbow Flightcases ett måste för dej som turnerar och
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- 4 samt stötabsorberande skumgummifyllning inuti.
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 - 12 Handtag lås hörnbeslag gångjärn hjul samma som användes till Rainbow flightcases finnes även i lösa delar.
 - 13 Straplock system ett sinnrikt snabbblås för fastsättning av axelband till gitarr eller bas som gör att axelbandet inte åker av och man tappar instrumentet lättmonterad.
 - 18 Heavy Duty gummikabel med kraftiga teleproppar av mässing finnes rak eller spiral i 7 eller 8 mm tjocklek.
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 - Zoom Box distortion 295:—.
 - Moving Box flanger 620:—.
 - 20 Sound Side effektpedaler Swell (volympedal) 140:—.
 - Wah Wah 250:—.
 - Wah Swell 295:—.
 - Fuss (distortion) 265:—.
 - Wah Fuss 330:—.
 - 21 Batteriförstärkare att användas i bussen, bakom scen, som stämförstärkare eller hemma för nybörjare 395:—.
 - 23 Hamilton gitarrstativ för både acustik som el. instrument lätt hopfällbar ett säkert sätt att förvara instrumenten på scen eller hemma betydligt stabilare än andra typer av stativ 195:—.
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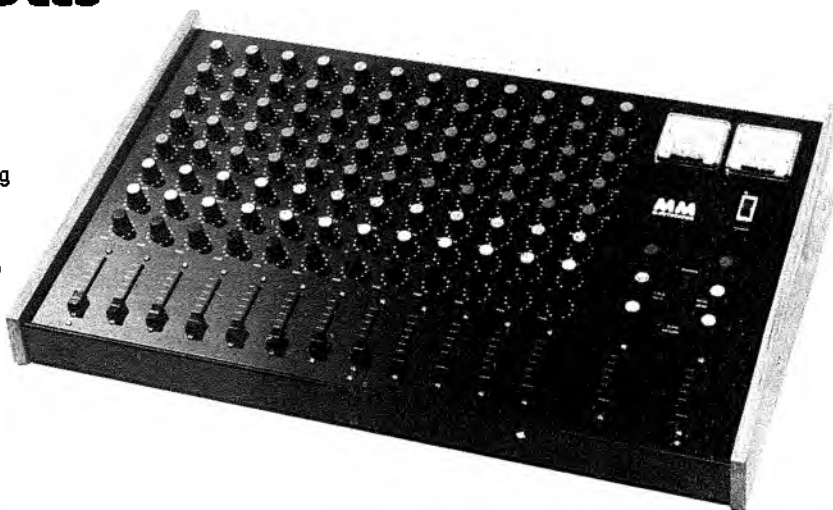
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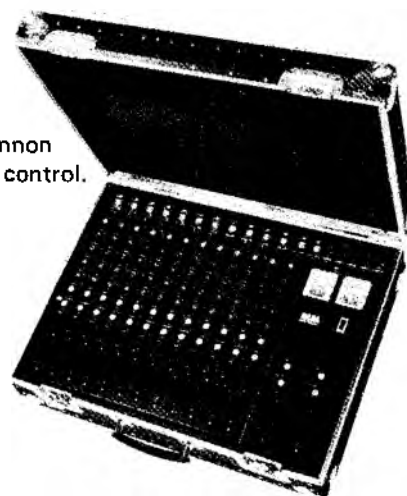
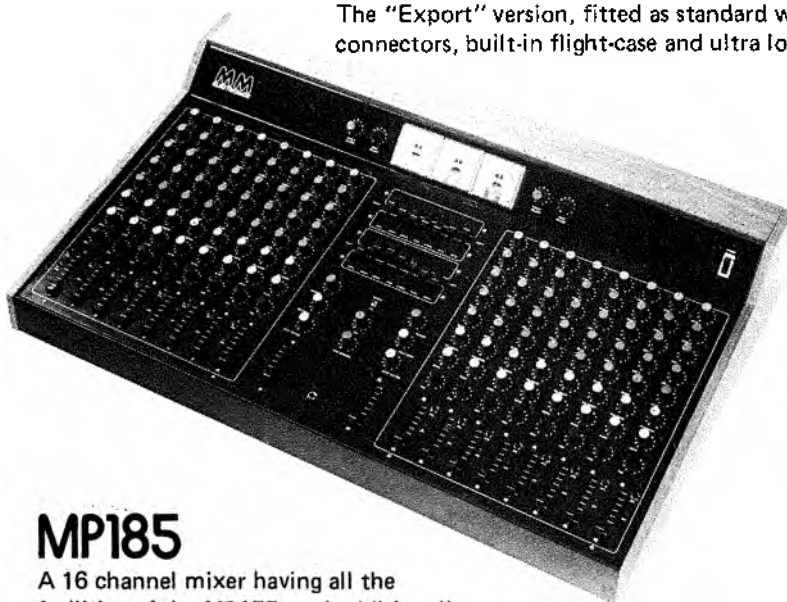
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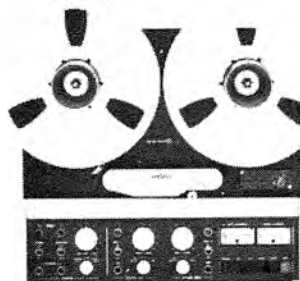
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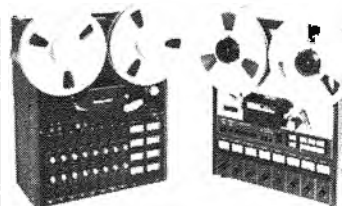
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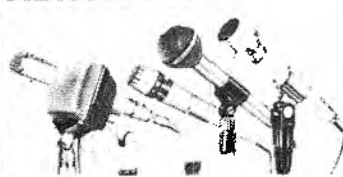
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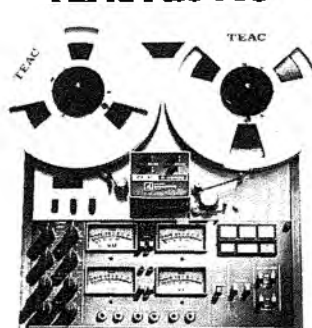
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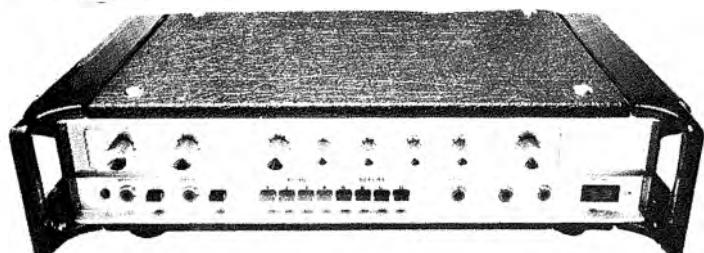
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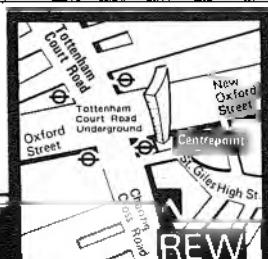
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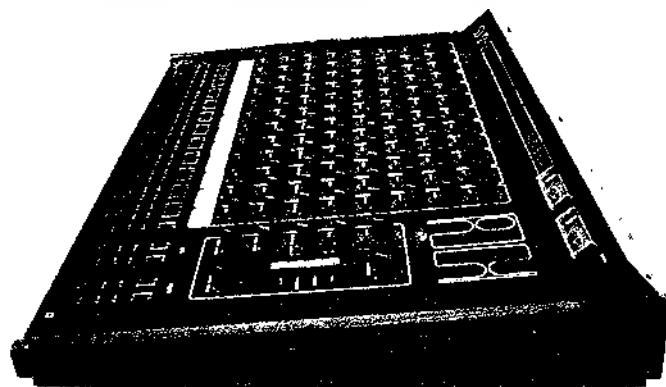
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Cathal's introductions were rambling in a good humoured sort of way, with the others trying to buck the act up to meet the tight schedule of the Queen Elizabeth Hall on a Sunday Night. The champion of a hundred Fleadhs picked up the tin whistle only about twice, preferring to stick to his flute in a Boys of the Lough gig that lacked some of the predictable structure their concerts would have had, say, a year ago, and instead, focused attention on some very interesting new material and some venturesome instrumental work. "A kind of a change" was the way Dave Richardson described it to me afterwards in the bar, when a somewhat travel-weary band bent their attention to whiskey, beer, and the reunions that attended a rare London visit: "A bit of a new approach to the music — some more stuff in the flats, and some more *release* for the fiddle. Things like that".

The Boys of the Lough began in the

late Sixties when Cathal McConnel and Robin Morton joined forces with Aly Bain and Mike Whelans. By 1973 Mike had left, Dave Richardson had joined, and the ensemble was said to be the first fully professional traditional band in the British Isles. This band, with John Peel as one notable catalyst, introduced hitherto unprecedented numbers of the British public to music they were quickly emancipated from regarding as a curiosity of Cloggy-land.

Unlike many traditional bands but like some of the other leading ones the members have always been far-flung in their musical roots. Cathal hails from Co. Fermanagh, Northern Ireland, and while Robin too was an Ulsterman Aly Bain, whose fiddle technique has always been at the heart of the band, is a Shetlander who brings the full, drone-laden sound of the Islands to the Boys' music. The band has known other influences, notably from Dick Gaughan who is a sometime

member, but the last two current members, Tich and Dave Richardson on guitar and citterns/banjo/concertina respectively, come from Tyneside where folk music is eclectic in itself.

Out of these diverse beginnings, the Boys have forged a distinctive although never static sound of their own. Recently, with Robin's departure, that sound has undergone changes. With Tich Richardson joining this September, contributing a very highly developed style of guitar back-up, the changes have been in some measure consolidated.

I asked members of the group about this new Boys of the Lough, about its musical sources, its influence, and the use that will be made of them on the forthcoming album, which should be in the mix as we go to press.

Dave describes the period immediately following Robin's departure as "... just sort of experimenting." They worked with various musicians on a temporary basis, getting used to a new identity, trying different ideas, and still picking up new material. "My brother had been sitting in a lot anyway" Dave continues "and we liked the style of guitar back-up. He was influenced a lot by the Shetland player Willie Johnson — that percussive way of playing. We liked that way of backing a

THE BOYS OF THE LOUGH

CHANGING KEY



lot — it meant that the fiddle could sort of explore a new area . . ."

Nowadays, the Boys of the Lough do not use a *bohran*. Tich's cello-build '50's Epiphone, which is indeed seen at its best when he accompanies Aly's virtuoso fiddle passages, supplies the percussion and can also give an interesting string-bass effect: not the plummy ragtime damped but a more aggressive sound damped by the fingers of the left hand rather than the heel of the right. This is a trade-mark of Johnson's disciples — it was found to be the only satisfactory accompaniment to Shetland fiddling, and now is a distinctive feature of The Boys of the Lough.

"As for the mixture of sources — well, we just naturally play the way we do because of who we are, where we come from. The styles came together without any effort, you know?" Dave is understandably brief. We're standing in a crowded bar with enough Englishmen, Scotsmen, and Irishmen to supply ethnic jokes for half a dozen Dave Allen shows. You can only buy beer by the half pint, because there aren't any pint glasses — so everyone goes to the bar twice as often. Cathal blinks at me owlishly over a brimming glass of something-or-other — perhaps Scotch. I haven't had a chance to speak with him yet. Tich has disappeared without trace and Aly is engaged in a discourse on (I think) Breton music.

"There's no Northumbrian influence in the band at the moment" Dave is saying. "Probably because I don't play Northumbrian pipes — not to that level anyway. On the other hand, we pick up a lot of influence as we go along." Throughout the band's history, and in recent months especially, the Boys have tended to keep 'open house' for musicians they admire. "We like the kind of situation where a musician can just come up and sit in. We've played with various musicians from Canada, the States and other countries as well as Britain — there's

an obvious crossover, with the piano, the fiddle and the guitar being the links . . ."

Dave himself has been described as a kind of backbone to the group providing a road holding with his expert and very reliable string and concertina techniques which can give the others freedom when they need it, and (with Tich's help) pull the band into tighter arrangements when desired. This means a very flexible unit. He describes a typical festival in the U.S. "We always play with like, anyone from Cajun musicians to Old-Time fiddlers . . . at one time we'd been playing all afternoon with a fiddler called Junior Docherty who was Champion of New Mexico. Then when his band went on Tich went up and sat in, and while he was on Dewey Balfour from Louisiana — one of the Balfour Brothers, only his brothers got killed in a car crash earlier this year — went up on stage, and then Aly went, so there were four fiddlers, and Tich was there and Junior's own backing guitarist — so you got a good mix, you see . . ."

Looking on, Dave was highly tickled to see a tune he'd composed for the Boys of the Lough being given the treatment by this impromptu band . . . "You see, first Dewey Balfour got it and made it into a kind of Cajun thing, and then Junior Docherty made a Texas reel out of it . . . it was great, the ideas were just flying around".

In England, the open house policy continues. "Like Jimmy, tonight" Dave continues, referring to Jimmy Finnegan, the Northern Irish Highland pipe player who had played with the Boys at the Queen Elizabeth Hall "We met him in Sheffield earlier this year, we liked his playing, we liked him as a bloke so we said, well, come down and play a few tunes with us. When he got here we had a tune-up and we found a couple of tunes we both knew . . ." And half an hour after that Jimmy and the Boys went on stage together for the first time. "And it worked" Dave points out, in fact, rather unnecessarily.

The noise in the bar has by now become something of an uproar, here's a movement afoot to adjourn from the Queen Elizabeth Hall to somewhere with a more flexible chucking-out time. I find out how to make a live recording, Boys of the Lough style as Dave tells a harrowing tale of mislaid multicores, errant ferries, and domestic exigencies while the band, aided by the engineering expertise of Calum Malcolm from Edinburgh's Castle Sound studios, put together 'Wish You Were Here', their last album.

Recorded on the Boys' annual Highlands and Islands tour which is in part sponsored by the Scottish Arts Council, discussion of this album naturally leads to a question of whether the band shares the Arts Council's consciously proselytising attitude to their music.

Dave appreciates the Art Council's contribution. "But the main point about their support is, you don't know how people will look at it — you don't know whether people who aren't quite sure of it like some of the Scottish will think it's kind of second class music because it

doesn't get the publicity and so on. Scotland exists on a diet of Tattar and Haggis as far as music is concerned. . . ."

On the other hand, the Boys feel that their work can also gain greater status in some circles by 'official' recognition "Provided we can get it, like we do, without selling out, just playing it as it is. It helps because it all feeds back into the tradition which, after all, is where the material originally comes from".

The concept of this living music is very important to what the band is doing now. They feel themselves to be part of a revival of traditional music not only in Shetland, Scotland, and Ireland but in Norway, Sweden, the Massif Central and Brittany, or West Virginia and Minneapolis in the U.S. — in fact, everywhere.

To learn a little more about what this philosophy means with particular reference to the coming album, I finally manage to speak to Cathal, who, amid a considerable hubbub as the assembly begins to disperse, explains the changes in the well-tried Boys of the Lough formula. In particular, the record, like the live performances, is unlikely to be arranged around the twin peaks of Aly's fiddle solo and Cathal's whistle solo.

"The whistle solo? It's gone. Dead, and Extinct." He doesn't seem too unhappy about it — the band obviously moved on, is trying new ideas.

"You see, it's like this — I do three, maybe four songs of an evening, all unaccompanied, and we like to give Aly space for a solo . . ."

It's a question of finding a balance, as it will be on the record which should also feature Cathal's sensitive unaccompanied vocals.

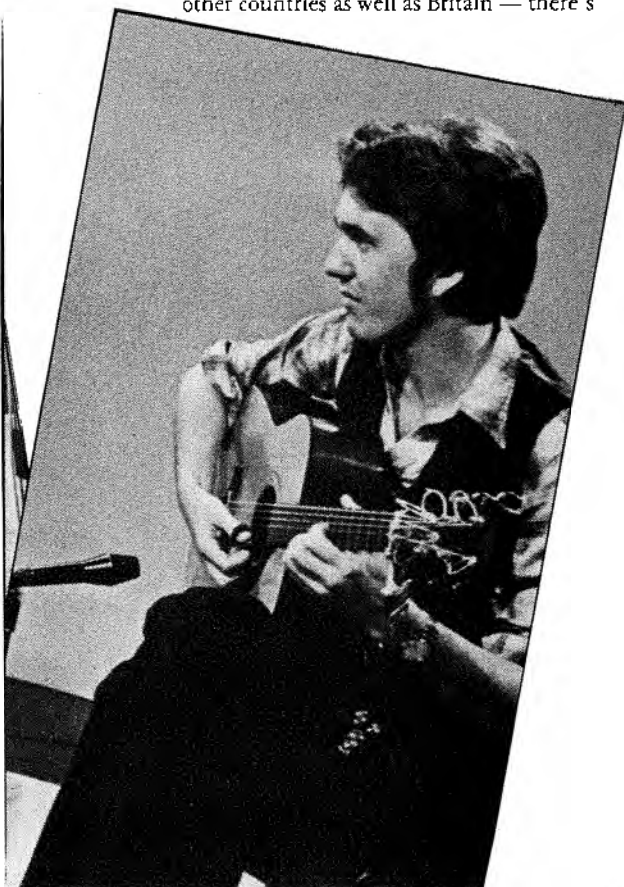
"It's hard to know exactly how to do it" Cathal says. "You're not the first person to say this about the whistle. In a way it was a feature of the group that I used to do this wild, frenetic whistle solo. You see for a concert or a record there's got to be a kind of . . . high point, a kind of . . ."

"Hook?"

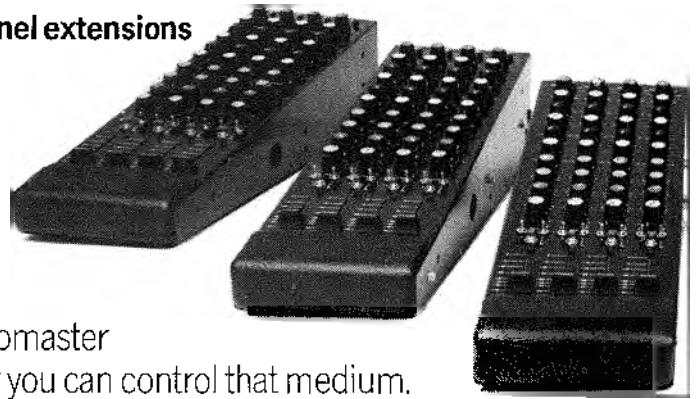
"Yes. But I think on the new record we'll be doing it a bit different — we'll perhaps have some influence from Norway or Orkney and so on, we should have some surprises . . . but I'd rather not elaborate at this stage. And we'll perhaps be working with some interesting people . . ."

"Pipers?" I suggest. Jimmy Finnegan has been receiving compliments all evening. At the moment he's explaining some points of technique and admitting that, yes, there are an awful lot of *eejats* wandering round saying they're pipers. But Cathal, like the others, is not yet saying precisely what the new Boys of the Lough record will have on it. Perhaps wisely, for they are noted for the spontaneity of their ideas. At the moment, any case, everyone is more concerned with getting down to the pub before it closes. "Maybe we'll get up a tune or two later" Someone says. "We have the technology . . ." Someone else rejoins in an exaggerated American drawl. Instruments are retrieved from where they lean against chairs or lie under the tables. The evening is kind of beginning. . .

Paul Ashford



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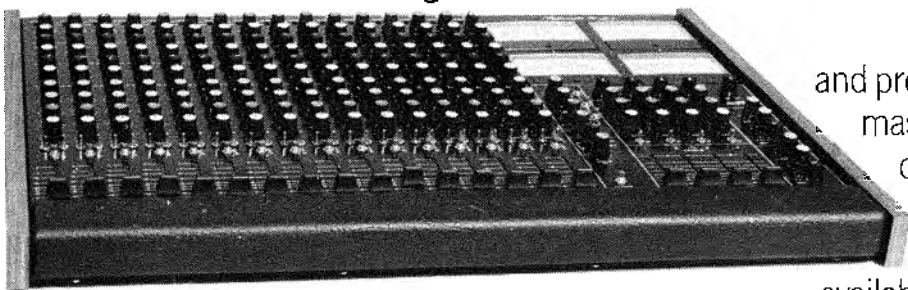
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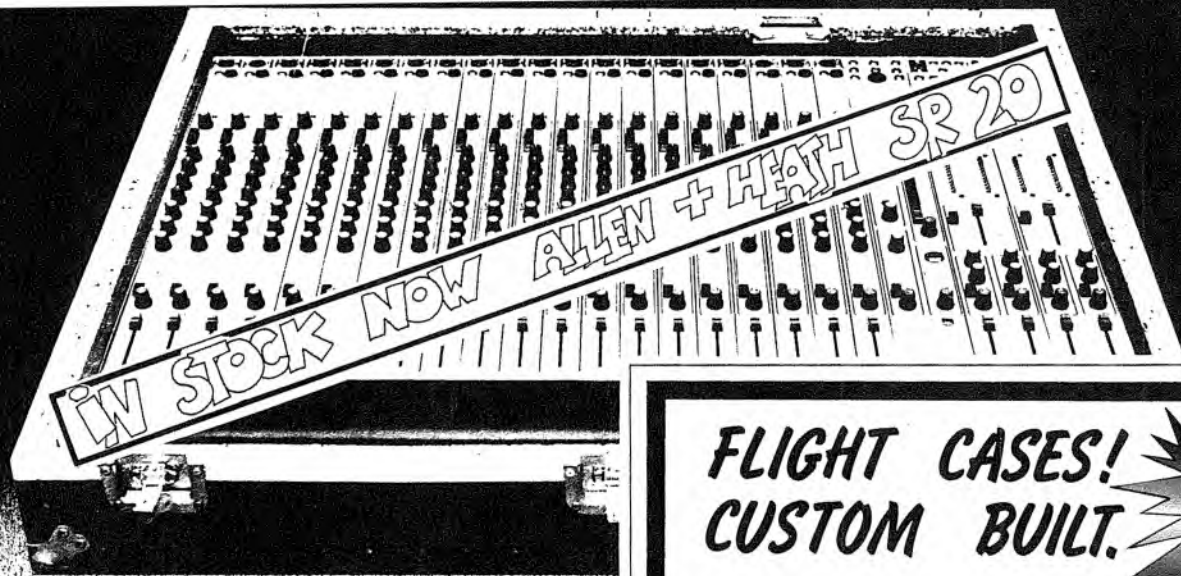
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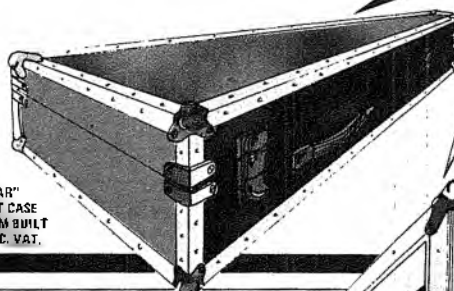


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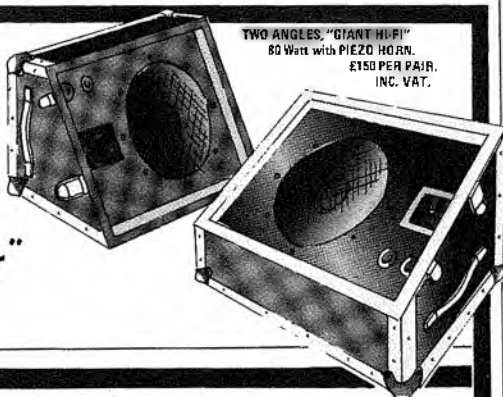
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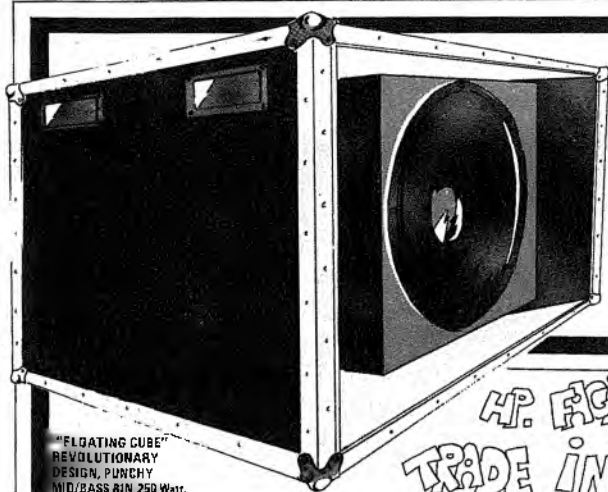
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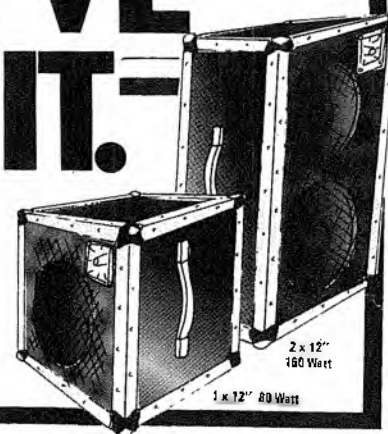
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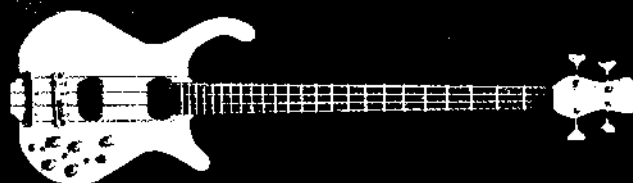
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MEET THE 400C



Paul McCartney-Songwriter

A Rhodium Disc. The metal is something you dig up (if you're lucky enough) in the Yukon or the Urals — rarer and therefore nicer than Platinum. The award was devised by the Guinness Book of Records; the first of its kind. Technically, the reasons for it are three-fold; McCartney has earned more gold discs than anyone else, has been named the most successful composer of all time, and has been named the most successful recording artist of all time. In fact, some question might be raised as to whether they started with the award and worked out who the man was that merited it, or started with the man and worked out how they could honour his unique contribution to popular music. But either way it was a rare accolade. It also created for McCartney an interesting position: to judge from the mood at the presentation and the attitude to the man, what the audience at Les Ambassadeurs were witnessing was the inauguration of an elder statesman of Rock — maybe the first ever.

Whether Paul McCartney would take to such a role is open to question. The impression that he gave journalists in conversation after the presentation was of a man too much wrapped up in the here-and-now of his own music to become an arch-pundit of the general issues facing the industry. He was open, witty and unaffected in response to questions: not a man who had temporarily come down from his pedestal, but a man concerned to escape from a pedestal that was none of his own making. He sees himself now as (just?) a professional musician — a fortunate one, because he needn't work if he doesn't want to — but one of the tens

of thousands currently touring, recording and rehearsing in Britain and around the world.

Not that the award means nothing to him: on the contrary "... I'm in the songwriting field so I've been trying to write hit songs. So for someone to turn up and say, 'you've written more than anyone else we can find,' is a pretty big deal. You couldn't think otherwise. You'd be daft if you thought it was nothing. I mean, I slightly agree with all those people who turn down Oscars and stuff — there are more *important* things than this. But for me, it's a biggy."

The more important things are his concern, creatively and stylistically, with Wings, with equalling and bettering past triumphs. But the Rhodium award must have had not a little to do with achievements before Wings was ever thought of, and many of *us* would have him live in the past.

"Do you think of the Beatles still? Do you play their records? Which of the old stuff do you like best?"

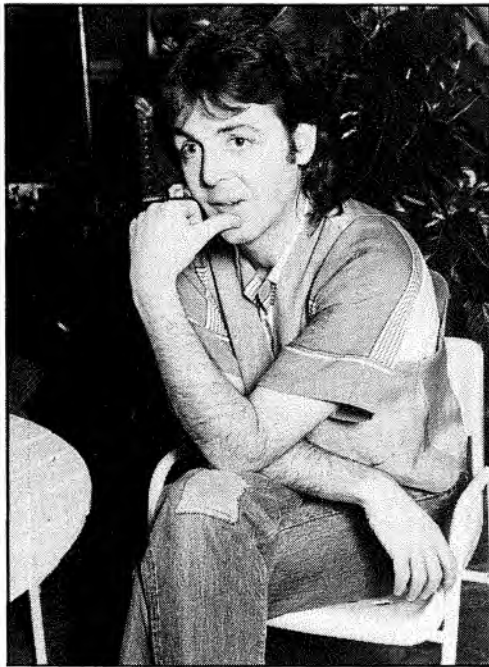
Yes, he still thinks of the Beatles. No, he doesn't play the Beatles records too much, although he does sometimes. And he thinks it's nice music, that's what he thinks about it.

"I like it. It's going back a bit now — a lot of it seems like it's only three years since we recorded it, but it's actually 15. Which is funny, you know, because I always think of it as *current*. Because when we made it, it was current."

The formula was a good one, but he never suggests it would be usable today. He has moved on, but will reminisce, for our benefit, about the Beatles' beginnings. Like the first hit. ►►



Paul McCartney-Songwriter



"Everybody says
we're in the doldrums
- I don't believe it.
I believe in thinking
positive"

"It was a small hit. It was 'Love Me Do'. I remember composing it... I was in my house where we used to live on a council estate in Allerton, Liverpool. And we skived off school, me and John. We were supposed to be at school and we took the afternoon off. We used to go to my house where there was a piano and we used to have our guitars, and we used to fill me Dad's pipe with Typhoo tea — it's true, this isn't the Rutliff part three — and we used to have a smoke of Typhoo just to feel big, it tasted horrible, and we'd go in the other room and plonk out a few tunes. 'Love Me Do' was one of the first ones we did. We did roughly 100 songs before we got one published and that one out of 100 was 'Love Me Do'.

"The other songs are all in the little book I've got. We never thought they were any good. We kept playing them to record producers and we'd say — 'How about this one?' and he'd say 'Nope'. 'Well, how about this one?' 'Nope'. So they never liked them you know. They're very dated now, it's a very long time ago. A good old sound like early Buddy Holly type tunes and stuff, and we've got stage directions like 'Oooooohs', 'Angel choirs', stuff like that. All old rock and roll. But those were the first ones.

"The first one I ever wrote was when I was 14 and it was called 'I Lost My Little Girl'. Three chords: G, G7 and C. It was just — well, you know. I'd sing it for you if I had my guitar here."

Paul expresses a paternal affection for every one of his songs, "even if it was really bad", but this is not the same as harping back to days gone by. On the subject of the real harpers back, for example the Beatlemania people, he's faintly bemused, but not critical.

"Yeah... I've heard about the show. It's okay, you know. It's a funny feeling being portrayed on stage while you're still living. I thought they waited until you were dead before they did that — so it's a weird feeling. It feels like it's your alter-ego up there. But that's when you first hear they're going to do it. I'm used to it now. When I go to New York people say to me 'Hey! Are you Paul McCartney?' I say no, I'm in Beatlemania, they go 'oh, it's alright'..."

Thus, then, Paul's relationship with his past. Really it is the songs that are important, not because they recapture the Beatles, but because they survive them. Paul doesn't re-arrange them, as Dylan does, he sort of unarranges them. Stripped of Beatles' style, songs like 'Yesterday' are carried over to Wings not just from public demand, but because they're the composer's own favourites.

Nominated for this "most successful composer" award, Paul faces the inevitable questions as to the genesis of his songs. Does he fear a lack of inspiration? Where do the ideas come from? For example "Yesterday" — the most recorded song ever.

"That one? Yeah, well I got the tune to that one first. I was, literally, in bed. And we used to have a piano by my bed, and I woke up one morning and I went hmmm mmm mm (Yesterday!) on the piano. And I thought it was *another* tune — because with good tunes, you always think someone else has written them. They're too good to be true. I mean, I'm not saying it's all that great, but this one really felt 'Oh dear me! Who's done this? This is a nick — I couldn't have done this.' And I kept asking people, what's this like, and they couldn't tell me so I thought, well, I must have written it. But it's kind of magic. It just comes out of the air. Like you're a medium. It's like, spiritualism, man.

"You see, whether I sit down at a piano or with a guitar, I just start off, ching chinga chinga, just like anybody. While I'm doing that, if I'm lucky, something will occur to me. I don't know whether it's me or whether it's just like dreams — I mean, how many people have had a dream where they've heard a whole symphony playing a tune. And they wake up and say — 'what's that tune?' And it isn't. It's never been recorded. Their mind just made it up, arranged it, conducted it, recorded it, did the whole thing. The artist has to try and re-create that. I mean I've done it often — I dreamed about the Stones once. Sorry Mick! But you know, in this dream, the Stones were on, and I was just listening to this great Stones song and saying YEAH and rocking away. And then I woke up and thought what's that one, and they'd never recorded it. It was like I'd got this song that they should record. He says I'm always trying to sell him songs anyway."

Concerning his current songs — he doesn't see himself in much danger of running out of ideas — probably we'll run out of precious metals to make awards in, first.

"They're not coming any harder," he says, replying to tentative suggestions that *Back to the Egg* might have contained "scaled down" ideas. "It was always hard with the songs that weren't so good. But they tend just to fall to the bottom of the barrel in the end. The ones that are easy are the ones you just fall out of bed and write. I've done some of those recently. Like 'Mull of Kintyre' was the easiest thing ever. Things like 'My Love' were easy, and 'Yesterday' and 'Michelle'."

From his own songwriting, Paul is led into a discussion of other people's songwriting. As the fountainhead of so much music, does he feel that the scene in general is drying up, running out of inspiration? Like a knell of doom, the cry of falling sales is raised. But McCartney isn't having it.

"Everyone says we're in the doldrums — I don't believe it, though. I believe in thinking positive. The thing is, the moment anyone's sales go down everyone panics." He gives the wider, economic

recession as an example.

"You see it's all still happening. The younger kids know all the names of the Clash or the Damned, and 999. They know them just like the Beatles were known, and all the disco kids know the Bee Gees and they've got every record they ever made, but older people just don't see it.

"For instance, all the people who are interviewing or who are in my age group tend to think of Elvis as a big, big star. But a lot of kids say 'who's Elvis?' Didn't like him anyway! Now I would never agree with that because he's still my idol, he's still one of the best vocalists I ever heard, and will be for a long time because I was brought up on him and I love him. But when record companies say their sales are going down, I say to them what if next week 'Saturday Night Fever' came out? They'd be a big upsurge. They'd still sell 10 million records, it wouldn't matter. It's just that the music's not there at this second. It will be next year, 1980. It'll all happen."

What will all happen, he cannot say. "Because I'm not magic, you know.

"But the Disco thing is big now, and some of the things coming out of it is good music. A lot of it is crummy... bass drum

all the time, but there's still some great music coming out of it. And New Wave is producing some good things, and Reggae is very good and only just being discovered really. And mixing Reggae with New Wave — there's another direction. There'll be combinations of all this... well, I don't know what will happen, but I don't think there's going to be the big slump and apocalypse everybody else thinks there's going to be."

Another subject on which Paul's views and those of three other people differ widely from those of the rest of the world is brought up by way of conclusion. Yes, you've guessed it. Will the Beatles be getting together again? It's a question on which most enquirers are unprepared to accept no for an answer — but no is the only answer they ever get. Now, on the tenth anniversary of the split, the negative is reiterated firmly, if not categorically.

"I know that none of the four Beatles — the four ex-Beatles — is thinking of doing it. I know George and Ringo — we just joke about it. We split up 10 years ago and as far as were concerned that was us split up, but everyone else didn't believe us and they kept saying, now when are you getting back together. So whenever we meet we just joke about it. We were at

Eric Clapton's wedding and three of us got up to play — George, Ringo and myself got up to play with Eric and friends. Next day, everyone said — oh, you're getting back together? So we were just joking and they think this is a reunion — but as far as we're concerned it's just, like, a non-event. None of us have any plans to do it. For me, it's a little like trying to get Elizabeth Taylor and Richard Burton together again. I mean, I can't totally rule it out because some day it might happen, but I think that it probably won't, and if it did it might not be very good anyway."

Well, you can't blame anyone for trying. But as Paul sees it, his future lies entirely with Wings — the band that was purpose-built as a vehicle for his songs, and has proved itself as varied and flexible as his songwriting talent. So, to conclude, Paul, an idea for a song. The title is Rhodium, and the subject matter concerns an honour whose recipient, however grateful, is against the creation of a musical "establishment": would rather just go on the road with a band that is taken at its face value. A song that acknowledges how rock 'n' roll won't stand still, much less go backwards. And gently admonishes anyone who believes too strongly in Yesterday...

McCartney P.J. B.18.6.1942 Liverpool

Met Harrison and Lennon while at school and formed the embryo of the Beatles, which were semi-pro by 1959.

By the time Ringo Starr joined the group while it was playing a Hamburg residency, McCartney and Lennon already had the groundings of what was arguably to be the greatest songwriting partnership ever.

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1965 — OBE award. Paul accepted it. John didn't. A harbinger of things to come?

The group's output blossomed into films, multi-media productions, record-

ings of unprecedented technical and artistic scope, besides their involvement with drugs, mysticism and other phenomena of the psychedelic era. After 1968, Lennon and McCartney increasingly failed to see eye to eye on a variety of subjects. When the Beatles finally split, McCartney, who had previously done his utmost to hold the band together, was first to leave.

"McCartney" album was issued in 1970, ushering in a period when his work had a definitely "family" air to it (Linda featured on this and all subsequent albums).

Wings was formed in 1971 — McCartney intended to "do what I knew

best how to do: to go on the road and play rock 'n' roll." In the initial years of Wings the variety of songs was amazing: ranging from protest to nursery-rhyme to the classic "My Love" and the "Live and Let Die" theme.

As a songwriter, McCartney has never let up on the flow of material and the "Wings" discography has swelled rapidly. Wings over America was the subject of a documentary film on the group, and also made a triple LP. The latest album, "Back to the Egg", suggests a band that has more of a consistent style than it once did, a good working band with confidence in its material. A British tour is forthcoming.

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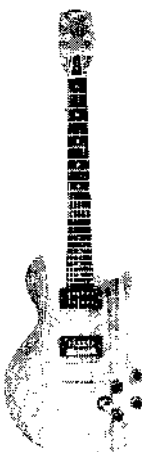
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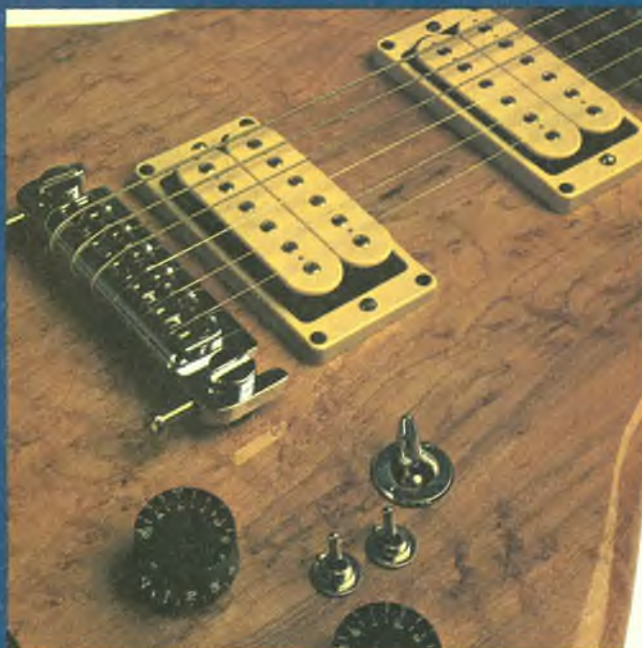
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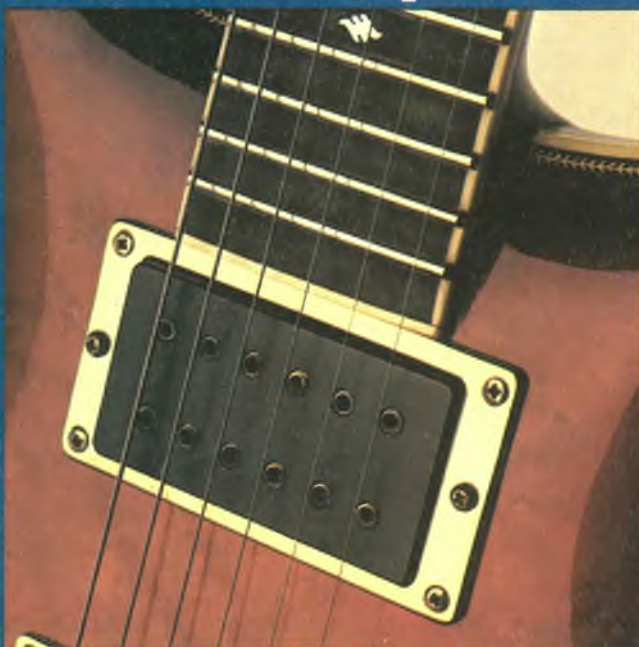
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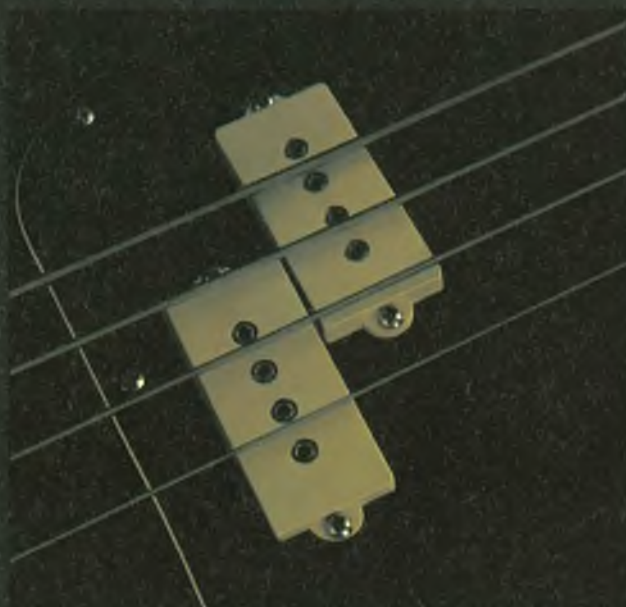
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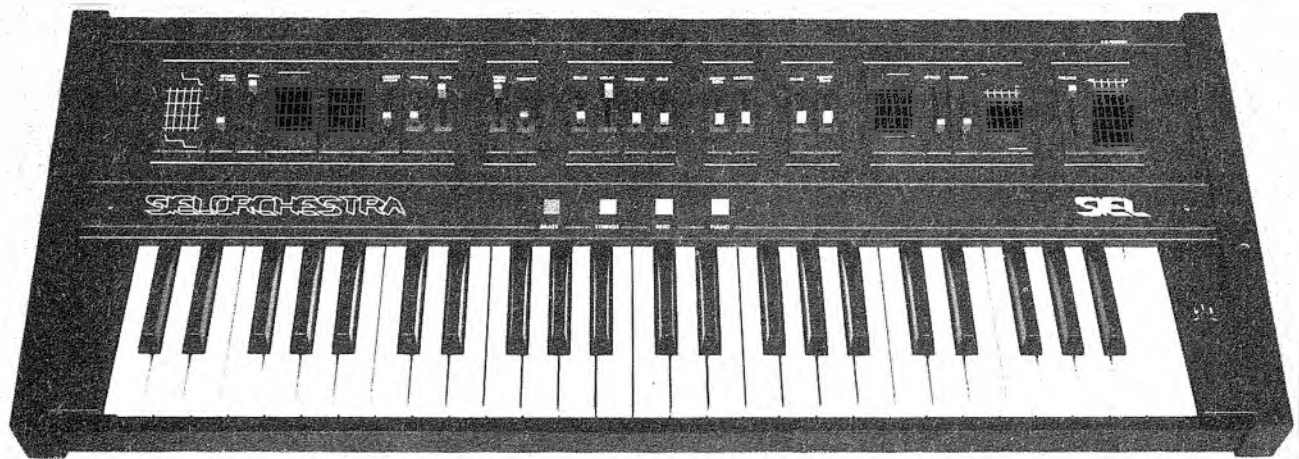
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**Godwin
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This new model from the Sisme organ factory in Italy provides the gigging musician with a portable "harmonic drawbar" instrument that also features an exceptional string orchestra sound plus piano and brass sections.

Construction

The organ arrived for review in three parts: the console, with its stand fastened to one side for transport, a free-standing pedal-board and a small plastic carrying bag for cables, and two foot-pedals.

The stand consists of two chrome side supports, a metal cross-bar and large black plastic knobs. These are all unscrewed from the side of the organ where they are held during transport and replaced at each end with the metal bar joining the side pieces across the middle. The console can be tilted slightly up or down, although a horizontal playing position would be needed when using the pedal-board.

The organ cabinet is solidly made of wood covered with black "anti-scratch" vinyl, with chrome edging and metal corner protectors. A lockable lid is lifted off to reveal the two 44-note keyboard manuals and control tabs and drawbars. Clipped to the lid is a music stand that slots on top of the console. The 13-note pedal-board (C-C) has a plug on the end of a lead to fasten to the organ underside. The piano "sustain" foot-switch and the volume foot-pedal are plugged in at the back of the console, along with the detachable mains lead. The organ output is connected to a suitable amplifier system — Sisme do a matching "Leslie" speaker/amp, the SM100 Spacemaster Rotor Amp — and then you are ready to play.

The instrument uses up-to-date circuitry and access to the electronics is made by removing the console top and back panels. A new feature for Godwin organs is a "tune" control on the rear connection panel — previously only accessible from the inside of the organ. This allows you to tune concert "A" between 436 and 445Hz — hardly a semitone — and so probably is not a lot of use.

There are three output sockets available, one for a mono mix of all the organ sections and two outputs splitting into Channel 1 with Piano, String, Brass and Bass Pedal sections, and Channel 2 for upper and lower manual organ drawbars, including percussion.

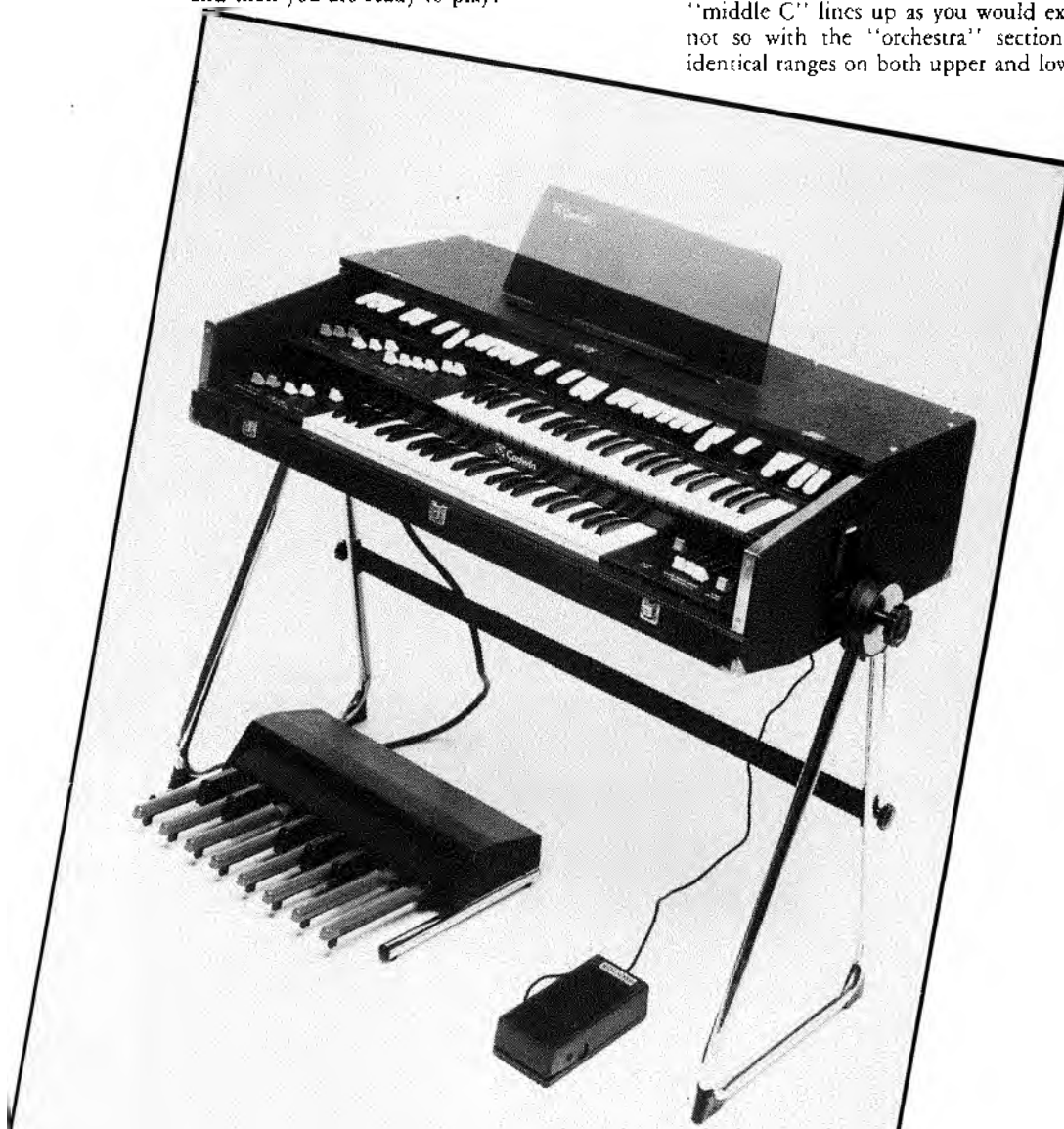
Harmonic drawbar sections

The basic sound of this organ comes from its drawbars on both upper and lower manuals and on the pedal-board. The drawbars do not have "click-stop" setting but slide fairly smoothly over their range. Each group of drawbars is a different colour, but since all the tapes are white, the layout cannot really be called "colour-coded".

The upper manual contains 16' 8' 5 1/3' 4' and 2' pitches, with a drawbar for setting overall volume. In the tab section across the top of the console there is an on/off tab and two further tabs for long or short sustain — increasing the "release" time of a note.

The lower manual has 8' and 4' pitch and overall volume drawbars with a single sustain tab available.

When playing the organ with the drawbars, the keyboard manuals both give 3 1/2 octaves, but the lower manual sounds an octave lower so that "middle C" lines up as you would expect. This is not so with the "orchestra" section, which has identical ranges on both upper and lower manuals.



This is a useful idea, allowing mixed ranges of accompaniment from the lower manual.

The bass pedal-board has the standard 8' and 4' drawbar pitches with an additional drawbar for sustain. I liked this particular pedal unit — it is small enough to tuck under your arm after a gig. I am surprised there isn't a case for it, although a simple carrying bag could easily be made — to stop the rubber feet on each pedal coming off and keep the dust away from the contacts and plug.

Along with the upper manual drawbars comes a percussion tab for each footage. The percussion section can be switched on or off as required and it can operate in the usual manner (working on the next key after all notes have been released) or it can be switched to "polyphonic", giving a percussion tone on every note. A "repeat" tab switches the effect on to repeat continuously at a rate set by its drawbar and there are two more drawbars for percussion volume and sustain length.

Variable volume "key-click" is also featured to simulate the original electro-magnetic tone-wheel effect — sounding on each upper manual note. This is suited to fast "Leslie" punchy jazz with Hammond-style registration and short decay on percussion drawbars.

To complete the basic organ sound, there is a "reverb" tab and "reverb blend" drawbar for dry to reverberation effect, obtained by the usual pair of 12" mechanical spring lines. Reverb output has been kept low to avoid distortion and harmonic ringing and if you've played a Hammond organ it may not give the depth you're used to — still, it adds enough to the organ tone for that "concert hall" feeling, (incidentally, it only works on upper and lower manual drawbars already mentioned).

Percussion sustains

Don't be misled by the label of this section on the organ — it just contains 4 instrument sounds that have a "percussive" sound envelope: Piano, Honkie-tonkie, Clavichord and Guitar. Each has a fast attack and decay, unless the sound is sustained — either by the hand, sustain tab or foot-switch — to give a slow decay. The decay time can be set by a drawbar (it's wrongly marked "attack" on this model as on other Godwin organs) and volume can also be preset.

All 4 preset tabs have their own distinctive sound and are pleasant to use for solos or on accompanying chords or arpeggios. Piano is particularly good (although only derived from a single oscillator tone and is not touch-sensitive) and the clavichord has a nice dry, brittle sound with a very bright tone that is not lacking in volume through heavy filtering. The guitar tab sounds more like a thin piano tone. Only one criticism here — a certain amount of noise comes through on this section when recording, although not so evident in performing with a band, which can probably be reduced by additional screening. The "percussion sustains" group is selected for the upper manual only.

Before I come to the final section on the organ, there is a group of 4 tabs on the far right of the row for "Vibrato". This operates on the whole range of sounds at once and so cannot be switched to a particular section, making it a little overpowering if used for too long. It has tabs for on/off, two-speed vibrato which can be heavy or light and "attack". This latter tab brings in the vibrato effect after a slight delay — enabling short notes or fast passages to be straight, with vibrato brought in on longer

notes. It certainly adds a "Hawaiian" feeling to the guitar tab and gives a vibraphone-like ending to sounds.

Orchestra section

The electronics in the Godwin organs are generally very good and this must add, not only to the reliability on stage, but to the authenticity of the sound tabs. In this section must come one of the main attractions of the Sisme range — the rich string orchestra sound. The three-stage "bbd" applied to the basic string tone gives a fine violin, viola and cello sound for a complete contrast to the organ and this is the point — it's not the same playing two separate keyboards, one organ and the other strings, because you can't get that mix of on/off organ tone while strings surge through on slower attack and long release, as available here.

It's interesting to note that polyphonic synths must have attracted quite a few musicians away from organs, because of the separate tone and sound envelope shapes in the layers provided — such as in the ARP Quadra, but now we are seeing organs with the same sort of variety on the market.

The "brass" in this group come in two presets — one for high trumpet fanfare effects and the other for deeper trombone/tuba brass band ensemble tone. The lower sound is best, with a gentle "wow" envelope that decays to a low "hold" level until the key is released.

Volume and sustain of orchestra sounds can be adjusted, although the "sustain" control is really only suited to the string tones. These usually require a fairly long sustain but needs to be set short for more realistic brass. An "attack" tab takes the edge off the strings, allowing percussive type sound from other sections to get through first. It is not suitable for use on the brass tabs as it removes part of their sound envelope. "Transpose" puts the orchestra on to the lower manual, making the LH accompaniment tone more variable.

Summary

The organ is suitably sturdy for a portable instrument, but the console requires two people for carrying. The stand is quickly put together (not quite as quick as its bigger brother, the SC448/P) by one person although a help is needed to lift the organ up. Its transport arrangement of having fastening points for the stand parts on the console side will ensure nothing is forgotten for the gig. It has a good finish without any extra trimmings that on-stage playing wouldn't need but the drawbars may require some attention occasionally to keep their movement smooth. I wouldn't like to put too much weight on the top of the console — it should take a small synth safely enough.

It's a nice idea to have separate optional outputs for organ and piano/strings/brass/pedals, giving a spacious sound for stage or recording — but of course requiring extra amplification to be carried.

The lack of topmost harmonics (1 $\frac{3}{4}$, 1 $\frac{1}{2}$ and 1') on the organ drawbars is not a problem here as additional sounds such as strings and clavichord can add any extra brightness.

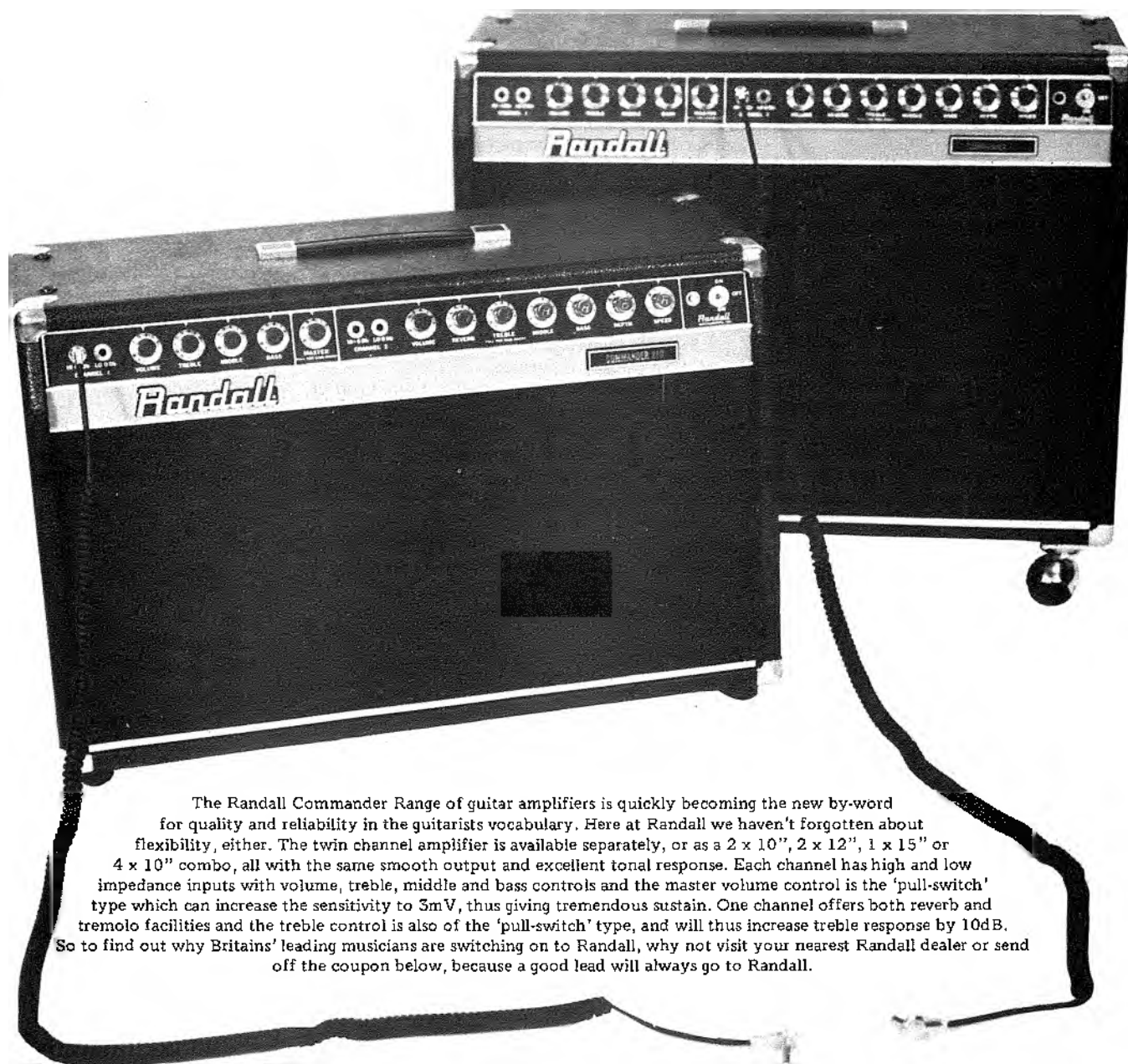
For the musician on the road, choice of the right organ to play must depend on its portability and its range of sounds appropriate to your needs. There are no real gimmicks on this organ, just a good "organ" sound which is alone worth the price, and the quality of its strings, brass and piano should make this an enjoyable instrument to play.

Mike Beecher

Mike Beecher is a musician and keyboard consultant. He composes and performs his own electronic music using multi-keyboards, in a style based on his wide experience of progressive jazz and classical music.

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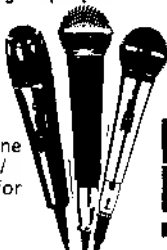
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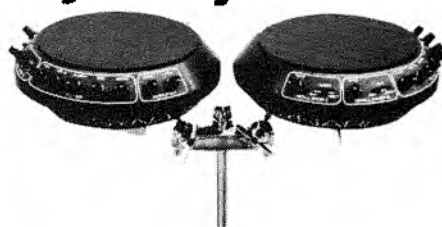
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Guitarcheck

Yamaha SC 1200 £445 inc VAT

Some time ago — back around 1975, I offered the suggestion that the days of cheap Japanese "copies" were numbered, and that both prices and quality of many Japanese guitars would soon catch up with those of the better known American instruments.

At the time, this seemed to me a perfectly obvious and reasonable conclusion. However, the dense silence with which it was received in some quarters, suggested that this was clearly not a subject for casual discussion over afternoon tea.

Looking back on that very small prediction, I think I probably under-estimated the situation. We now have some American companies working very hard to produce less expensive guitars, and some Japanese companies confidently making more and more expensive instruments.

At least, I *think* they are confident; it would be rather difficult to tell, without a thorough understanding of Japanese traditions and language. Some of the latest American instruments make extensive use of plastics and modern assembly techniques, while some of the latest Japanese guitars seem to be employing rare and exotic timbers and large amounts of very skilled hand work. Where will it all end?

At the moment, the top quality instruments from Japanese makers seem to be even tastier than last year's batch. Most of them are fairly expensive, but in general are certainly better instruments than those made a few years ago. I think you probably have now a wider choice of well-made, good-sounding instruments than ever before. One such instrument is the Yamaha SC 1200.

This instrument seems very different in style from Yamaha electrics previously available in England. A quick glance through a 78/79 guitar catalogue from Japan indicates four Yamaha SC guitars, of which the SC 1200 is the top model. Only the SC 1200 is available in England at the present time.

As with the Music Man guitar reviewed last month, the general body outline is instantly recognisable, although the SC 1200 differs from similar-looking American guitars in almost every other feature.

The SC 1200 is a solid-body guitar with a straight-through neck, ebony fingerboard, three single-coil pickups and extensive tone-selection switching. Our sample has a hard, clear and very glossy finish, in the natural colours of the wood. The neck and centre body section is made from alternating strips of maple and mahogany and the two side pieces of the body are made from a less dense wood similar to poplar.

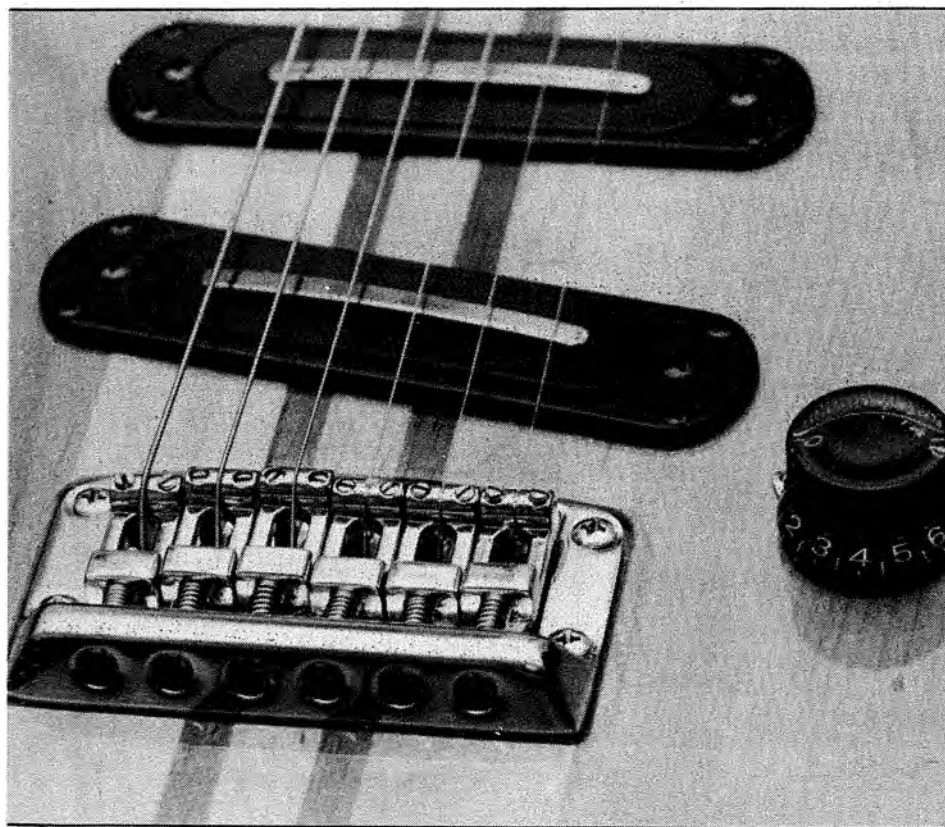
The light brown wood contrasts nicely with the maple centre piece, and keeps the overall weight of the guitar within reasonable limits. This is certainly not a lightweight guitar and if the whole body was maple, it would probably be too heavy for comfortable playing. There may be another advantage in this choice of woods. Some all-maple guitars suffer from a rather "cold" tone/sustain combination, which divides up guitarists fairly sharply, into those who like it (or can tolerate it), and those who react unfavourably to it. Personally, I don't like this sound. It only affects *some* maple guitars, but for my money, if one can prevent it, so much the better.

The fingerboard is ebony. The wood used has small, naturally occurring pores along the grain; most of these have been filled up with a hard sealing material, the result is a good smooth playing surface. The sealing is more thorough in some parts than in others. These more open-pored areas may wear a little faster than the well filled bits, but it is all good hard ebony and even the most porous parts are likely to wear much better than the average rosewood fingerboard. Correct use of a penetrating and preservative fingerboard oil will extend the life of the fingerboard even further and prevent it from becoming brittle. The usual fret positions are indicated with attractive pearl diamond shapes, and the same positions are marked in the edge of the fingerboard with tiny pearl dots. It is well worth the trouble of using pearl instead of plastic for these tiny edge dots because the pearl is much easier to see in difficult lighting conditions.

The frets are of medium width and securely fitted. They have been smoothly levelled and nicely rounded over along edges and ends to feel very comfortable. I think a very light final stoning of the tops might be worthwhile for players who want to use the lowest possible action. There is a slightly worrying creaking sound from the nut when the top string is bent towards the centre of the fingerboard, but it does not at the moment seem to affect the guitar's performance.

The truss rod adjustment for the neck appears between the end of the fingerboard and the first pickup. Adjustment is by a small tommy-bar inserted into a series of holes in the threaded "nut", and is easily done with the strings in position and tuned up.

Any fine musical instrument needs reasonable handling, but the SC 1200's neck is unlikely to suffer any serious damage from minor accidents in use or on the road. It looks unusually strongly built and I think this is a valuable feature for busy working musicians. On the other hand, it may be robust, but it is also relatively flexible. On a guitar in this price range, I would have liked to see a little more stiffness, as well as just strength and durability.



The bridge on this guitar is an interesting derivation of the principle used in the "Strat" tremolo bridge unit . . . except that this one is not a "tremolo" bridge — (If you want to use the correct meaning of the words, it is not a vibrato bridge, either.). Although the bridge is fastened solidly to the body with five screws, and does not move at all, the principle of the heavy string-holding block underneath has been retained from the original design. This goes right through the guitar, and appears (suitably polished) through a slot in the back. The recesses for the ball ends are drilled directly into the back of this block, and instead of six little string bushes at the back of the body, you see one neat metal bar with six holes in it. String changing is easy, and it solves the problem of the separate little bushes falling out when you remove the strings.

At the front of the bridge assembly, each string is individually adjustable for height and intonation, in the usual way. Some of the "height" screws have rather sharp edges and could be a bit uncomfortable when damping strings. The first and sixth pairs project most. Shorter screws here would put things right in most cases.

The machine heads are stamped with "Yamaha Japan" and look very like the smaller pattern of die-cast Schaller machines. If they *are* made by Yamaha, I feel that such close similarity between different makes of machine head is neither necessary nor entirely fair. On our sample guitar, the second string machine head varies in stiffness as the button is turned, and should probably be replaced.

The electrical system on this Yamaha guitar is interesting, versatile, and also confusing unless you understand what it is doing. The single volume and tone controls work on any pickup selection: I got the best sounds with both, full on. There are three miniature pickup selector switches, so you can have any pickups on in any combinations: this includes all the settings of the usual three-way and five-way selector switches, plus a few more.

The fingerboard pickup switch has two positions "Down" is on: "Up" is off. The middle and bridge pickup switches have a *central* off position. "Down" is on: "Up" is also on, but with reversed phase connection: in the middle is off.

I suggest you try the following sequence of switch settings while listening to the differences. I shall call the fingerboard pickup selector nearest to the strings "1". The middle switch is "2" and the bridge pickup selector, nearest the edge of the body, is "3".

Start with No. 1 up: no. 2 in the middle: no. 3 down. Listen to the sound. This is the bridge pickup alone. Then move switch 2 down, (adding the middle pickup,) this gives a fuller sound. Then move switch 1 down (adding the fingerboard to the other two. You now have all three pickups in use, and the fullest sound, with most bass.

Now for the first out-of-phase sound, move switch 2 all the way up, and for an *even more* out-of-phase sound, move switch 1 all the way up as well.

That gives you five different sounds. Enquiring minds will soon find more, but I suggest you repeat the sequence given above a few times, until you begin to have a feeling for the way the switches work.

After that, use any switch combinations which give you the sounds you want, and try the most promising combinations with different amp settings. Some combinations are hum-cancelling; others are not.

The switching arrangements and the sounds available are interesting, and the standard of internal wiring is unusually high. Solder joints are neat, and screened wiring is used for all internal connections.

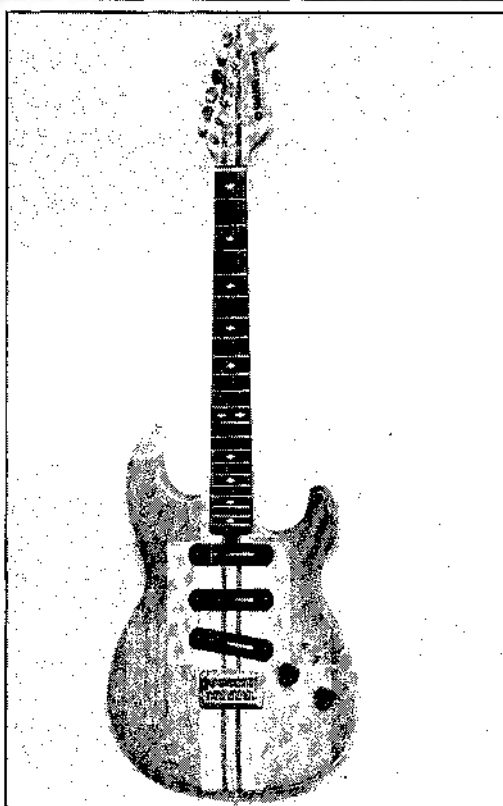
There is a certain amount of screening paint applied to the inside of the body, but some of it is not connected to anything, and in other places, where it would do some good, it has not been applied at all. For instance, there is screening paint in the control cavity, but only halfway up the sides, and not at all on the back panel. I checked the paint film under the middle pickup and I could find no continuity with any other part of the guitar or wiring.

Come on Yamaha, surely you know what conductive paint is *for*, or do you just put it inside to please guitar reviewers?

An impressive guitar with many different sounds. Some may find the selector switches a bit small and fiddly for quick changes. Neck and fingerboard feel good to play, but the neck bends more than I like. Other samples may have stiffer necks and more usefully arranged internal screening. The screening is not vital, as screened wire is used extensively and single-coil pickups are likely to collect a certain amount of hum and noise anyway.

Stephen Delft

Yamaha SC 1200 Measurements. Serial No.002498	
Scale length:	650mm
String spacing at bridge:	52mm
String spacing at nut:	34mm
Fingerboard width at nut:	41mm
Depth of neck at 1st fret:	21mm
Depth of neck at 12th fret:	24mm
Depth of neck at 15th fret:	28mm
Heel starts at fret 14	
Body joins at fret 17	
Treble side cutaway to fret 19/20	
22 frets on fingerboard	
Action as supplied 1.7mm treble/2.1mm Bass.	
Preferred "standard conditions" action 1.8mm treble/2.5mm bass.	



Stephen Delft is a maker and repairer of guitars and other instruments, and a member of the Institute of Musical Instrument Technology. He is also a more than capable performer on the guitar.



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Guitarcheck

Fylde Orsino
£298 Ariel £415
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The Fylde guitar range now includes about nine guitars, one bass and several mandoline family instruments. I had originally intended to review only one steel string guitar, the Orsino model, but as you may not have seen many Fyldes about so far, I thought it would be helpful to include a brief review on another, smaller model, as well.

I suppose you might consider the Orsino to be one of the Fylde budget models. It is one of the least expensive of the range, but it does not have the "pared-down" appearance of some makers' budget models. It is made entirely from solid woods, has good fretting, a comfortable, (if slightly chunky) neck, good quality enclosed Schaller machines and it plays easily and in tune. In fact, apart from the choice of slightly less expensive and exotic woods for its construction, it seems very similar to the more expensive Fylde guitars. The Orsino has a mahogany neck, sapele mahogany back and sides, cedar front, and rosewood for the finger board, bridge, and head facing.

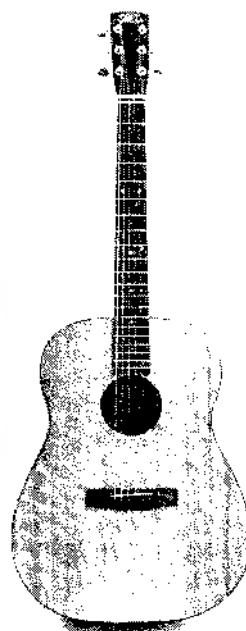
When our sample of the Orsino arrived, it sounded at first rather disappointing. However, I like to spend a few days with any review instrument, and after some casual playing over about four days, the tone of this guitar improved very much.

Although our sample appears to have been handled a little, or perhaps put on display at an exhibition, I don't think anyone had played it for more than a few minutes until it came to me. Any Fylde which has recently arrived at your local music store is likely to be in the same position. These guitars are hand made instruments, and are not likely to come to life until they have been played for a few hours. I do not find anything unusual about this: some high quality instruments can actually sound worse than some mass-produced ones when both are new and unplayed. However, after some playing, the better instrument will usually overtake the other one, and leave it further and further behind with more time and playing.

The best-sounding new guitar out of three or four may not remain the best one, after they have all been played for a few months. This makes it very difficult for any one who is trying to find a nice guitar which will last them a long time. Many players (and some retailers) have become used to factory guitars which sound good, straight out of the box. It is very difficult to make fine, handmade instruments which sound good, straight out of the box. Any retail stores which have recently arrived Fyldes (or any similarly constructed guitars) will do themselves a favour, if they encourage their more



(Ariel, courtesy of Ivor Mairants Musicentre, the London stockists of Fylde guitars.)



careful and responsible customers, and their staff, to play them. Apart from any possible sales advantages of allowing musicians to play nice guitars while on the store, the guitars are likely to improve in tone and responsiveness. Although this review is of two English-made guitars, the same principle generally applies, at least to the smaller-production American-made instruments.

After a few days' playing, the same Orsino certainly did not sound disappointing. It had improved greatly and shows every sign of further improvement in the future. This instrument now has a clear and fluid treble all the way up to the neck to around the 12th or 14th fret. On the higher frets, over the body, it is tighter and less responsive, but that is probably because I have not played it very much in the highest positions. I would expect it to loosen up here as well, after a bit more use.

At the moment, I find the least pleasing sounds from the fifth and fourth strings between low C-sharp and the F above. The notes are there, and they are clean and clear, but there does not seem to be very much warmth or punch behind them. I cannot say how this will be affected by playing. If the guitar was mine, I would try fitting *slightly* heavier fourth and fifth strings and raising the height of these strings a little at the bridge. It is also possible that strings of a different make from the ones fitted, might have a bit more meat on the lower strings: this would improve the balance between strings without the need to make up special sets from the "custom box".

Most steel-string acoustics have some parts of the bass range which are better than others. Often, the weaker notes are in roughly the same place as on this Fylde. It would be nice to even out the tone, while retaining the distinctive character of the instrument, but most attempts at this seem to produce instruments which are evenly dull and characterless. I don't think that is any improvement, and for the moment I prefer the traditional (if imperfect) kind of instrument. However, keep your eyes open. So-called "level-response" guitars are already with us, and they are becoming better!

The lower range of the instrument from bottom E up to about C on the fifth string has a richer and more interesting tone and a more punchy attack to the notes. This is not a guitar with a loud booming bass, but I don't think it is intended to be. The bass notes have a longer and more even sustain, and balance very well with the loudness and sustain of the upper strings.

I think this is the sort of guitar which is very well suited to the complex instrumental styles associated with some English acoustic guitar players and would generally be of interest to any acoustic player who has *not* been brought up on large, bass-heavy jumbos. Players who prefer the smaller model of steel string guitar, for their tone-balance and more immediate response, would probably also like this Fylde guitar.

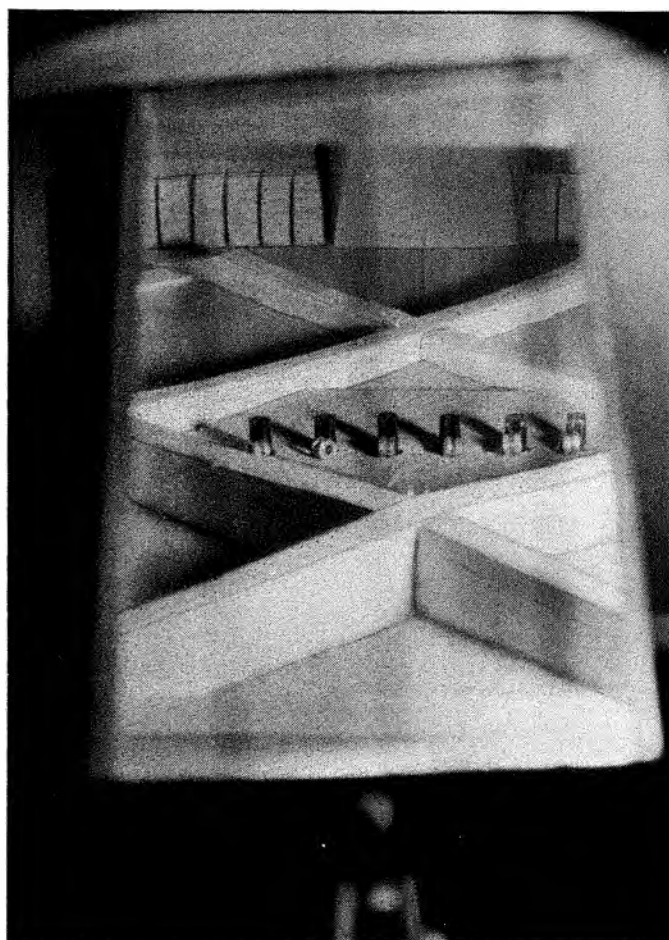
The outside of the Orsino does not require much in the way of comment. The neck is straight and free from warping. There does not seem to be any truss rod adjustment, but the neck is reinforced with a light alloy bar which extends inside the body, almost up to the soundhole. This helps to keep the fingerboard straight in the critical area around the 14th fret. The neck shape is individual to Fylde guitars and is a bit triangular and a bit rounded. I am not going to attempt to describe this one, you will have to try it. The fingerboard is neatly finished, although it would *look* more interesting

with a bit of oil dressing to bring out the colour. The frets are levelled, rounded and smoothly finished at the ends.

Fylde guitars use the "Zero-fret" system at the nut, with a slotted nut made of very hard, dense wood, and a wide and slightly raised nut-fret. As with most other nut arrangements, this one can work well, or not so well, depending on the amount of skill and care taken during final fitting and setting up of the instrument. On both the Orsino and the Ariel, the nut and Zero-fret arrangement works well. The strings can be adjusted easily and without creaks or tuning jumps. An advantage of this Zero-fret arrangement is that the strings are almost automatically set for very easy playing at the lower positions. You may have noticed that some acoustic guitars are rather difficult to play on the first and second frets, next to the nut. This can be corrected by skilled adjustment, but on a Fylde, such adjustment is unlikely to be needed. There are probably advantages and disadvantages to both one-piece and two-piece nuts and I suspect that on balance there is no clear advantage either way. With the Fylde system, the nut fret may eventually need replacing — probably at about the same time as all the other frets!

The internal construction of Fylde guitars is related to the traditional "Martin" strutting, but modified to give the soundboard slightly different mechanical and acoustic properties. The resulting tone is pleasant and distinctive and there is a family relationship in tone between the various instruments in the Fylde range.

The little Ariel guitar, which I examined briefly at the Ivor Mairants shop in London, was even more pleasing than the Orsino. (It ought to be: it costs considerably more!) It also has mahogany back and sides and a cedar front, but the fingerboard and bridge are made of ebony instead of rosewood. It is a smaller guitar than the Orsino, with a shorter string





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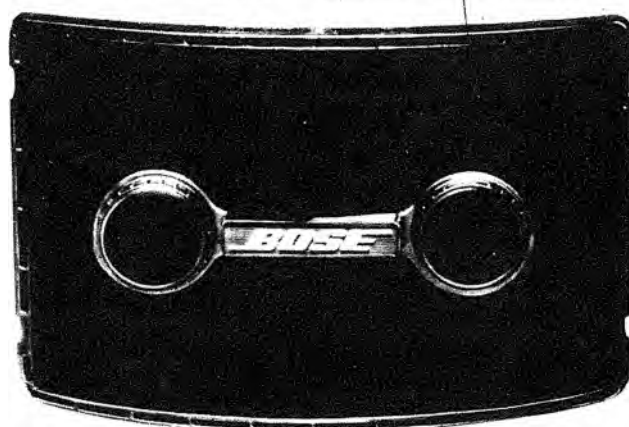
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length, but a slightly *wider* fingerboard. It is not much wider; there is only a difference of about 1mm, but it will probably please players who like the traditional small-bodied American steel-string guitar. On rather limited hearing, I think I preferred the overall tone of the Ariel to the larger Orsino. Perhaps that is because I am used to very large guitars and very small ones, and less happy with the ones in the middle. Anyway, of the two, I preferred the little one, but only by a narrow margin: they both have their good points! I think I also prefer the neck of the Ariel, although I would find it difficult to give a clear reason for this.

The Ariel had been set up at Ivor Mairants' shop, as is their custom. The Orsino came direct from Fylde. Both guitars played almost perfectly in tune within the limits set by use of different makes and gauges of strings. "Almost perfectly" is as good as you can get, with the conventional type of acoustic guitar bridge, and most players of most famous makes of acoustic guitars, find this a reasonable working compromise. The Ariel had an action which was perfect on the bass side and a little higher than I would wish on the treble side. This is a matter of personal taste: the guitar worked well as set up.

The Orsino was supplied to us with a similar action; perhaps a shade higher on the treble side but quite suitable for this kind of guitar. On the bass side the Orsino's action was a bit lower, and some of the strings tend to buzz if played moderately hard. I don't think this one is a matter of personal preference: the action is too low for *these* strings on *this* guitar. There is no problem with the neck or fingerboard, and I would be inclined to leave the action alone and try to find suitable strings.

Both the Orsino and the Ariel are nearly finished on the outside, and reasonably well finished on the inside. On both guitars the underside of the soundboard (which is not easily visible) is not as prettily finished as the inside parts which you can see through the soundhole. This does not necessarily have any bearing on structural integrity, but I would prefer an equal amount of care spent on the bits which you can't see. On our sample of the Orsino, the dots in the edge of the fingerboard are poorly fitted. The wood is chipped by the side of some of the dot positions, and although it is only a cosmetic blemish, there does not seem to have been any attempt to tidy the job up. After all, this edge of the fingerboard is almost under the player's nose and a few specks of filler would have made it look better.

Conclusion

Apart from a few small points concerning finishing and setting up, I think they have the right priorities (for instance, good machine heads before fancy inlays) and they have an individual Fylde sound, which follows in the tradition of the "English Steel-string Guitar", established by John Bailey, Jansch, Renbourn, *et al.* in the Sixties. On the debit side, my feeling is that the overall finish is perhaps just a little too practical. On our Orsino, the bridge is quite roughly finished and still shows marks from the shaping and sanding processes. I don't like the three rings of black and white plastic stripey stuff around the soundhole. The colour of white plastic does not look appealing, set into warm brown cedar. The neck shape feels comfortable, but I think the heel looks and feels unnecessarily bulky where it joins the body. The high gloss lacquer is nicely polished, but has a slightly "plastic" appearance, (or put another way, the wood colours appear to exhibit slightly reduced colour

saturation.) I also find it unusual that an obviously hand made, high-quality instrument should be let out into the world outside, with rather obvious buzzes on one or two strings. Either the strings or the action need some attention.

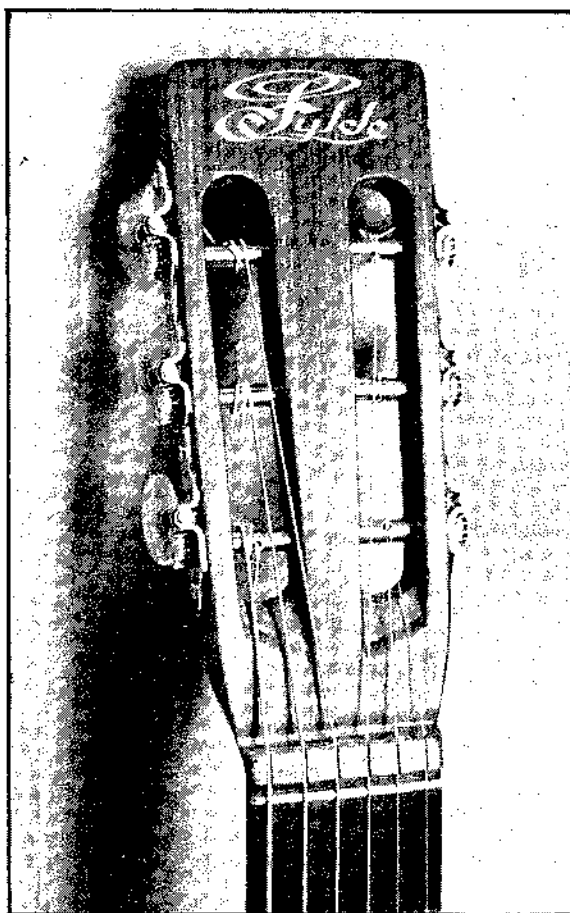
Overall, they are both nice guitars, but I think I prefer the Ariel.

Stephen Delft

Fylde have informed us that the heel is now modified and less bulky and that the edge bindings are wood instead of plastic.

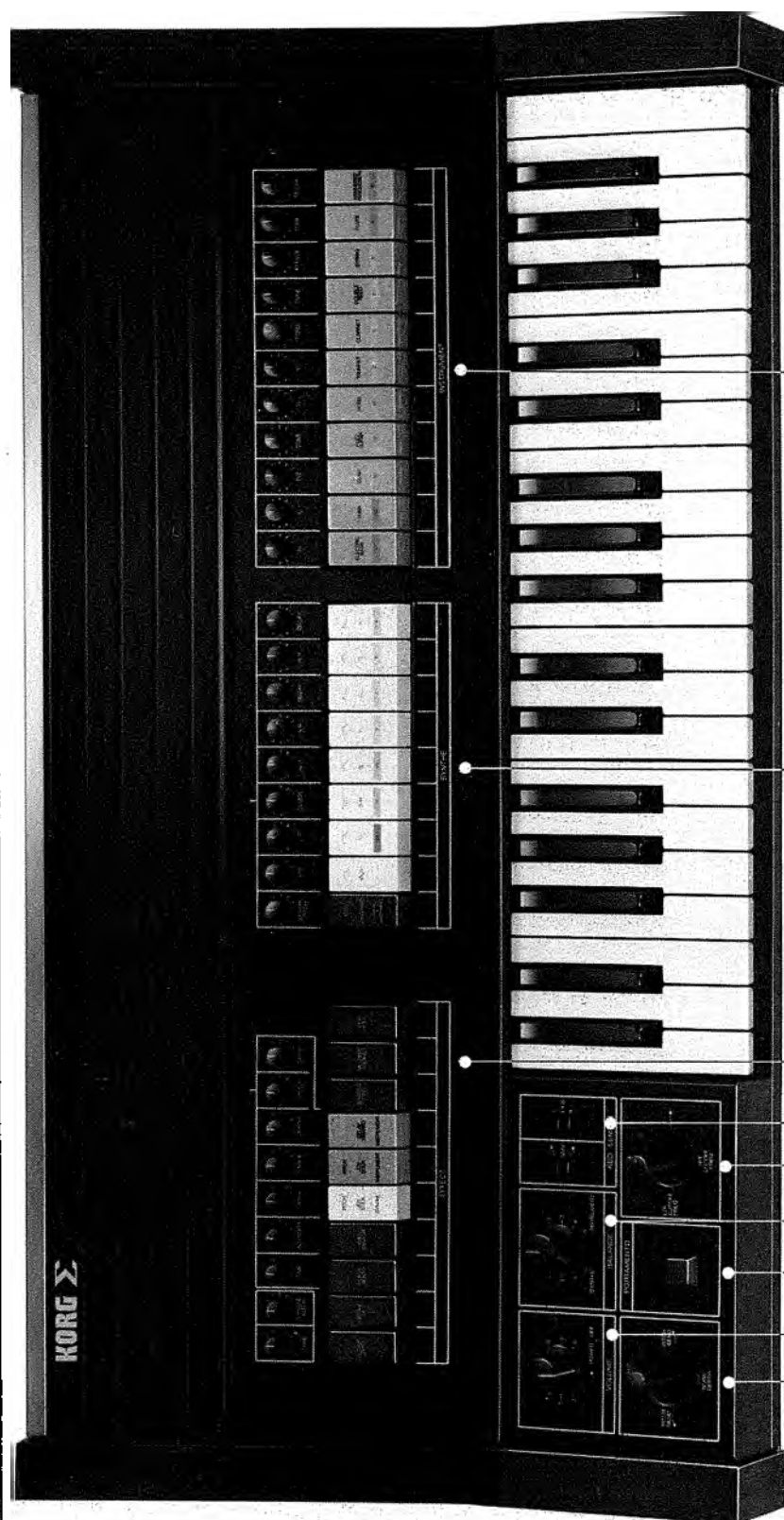
Measurements on Fylde guitars.	Orsino Ser 1414	Ariel Ser 1384
Scale length:	648mm	629mm
String spacing at bridge:	57mm	58mm
String spacing at nut:	36.5mm	38mm
Fingerboard width at nut;	45mm	46mm
Depth of neck at 1st fret;	23mm	N/M*
Depth of neck at 10th fret:	27mm	N/M*
Heel begins at fret 10	both	
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Action as supplied	2.1 treble 2.4 bass	(approx 2.0 treb/ 3.0 bass)

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Synthcheck

The ARP Quadra is a most impressive and extraordinary new polyphonic type synthesizer from a stable and breed of the highest pedigree. Although there have been some genetic mis-hits in the family, to pursue the analogy, by and large ARP have always put more thought than most into whatever new instrument they have introduced.

This one being a case in point, it's worth quoting ARP's president, Mr. David Friend when he commented on the Quadra recently in an American magazine. His statements may help you to understand what the Quadra is about, and thus, with my conclusions, help you to judge it as a keyboard, and whether it's for you. Over to you, Mr Friend. "We felt that we couldn't use the channel assign approach. We wanted to produce something that would give a very orchestral kind of sound, with a lot of layers to it. This instrument was designed for live performance, not for the studio".

So you see where they're coming from with this one. And now an attempt to describe the Quadra, and what it does. You'd better be ready as it's quite a wade; a bit like cycling to Pluto, I suppose.

There are four main panel areas above the keyboard which deal with control functions for the following; Bass, Strings, Polysynthesizer, and Lead synthesizer. Each one of these parts has a varying number of preset tabs of the touch-sensitive type, which also contain LED indicators to display their status. In addition to the four basic function control sections, there is a mixer to blend the four, plus a phase shifter built into the output mixer.

All the subdivided areas are arranged in a very pleasing and logical manner, with lines drawn on the panel between controls so that one can follow the course of a signal through from it's oscillator and via all modifying components and mixers out to the final signal output. You can actually "see" what you're doing with this arrangement.

The back panel, where traditionally all the jack leads out spring from, is again an insight into the care, design, and functions of the Quadra. There are pedal control inputs to the Lead section VCF, the poly/phase shift, and overall volume. Then, foot-switch inputs for sustain, pitch latching, and bending flat, and portamento.

They have an external signal input, quad output section (one for each of the main four subdivisions mentioned above stereo left and right outs, mono) outs with low or high level switchability, balanced XLR output, and unbalanced phones output.

Yet more; Bass synth control voltage input, gate input, control voltage output, and gate output. Further interface availability is provided by Lead synth section control voltage input to the VCO's, control voltage outs from the VCO's, gate inputs, gate outputs, and finally trigger in and out. One thing's for sure; to use all this lot, you'll need five million jack leads and pedals to get it all happening!

A full and detailed explanation of every facility and programmable possibility on this instrument would read so clumsily and be so lengthy that I'm using this fact as an excuse not to go on simply listing what it does, but to now concentrate on the less specific areas of how it sounds as an instrument.

The first thing that is impressive in use about the Quadra is that it is light enough to be thrown across the North Atlantic Ocean, thus saving air freight charges, but still heavy enough to use when you need to press flowers and leaves for your scrapbook. What's more, its got a microprocessor with a

memory for patch storage.

There are not as many memories as on the Prophet 5, but, as ARP states, anyone with a knowledge of microprocessors could hang more additional memories onto it. But, unlike the Prophet, you've only to hit one button, and not two, for a bank selection. With the touch switches they've used this makes very instant and positive commands possible, and the switches themselves are hermetically sealed. Coffee and tea can get spilt with impunity.

The Quadra is a very thick-sounding instrument, possibly due to the fact that none of the four main sound source areas are phase-locked. So when used together, the natural width and thickness is self generating.

It doesn't take long to get familiar with this instrument at all, and as far as it's uses as a stage synthesizer are concerned, its a dream ergonomically. When first sitting down at it, one can only seem to get weedy, ordinary sounds, but don't be put off; in half an hour, you'll have really got into it, and you'll have the feeling that it can keep supplying you with surprises and new sounds in direct proportion to how much time you're prepared to put into exploring it. My only real criticism is the price which I think is just a bit over the top for what it is, all thing considered.

In conclusion, this is one of the few new instruments that I would actually consider obtaining, in that it does things that none of my battery of synths so far obtained can perform. For those of you with few, or no synths at all, it should make even more sense to give one of these a try-out. It will carry on growing up with you, for whatever you need within its own parameters.

Robin Lumley

Robin Lumley is a record producer and keyboard player who has won international recognition through his work with Brand X and a wide variety of artists including Bill Bruford, Rod Argent and Dave Greenslade. He now divides his time between freelance producing and session playing both in Britain and the US.

ARP Quadra
£3,499 inc VAT



Arturo is the man with the lead guitar in Pinpoint. The amp is a Vox AC30 Combo. One of them plays through the other and there's no prizes for guessing which way round it is.

Anyway our story starts at the Nashville in October. We decided that as Arturo needed an amp and we had one spare maybe it'd be an idea if the two of them got together. So we pitched up at the Nashville with an AC30 and a couple of Escort rehearsal amps.

Pinpoint were a little bit magic and Arturo said I like the amp and we said keep it and give us some nice things to say about it in an ad and he thought for a bit and then said OK because it's not so bad really which was roughly when we switched on the tape recorder which we left running.



Arturo's amp. A love story.

...the first guitar I ever owned was a Vox Clubman... cost me seven pounds and it had a socket like a television aerial. It was ridiculous really... my brother played in groups years ago... taught me three chords and it just went from there...

What other gear... did I have? All sorts.

A real mish mash... for a long time though I've had my eye on an AC30... preferably an old one although when I've played the new ones there really isn't that much difference...

well they haven't changed it in fifteen years...

No it's the same circuitry...

all that's missing is a few kick marks... no well it'll get like that after a few gigs now I'm using it...

was that the first time you'd set up with it...?

yeah... yeah it was... I was really pleased with the sound... really punchy... I use a Gretsch Roc Jet which is really an old guitar as well and it sounds really good... I think too many people are using the same guitar and amp setup and the sound is too similar in a lot of groups... the thing about an AC30 as well is that it's small... you don't get as much spread so the vocal mike and the drum mike don't pick up as much... the overall sound's not as mushy as it used to be...

how do you find working in the studio?...

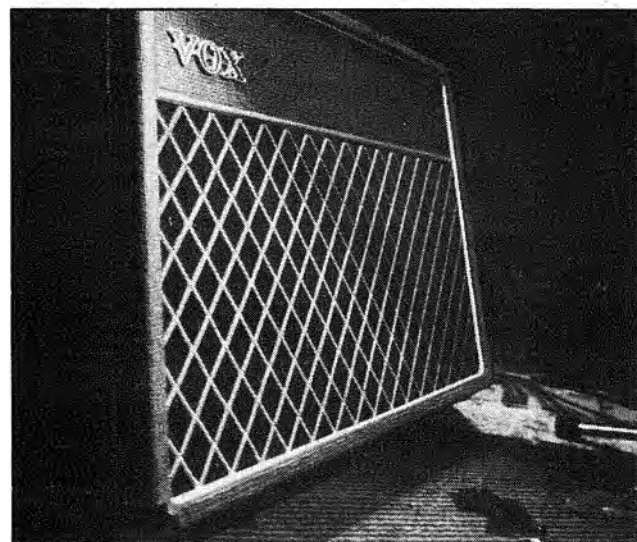
depends on the producer... you can hear every single beat... every single note... the first time you're in a studio is the first time you really hear yourself... there's no way though you can sound as raw in a studio as you do live... no way... *

what's the most frustrating thing about playing

live... touring?... getting to a gig at five and not going on stage 'til midnight... and having to kill time in a town you don't know with no money... most of mine goes on the motorway services... eating sometimes and playing Space Invaders...

when you were doing the tour with the

Members did you have any hassles?... None at all... we had a really great time... I think that the people who you do get like that... they think you don't deserve a soundcheck or whatever... have something seriously wrong with them... it's silly... everyone's a support band sometime...



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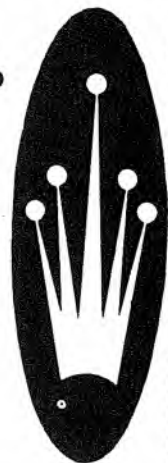
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Drumcheck

ASBA Fibrecel Five Kit £880 inc VAT

The Boudard family have been making extremely high quality Asba drums just outside Paris for the last 30 odd years. Our introduction to them in England was in the early Sixties when their super, distinctive and, at the time, highly expensive coopered lemon tree and mahogany bongos with plastic heads first came over. At that time for one economic reason or another, the actual sets were not imported. The first outfit I set eyes, hands and feet on belonged to a French singer called Richard Anthony. I worked with him on the continent for nine months or so and during that time became rather fond of Asba. It was quite a surprise to me because at the time I was the proud owner of a Gretsch kit and wasn't prepared to believe that anything could compete with it, let alone something made outside of America. Interestingly though I found Asba to be pretty close to Gretsch with the same sort of warm, contained sound with four overtones.

Of course this test set is a completely different

kettle of fish to the one I played all those years ago, since it's made of layers of compressed paper glued together. Pearl call this shell material 'phenolic', Asba call theirs 'Fibrecel'. We in England used to call the substance bakelite and during the Fifties it was very much in demand for radio and television cabinets not to mention P.C. boards. Asba's material is at least twice as thick as Pearl's, roughly 3/4 inch thick. Of course Pearl only make *tom toms* from the compressor paper whereas Asba make the bass and snare drums too. There are no glue rings fitted inside the shells but they seem to be strong enough without — certainly I couldn't make the bass drum bend by sitting on it. (While I'm on the subject there is one other company making Phenolic shells in California call 'Drummers Workshop' who also construct with the thicker shells).



The set I've inspected this month has a 22 inch bass drum 13, 14 and 16 inch tom toms, a 6½ deep snare drum, hi hat, snare drum and boom cymbal stands and, of course, Asba's redoutable 'Caroline' bass drum pedal. This configuration is the basic set from Asba these days and is available in stainless steel (which can be sprayed in black, blue, grey, red or white), see-through Altuglas, wood and *Fibreceel*.

Bass Drum

The standard bass drum as supplied with all Asba sets is a 22 x 14. It has 20 nut boxes with cast, solid looking claws and *very* small cast timpani-type 'T-handled' tensioners. They fit Remo CS heads to all the drums (except the snare) and the bass has solid, natural wooden hoops inlaid with plastic to match the sprayed colour of the drum. It has sharp pointed disappearing spurs set at an acute angle which can be locked into position with a very sturdy thumb-screw (reminiscent of the Gretsch damper adjustment knob). The movement of these spurs is smooth as silk within their cast holders which penetrate the drum's shell slightly. Their actual angle of incidence to the floor is different to any other manufacturer's — far closer to the perpendicular. I can't say that it would make the drum any less stable but it looks as though it might.

The latest generation of Asba bass drums have an adjustable strip damper like Gretsch's or Sonor's which the French used to fit only to their floor toms. The damper works on a cam and is adjustable via the same sort of knob which clamps the spurs. When you turn this knob clockwise it activates the cam towards the head — this mechanism is sprung in a unique way with elastic-bands to give it some tension to work against. The 2½ inch wide strip of felt is fixed at the bottom (bass pedal position) of the drum just a millimetre or so away from the head. When the cam moves it pushes a piece of dowel in an arc up against the head; it also stretches the damper too and effectively muffles the sound of the drum. It's nowhere near as sophisticated as the Sonor one but it *works* well.

This *Fibreceel* drum has a good sound with *both* heads on — when I last reviewed an Asba bass it was the stainless steel one which I felt was better with just the batter head. This one though seemed fine as it was with good tone and projection not to mention "balls".

The double tom holder fitted to this set is new to me. It has a cast plate fixed (with the attractive dome-headed hexagonal bolts used to secure all the fittings on the set) to the bass drum dead centre (back to front) with two three inch long tubes formed into it extending inside the drum. These locate and thumb-screw-lock about a foot or so of inch diameter, completely knurled rod. At the top of each of these rods is fixed a cast, radial-splined ratchet which holds the tom tom's back and forward angle adjustment. Vertical adjustment is as usual via the tube holder thumb screws. From the first "ratchet sandwich" extends a six inch piece of tube with another ratchet fixed but at right-angles to the first. To this is mated the other part of the clamp which is fixed directly to the tom with the hexagonal bolts. At first sight I did *not* like this holder presuming it to be too difficult to remove the toms for packing away. In reality, though, it's simple, since the fixed end of the ratchet has a slot from its centre bolt hole out, so one only has to undo the 'T' wing-units a little and pull the bolt out through this slot. The wing-units are definitely notman-enough for the job — but it's obvious they are cramped for

space here and so couldn't get a larger thumb screw or bolt in. (These 'T' units at every position on the kit are downright *painful* especially at the tom holder locking position where I know one could take one's thumb-nail off. It would be wise to invest in one of Ludwig's Sta-Set combination spanners or else fit a hexagon nut.)

As I said the drum certainly appears to be strong, I couldn't bend it, nor could I find any air holes at first, eventually I found them exactly where they used to be on the stainless steel drums — in front of the bottom two non-batter head nut boxes. They are very small (it looks like the same size screw hole used to secure the nut boxes) but this is Asba's way of unobtrusively and efficiently "venting" the drum.

Tom Toms

13 x 9, 14 x 10 and 16 x 16 all double-headed and fitted with see-through Remo CS heads. The two smallest drums had six, waisted screw-drive-slotted tension screws per head and the floor tom tom eight. (I wasn't too knocked out by the fit of these tension screws into their inserts within the nut boxes. They fitted too tightly, almost as if they were cross threaded.) All drums have cast hoops with an extremely heavy stick saver edge bead at the top and unusual (by present day standards) oversize round holes instead of slots to locate their tension screws. A slotted trim allows more leeway for the screw to find its own right-angle relative to the trim. The mounted tom toms and snare drum have internal under batter head external lever operating cam dampers which are like the old Ludwig's (except they are moulded) unlike the old Ludwig's these dampers hold and work in any position and I certainly couldn't knock them off as I played the drums. The floor tom uniquely has an adjustable strip damper like the bass drums, which works very well indeed. I'm surprised no other manufacturer has ever fitted one of these — especially to an 18 inch floor tom.

All the drums except for the bass have a screw driver-centre — type drum key fitted into a collar hole which is a good idea. It's like the Gretsch one (or the Camco) but gives you *four* drum keys to choose from. Unfortunately I find (and I'm sure you would too) these cast keys are too small. The nut boxes are sprung but not padded inside — perhaps on a man made fibre type kit it might be an idea to put some foam inside them, certainly from a recording point of view. All the toms have a small breathing hole like the bass drum's which as I said is difficult to find. It's just below the nut-box.

The floor tom has legs which are new to me. They used to work on a splined ratchet but now they have a cast block fixed to the shell with a horizontal hole in it which takes a sort of bolt and wing-nut. The fat end of this bolt is a thick boss with a cleance hole in it which runs up and down the tom tom leg. This bolt itself is then pushed through the leg block and locked there by the puny wing bolt which sandwiches the whole thing together. The bent steel rod legs have a rubber foot tip at each end which leads me to believe that one is supposed to simply push the legs up to pack the drum away. (You could if you wished undo the wing nut to remove the leg.) This locking wing nut is also lethal like the others on the set. Definitely use a Sta-Set here.

The toms sounded as good as the bass drum with two heads — strong and not too bangy. I whipped the heads off to see what would happen to the sound since the only glued, compressed-paper drums I'm used to are single headed. They sounded ►►



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Drumcheck

much more "ballsy" with just the one head. I'd be interested to see how the drums responded with thicker heads on say Remo Emperors or Evans Rock.

Snare Drum

The set comes with a 6½ inch deep Fibrecel snare drum. This drum has 20 single nut boxes staggered (or offset if you prefer) on its shell, cast hoops, a drum key holder, internal damper and a Remo Ambassadors head on the batter side. The snare side for some reason or other was fitted with an Asba Derma plastic head. I don't quite see why the company don't fit a Remo CS head to their snare drum like they do to the others. In my experience a C.S improves the *live* sound of any snare drum so I'm sure Asba's solid, cutting sound should be no exception. The drum is very responsive possibly because of its 25 strand snares which are attached with a plastic strip to their strainer mechanism through a smallish snare gate. It's an interesting snare strainer this one. Adjustable at *both* on/off lever end *and* at both end. The cast butt works on a spring hinge, at the other side (the lever) is a combination of hinge and adjustable cam. The cam lifts the snare-the hinge actually tightens it. This on/off lever is made of a piece of steel rod with a screw driver slot in its top which in this instance was covered with a piece of see-through plastic sleeving it seems to be *meant* to be fitted because I certainly couldn't take it off. Like the other drums in the set there are no real air holes, just one behind the snare strainer. (It looks like a mistake, but I'm sure, knowing Asba, that it's not.) The snare shell itself is not particularly unusual; it has the normal sort of bearing edge and snare contact area. When I reviewed my last Asba I criticised the snare drum for not cutting through as much as normal. (The set was the stainless steel one where all the drums were just as cutting as each other.) These isn't that problem with this Fibrecel set although I'm sure a metal drum *would* be more cutting and "stick-out" more.

Accessories

Asba make very large based substantial twin-legged tripod cymbal and tom tom stands. They have cast bosses to join their double short legs to the substantial centre tubes (at the rubber foot ends the four struts are simply sandwiched together), cast ratchet tilters complete with cast cymbal locking nuts to match the wing nuts. (and bolts) used every where else on the set. One boom stand comes with the standard Asba set. It doesn't have a counter-weight fitted to it, the boom simply extends from the centre and is fixed with a cast ratchet. I don't think the stand will be *that* stable without a counter balance but I haven't heard of any falling over. Asba used to make a 'Y' shaped cymbal stand which supported two cymbals simultaneously.

The hi-hat has changed a little since the last one I saw, it has a nylon strap for its centre-pull action instead of a fibre one like the bass drum pedals. It has a one piece cast foot-plate, a new double-strut, tripod stand adjustable spring, twin sprung spurs, a toe stop, a locking collar for the top tube (so you always set up the pedal at the same height), a large adjustable-angle bottom cymbal seating, and an original-looking top cymbal clutch. The pedal is fast and easy to use but still not as substantial as the other expensive hi-hat stands available.

The Caroline bass drum pedal hasn't changed much (if at all) over the years. It has a twin cast post, one piece cast footplate with toe stop, cam action, single expansion spring with twin spurs on its base

and a tough looking industrial fibre strap. The whole unit clamps to the bass drum hoop from the sitting position with two tightening screws, one in each post. The pedal is, and always has been, very good. It's a pointer to the importance of this pedal in the world market that years ago I visited a famous American manufacturer and in his office he had one of the Carolines. I asked him why, and he told me he wanted to make a pedal which was better than this one. He never did make a better one and now his company imports these *French* pedals into America. Incidentally, both the hi-hat and the bass drum pedal have pieces of webbing with holes in them attached beneath their heel plates and extending from them back towards the playet. The idea being you can bang nails or screws through these holes to make the set even more stable and rigid.

The snare drum stand I am still very undecided about. It has a much larger base than before with the same double strutted legs as the other stands. It has a basket-type holding action but to secure the drum to it you must rotate both drum and basket. This is not too much trouble when you're setting-up but if you had to get your drum off quickly to change a head it could be a drag, especially if you like to play with your snare drums close to your toms. I found it bashed against everything when I turned it mostly because the snare strainer and damper stick out quite a way, as on almost all snares.

The playing angle adjustment is something else. Basically, it is two hemispheres inside a cast adjustable cage which is attached to the basket part of the stand. One of these hemispheres has a hole dead centre and the other has one off centre. A rod attached to the tripod base of the stand fits first into the off-centre hole and then into the centre one. The two hemispheres are sprung to keep them apart so all one has to do to maintain and arrest the playing angle is to tighten the cage around the two hemispheres with a wing bolt.

Summary

These drums are exceedingly well finished off both inside and out. The set I saw was a sort of matt yellow. The interiors are also sprayed, but white. There is a very good *pink* sprayed colour which I really think looks up to date. I have no way of knowing how permeable this finish will be — time alone will tell, but certainly the drums I have seen don't have any blemishes on their shells at all. This sprayed outer coating as opposed to Pearl's plastic or 'Drummers Workshops' veneering should make the Asba drums more resilient competitors.

Having visited the factory in Paris two or three years ago I know how painstakingly the drums and accessories are put together. They are as hand-made as it's possible to be in this day and age. Indeed, even their castings for wing nuts and tension screws and just about every other metal part are made by hand. From what I saw the guy who *has* been assembling drums or covering them or putting the veneers into the shell presses will, when necessary, go off and cast some more nut boxes or whatever is necessary. This facility unfortunately does not result in a high production output which reflects in the price of the set. The bad news then is the set costs £880, including VAT. There's no way this can be described as cheap. The only consolation if you want one is that the French 'battreur' would pay more for his set since their rate of VAT is still higher than ours.

Henry Roberts



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BEWARE OF FLUNKY IMITATIONS



Soundcheck

BI AMP 8802 Stereo Mini-console £456 inc VAT

We are on the Oregon trail this time, Beaverton to be precise, where you will find Biamp Systems Inc hiding out. This company produces a professional range of audio equipment, well-known in the States and more recently in the UK and the Continent. Their range includes various sizes of mixing consoles, graphic equalisers, stereo reverberation systems, electronic crossovers, four-channel limiters and finally power slave amplifiers. Biamp claim that their equipment combines both professional reliability and performance characteristics with a price bracket that is affordable by most and regard their equipment as being value for money. From the Biamp range, I was particularly impressed by their electronic crossovers M2/V and SM/23 — a continuously variable type i.e. 100 to 1kHz and 1 to 10kHz with 12dB range per octave, Models: TC/80: TC/120: TC/225 Stereo amplifiers and also their range of multi-purpose small mixers: the 8802: 1282: 1682 and 6702.

The object of this particular review is the smallest Biamp mixing system — an 8-input stereo model — the 8802 Mini-console, designed for everything from small clubs and sub-mixing applications to stereo keyboard mixing work.

This 8802 Stereo Mini-console measures just 20 3/4" W by 5 3/4" H by 16 1/2" D and its total weight appears to be in the region of 7.5 kilos. But despite its small size, the console has a really compact design packing in many professional features such as; three band equalisation (Lo, Mid and High); Prefader and Pre-EQ monitor, Built-in Accutronics/Hammond reverb, access to all busses, transformer balanced inputs, transformerless electronically balanced outputs, lighted VU meters on outputs and so on. Biamp have followed many other manufacturers' steps in making the 8802 a semi-modular system, and this simply means that each channel's electronics are independent with separate PCBs.

En face, the front control fascia is formed from a single piece of metal sheet with vertically marked white on black lines showing individual channels. As expected all 8 channels of the console are identical in the electronic and control sense and feature the following (top to bottom): Attenuation rotary control, High EQ rotary control, Mid EQ rotary control, Low EQ rotary control, Reverb/Effects rotary control, Monitor level rotary control, PAN (L, R) rotary control, Channel Level slide control. As far as "Master area" controls are concerned, these are grouped below the twin scale VU meter and comprise: reverb pan, reverb level, Aux pan, Aux level, Effects send, LF Filter (R & L) and Monitor LF Filter. The other controls, meaning the slider type ones here are the L & R Master faders and the Monitor Master Fader.

Now to turn your attention to the heart of the console — the insides, and starting with the input channel module construction, here each of the 8 modules (type Biamp 8-12 PR) are about 13" long and house 100 per cent of the channel circuit including all the controls. The balanced input transformers are screened magnetically as the whole transformer is covered with a cylindrical steel cadmed housing. The actual channel circuit is an op-amp design using just 3 eight-pin DIL devices, whereas the input is specially designed for improved noise performance by Signetics and labelled Biamp N-S-7841. As for the majority of the small non-active components (resistors, capacitors), well they originate from that far off land of apple blossom —

Japan. In addition, each channel bears an individual decoupling capacitance of 100uF/20V.

You will find that all 8 sliders are 5kohm, anti-dust protected by a black foam strip running parallel to the slider aperture, on the inside of course, and the rotary as well as the slide pots come from Japan — ALRS Corporation.

Carrying on with the interworks — we can find two separate output modules (type Biamp 8-12L and Biamp 12RA) which are fitted in the top part with a provision for a VU meter connection, where both channels' driver circuits are full wave rectified and the individual pre-set pots serve as individual level pre-set calibration controls. The VU meter itself is an ARC-Japan (type GIY-5) and an internal sub-miniature bulb illuminates both scales calibrated to the usual (-20: 0: +3) VU or 0-100 per cent standard.

The console's power supply is split into two sections, a mains insulated transformer mounted on the inside walls of the rear panel and the low voltage circuitry planned on one of the output PCBs. The massive smoothing of 6 x 470uF/35V electrolytics control the hum and ripple levels with a single 1A bridge used as a power supply rectifier. All input and output modules are interlinked by easily accessible silver-plated 1mm bus wires and both rails of the power supply are included in this.

Now for: the Reverberation spring — Accutronics/Hammond — type 4FB2D1B, which is bolted directly to the console floor and again a piece of black foam is inserted underneath the reverb enclosure box in order to suppress unnecessary vibration and microphonics.

Cables — a pair to be precise, terminated with co-axial plugs provide input and output signal connections to the reverb and can be simply disconnected if any service work is due.

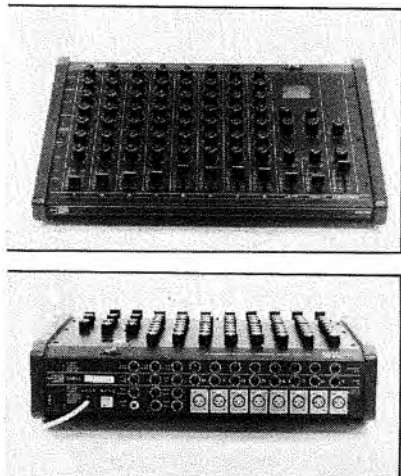
As far as the 8802 Mixer's specification goes, the total Harmonic Distortion figures are quite low, at about 0.02 per cent level, whilst the Intermodulation products are below 0.01 per cent. The Frequency response is claimed at +1dB Ref. 15Hz to 45kHz and a typical crosstalk shows 75dB on adjacent channels with a 1kHz signal test.

One useful feature of the 8802 console is the LF Filter incorporated on both left and right outputs as well as the Monitor. The LF Filter rotary control are calibrated continuously from 20Hz to 100Hz and their efficiency is defined by an 18dB octave slope on the filter characteristic.

Conclusion

The Biamp 8802 Stereo Mixing Console is a versatile piece of equipment fitted with many features normally not provided in the majority of "mini" mixing consoles. Among these, the most valuable in my opinion are the following: range of quite efficient controls, comprehensive range of patching facilities, flexibility on input side i.e. XLR Cansons Lo Z, Line inputs (1/4" jacks) High Z, Transformer balanced inputs, Electronically balanced outputs, Low frequency filter on L & R outputs and Monitor, and all this combined with good overall performance both during lab measurements and in practice.

One criticism, I think should be noted by Biamp, is the size of the VU meter, which unfortunately is too small to allow for convenient monitoring. In fact the top right hand corner would permit a much larger meter to be fitted, as shortage



of space is no problem here. The current one is very small and similar to those on portable stereo radios or tape recorders and its "window" only measures 1 1/4" by 1 1/2".

Personally, I should also have liked to have seen a headphone monitoring provided, which often proves very useful and wouldn't cost the earth to incorporate.

At the time of this review, Biamp's mixer arrived with just two looseleaf A4 format manufacturer's brochure, giving only the briefest specification for this and also three other mixing consoles. Nothing

as far as operations, setting up, etc. is concerned. Well, I am sure everyone knows my fetish about comprehensive literature — needed to explain all aspects of the particular equipment at hand. So no marks for the 8802 on this point.

As for the workmanship, this cannot be faulted and all components are suitably picked. What about the quality of sound and overall controllability and looks? Very good. This console can be used with equal success for standard small PA mixing as well, as for keyboard applications.

Mark Sawicki

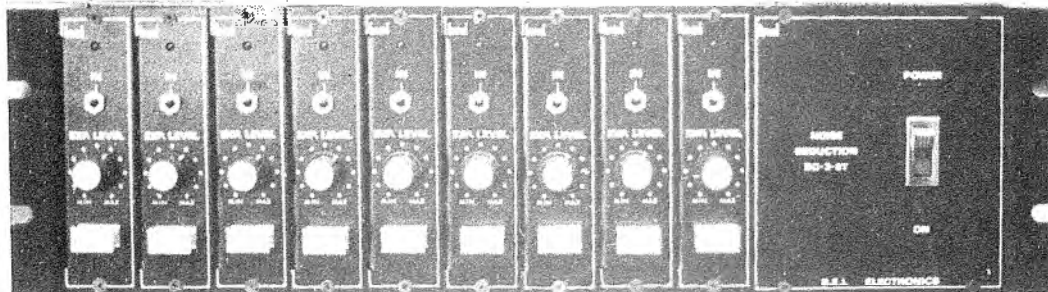
Mark Sawicki MSc (Eng) Ph.D is a consultant in electronics who also designs and builds electronic equipment.

PARAMETER	RESULT	TEST CONDITION	COMMENTS
Maximum Input Level	approx +10dB approx +30dB	Ref. "Lo-Z" 1kHz signal Ref. "Line-In"	Biamp 8802 Stereo mixing console uses XLR cannon sockets on "Lo-Z" inputs and 1/4" jacks on "Line in" side. Screened audio transformers are used on balanced inputs and special electronic circuit on transformerless balanced outputs.
Attenuation	0 to -50dB	1kHz	The channel attenuation control is calibrated zero to minus fifty and this control allows for very convenient multichannel balancing in conjunction with channel level slider potentiometer.
Headroom	approx 18dB	1kHz	Useful
Input Sensitivity	6.15mV RMS typically	Ref. "Line In" input into 4.0dBm (1.228 VRMS) o/p	This figure is typical for 8802 console and allows for most typical microphone applications. This test was carried out for 4.0dBm o/p level with Ch. EQ at Flat, Gain at Max, Pan at Flat, Master at Max.
Frequency Response	+1dB	Ref. 15Hz to 45kHz	Very good. More than required to cut the audience in half.
Total Harmonic Distortion (THD %)	better than 0.02% (typically 0.013%)	Ref. 1kHz (from "Line In" i/p to Main o/p — unbalanced) into 600 ohms	Better than specified by the Man. Predominance of the second harmonic component observed. Nice and real sound. Minimum matching impedance is 600 ohms.
Intermodulation Distortions	Better than 0.01%	Single Channel SMPTE: 60Hz/7kHz, 4:1 test	Quite good. Biamp claim that TIM (Transient Intermodulation Distortion) and SID (Slow Induced Distortions) should be of prime consideration when searching for the best possible sound in live performances and recording situations.
Channel Equalisation	23.5dB swing 29.1dB swing 27.3dB swing	Treb. @ 5kHz: Ref. Bass — flat, Mid. — Min Mid. @ 2.5kHz: Ref. Treb/Bass — flat Bass @ 100Hz: Ref. Treb/Mid — flat	High EQ (Treble) control could be slightly better. Manufacturer's spec. does not claim any figures apart from centre frequencies and type of control i.e. High/Low — shelving, Mid — peak & dip.
L.F. Filter	18dB/Octave slope	Variable. Ref. 20Hz-100Hz	Useful. Incorporated both on L&R outputs and monitor. Controls are logarithmically calibrated, i.e. 20, 27, 36, 55, 100Hz. Quite effective.
Signal/Noise Ratio	Below 80dB	Ref. 1kHz. One microphone channel test.	Biamp claim same Signal to Noise ratio figure. Ref. 20Hz to 20kHz. Not too bad, bearing in mind "op-amp" design. DIN audio band weighing (20Hz-20kHz) True RMS reading on ANM2 Radford Noisemeter.
Crosstalk	Below 75dB	Adjacent channels, Ref. 1kHz	Satisfactory.
Slewing Rate	8V/ms	—	Fast and adequate for most typical applications.
VU meters	Ovu = 1.322 VRMS Ovu = 1.361 VRMS	Ref. Left channel Ref. Right channel	T/C = flat Ch. Atten at 20. Pan = flat
Reverberation	OK	Accutronics/Hammond spring unit	Quality of sound OK. Each channel equipped with individual Reverb level calibrated 0-100. Master area incorporates Reverb Pan (L&R) and Reverb level controls.
Multi Input Priority Test	Satisfactory on actual experiments.	8 Channel test and variations	No problems during MIP tests.



ELECTRONICS NOISE REDUCTION

- 30 DB Noise Reduction
- Modular Construction
- No Line Up
- Pre/De Emphasis (Signal & Level Sense)
- Spare Channel Supplied
- 3 Connector Options
- 19 Rack Mounting



The latest in the range of B.E.L. Professional Audio Processing Equipment. The B.E.L. Noise Reduction unit gives over 30 DB of noise reduction and is capable of decoding DBX encoded tapes. The 8 channel unit is modular with an extra slot in spare module. All B.E.L. noise reduction units are simultaneous encode/decode enabling the user to monitor a decoded signal off the tape machine while it is being recorded. Immediate A/B comparisons. There is no need to line up the B.E.L. noise reduction unit to the tape recorder as the signal is processed at all levels.

There is a gain control to adjust replay signal level, once set the unit requires no further adjustment. Using B.E.L. electronics. 2 to 1 compression and expansion circuitry with pre and de emphasis. Enables the user to record low level signals without the worry of tape noise. Allows extensive track bouncing often required with 8 track recording. The B.E.L. electronics 8 track unit is available with XLR type sockets 1/4" Jacks or Multipin Connector (plug supplied) from £500 + V.A.T. 19" Rack Mounting Stereo Unit at £130.00.

B.E.L. BF20 STEREO FLANGER £450

The B.E.L. BF20 Stereo Flanger is a true stereo unit with separate circuits. Which enables flanging of a stereo mix without upsetting the stereo image. There is a Mono Switch which feeds the signal of either input into both circuits, used in conjunction with the Reverse Sweep Switch an unusual image shift can be obtained giving a stereo effect from a mono instrument. There are three operating modes, Manual, Envelope and Continuously Variable Oscillator with Depth and Speed Control.

In the Envelope Mode there is a Threshold Control. Once the signal level exceeds that set by the Threshold the unit will start to sweep. The rate of recovery is set by the Decay Control. In this mode Channel 2 can be used as a Mono Flanger and keyed by a signal from an external signal source. There is also a Feedback Control for increased depth and additional pitch changing effects.

When used in the Stereo Mode the unit sweeps across its



- 3 Operative Modes
- Stereo/Mono
- Keying Facility
- Image Shift
- Random Auto Panning

left and right inputs, producing a wide variety of unusual stereo effects, not just flanging, but also completely random Auto Panning created by the HAAS effect.

B.E.L. BF20 MONO FLANGER £275 *New*

Now available in Mono Form the B.E.L. BF20 Flanger is available at reduced cost to a larger market and is a must for the smaller studio, P.A. Hire Company and Musician for use on stage (fed through a pre amp).

The B.E.L. BF20 has all the features of its stereo sister apart from the Keying Facility but with the addition of C outputs (normal and reverse) and a VC input, two units can be linked to give the same see-saw panning effect as the stereo version. Both versions are 19" Rack Mounting available unbalanced (standard) or balanced (option).

- VC In/Out
- Negative & Positive Flanging
- Feedback Enhance
- Envelope
- Manual Switch

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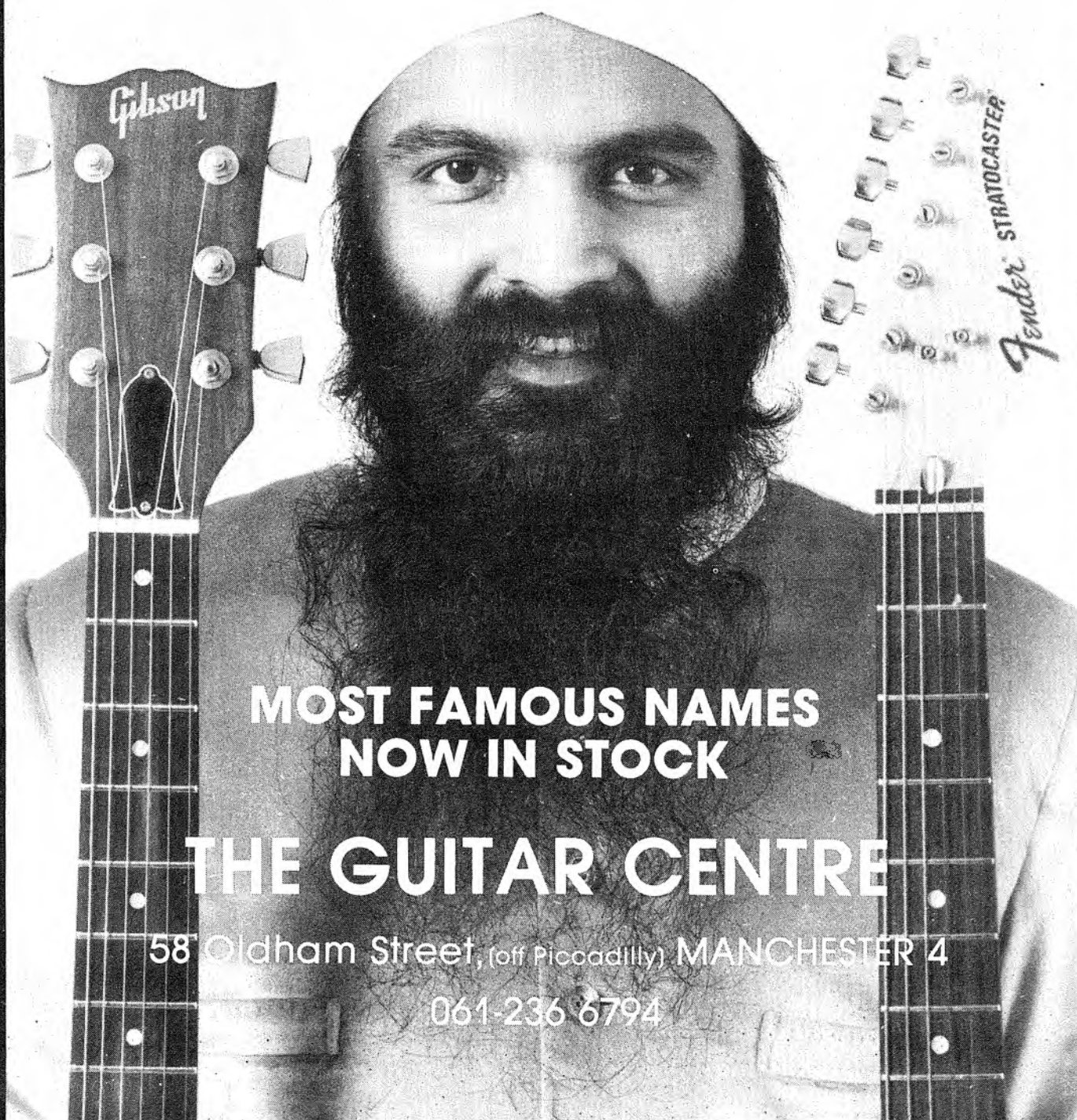
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Amcron PSA-2

£977.50

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The Amcron PSA-2 self-analysing amplifier is a relatively new addition to the well-known range of products from Crown-Amcron International based in Elkhart, Indiana, USA (imported as Amcron). Their contribution to the audio industry began circa 1949 with a range of patents and inventions related mainly to the field of recording. In 1962, they developed the first silicon solid state professional quality tape recorder, in 1964 the Amcron/Crown SA 60-60 was the world's first stereo amplifier with direct coupled input and output. More recently, in 1977, their DL2 Controller revolutionised pre-amping with its digital logic, digitally controlled modular system with separate control, phono and power modules, in addition to its computer interface capabilities. 1979 saw the launch of the Amcron SA-2, the first power amp to use built-in computers to maximise performance of the amplifier's output transistors.

In short, the PSA-2 is the latest innovation from a company well-known for breaking new ground.

Construction

The PSA-2 is a high power system's amplifier for professional amplification of frequencies up to 20 kHz starting from DC(0Hz). Designed with "self-analysing" circuitry, the PSA-2 automatically analyses its own dynamic environment and thus is able to control the output level relative to the output transistors safe operating area. The obvious purpose of this design is to provide maximum output as well as maximum safety.

As day to day practice confirms, the power amplifier's output stage and its protection is the most critical circuit area of any power slave amp — here the output transistors operate in the AB class of operation, where quiescent current is carried by both the output stage (16 rugged 150 watt transistors with total power dissipation of 2400 watts), as well as the driver stage. As Amcron claims, the PSA-2 Self Analysing circuit employs an "analogue computer" in each half of the output stages. This enables it to respond to instantaneous

output device junction conditions. The computer's output controls the continuously variable limiting circuitry to provide the appropriate operational limits for most possible conditions encountered. The PSA-2 was designed to operate safely and continuously into a variety of speaker load configurations.

The following listing will give you an idea of the power you may expect when connecting various load impedances to the output of the amp:

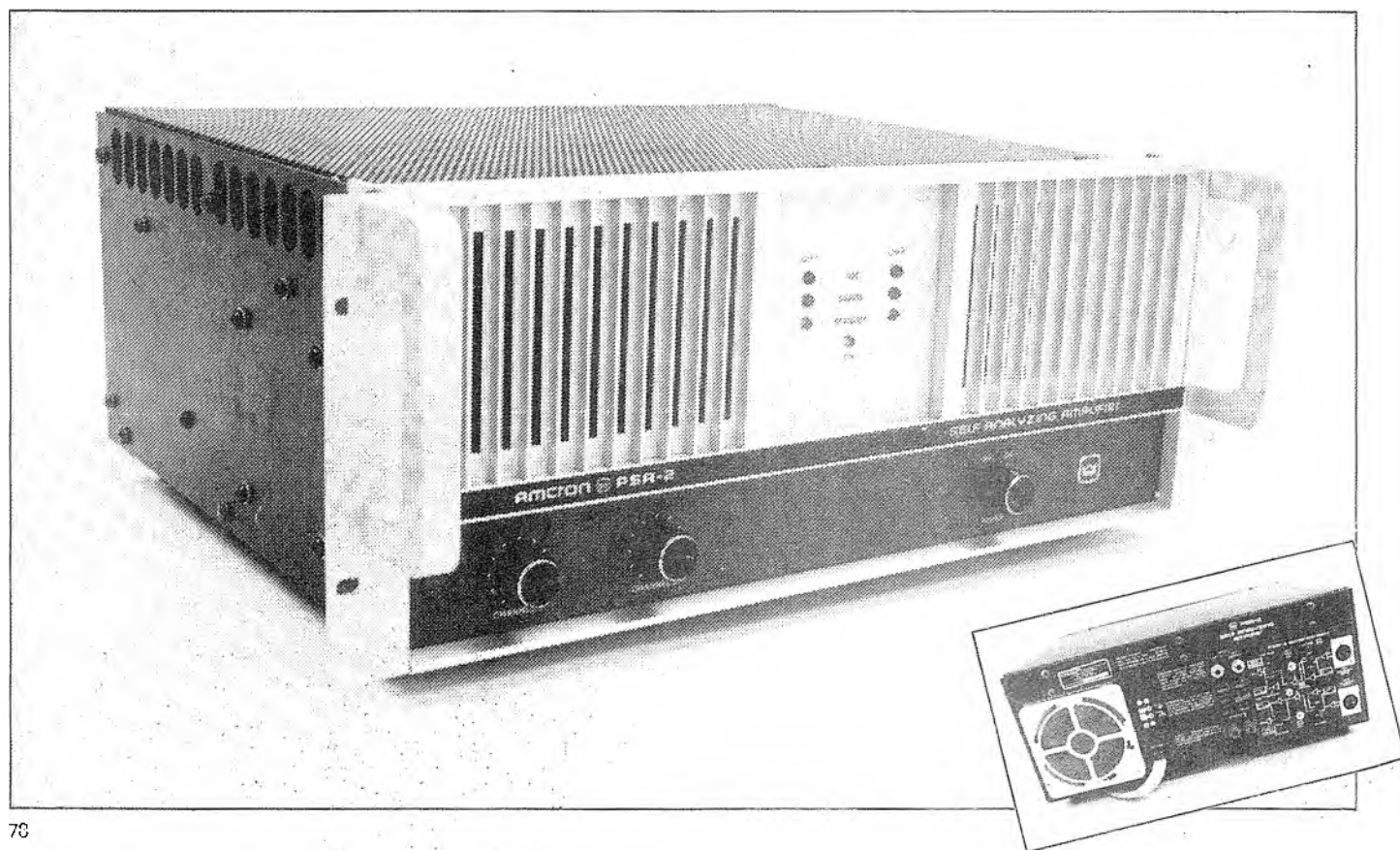
400 watts	(both channel operation) into 4 ohms load over a bandwidth of 20Hz to 20kHz with no more than 1 per cent THD.
250 watts	(both channel operation) into 8 ohms load over a bandwidth of 20Hz to 20kHz at no more than 1 per cent THD.
600 watts	(both channel operation) into 2 ohms load at 1kHz with no more than 1 per cent THD.

Mono, i.e. bridged output operation, allows for even higher power levels:

1200 watts	at 1kHz into 4 ohms. Ref 1 per cent THD.
750 watts	at 20Hz — 20kHz into 8 ohms with about 0.12 per cent THD.

The PSA-2 is designed for standard 19" rack mounting as well as "stack" mounting without a cabinet. The basic measurements of the amp are as follows: height 7", width 14 3/4" (without handles), total length 19".

The front panel facilities include the following: an AC rotary power switch, channel 1/2 input level controls and a range of 1/4" LED indicators, ie Standby, Signal and IOC (Input Output Comparator).



The IOC facility helps the operator to identify certain problem areas such as "too high" input, not adequate load impedance or internal amp problem, for example a need for fuse replacement.

The rear panel of the amp is occupied by a large cooling fan on the left, then a pair of unbalanced input 1/4" jacks with three slide switches labelled: Stereo-Mono, Low Freq Protect and Delay. "Stereo-Mono" switch operations are as usual, but engaging the "Low Freq Protect" switch causes the amp to cycle through the "standby" mode if low frequency (DC + 10Hz) appears at the output. The PSA-2 manual claims that this problem will be recognized by the listener as a repetitive pop or "thump" through the loudspeaker (every 4/5 seconds when Delay is used). This would, of course, require immediate attention if it happened during work.

The right hand side of the rear panel incorporates the remaining amp control facilities, i.e. PSA-2 balanced input modules, a pair of XLR Cannon sockets of 20k ohms impedance providing balanced input on both channels, plus an individual HI/LO Pass filter, and a compressor. Gain adjusting pots operate independently for both amp channels. The only controls common to both channels, i.e. serving both simultaneously, is the AGC Threshold Adjust and the previously mentioned Test Tone switch. The AGC Threshold adjusts the point at which the Automatic Gain Control is activated. The purpose of this control is to compensate the operational gain depending on the specific situation.

A word about the PSA-2 output termination — there are two pairs of red and black moulded insulated terminals, accepting continental standard 4mm plugs in the top. For bridged operations (Mono) the "Stereo-Mono" switch should be selected, secondly, both top (red) output terminals should be used as Mono output terminals. It is important to remember that the output from the PSA-2, if mono, is balanced and as such is isolated from the chassis and from the input grounds.

The amplifier's electronic protection circuitry is quite comprehensive and includes the following: protection of the output stage's transistors from elevated temperature, protection against the transformer overheating, RF anti-burnout protection (via controlled slewing rate, voltage amplifiers), input overload protection, protection against short/open circuit operations, protection against mismatched loads, protection against "chain destruction" phenomena.

Additionally, the line for the 240V AC power supply, is fused with 6 amps AC. The low power supply and cooling fan is fused with a 0.25A type AGC fuse.

Conclusion

For some time professionals, when searching for extra large power levels for all kinds of gigs, have found that Amcron is among the best international names. In fact, when reading reports of systems used by Led Zeppelin, The Who, McCartney, Genesis, Bad Company and many other bands, the Amcron name appears frequently, providing the "building block" for indoor systems up to 30,000 watts or over 60,000 for outdoor. The question is: why?

Well, reliability and outstanding performance is the answer. The company's reputation has been built up over the last 30 years and their DC 300 A power amplifier certainly is the most common workhorse in many serious installations.

When considering the PSA-2 amp as a new addition to the already excellent range, it cannot be

regarded as a replacement for any of the current production models. This amp with all its advanced features is classified as a complete power system of its own. Indeed, the Amcron PSA-2 power amplifier is a very flexible piece of equipment and as such is designed to operate safely and continuously into a variety of load configurations.

Our power measurements show that Amcron's specifications are adjusted rather conservatively as the "onset of clipping" figures indicate up to approx. 30 per cent more power available than specified.

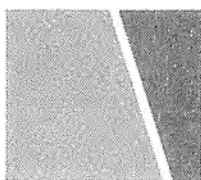
The rest of the spec is quite accurately adjusted. Overall, the amp's performance, including the practical listing test, is excellent.

Quality of workmanship and components is of the usual high Amcron standard and certainly the amp looks, and is, a first class design. On top of everything we've said here, I should mention the excellent instruction manual, consisting of five substantial chapters with all the schematic diagrams you could possibly need — Installation and Operations, Theory etc. In fact, nothing is omitted, which just shows Amcron confidence in their product and all this is supported by a full three year warranty.

A small but nevertheless important message for Crown — For God's sake change the A/C power line for one having live, neutral and ground colour coded. As it is now, the live and neutral are both plain colours and identical. When in Rome do as the Romans.....!

Mark Sawicki

PARAMETER	RESULT	TEST CONDITION	COMMENTS
Specific Power Output (Watts) Ref. 1KHz	Ch. 1 Only 718 W RMS 498 W RMS 288 W RMS 168 W RMS Ch. 2 Only 714 W RMS 497 W RMS 288 W RMS 163 W RMS	Onset of clipping into 2 ohms Onset of clipping into 4 ohms Onset of clipping into 8 ohms Onset of clipping into 16 ohms Onset of clipping into 2 ohms Onset of clipping into 4 ohms Onset of clipping into 8 ohms Onset of clipping into 16 ohms	CROWN PSA-2 spec. claim the following: a) Power O/P 2 ohms: 600 Watts RMS per channel, 1 KHz @ 1% THD b) Power O/P 350 Watts RMS per channel (4 ohms) 20 KHz @ 0.08% THD c) Power O/P 18 ohms: 220 W RMS per channel 20 KHz @ 0.05% THD d) Power O/P 14 ohms: 1200 W RMS bridged O/P 1 KHz @ 1% THD e) Power O/P 160 ohms: 700 W RMS bridged O/P 20 KHz @ 0.12% THD f) Power O/P 440 W RMS bridged O/P, 20 KHz @ 0.08% THD
Total Harmonic Distortion	Less than 0.002% Less than 0.05%	Ref: 20 Hz-1KHz @ 220W/8 ohms Ref: 1 KHz-20 KHz @ 220W/8 ohms	For bridged "mono" operation, however, exclusive of balanced input module, the following figures are typical: less than 0.005% from 20 Hz-1 KHz and increasing linearly to 0.12% @ 20 KHz Ref: 800 Watts/8 ohms.
Intermodulation Distortion (IMD)	Less than 0.01%	Ref: 160 Hz-7 KHz 4:1 Test S.M.P.T.E. into 8 ohms	The same test related to bridged "mono" work identifies less than 0.015% I.M. Ref: 0.25 Watts @ 500 Watts into 16 ohms.
Input Sensitivity for 220 W RMS (at 1% RMS) output signal	Ch. 1 only: 2.08 VRMS Ch. 2 only: 2.11 VRMS	into 8 ohms 1 KHz into 8 ohms 1 KHz	CROWN spec claim the following: Input Sensitivity: 2.1 volts for 220 watts/8 ohms (Slew rate 2.2 volts for 500 Watts/8 ohms (Mono)) Voltage gain: a) 20 + 2% or 26 dB + 0.2 dB at Max Gain (Stereo) b) 40 + 2% or 32 dB + 0.2 dB at Max gain (Mono)
Frequency Response	+0.11 dB or -0.2 dB	Ref: 20 Hz-20 KHz 1 Watt/8 ohms Ref: DC-20 KHz 1 Watt/16 ohms	For PSA 2 balanced input module frequency response is claimed as "flat" as +0.2 dB Ref: 20 Hz-20 KHz
Hum & Noise Level	Approx 115 dB approx 119 dB	"A" weighted reading "DIN" audio band weighted reading	Very good. True RMS readings on High sensitivity AVM2 Radiodetector.
Input Impedance	approx 20 kohms approx 25 kohms	Ref: balanced XLR inputs Ref: unbalanced 1/4" jacks	PSA-2 is normally equipped with both: unbalanced 1/4" jacks and balanced input module (PSA-2-B 1A), which is fitted on rear side of the amp including filter, gain stage, and test tone switch.
High and low pass Filters (balanced input module)	18 dB/octave 18 dB/octave	Ref: 50 Hz 3 pole Ref: 15 KHz Butterworth	Butterworth filter network allows for the flattest possible response in the passband. The response rolls off smoothly into the stop band, where it approaches a constant slope of 18 dB/3 pole design.
Compressor Range (balanced input module)	18 dB	Ref: 1 KHz Threshold adjustable from overload level of main amp to 12 dB lower.	Manufacturer states that wider range would appreciate feedback in live performance.
Test Tone	OK	Frequency spectrum of 50 Hz-20 KHz applied directly to both inputs.	Very useful. The PSA-2 internal test tone generator is activated by the slide switch at the rear panel. Because the test tone is a wide band frequency, pulse it is possible to monitor the tone throughout the woofer, midrange and tweeter range.
Phase Response	+0-13.5 degrees +0-30 degrees	Ref: DC-20 KHz Ref: DC-40 KHz	This is 1-Watt Test.
Damping Factor (Non-dimensional)	greater than 700	Ref: DC 400 Hz/8 to 16 ohms load Both Stereo and Mono operational	Defined as a numerical indication of an amp's ability to dampen unwanted loudspeaker movements. D.F. can be calculated by dividing the load impedance by the amplifier's output impedance which for PSA-2 is less than 12 milliohms in series with less than 1.2 milliohms.
DC Output Offset	<10 millivolts	Shorted input	Acceptable
Slewing Rate	Greater than 30 volts/microsecond Greater 60 volts/microsecond	Ref: "Stereo" mode of operation Ref: "Mono" mode of operation	OK
Capacitance Load Test	OK	2 microfarade non-electrolytic capacitors/250V working voltage into 4 and 8 ohms dummy load.	Does not show any tendency to instability.
Open Circuit Stability Test	OK	Left right Gain and level potentiometers at MAX. Dummy Load removed	Stable during O.C.S. test.
Short Circuit Test	35 seconds		"Protection circuitry" limits the output level to protect the output stage transistors. Controlled slewing rate voltage snips protect unit against RF burn out. Worked normally after S.C. test.



fact: Shure's new loudspeakers may look compact... but there's plenty of room for all your sound!

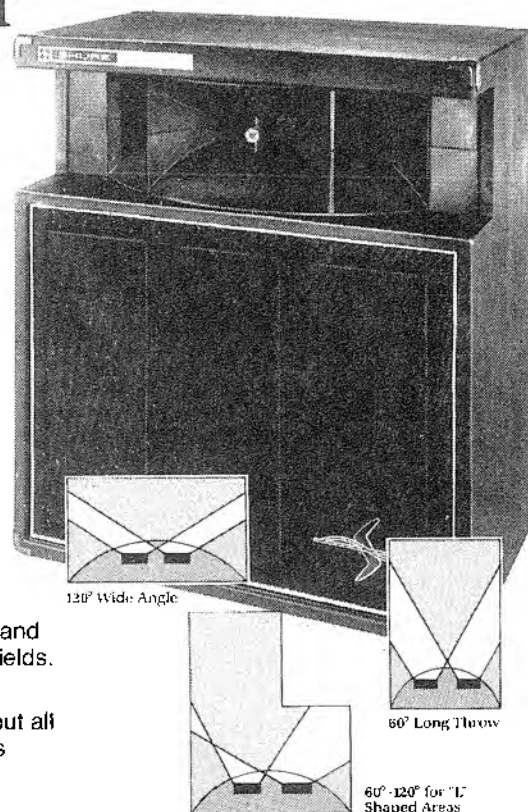
PRO MASTER™ Model 701 Loudspeaker

- Adjustable dispersion—for long- or short-throw applications.
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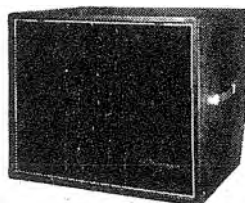
PRO MASTER Modular Loudspeakers

These modular units may be used to construct a custom speaker stack, add high- or low-frequency emphasis to another full-range system, or create custom stage monitor systems. Each speaker is designed to operate with an amplifier capable of delivering up to 150 watts continuous to an 8-ohm load.



Model 708 High-Frequency Speaker

The high-frequency portion of the Model 701, including adjustable dispersion horn. It has a frequency response of 2,000 to 15,000 Hz, an internal crossover filter rolling off at 18 dB per octave below 2,000 Hz.



Model 707 Low-Frequency Speaker

The low-frequency portion of the Model 701, with rubber feet on two surfaces and diagonally beveled back allowing the speaker to be tilted. It has a frequency response of 50 to 2,600 Hz, an acoustic rolloff above 2,600 Hz.

PRO MASTER Stage Monitors

Really cut through in monitor applications! The Shure-developed shaped response is a performance-proven way to put the sound energy where it belongs.

Model 703

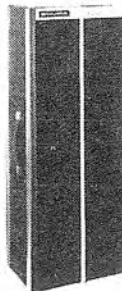
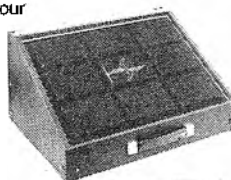
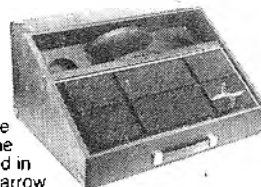
Special removable wedges enable the monitor to be used in a wide-angle or narrow pattern. Rated at 100 watts to 8 ohms, output 117 dB SPL at 1.2m (four feet) with 100 watts.

Model 702

A compact two-way system rated at 50 watts to 16 ohms, output 114 dB SPL at 1.2m (four feet) from only 50 watts. Features a built-in volume control.

VOCAL MASTER® Stage Monitor

The VA301-S is a highly directional stage monitor, featuring a built-in volume control. Designed to be used with the Shure VOCAL MASTER Sound System, it is rated at 50 watts to 32 ohms.



Compact Speaker Systems

Three professional speaker systems (SR112B, SR112W, and SR116B) that combine high output capability, high power handling ability and wide frequency response into a compact package. Extraordinarily efficient, they produce 95.5 dB SPL at 1.2m (four feet) with just one watt. And, each is rated at 100 watts to 8 ohms!

SR112B (SHOWN)

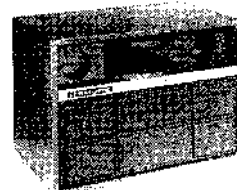
Designed for permanent or semi-permanent installations indoors or outdoors.

SR112W

Same as SR112B with woodgrain finish, matching many indoor decors.

SR116B

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Steelcheck

Wiggins Pedal Steel Guitar £700 inc VAT

Everything I've said previously about American versus British pedal steel guitars still applies when considering an instrument such as this. I use the word "versus" advisedly, as this is exactly the criterion which is bound to be used by potential players when judging a pedal steel. It is a fact of life that the Americans have a monopoly in the market of steel guitars; this is because they have the experience, the general reliability that comes from years of production, the demand from relatively large numbers of players of the instrument, and probably most important, American steels have the *image*.

Therefore, to a certain extent British makers must break new ground in both building and selling their products. Let's get one thing straight; this doesn't mean that British pedal steels need be inferior in any way. In fact there's no reason why a maker shouldn't design a pedal steel which improves on the products from across the Atlantic; after all, I doubt whether the perfect pedal steel has been built yet, even over there.

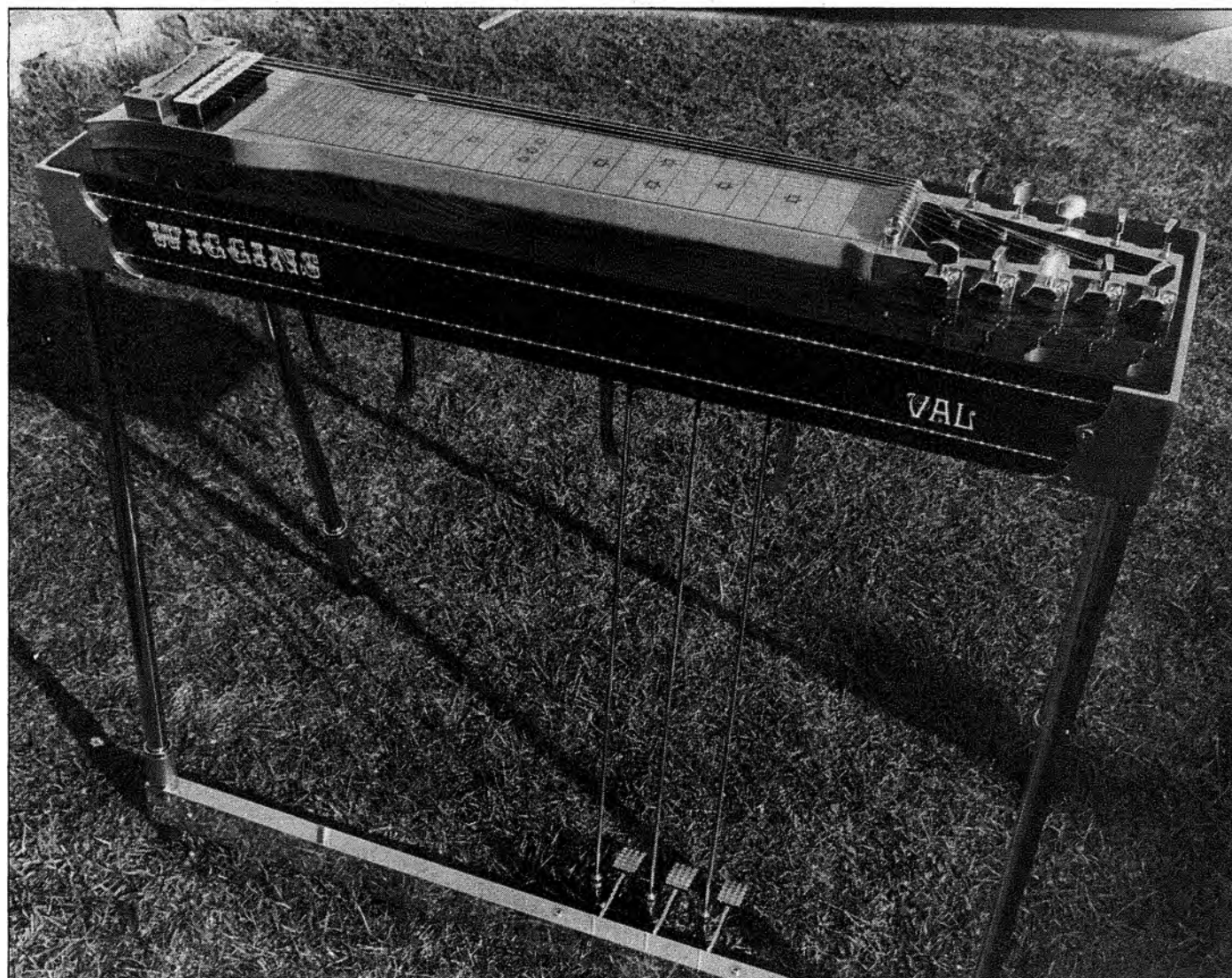
In reviewing this model I've come across one important advantage of a steel being produced in this country, and that is, it's easy to get the instrument "custom built". How many people are lucky enough to know someone who custom builds them in the States and to be able to meet him personally for a custom job? That is something which the maker, Dave Wiggins, has recognised as an advantage; consequently he's keen to build his

instruments exactly to the customer's requirements and the luxury of personal attention becomes a matter of course. Dave was kind enough to let me have this single-neck ten-string model for review although I didn't have it for as long as I would have liked — the new owner was waiting to get his hands on it.

Appearance

This model has a rosewood body, the lighter coloured neck giving a really pleasing appearance. Mahogany is the wood normally used for Wiggins' bodies (the rosewood is a "special" for this particular) and this should also look good. It's a departure from the usual practice of using maple for the body. The fret markings are black and painted or transferred directly on to the wooden neck and then lacquered over. The position markers are of a "star" design and the appearance of the fretboard is generally "quiet" but pleasant, clear and easy on the eye. There are two interesting features on the fretboard; one is the number of fret markings — there are 33. This is far more than the normal 24 or 26 on a pedal and gives the player a guide if he wishes to play above two octaves from the open position. I like this feature, as I have on occasion in the past wanted to play this high.

The other feature is the actual spacing of the fret lines. As you go up the neck the fret mark spacings don't reduce by a constant factor but do so unevenly to give a "natural" scale in any key using an open-



string note as its root. This means that in a sense the fretboard is "untempered"; i.e. it is fine if you play, say, an ascending E major scale starting on the open E string (4th or 8th on the 9th tuning), but move to "F" (first fret position) on the same string and try to play an F major scale and you're in trouble. Don't forget that the fret marks on a steel guitar are used only as a guide to where to place the bar. It should be possible to correct or "temper" your intonation as you play in different keys by moving the bar slightly, which is something you have to do anyway. It's just a question of whether you do it at different points in a scale in some keys only as with this model, or always at the same points in *all* scales as with an evenly spaced fretboard. I've given it some thought and I think I still prefer the latter, as the compensations necessary are then at the same intervals in any key and always deviate by the same amount relative to the fret marks.

The finish is clear cellulose lacquer which shows off the wood grain. The glass surface is very good even though the lacquer hasn't yet settled.

It should improve still more with burnishing later, which will produce an excellent finish. It gives you some idea of the trouble taken once you realise these are two litres of lacquer on the body and neck, consisting of 26 coats. The neck itself is of one inch thick maple — much heavier than normal — a point which must contribute greatly to the tone and sustain.

Machines & neck

The head piece is of cast, polished aluminium, matt black on its inside surfaces, and carries a smart looking set of Japanese-made machines. It's good to note that the machines have been stripped, cleaned, adjusted and greased before being fitted; they certainly operate smoothly. From the machines each string passes in a straight line over its roller at the nut position. These rollers, mounted on an $\frac{1}{8}$ " diameter steel spindle, are made of $\frac{3}{8}$ " diameter steel and have their grooves carefully graduated in depth across the neck to give even string height — very important in order to avoid string buzz on the bar when it's anywhere near the nut position. Going to the other end, the strings pass over the steel, round-section tops of the changer fingers, and locate with their beads in keyhole slots, not the normal peg method. I'm told that the design of the changer is such that the string life is good (the maker quotes "bench-test" changes of upwards of 8000 average in number before string breakage).

The changer fingers are mounted on a very substantial $\frac{1}{2}$ " diameter steel spindle which locates at each end in a relatively large square-covered aluminium block. This in turn is bolted to the changer plate which is of one inch thick cast and polished aluminium, with a thoughtfully designed "coronet" shape. A neat triple-coil pickup of Wiggins' own design is mounted at position slightly closer to the bridge than normal. The magnet diameter is $5/16$ " — quite large — and the windings are moulded into a resin block. Switching between coils is achieved by a row of five push-buttons on the side of the neck facing the player. It's possible to select either of the three coils or two different pairs by depressing each button in turn, but it's also possible to depress more than one button at a time giving further combinations. A small tone pot gives treble cut, although it doesn't work progressively enough. The cut occurs at just one point in its travel, a simple switch would achieve the same.

The end plates are of highly polished aluminium and have an attractive "scalloped" shape on the wrap-around sections. White "decal" strips and the Wiggins logo add the finishing touches to the body.

Any good steel should be firmly supported and this is achieved in this case by one inch diameter mild steel tubular legs which are chromed. All four legs are adjustable in length, with a telescopic bottom section and knurled locking collar, and locate positively in the body by means of a good chunky threaded top section.

The aluminium channel pedal bar attaches to the front legs with a fairly conventional type of screw and clamp, except that there is no hole and pin, which means that each of the front legs can be adjusted in height independantly of the pedal bar — very nifty. The floor-pedals pivot on the pedal bar conventionally on a $\frac{1}{2}$ " diameter steel spindle. The pedals themselves are fabricated of steel, with a sensible tread plate, and chromed. Size-wise, I found them a good compromise between the normal large type and the newer very narrow ones. The stainless steel pedal rods attach to the pedals and to their operating levers under the body, with the same spring-loaded ball and socket joint at the top and bottom.

The four knee-levers are of machined aluminium and on this model are very long (to suit the knees of their particular customer who was having this model).

Summing up appearance, I would say that what we have is a very attractive, substantial-looking instrument. If you like a robust look and feel then this one is worth considering. It is a fairly large for its type, but not unduly so. I have only two gripes. One is the blocks in which the changer spindle is mounted — they look too big and cumbersome; the other is the "engineering" look of the Allen screw heads which fasten these blocks and the roller nut assembly to the respective mounting plates — they could be a bit prettier, chromed maybe.

Changer

Having covered all the visible parts we'll go on now to the guts. The heart of the mechanism — the changer — is of Wiggins' own design and construction, and very nice it is too. Each string finger is "double-jointed" as it disappears through the body, so that a pull on the bottom section produces a lower, and a pull on the top section a higher, pitch of that string. Nothing out of the ordinary in the principle of this, but it's the execution of it that is worth remarking on. This type of mechanism must have balance springs to counteract the pull of each string so that it can be lowered when necessary; but the interesting point with this changer is that they are on compression springs housed neatly within the changer itself, instead of the usual large tension springs attached to the body or endplate.

This type of changer means that an "all-pull" undercarriage is used and this steel has a fairly conventional system of a "tried-and-tested" type of design, but it is very well thought out, constructed and finished. Adjustment of the raises and lowers is done by turning hexagon screws which pass through the end plate (for which a suitable size wrench is supplied) and which change the effective length of the pull-rods. Each pull-rod passes from the changer to the appropriate lever on a cross-shaft, to which it can be attached at any one of several holes to give different leverages and travels to suit the gauge of string concerned, and the degree of raise or lower

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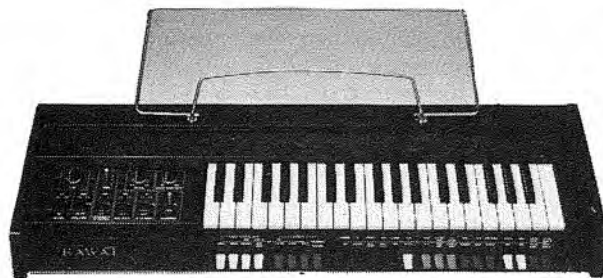
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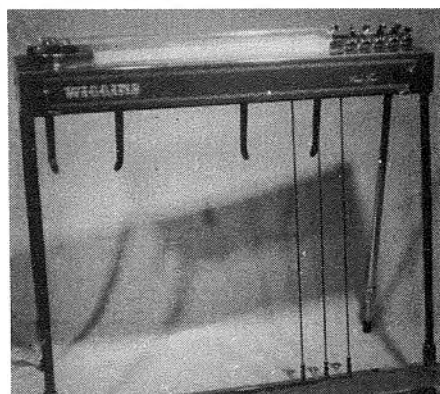
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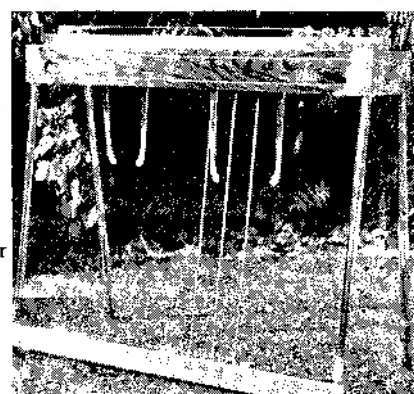
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Steelcheck

required. It's good to see that all the pull-rods face straight and parallel to the changer which should present none of the problems with pedal tuning which can occur on some steels when rods are bent to clear other parts of the mechanism.

The cross-shafts are of $\frac{3}{8}$ " diameter high carbon steel and are carried in very substantial split plain bearings at either end. Where the floor-pedals are concerned, welded to the bearing block itself forming an absolutely rigid assembly, is the adjustable lever stop. The stops for the knee-levers are either screwed to the underside of the body or are integral with the lever pivot assembly. All the cross-shaft levers attach by means of adjustable clamps, and the rod lengths can be varied, so a whole variety of knee lever angles can be obtained together with a short or long travel on both levers and pedals. The underside of the body is painted matt black and, together with the exceptionally neat simple-looking undercarriage and changer, gives a very smart appearance. You may say "You can't see any of this so what does it matter?" But the point is a pedal steel should be — no, needs to be — a precision engineered instrument to work well; and the chances must be that if the designer has taken the trouble to make the mechanism neat and well-finished as well as functional, then he knows what he's about. This is definitely the case with this steel.

The jack socket on this model is underneath the body near the changer end, but can be positioned anywhere to individual customer requirements. If you like to use a "boss-tone" or similar, then you might prefer the socket on the end plate although the plug is more protected if it's underneath. Really, it's down to personal taste.

A test drive Sir?

Sitting on this steel I was immediately impressed by its solid appearance and feel. This was probably partly due to its large body (which, should allow extra pedal and levers to be fitted in with ease). It was also due to the chunky solid metalwork in evidence. Probably the changer spindle mounting blocks are too substantial in appearance for most people's tastes but apart from this I liked the instrument. I found the pedal and lever actions very positive but a bit on the heavy side. Obviously being new didn't help — it will become freer with use — and by changing the leverages of the mechanism a longer, lighter pedal action would result. I also have a feeling that "helper" springs on some of the changes would make them easier, particularly the one on this model where three strings are lowered on the same knee lever.

All the pedal and lever actions, although slightly heavy, produced their changes accurately and smoothly, with "half-pedals" possible. I'd like to have played around with this steel much longer but during the time I did have it, no tuning problems at all cropped up. I was pleased to find that when a lower and raise were both applied to a string at the same time, the resultant note was accurate — an indication of a well-designed changer.

The copedant looks very easy to change around: very important this, as most people's setups vary to some extent.

With the tone controls on my amplifier roughly "flat", the steel produced a very pleasant, even sound with no undue resonances at either the top or bottom end of the range. The sound is fairly smooth with quite a lot of body — and it's easy to "tweak" the amplifier to give a good variety of different tones. In fact, this gave a greater degree of control than the push button pick up coil switches which

tend to be more subtle in their effect. Not so the tone potentiometer on the steel which acted over a minutely small travel near its anti-clockwise stop to cut all the treble in one go.

Sounding out

Basically, I liked the sound very much, and when the volume was wound up its tonal qualities seemed to be preserved — something which isn't always easy to achieve with a pedal steel. The sustain was really good, probably due to the generally heavy, thick material of the body and neck, and the solid construction of the head and changer assemblies. In fact the whole shooting match was bolted and screwed together exceptionally rigidly.

You should never take someone else's word about the sound of a steel guitar for reasons I've stated many times before, and my advice again if you're considering one is *go and try one for yourself*.

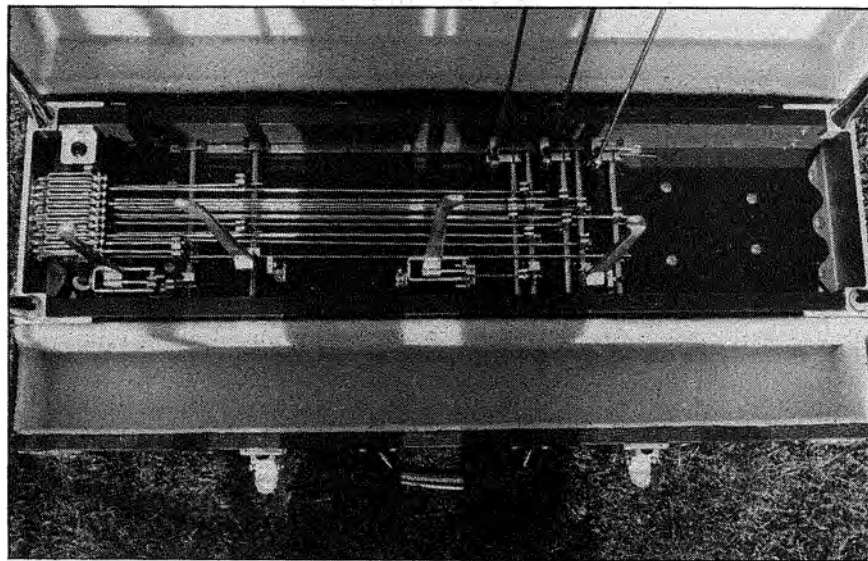
Summary

This steel must be among the best that this country has produced. It does everything well that a pedal steel should do, and really ought to present no problems when being compared with those from across the Atlantic. What it doesn't have is the image of American steels, but this is mainly because the top makes from over there have long been associated with one or other of the big, almost legendary names of the pedal steel world. If Wiggins can produce and sell more of the same quality as this review model, then that must be a step in the right direction towards the recognition needed for such an image. As a matter of fact I happen to know that one Wiggins steel has already been exported to America. The instrument certainly deserves to do well; at £700, inclusive of an excellent case, it is good value.

Dave Hayward

Dimensions:-	
String spacing	11/32"
String length	24"
Body overall width	9 1/2"
Overall height — to suit customer.	

Dave Hayward has been playing guitar for over 12 years and pedal steel for over four. As a dedicated "steelie", he splits his time between session work and gigging with a popular British country band called Al Barrett's Linemen.



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12" Professional Cone Drivers

Having covered the general purpose 12" units in last month's *Speakercheck*, we now move up-market to look at some of the more recent developments at the professional end of the scale. We have an interesting collection of units from Celestion, RCF, JBL, Fane, Richard Allan, Peavey and HH at prices ranging from £40 to almost £140. There is a similarly wide variation in specifications, with sensitivities ranging from 95dB to 103dB and power ratings of between 50 watts and 200 watts. Note that there are several loudspeakers included this month whose low frequency performance would benefit considerably from a larger enclosure than that used for our tests. A good guide to the likely low frequency can usually be obtained from the published free air resonance figure, as with good acoustic loading provided by a properly designed enclosure, it is usually possible to get useful response down to the free air resonance frequency. I recommend that your refer to the introductory article published in the October issue for full details of our testing procedures and guidelines on how you can interpret our results.

What of this month's results? It can be seen that again, most units submitted are confirming the manufacturer's specifications, the notable exceptions being the Richard Allan HD12 Super and HH Acoustics 1200E, both of which came out well below the maker's sensitivity figure. Another Richard Allan unit, the HD12/P Super is the only unit this month not to confirm the maker's power rating in terms

of our assessment criteria based on permissible distortion components. In fact, both these Richard Allan units are a little out of their depth among the type of unit reviewed on this occasion, and were included in the professional section at the manufacturer's request. While these units are very nicely made and generally gave a good account of themselves, they are really no match against the other units tested — especially the Fane Crescendo, RCF L12P/11C and Peavey Black Widow. Having said that, we must not overlook the fact that the Richard Allan units are priced at around £40, whereas apart from the HH Acoustics 1200E, which is very competitively priced at around £56, the other units included here start from around £70 and go up to £140.

Not everyone has got that sort of money to spend on a loudspeaker, and the Richard Allan HD12/P is certainly good value, although I would consider that the HH 1200E was well worth the extra £16. In fact, the HH unit is spearheading a breakthrough in loudspeaker prices, as this standard of performance has not hitherto been available at much under the £70 mark. It is interesting to see that the Celestion Powercell 12-150 surpassed the manufacturer's published sensitivity figure by a full 3dB and this unit also gave a very good account of itself at a keen price.

Comparing the sensitivity and sound pressure levels of the Fane Crescendo 12E, the Peavey Black Widow 1201 and the RCF L12P/11C, we find an interesting situation. Although the Peavey and RCF

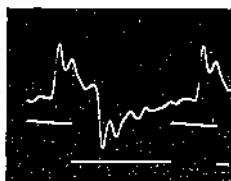
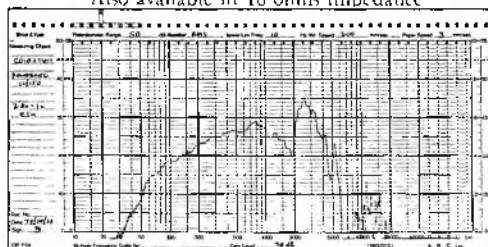
units show the same sensitivity figure of 101dB for one watt at one meter, we find that the Peavey requires 150 watts for sound pressure level of 119dB(A) while the RCF generates exactly the same SPL for just 100 watts. Similarly, the Fane, with an even higher sensitivity of 103dB only gives one more decibel of SPL — ie 120dB(A) for an input of 120 watts. Logically, the Fane should be appreciably the loudest due to its higher sensitivity and high power rating, the Peavey next, due to its higher power rating, and the RCF third. Not so, the Fane is only marginally louder than the other two, and the RCF requires the least power input to achieve these SPLs.

Therefore, it is a toss-up between the Fane and RCF as to which is the more efficient loudspeaker, and there is really very little in it at all. When price enters the discussion, then the Fane, at some £28 cheaper than the RCF which in turn is £7 cheaper than the Peavey, does indeed look like a very attractive proposition. However, the Fane does have a particularly stiff suspension system and cannot be expected to produce the same low frequency energy as the RCF. The JBL 2202A is a special product and is fitted with a heavier cone than the other units tested in order to produce an enhanced low frequency performance. Because of this, its sensitivity is lower and the unit cannot be compared with the other units. It is a fine loudspeaker, but at £138, it should be. Make what you will of that lot. Next month, we shall be looking at general purpose 15" units. **Ken Dibble**

CELESTION POWERCELL 12/150 (UK) Price around £72 incl VAT

Parameter	Manufacturer's Rating	Test Result
Frequency response	30Hz-5kHz	Useful to 6kHz (-12dB)
Sensitivity	94dB average	97dB @ 1W @ 1m av 500Hz-4kHz
SPL	Not stated	116dB(A) @ 150W RMS sine wave
Power	150W unqualified	Confirmed @ 150W RMS sine wave
Distortion	Not stated	5% @ 150W RMS sine wave
Impedance	8 ohms*	8-27 ohms
Resonance	55Hz free air	75Hz in standard enclosure

*Also available in 16 ohms impedance



The Powercell chassis is of an unusually deep design. A substantial front rim and four well braced struts link this to the backplate — which, incidentally incorporates a cup into which the magnet is fitted. It is cast in aluminium and finished in an attractive hammer green stove enamel, and this combines with a simple black crackle finished magnet cover to give an unfussy, functional appearance, bereft of cooling fins and other unnecessary adornments. The cone is absolutely straight, of medium weight and exceptionally deep. It is fitted with an alloy centre dome and mounted on a compliant "concertina" linen suspension. The entire unit is very nicely made and presented, and comes with gaskets fitted to both sides of the front rim to facilitate mounting from either side of the baffle panel.

Although sensitivity is not high, it can be seen that even so, the unit exceeded the maker's figure by 3dB. Also, a usefully wide frequency response was recorded to 6kHz — which is again better than the published spec, and the 150 watt power rating was confirmed with no problems. Despite the lowish sensitivity, the unit is still able to generate a high sound pressure level of 116dB(A) due to its high power rating. While the impulse response shows some resemblance to the input waveform, there is an obvious unwillingness for the cone to settle at any particular state and considerable overtones are generated, although overshoot on the attacking edge of the waveform is minimal. Should produce good sustain and good gutsy musical instrument sound, and this supports the maker's stated application for electric guitar.

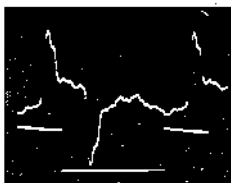
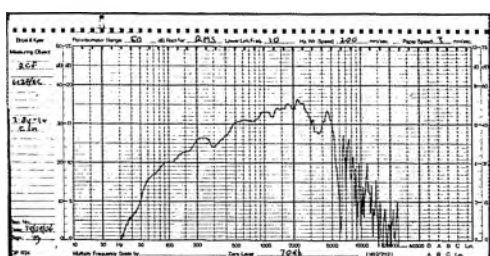
A very nicely made unit, which exceeded the maker's own specification under test and is sensibly priced.

RCF L12P/11C (Italy)

Price around £98 incl VAT

Parameter	Manufacturer's Rating	Test Result
Frequency response	32Hz-5kHz (-8dB)	Useful to 8kHz (-12dB)
Sensitivity	100.5dB @ 1W @ 1m	101dB @ 1W @ 1m av 500Hz-4kHz
SPL	Not stated	119dB(A) @ 100W @ 1m pink noise
Power	100W RMS sine wave	Confirmed @ 100W RMS sine wave
Distortion	Not stated	5% @ 100W sine wave
Impedance	8 ohms nominal*	7.5-21 ohms
Resonance	32Hz free air	75Hz in standard enclosure

*Also available in 4 and 16 ohms impedance



This is a brute of a loudspeaker, and is the result of a re-design exercise by RCF to replace the Alnico magnet assemblies hitherto fitted to their top models with a ceramic substitute in the face of the escalating price of cobalt — an essential ingredient in Alnico and Alcomax type magnets. It is built on the usual superb RCF cast aluminium shallow chassis which has been described so many times in these pages that I do not propose to think up yet another verbal variation.

Suffice to say that it is among the best chassis designs we have encountered and is suitable for front or rear loading. To this is fitted a massive ceramic magnet, which, apart from a machined and cadmium plated back plate, just sits there in its raw state with no pretentious cover, fins, or any other unnecessary adornments. This magnet is 210mm in diameter and 45mm deep and is quite the biggest magnet I have yet found on the back of a loudspeaker. A lightweight parabolic profile cone, fitted with an alloy centre dome with the distinctive RCF star embossed on it, is carried by a damped linen suspension. A very nice, functional product indeed.

It can be seen that the unit totally complied with all aspects of the maker's specification. It is highly sensitive with an exceptionally wide frequency response for this type of loudspeaker and fully confirmed its 100 watt power rating at 5 per cent distortion. Along with the Fane Crescendo and Peavey Black Widow, this unit is capable of generating very high sound pressure levels and must therefore be used with caution. Its impulse response is interesting, as apart from a massive overshoot on attack and decay, the L12P/11C almost managed to reproduce the square wave pulse. The frequency response falls off below 500Hz, but with a free air resonance as low as 32Hz, such a unit will not be properly loaded by our standard enclosure.

This is another excellent product from this Italian manufacturer, and would be equally suited to cleaner musical instrument amplification or to vocal or discotheque systems. Some overtones can be expected on transient material, but will not be excessive.

PEAVEY BLACK WIDOW 1201 Serial No. 039609 (USA)

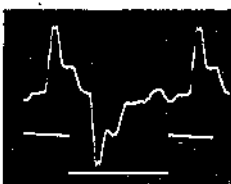
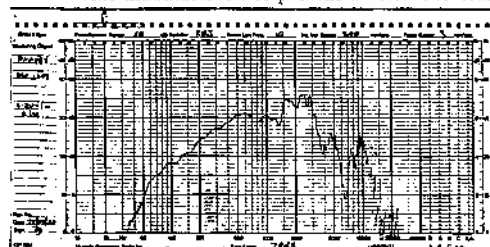
Price around £105 incl VAT

Parameter	Manufacturer's Rating	Test Result
Frequency response	Not stated	Useful to 6kHz (-12dB)
Sensitivity	101dB @ 1W @ 1m	101dB @ 1W @ 1m av 500Hz-4kHz
SPL	Not stated	119dB(A) @ 150W @ 1m pink noise
Power	150W continuous	Confirmed @ 150W RMS sine wave
Distortion	Not stated	5% @ 150W RMS sine wave
Impedance	8 ohms*	8-21 ohms
Resonance	70Hz free air	100Hz in standard enclosure

*Also available in 4 ohms impedance

While the Black Widow loudspeaker range has been around for some time, it has hitherto only been available in Peavey amplification equipment. Like HH, Peavey were reluctant to release these for review until such time as the product was available on the market, and this is now the case. It was therefore with some interest that I investigated whether or not this loudspeaker lived up to its rapidly established reputation.

It is built on a sturdy cast aluminium chassis of a shallow, eight-spoked design, which is unpainted and apart from the front rim being machined, is delivered as a raw casting. To this is bolted a very large ceramic magnet assembly which has an unusually large air vent grille at its centre. A very nice, plain, lightweight, parabolic cone is carried by an impregnated cambic suspension of medium compliance. An unusual departure from conventional speaker design is that the aluminium centre dome and four inch coil are formed as a single unit, and this is claimed by the manufacturers to provide an efficient heatsink and thus reduce voice



coil temperature. The delivery includes a set of mounting hardware and an additional gasket to facilitate front loading. Another unusual feature is that a replacement cone and chassis assembly is available so that by simply unscrewing the magnet and replacing it on a new "basket" as it is termed, the loudspeaker can be re-coned in a matter of minutes, although a replacement basket assembly costs £51. From an engineering aspect, this is an interesting and well made product, if somewhat utilitarian in presentation at this price bracket.

No problems at all in performance. The unit fully complied with the maker's high sensitivity and power ratings, and although the sensitivity is some 2dB lower than the Fane Crescendo 12E also included this month, the extra 30 watts of power handling brings the sound pressure level at full power up to within just 1dB of the amazing 120dB(A) attained by the Fane unit. The omission of a frequency response in the maker's specification is intentional, as Peavey claim that frequency response figures can be misleading. They are quite right, as is amply demonstrated by the Richard Allan results also included in this review, but I feel that some guidance in this respect is necessary if the purchaser is to have any idea of what he is buying. I feel that our method of presenting a frequency response characteristic is probably as fair as you are likely to find, with a simple statement of useful response supported by a full frequency response graph. In any event, it is good to know that Peavey are concerned that they do not provide specifications which could be misinterpreted. It can be seen from our graph that the response rolls off from about 500Hz and is some 12dB down at 100Hz, and this, in conjunction with the usual presence peak, confirms the maker's recommendation that the 1201 is best suited to musical instrument application. This is further confirmed by the impulse response, which shows considerable overshoot and overtones and should provide good sustain properties.

A totally functional product with full confirmation of the maker's specification. However, although I do not advocate elaborate and fussy presentation, I do feel that the Black Widow is perhaps a little too utilitarian at this price. It is good, certainly, but it is at the top of the price range and therefore should be better.



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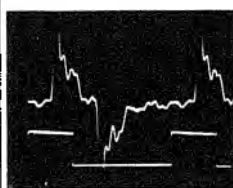
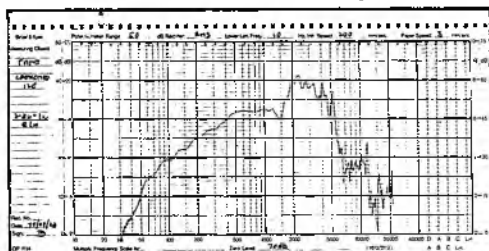
Speakercheck

FANE ACOUSTICS CRESCENDO 12E (UK)

Price around £70 incl VAT

Parameter	Manufacturer's Rating	Test Result
Frequency response	75Hz-7.5kHz	Useful to 6.5kHz (-12dB)
Sensitivity	103dB average	103dB @ 1W @ 1m av 500Hz-6kHz
SPL	Not stated	120dB(A) @ 120W @ 1m pink noise
Power	120W RMS	Confirmed @ 120W RMS sine wave
Distortion	Not stated	5% @ 120W RMS sine wave
Impedance	8 ohms*	8-12.5 ohms
Resonance	85Hz free air	100Hz in standard enclosure

*Also available in 16 ohms impedance



This is the first time we have had the opportunity of reviewing the new Fane Crescendo "E" series. It is built on the newer, up-rated version of the long established Fane cast alloy chassis which can now be mounted from either side of the baffle panel and foam gaskets are fitted for both methods. It is not the most sturdy chassis available, but is probably quite adequate for the purpose. A very large ceramic magnet is fitted, the chrome plated finish of which, in conjunction with the black painted chassis, gives a functional, unfussy appearance. Termination is by a pair of rather nice spring-retaining plastic terminals. These are clearly marked for polarity, power rating and impedance is clearly shown on a large label below the terminals. I like it. An almost straight ribbed cone, which although not heavy, is far more substantial than I would expect to find on a unit with such an amazingly high sensitivity figure, is carried by a stiff doped paper suspension and is fitted with a vented alloy centre dome.

It can be seen that the amazing sensitivity figure is totally confirmed by our results, and this is the highest figure recorded. This results in a sound pressure level capability of 120dB(A) at one meter at full power, and I would not advise any musician to stand too close to, or directly in front of, this loudspeaker when being driven hard or hearing damage will almost certainly result. Also, the 120 watt power rating is confirmed and a usefully wide frequency response is shown, although the gradual roll-off below 400Hz and pronounce presence peak would tend to indicate a musical instrument application, and should produce a more biting, hard sound quality rather than any depth. Of course, a large enclosure will increase the low frequency response, but in any event, I cannot see this unit doing much below about 150Hz. This indication is confirmed by the impulse response trace, which shows large amounts of overshoot, but also fast recovery. Should produce a really powerful guitar sound.

A nicely made, really powerful loudspeaker at a competitive price, best suited — in my opinion — to musical instrument application rather than PA or disco. Also, it is good to see that Fane are now providing a full and accurate specification for the new product range.

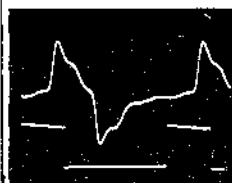
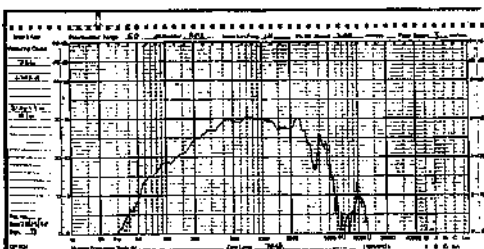
JBL 2202A Serial No. 15387 (USA)

Price around £138 incl VAT

Parameter	Manufacturer's Rating	Test Result
Frequency response	60Hz-4kHz	Useful to 5kHz (-12dB)
Sensitivity	96dB @ 1W @ 1m	99dB @ 1W @ 1m av 400Hz-2.5kHz
SPL	Not stated	116dB(A) @ 100W @ 1m pink noise
Power	50W RMS sine wave 100W cont program	Confirmed @ 50W and 100W RMS sine wave
Distortion	Not stated	1% @ 50W RMS sine wave 2% @ 100W RMS sine wave
Impedance	8 ohms nominal*	7.5-27.5 ohms
Resonance	50Hz free air	70Hz in standard enclosure

*Also available in 4 and 16 ohms impedance

I cannot quite put my finger on the reasons why, but there is always something about a JBL loudspeaker. Somehow, they always seem to find the right combination of engineering design and an unpretentious, unfussy, yet totally functional presentation. To me, a JBL loudspeaker somehow looks, feels and in most instances, is, just right for the job. The problem, as always, is the price. Taking the 2202 as an illustration, the chassis is a simple, eight spoked aluminium casting of the shallow pattern and is finished in ordinary grey stove enamel. It does not look particularly heavy duty or substantial, yet it is immensely strong and rigid and is more than adequate to carry the very largest of magnets. A very large Alnico



type magnet is fitted, and again, there are no "cooling" fins or other cosmetics — just a simple grey crackle stove enamel finish, the only concession to trim of any description being the polished edge of the magnet face-plate and the label. In fact, this is the only unit included in this review that is still being fitted with Alnico type magnets, most other manufacturers having changed over to ceramic magnets due to the very high cost of this type of magnetic structure — especially of this size. Even the terminals are of the heavy duty metal spring retaining type instead of the plastic variety more usually employed, and these are mounted on a special lug incorporated into the chassis casting for this purpose. A medium weight, very shallow, parabolic cone is carried by a double-roll doped linen front suspension system and a four inch voice coil assembly, and, oblivious to the end to the dictates of fashion, an unpretentious composite paper centre dome is fitted instead of the usual metal type. Altogether a superb piece of functional engineering.

When considering the results obtained from our tests, it should be born in mind that the 2202 is designed specifically as a low frequency reproducer for use in a wide band system such as high quality floor monitors, studio monitors and smaller PA systems. It is not intended as a musical instrument loudspeaker and therefore should not be compared directly with most of the other units included in this month's review. Also, bear in mind that our test enclosure is no where near large enough to properly load such a loudspeaker and that there is no chance of the unit's low frequency performance being adequately demonstrated under these conditions. It can, however, be seen that the maker's stated upper frequency limit is exceeded by a wide margin, that the rated sensitivity figure is exceeded by a whole 3dB and that the power rating is complied with at amazingly low distortion. However, I would have expected a more faithful reproduction of our impulse waveform from a unit of this type. While there is little overshoot on the attacking edge of the pulse — ie when the piston is removed, and the unit takes some time to settle.

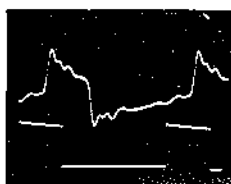
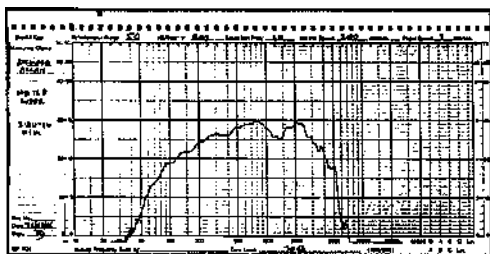
With a four inch edge wound copper voice coil and a highly efficient magnetic circuit, I would have expected better "braking effect" as the cone returned to its rest position. As has been stated, no one expects any loudspeaker to faithfully reproduce the pulse we apply, but whereas certain errors are advantageous in a unit intended for electric guitar use, a unit of the type now under construction should do a little better. Maybe it would fare better if we had used a lower frequency pulse rate in view of its intended application.

Nevertheless, this is a superb product indeed, but is also extremely expensive. Whether you get your money's worth as a working musician when you compare JBL engineering quality with competing products at between half and three-quarters the price I would be reluctant to say. I confess to being an engineer first and a musician second, so maybe my views are coloured by this viewpoint.

Speakercheck

RICHARD ALLAN HD12 SUPER (UK) Price around £40 incl VAT

Parameter	Manufacturer's Rating	Test Result
Frequency response	Graph given	Useful to 5kHz (-12dB)
Sensitivity	99dB @ 1W @ 1m @ 1kHz	95dB @ 1W @ 1m av 500Hz-4kHz
SPL	Not stated	111dB(A) @ 100W @ 1m pink noise
Power	100W RMS	Not confirmed
Distortion	Not stated	10% @ 100W RMS sine wave
Impedance	8 ohms*	8-28 ohms
Resonance	55Hz free air	75Hz in standard enclosure



These loudspeakers are built on identical chassis to that employed for the HD12/T included in last month's *Speakercheck* and are finished to a similarly high standard. The most obvious difference between the models included here and the HD12/T is that considerably larger and heavier magnets are fitted, and while I have been quite happy with this chassis for the smaller magnet models, I am somewhat concerned as to the long term capability of a plain cast alloy chassis, with no reinforcing ribs and not of a sufficiently sturdy construction to avoid fracture during rough handling on the road. The magnets are very heavy, and I have experienced cracking in more substantially built chassis than these after some rough treatment.

Visually, these two loudspeakers are similar, the only apparent differences being in the cone suspensions, although close inspection reveals that the cones themselves are altogether different. The HD12 Super is fitted with a fairly heavy, parabolic cone carried by a nicely compliant cambric suspension system, while the HD12/P Super has a straight cone which, although lighter, still seems to be on the heavy side for a unit of this type. This is carried by a stiff doped paper front suspension. Both units are fitted with what would seem to be a metalised plastic centre dome which has no "ring" to it whatsoever and can only be fitted for cosmetic reasons, as it has no chance of making any contribution to the performance. It even springs back to its original shape when depressed.

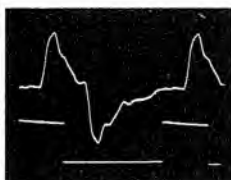
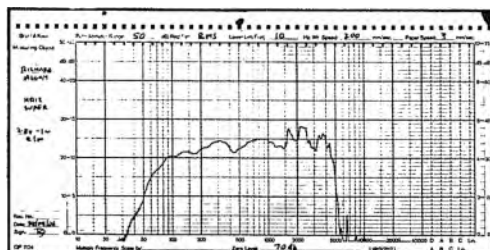
Similar though these two units may look, here we have a prime example of how two loudspeakers with almost identical specifications can offer completely different performance characteristics. In fact, the only difference in the maker's specification is the free air resonance figure, but they are as different as chalk and cheese (Wensleydale cheese of course, Richard Allan being in the heart of the Yorkshire dales). To start with, although the manufacturer gives 99dB sensitivity for both models, our tests showed the HD12 Super to be only 95dB, while the HD12/P Super almost complied with the maker's figures. The frequency response characteristics show just how misleading a simple statement of frequency response can be, for although even our own figures show a useful response to 5kHz in both cases, a look at the graph will show a vastly different picture. While the HD12 offers a fairly uniform distribution of energy over most of its working range and falls off rapidly below 95Hz and above 5kHz, the HD12/P has a gradual roll off below 300Hz and above 3kHz. The former will give you a nicely rounded, full bodied sound quality, while the latter will give a hard, brittle sound which would only be suitable for electric guitar applications. Both units suffer from higher levels of distortion, and in the case of the HD12, this is of such an order that we cannot accept the 100 watt rating. This need not necessarily imply an electrical inability to handle the rated power input as explained in our introductory article in the October issue. It simply means that for some reason, be it electrical or mechanical, distortion is above our five per cent to six per cent acceptance limit.

This was a particularly interesting comparison and served to illustrate some of the difficulties in selecting loudspeaker units from the manufacturer's specifications. Don't get me wrong — there is nothing wrong with Richard Allan's specification. It's just that specs don't always tell the whole story, and this happened to be a prime example. Both these loudspeakers are quite OK for their different applications, but sensitivity is generally on the low side for this end of the market and distortion is, in my opinion, too high. But then compare the prices with any other product included this month!

RICHARD ALLAN HD12/P SUPER (UK) Price around £41 incl VAT

Parameter	Manufacturer's Rating	Test Result
Frequency response	Graph given	Useful to 5kHz (-12dB) see text
Sensitivity	99dB @ 1W @ 1m @ 1kHz	98dB @ 1W @ 1m av 500Hz-3kHz
SPL	Not stated	111.35dB(A) @ 100W @ 1m pink noise
Power	100W RMS	Just confirmed @ 100W RMS sine wave
Distortion	Not stated	6% @ 100W RMS sine wave
Impedance	8 ohms*	9-32 ohms
Resonance	95Hz free air	100Hz in standard enclosure

*Also available in 15 ohms impedance



Richard Allan HD12/P

HH ACOUSTICS 1200E Serial No. 21904 (UK)

Price around
£56 incl VAT

Parameter	Manufacturer's Rating	Test Result
Frequency response	Useful to 6kHz	Useful to 6kHz (-12dB)
Sensitivity	0.1W for 96dB @ 1m	98dB @ 1W @ av 500Hz-4kHz
SPL	Not stated	117.5dB(A) @ 200W @ 1m pink noise
Power	Use with 200W amplifier	Confirmed at 200W RMS sine wave
Distortion	Not stated	5% @ 200W RMS sine wave
Impedance	8 ohms nominal*	9-29 ohms
Resonance	45Hz free air	70Hz in standard enclosure

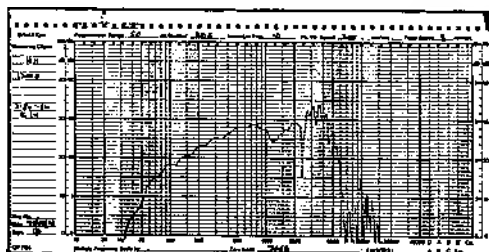
* Also available in 16 ohms impedance

This is another loudspeaker which, although it has been around for some time, has hitherto been available only in the HH "Pro Series" loudspeaker systems and is now finding its way onto the dealer's shelves. It is built on a rather nice six spoked cast magnesium alloy chassis for which the maker's claim outstanding strength and heat dissipating qualities. It is suitable for front or rear loading and gaskets are fitted for both. One particular feature is that the gaskets are cut to leave a clear area for the bolt head to be tightened down directly onto the rim casting instead of chewing up the gasket as it is tightened as it so often the case. The delivery includes a full set of mounting hardware including rim clamps, bolts and tee nuts. A large ceramic magnet is housed within a black painted, finned cover which, in conjunction with the white painted chassis, gives an attractive "powerhouse" aspect. A plain, fairly heavy cone of slightly curved profile is fitted, and this is carried on a "concertina" type suspension of resin treated Terylene which provides good piston linearity. An alloy centre dome is fitted.

The overall standard of performance is good, but due to not being particularly sensitive, it needs its 200 watt power rating to compete with the sound pressure level capability of some of its competition. The maker's sensitivity figure is expressed in DIN form, and if this is interpolated for an equivalent form, we find that one watt at one meter should produce about 106dB — which, as our figures show, it doesn't and in any event if it did, it would be by far the most efficient 12" loudspeaker yet made.

In fact, at 98dB it is quite acceptable, if not among the more sensitive units tested. The incredible 200 watt power rating is confirmed without difficulty and a usefully wide frequency response, totally in agreement with the maker's figures, is recorded. With its low free air resonance, this unit would benefit considerably from a larger enclosure, or from a tuned reflex type housing. Our 50 litre standard box is not bringing out the best in low frequency terms from this type of loudspeaker. The impulse response trace shows good reproduction of the square waveform, with little overshoot when the pulse is applied, although it does overshoot the other way when the pulse is removed before coming to its rest position.

This is not peculiar to the 1200E and is due to inadequate damping. I would expect to find good transient response capability from this type of trace. From these results, I would entirely endorse the maker's recommendations in respect of its application, which is for better quality musical instrument amplification — ie where a cleaner sound quality is required rather than the more raucous characteristic, or for PA and disco use. This is a quality produced product at an attractive price and capable of a high level of overall performance.



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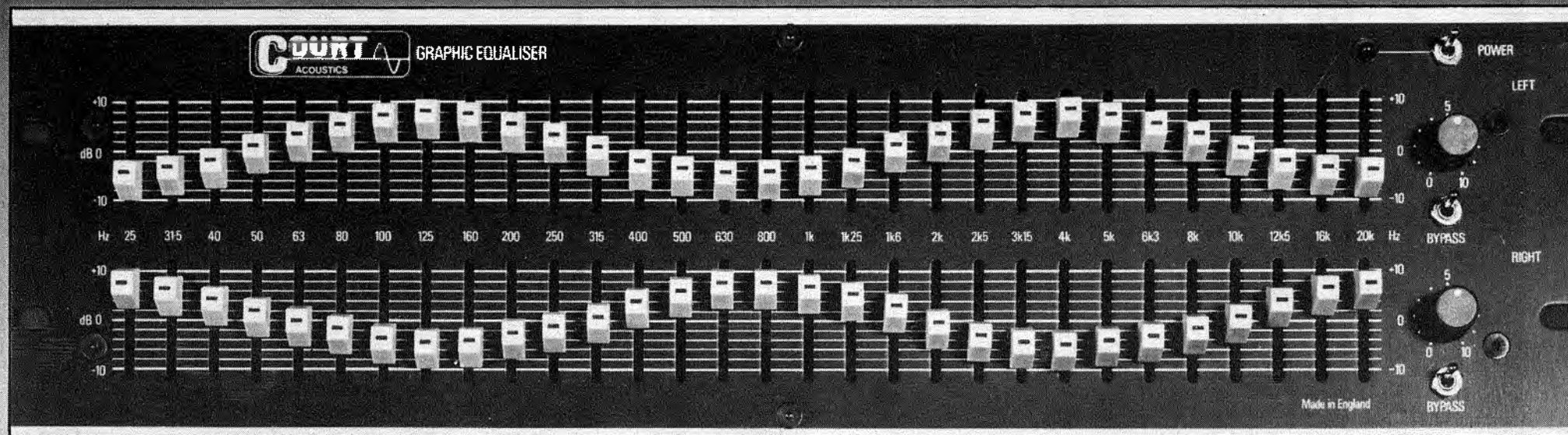
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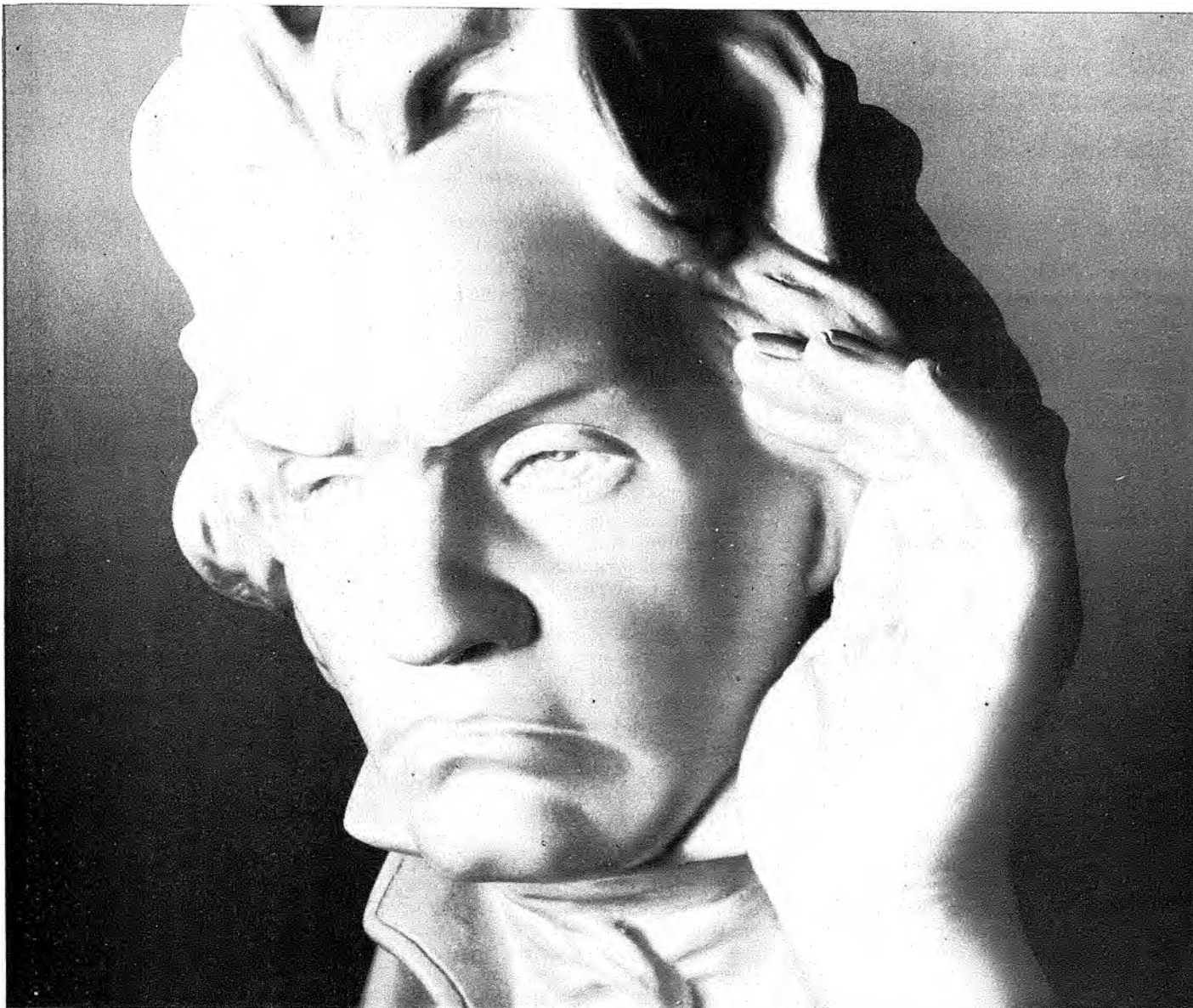


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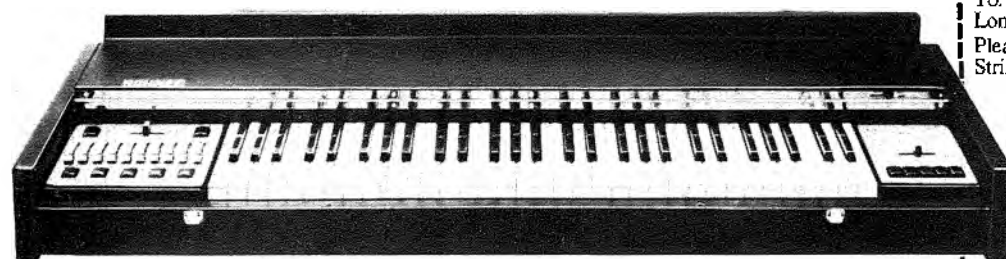
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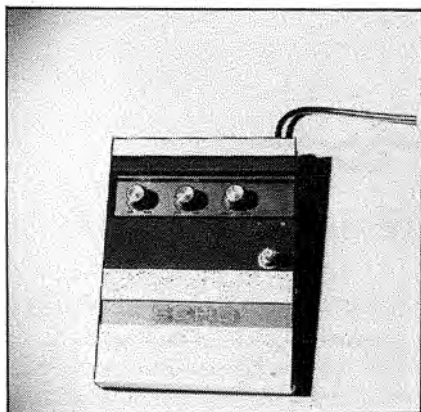
These days I think it's fair to say that an echo unit of some description has become a standard piece of equipment to the guitarist. This then leaves us trying to find a suitable unit to use — it's not always a simple task.

Basically, there are four types of unit available. Or more correctly three. The fourth which I shall start with is the Springline, this of course has found popularity over the years and is fitted as standard in many amplifiers and combos, but it is not strictly an echo unit — it is a reverb unit.

Of the three left the first which springs to mind is a tape echo unit. These again have been with us quite a few years and have been immensely popular, and continue to be so.

The final two are completely electronic systems. The digital delay was first to be introduced and has become immensely popular but not for the guitarist. A full digital echo delay system is a very costly piece of electronics and while it has found favour and regular use in studios or mixing desks at live gigs it is usually beyond the pocket of the guitarist.

Finally, we come to another electronic system which uses integrated circuits called CCD, an abbreviation for charge-coupled-device. These are more popularly known as bucket brigade chips.



The speed at which the "buckets" of signal pass along is determined by an oscillator. The Carlsbro Echo utilises this principle and has within it the very latest integrated circuit of this type.

The main problem with using this type of device is that it can become very noisy in operation, allied to which one gets a reduction in band width for long delays. All this may sound a little bit technical but it is quite simply explained, if I say that the longer delay you use the less top you'll get, it's as simple as that.

It must be becoming obvious that no matter how you do it a compromise must always be involved. Carlsbro have elected to suffer a reduced band width, but it is I feel adequate for guitar use. The actual band width as displayed in the curve is from 6.6Hz to 600Hz at maximum delay. Just to get this into perspective a guitars top E string open is 329.63Hz. As far as

noise is concerned this unit is to my knowledge the quietest echo pedal available for guitar use.

As far as physical construction is concerned Carlsbro have managed to find a very neat and strong aluminium extrusion on which to base the unit, it is without doubt rigid and strong and I would think very hard to damage, certainly I haven't managed to yet. There are very few effects units which one doesn't push around the stage with one's feet, this unit from Carlsbro is one of them, it stays where it is put. There are three rotary controls labelled delay, swell and mix. The delay is obviously the delay time with a minimum being around 30ms and maximum being just under half a second. I would point out at this stage that the delay control hence the delay time is produced by changing the speed of the oscillator which controls the bucket brigade IC. The swell control alters the repeat and should more correctly be named feedback as it adjusts how much of the output is fed back to the input. On "minimum" you get a single clean repeat while on "maximum" the unit is in complete control all on its own. Finally, the last control alters the amount of echo signal and direct signal. On "maximum" all you get is the echo. In between the two there is any permutation you may require. Obviously, there is a foot switch which turns the unit on and off above which there are two red indicators, the right hand one is on all the time, while the left hand one comes on when the foot pedal is pressed and the echo is in operation. On the rear of the unit conveniently and neatly placed are three jack sockets, an input and two outputs. The two outputs comprise direct and mix and are self explanatory. Also emanating from the rear of the unit is the mains lead to power the device.

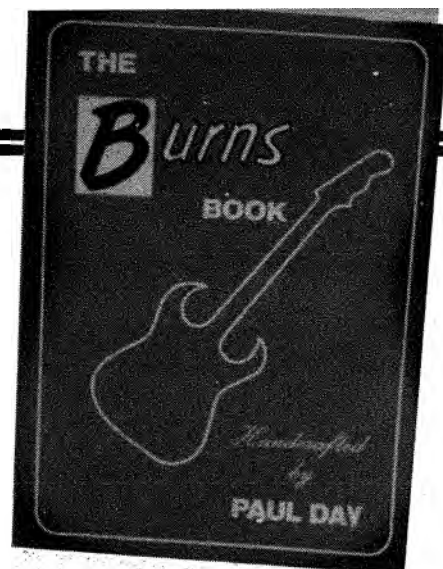
In operation this unit has as wide a variety of effects as the user can invent. While there are only three controls, these are all that is necessary as they govern just about anything that the unit can achieve. Admittedly, other devices have chorusing added but it obviously puts up the price. As far as a basic echo unit is concerned the Carlsbro is in my opinion the finest foot pedal echo unit available and I would further add that with its price tag it puts to shame many other units, certainly its performance is superior and its price less than much of the competition.

Chris Rogers

The Burns Book

by Paul Day. Price £3.50 plus 50 pence p&p from 19 Forde Road, Newton Abbot, Devon TQ12 4AF.

In case you had not already noticed, there is a bit of a Burns revival going on. Burns guitars have always been valued by those who like them, but they are now beginning to be generally considered as "collectable" guitars. Some of



the more scarce models, such as the Black Bisons, are changing hands for quite large sums of money, and pieces of old Burns metalwork are being hoarded and exchanged among collectors and enthusiasts. At the moment it is still just possible to find examples of the more desirable Burns guitars and basses languishing in secondhand shops at reasonable prices. The next stage will be reached when there is general agreement about the "blue book" second-hand price of the better-known models, in good condition. Before this can take place, there must be a standard reference work, which lists as many as possible of the different models and variations made by Burns, with dates of manufacture and any interesting features.

Paul Day has provided us with a suitable Bible for Burns fanciers. He has done better than just a model reference book; *The Burns Book* includes biographies of Jim Burns himself, and the other people who were connected with making Burns guitars and amps. It includes a history of the various Burns companies, over 100 photographs of different Burns instruments, details of finishes, styling changes and numbers of each model produced. There are also photographs of the guitars during construction, and five pages of patent drawings relating to Burns guitars and fittings.

In addition to all this, the book also gives some details of related makes of instrument, such as the Fenton Weill guitars, Hayman and Shergold instruments, and the brand new 1979 guitars, amps and basses which are now being made in Cambridge to Jim's new designs.

The Burns Book also provides some interesting background information on the British electric guitar industry over the last twenty years. As the author says in the introduction, some details of Burns production are lost in the mists of time, and Jim's tendency to produce modifications at the drop of a hat has not made the researcher's job any easier, but for much of the period covered, Burns virtually was the British guitar industry, and it makes fascinating reading.

Highly recommended to old guitar fanciers and to anyone who is still wondering what the recent interest in Jim Burns and his guitars is all about.

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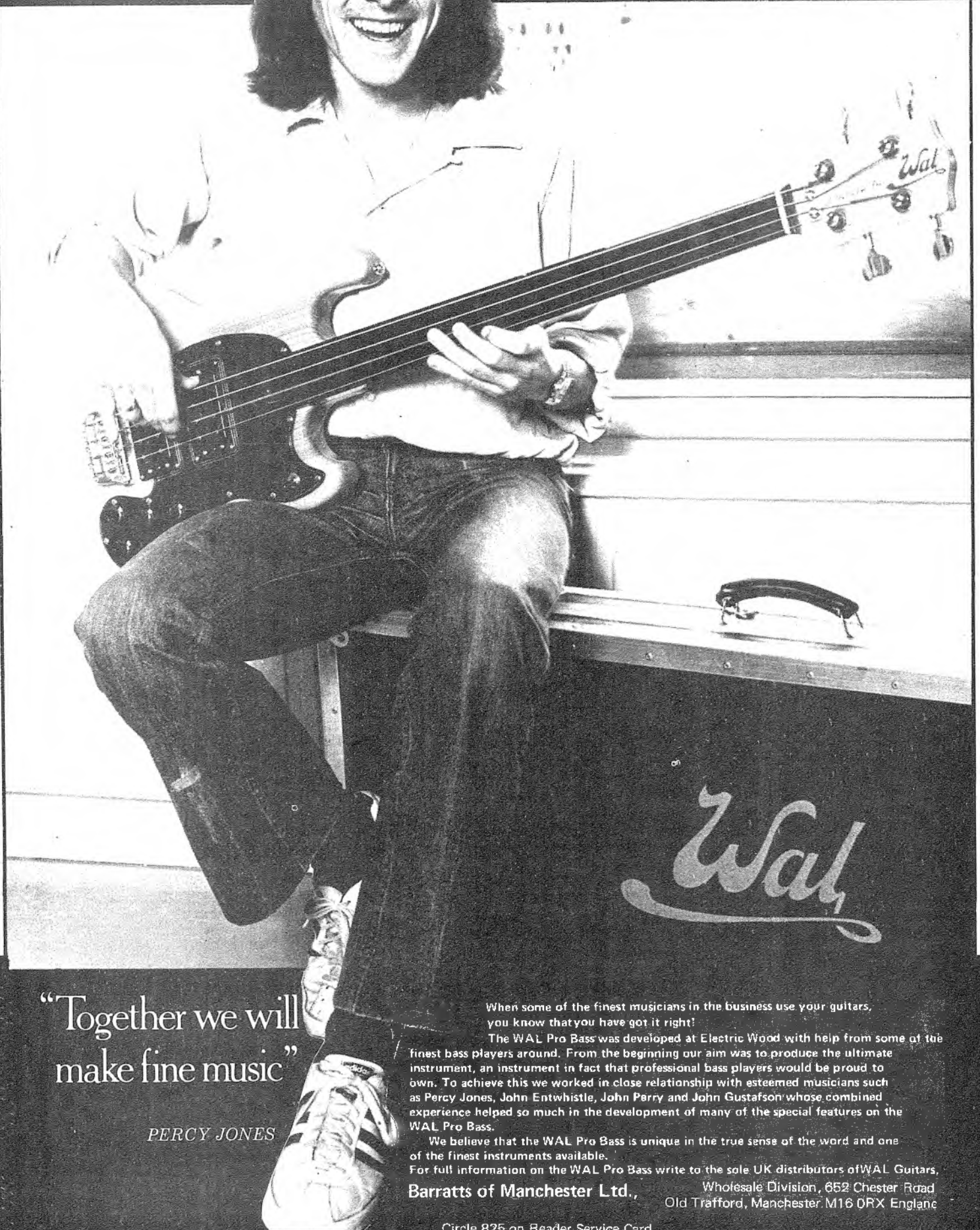
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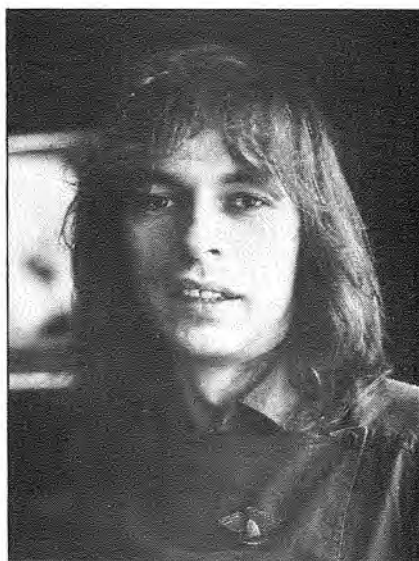
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HOWE TO GO SOLO

Yes man Steve Howe puts his positive approach in music to Stephen Brennan



There is a dilemma facing successful rock musicians. On one hand they are faced with the very pleasing prospect of their band selling every copy of a record it makes. Thus ensuring a continued megabuck income and the comfortable lifestyle it guarantees, but it also promotes frustration and a sense of being stifled creatively.

Some musicians opt out of the star syndrome before it overtakes them; such as Mick Taylor, Bill Bruford and Peter Gabriel. Other musicians gratefully allow stardom to overwhelm them, and then look outside their bands for other outlets for their talents: such as Phil Collins with Brand X, and Ron Wood with his solo albums.

Into this latter category fits Steve Howe, Yes guitarist. "Yes can't absorb as much guitar music as I write," he declares, "and a lot of stuff I write gets hacked about once it gets into Yes' hands."

So Steve Howe has recorded another solo album. The first individual project was a dangerous taste of freedom — heady nectar indeed for a man who's been with the same band for nigh on 10 years. Writing songs becomes a reflex action, and with Steve Howe's enormous guitar collection — 133 at the last count — what else can a body do except sling one around the neck and compose?

"After the last tour with Yes the band members were free to do what they liked," explains Howe, "so I began to work about one or two days a week — I'd go into the studio and experiment with a few guitar sounds. Once I went into a church and recorded as an experiment, but it didn't work. During this period I generally took things easy and didn't work too hard.

"This was during October and November of last year. Just before Christmas I began to book heavily at RAK for January and February."

The entire album was recorded during those two months. Some of the tracks are instantly reminiscent of Howe's previous work, but others realise new ground for him. The orchestral sessions particularly he remembers vividly.

"That orchestral bit was recorded at EMI, on the day, live," says Steve. "The orchestra was put together by Andrew Jackman, all 59 pieces of it, incorporating a string section that Andrew likes to work with."

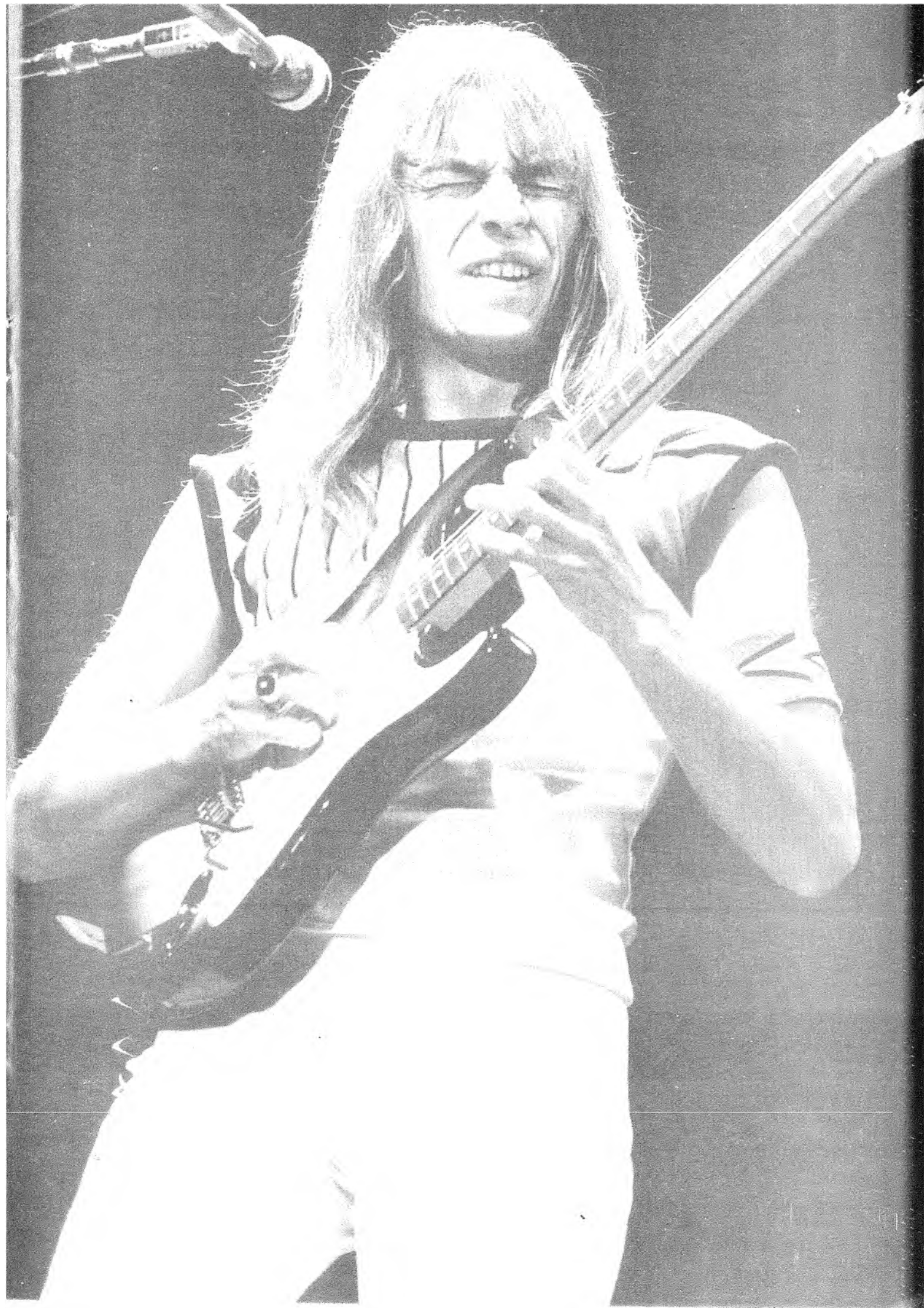
This was a new experience for the Yes guitarist. He's worked with orchestras before but not as closely or extensively as this time. With rock music, the musician can go into the studio much more loosely prepared, and count on working something out spontaneously with the rest of the band. But this was different.

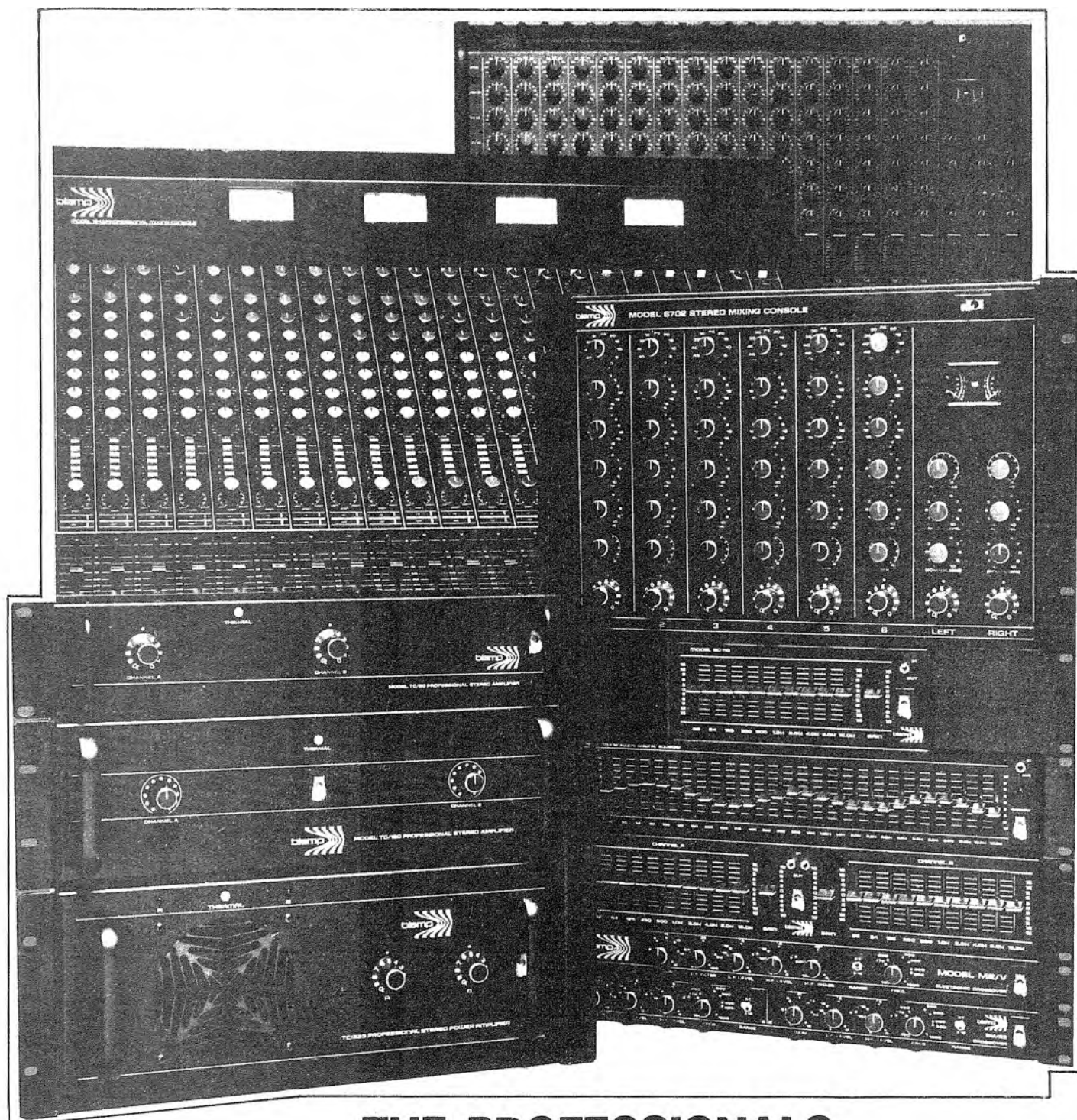
"You know you have to be well rehearsed, because those classical musicians *know exactly* what should be played, because they have it written down in front of them. You can't argue on their level. I was really thankful that I did enough work before I went into the studio. I can't read music, so that stand you see in front of me on the inner sleeve of the album didn't have much on it except an outline of the piece we were playing, so I knew where we were all the time."

Steve assures me that the release of his new album doesn't herald a whole glut of LPs from the personnel of Yes. The pattern followed by Yes the last time solo albums were made isn't in evidence this time around, although Steve claims that Jon Anderson has an individual project awaiting release.

"The problem with solo records is that one mis-timed release by a group member can screw up the entire Yes year. It has to be a carefully considered proposition. That's why you won't see Jon's album for a while. Chris (Squire) doesn't want to get involved with a solo piece. He maintains that any creative energy should be fed into Yes, not into an individual's work. Indeed, it's Chris who's responsible for redirecting Yes back into its present creativity."

Howe's latest record is fairly evenly divided stylistically between side one and side two. The former does justice to his rock and roll and country roots, while the latter explores less well known aspects of





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HOWE TO GO SOLO



Howe's musical character. "Pennants," the first track on side one, is perhaps the most straight ahead rock piece on the album, followed by "Cactus Boogie", a shit kicking yee-hah acoustic country work-out. The third cut features 10 guitars on another straight rock number, with the foundations laid by ex-Yes, Crimson, National Health drummer Bill Bruford. Patrick Moraz also makes himself felt on this track, counterpointing a lyrical Spanish guitar piece with Howe contributing his sole singing part. "Diary", the penultimate number, features a solo Steve picking an electric, while the last track has Claire Hamill on voice and Alan White on skins.

Side Two opens with "Meadow Rag", a solo guitar piece. The second track is a surprising departure for a Yes man steeped in pomp rock — it's "The Continental", with violin, yet. Steve says he's influenced on this cut by Django Reinhardt and Stefane Grappelli. It's certainly a surprising tune to find on this record. After the next piece, solo Spanish romantic/acoustic, comes the first of two sessions with Andrew Jackman's orchestra.

"The whole 59 piece orchestra is used in these two pieces," explains Howe. "The Double Rondo comes first, and begins with a solo guitar intro, then some sparse orchestration, and then gets into a canon that really begins to rise, followed by a full recapitulation of the main theme. Then the piece dies away on a decrescendo guitar.

"Vivaldi's Concerto in D for lute is a very famous piece, and I've re-interpreted it for guitar. All we've done in our rendition is substitute the mood of the

piece. Usually it's a fairly lively afternoon mood, but we've blown out the sound and slowed it down to match the ambience of the evening. For this piece I substituted the lute with an electric guitar — a special Les Paul called simply The Les Paul. It has a very full sound, a round sound with a great deal of sustain. It's constructed largely of wood and has a beautiful finish. I used it because of the range and because the sustain is extremely controllable.

Fourteen guitars are used on the record, and to aid the interested listener a reference chart is included on the inner sleeve plus pictures of each instrument used. By following a simple cross referencing table you can see exactly which guitar is played on which track.

A question that's begging to be asked is — how does Steve Howe decide exactly which guitar to use out of his collection of 133?

"Well," says Howe, "it's not so difficult really. Out of that number of guitars there are quite a few which are antiques, and not considered for playing unless the circumstances demand something extra special. For playing, I immediately consider about 30 to 40 guitars — a full bodied Gibson L5, 175 Super, a 100. And then there are the Les Pauls and Fenders, so really you're talking about up to 30 working guitars. I'm taking 30 guitars to Paris for the sessions for the new Yes album, and when I go into the studio I'll take perhaps 15, including a six string Rickenbacker, a few Fenders and some extra Gibsons. So when I'm in the studio I'm faced with this big question mark — which guitar do I use? My first reaction is to use the Gibson Steve Howe model, which is like a 175 with more frets and pickups, or a Les Paul. If either of these choices isn't quite right then it serves to suggest exactly which sound I *should* be using. After a few days the track I used my first choice on comes up again and I make a final decision then.

"If I have to pull a quick solo out of my pocket then the Les Paul is the one I'll go for. But if I have to sit in the studio all day working then I'd probably use a Telecaster, which isn't so heavy and tiring as a full body."

Strangely enough, out of a collection of 130 plus guitars, Howe doesn't boast any Japanese made guitars except a special hand-made item. The Yes guitarist admits that he did start getting a few phobias when Japanese companies began churning out copies of all his favourite axes, but then some professional players began to use them, like Jeff Lynn from ELO, and Steve started to have more sympathy towards them. He says that he's more disposed towards a Japanese guitar when it doesn't copy well-known body shapes.

"These cheaper Japanese guitars are good for a person who perhaps can't afford an original. Hopefully they will

reach a point where the type of playing they do will demand an original. I have a distaste for the entire copy industry, really."

Earlier this year Steve had a sample of performing in an environment contrasting greatly with the usual vast auditoriums that Yes inhabits. This was at the Montreux Jazz Festival. Claude Nobs, the promoter, left Steve with a standing invitation to play the gig a couple of years ago, and he only took up the option this year, and then with some trepidation.

"YES CAN'T ABSORB AS MUCH MUSIC AS I WRITE"

"After seeing Weather Report and guys like that playing on the same stage as I was due to play on the next night, in front of the same audience, I thought: 'hang on a mo, have I done the right thing?' So I abbreviated my set, cut out all the reflective Spanish guitar pieces that demanded that the audience listen, and kept in all the up tempo stuff. I felt I couldn't guarantee to control the audience otherwise.

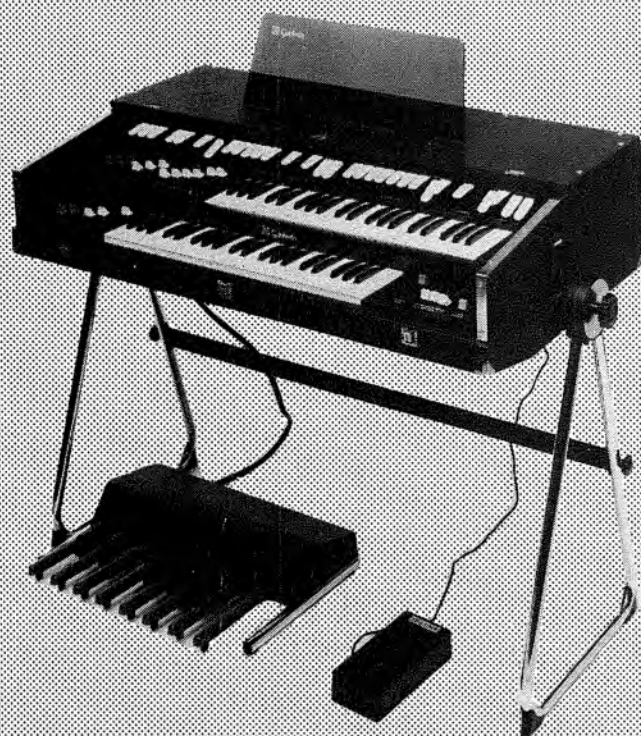
"This approach seemed to work. The people appreciated the colours and keys it's possible to suggest with an acoustic guitar. I like to think they became involved with the simplicity of it. And there were a few Yes fans in the audience, because Rick was playing that night, too. So I had a cadre of support to work from, too.

"There's a wonderful party feel at Montreux. Claude Nobs deserves a medal every year. He's phenomenal in his energy and work output. It was Claude's reassurance that got me through the set, really, I'll do the festival again, but not in the same context."

At present Howe is at the Marcadet Studios in Paris, cutting the latest Yes album. Chris Squire maintains that each member, irrespective of their solo projects, should offer up their best song to Yes. That's what Steve is doing now. Doubtless it'll change considerably once in the hands of the Yes collective. The band will be back on the road in the new year, and Steve hopes that Britain will be better catered for this time around, with gigs in the provinces as well as the usual Wembley extravaganza. In the meantime keep a look-out on the record racks for a Roger Dean album cover.

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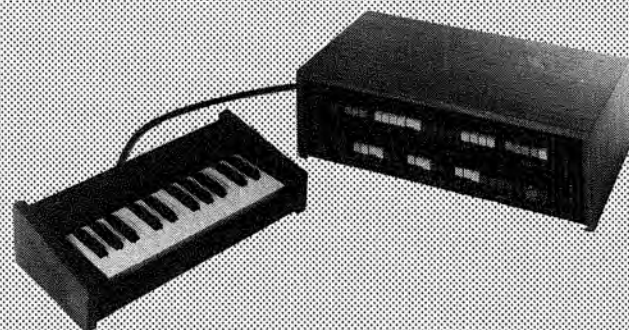
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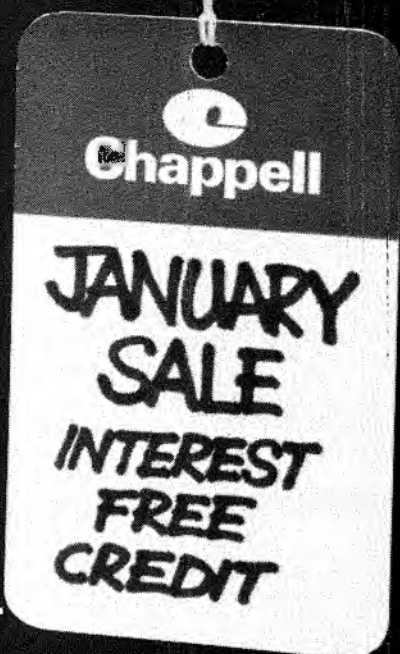
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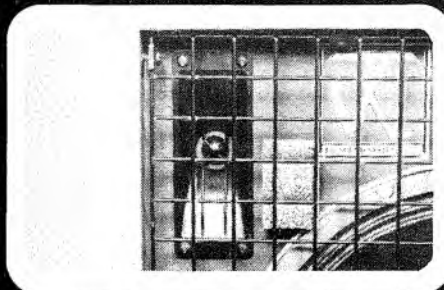


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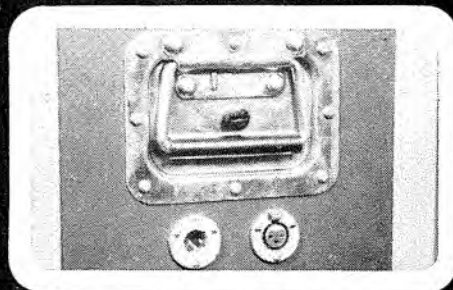
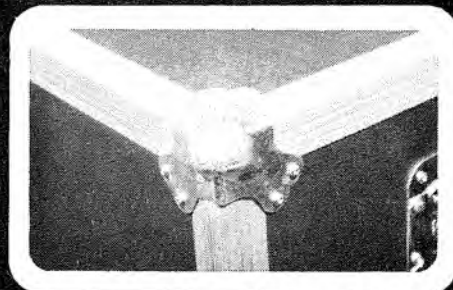
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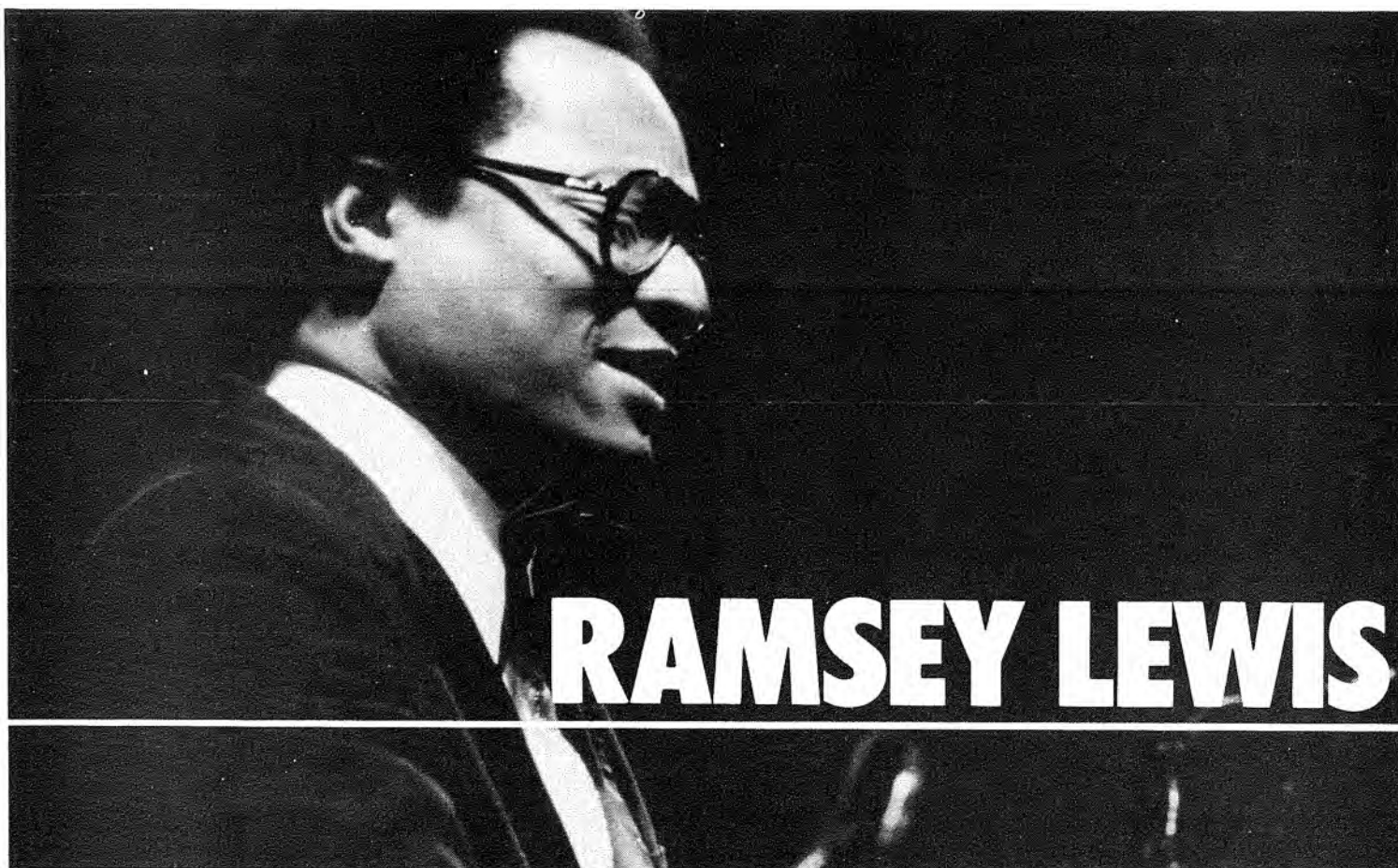
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Still in with the In Crowd

There is more than a touch of irony in the fact that Ramsey Lewis should be touring this country at a time when the only discernable trend on the music front is a Mod Revival. Now Ramsey doesn't know what a Mod is, but in the heady days of the Sixties they certainly knew who he was.

Round about 1965, this celebrated pianist was about the hippest name you could drop in trendy circles. Many an all-nighter was incomplete without at least one play of "The In Crowd", or "Wade In The Water" — two instrumental classics which were a must for any soul fan's collection.

Fortunately, Ramsey has moved with the times, and while his appearances in the charts have been limited, numbers like "Spring High" and "Tequila Mockingbird" have kept him popular with disco fans. Which is not to say that Ramsey has jumped on any bandwagons, for everything he does shows taste and class.

One thing which does set him apart from most other artists is his use of the acoustic piano as his main instrument. In these synth ridden days he remains true to his classical background, to the extent of wearing evening dress when performing. In common with many jazz players like Herbie Hancock he wanted to be a classical player, but common sense won out over ambition.

"I had a very wise teacher who told me, 'You have the technique and feel for

classical music to be accepted. But it is very difficult to make a living playing classical music.'

"Every year you see the same classical piano players coming back, and once in every three years maybe a new one will come in. But it will take him another five to 10 years for him to be accepted in the group who are making pretty good money now. Now if you're black you can forget it! I think there's maybe two black classical pianists who have been accepted over the history of classical music.

"So you have to make a decision, do you want to earn a living and pay your own way or do you want to spend your life knocking a system. If the system is older and bigger than you are, then common sense tells you, 'my life is only so long'."

This may sound as though Ramsey is dissatisfied with his lot; he isn't, it's just his philosophical approach to life. And anyway, his early ambitions are being achieved to an extent in that he now plays some solo recitals in States. "It feels very good. I think the mere idea of being up there alone with the Steinway, the audience seem to have more respect. It's like a bullfighter, you're up there alone.

"I love it. I love the challenge, it gets my adrenalin going and the audience seem to love it too."

Ramsey's music is certainly diverse and hard to categorise. His appearances recently in Britain also reflect this, having at first supported Gladys Knight and the Pips, and then playing "solo" with his

band at London's Venue.

In the States, apart from the solo college recitals he plays jazz festivals, he plays with symphony orchestras, and he also has a Las Vegas act. Thus his appeal is fairly wide ranging, but in Britain he is perhaps best known as a soul/jazz act. However, he is not happy with labels, particularly with that of "jazz musician".

"Were I to pop off tomorrow and they buried me, I would just like them to say, 'A very fine musician.' Because I find that when you allow yourself to live by a label, then you're expected to stay within the boundaries that that label dictates. If I believed that I was only a jazz musician, I would not play 50 per cent or more of the music I'm playing.

"I like the freedom to choose ideas from classical music, R&B, rock music and folk music as well as jazz traditional. It allows me a broad scope of expression, and this is in agreement with my early childhood. From the age of four to 14, it was purely classical music and gospel played in our church. At 15 I got involved in jazz and during my high school years was exposed to many ethnic groups and their influences.

"So when I begin to express myself I don't say, 'OK, it's got to be jazz, it's got to come from the jazz book.' I think if there's anything synonymous with jazz that I do it's creativity, the feeling of creation and the movement, the beat, the syncopation."

I think many visitors to one of Ramsey's concerts would have been pleasantly surprised by his playing. He has always been considered a good player, but perhaps on record he has seemed a little restricted and used the same phrases once too often. There was no evidence of this in his stage performance which showed a good left hand technique and a nice lyrical style with a touch of humour which always goes down well.

What his live concert did show up, however, was a lack of comfort when dabbling with a synthesizer. Although he uses the synth only minimally on both record and on stage, playing just one pre-set instrument, he clearly has not mastered the instrument and doesn't intend to.

"I think that George Duke, Chick Corea, Herbie Hancock, Stevie Wonder and maybe three other people have mastered or taken the time to master



the synthesizer. When I say mastered, I mean to the point where even though they are electronic, and really they are no different to a typewriter, you can sit down and hit an A and it will come out the same as when I hit an A, but they have taken the time to hit them in such a way as to stylise the sound.

"There are no more than 10 of those who can play and you say, 'Oh, that's George Duke, that's Herbie Hancock.' The others, you can't tell who they are and it takes time and dedication. I feel I'm neglecting the acoustic instrument when I don't put in four, five or seven hours a day practicing. So to be honest my priority is the acoustic instrument."

His last album, simply titled *Ramsey*, saw the pianist stretching out a bit more, an approach which is likely to be furthered on his next one. Although not a prolific writer, Ramsey has never had any problems finding material, because it usually finds him. Both Maurice White, of Earth Wind and Fire and Stevie Wonder have been among those who have written for him, which ensures that he will always have a contemporary popular theme in his work.

Still, popularity and commercial success are pretty much dirty words among jazz purists and Ramsey agrees that this

was a problem after his hits in the Sixties. "The jazz critics were very down on me, they said that you should not involve rock music, gospel music, R&B in jazz, you should not mix them up. But what I was doing was just a natural thing, I played and what came out was a mixture of all these things. I'm comfortable playing this so I don't care. At the most there are

maybe five critics who've come out against me over the past 25 years — so what?"

At this point I wondered if Ramsey would have preferred to sacrifice his commercial success for a reputation of someone like Oscar Peterson. I was made to ask the question twice before the man broke out into a huge grin — I had obviously touched a sensitive spot.

"I love Oscar Peterson, he has impressed me most, and he still does. I remember playing in a Chicago club in 1962 and I knew he was in town. I just looked down to the table which was near the stage and my fingers just turned to butter.

"Oscar Peterson and Vladimir Horowitz are my two heroes because they play the piano the way I think it should be played. The way they play the piano, they get certain expressions and colours and feelings out of the acoustic instrument — more than a synthesizer. You wouldn't say to Horowitz, 'have you ever thought about a synthesizer?' I'm striving for that.

"Oscar Peterson had better watch out because I'd say that about three years from now I'm going to challenge him to two pianos on stage, him on one and me on the other. If I don't outplay him on the piano, I'm going to break his fingers with a sledge hammer."

Piano duelling aside, the name Ramsey Lewis still means something in the contemporary music, whether it be to ageing or revivalist Mods, or the dance crowds of the more enlightened discos. He still plays "In Crowd", the archetypal mod record, but some of his more recent work is still very much in evidence.

"I went to a disco here, and I was surprised at the number of young people who were dancing to 'Spring High' and 'Tequila Mockingbird'. Afterwards I was surprised by the number of kids who said, 'Are you going to be at the Venue? We'll be there.' And they were 17, 18 and 19, so maybe there'll be a revival of old Ramsey."

David Lawrenson

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VITAVOX PA COMPETITION

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One of the biggest outdoor events of the decade earlier this year used Vitavox equipment. You may think it was Zeppelin at Knebworth, or the Boomtown Rats in Scotland, or even the Pink Festival in the Netherlands. But you'd be wrong. The event in question was the Pope's visit to Eire and his address to the multitudes at Phoenix Park. With the eyes of the world on that small crowded "stage", Haydon Warren, acoustic consultant to the Vitavox company, had to make sure that nobody committed the cardinal sin of disturbing a microphone. There were 1 1/4 million people in the audience and the sound system was rated at 5000 watts. Some gig.

Linking the Pontiff with rock band the Enid would normally be a difficult task but in this case it isn't, they both have the distinction of using Vitavox sound gear. The Enid used to use something quite different, JBLs in fact. But the group spokesman, Robert Godfrey, explains that spares for JBL PAs were becoming so scarce and expensive that the band looked around for something homegrown but as good. They didn't look further than the Vitavox factory in Queensbury, North London.

When the band were invited along to the factory to see how their new PAs are built, IM were asked along to follow them around, too. From the outside the factory is like so many others on the trading estate where it's situated. Inside it's a different matter. Casual conversations in the office are disturbed by test signals wailing up and down the scale. It's easy to imagine that out in the corridors somewhere Dr Who is fighting Ron Grainer's Radiophonic Workshop. Nobody seemed to bat an eye, though.

Vitavox earned the distinction earlier this year of winning the State of the Art Award from the top Japanese hi-fi magazine, *Stereo Magazine*, for their System 191 speakers. But the goods, as far as IM are concerned, are the Thunderbolt PA horns, based on the S2 pressure unit and the AK157 15" LF unit.

In the past Vitavox have been more concerned with providing good quality sound equipment to cinemas and

concert halls, not to mention their contracts with the Ministry of Defence. The Queen Elizabeth Hall and the Festival Hall both use the firm's equipment. Vitavox speakers were chosen for use on Royal Navy warships because they don't break under the shock wave of a big gun firing. In addition, they're waterproof.

The groundfloor of Vitavox production is in the machining room, where the scene is of typical small industry — lathes, milling machines, soldering areas, that sort of stuff. Lying around in part bins, and being steadily turned on the machines, are the basic building blocks of Vitavox equipment.

Multicell horns are built up from single square, flaring tubes, soft soldered from strips of steel. They're then soldered up into multi cell units, from three to 15 cells. At this stage the Enid drummer had to be very careful because the floor of the machine shop was covered with steel and ally swarf, and he had inadvertently forgotten his shoes.

From the shop floor we made our way up to the testing room, where the will of Doug Johnston, resident boffin, holds sway. The anechoic chamber is housed here. This is a small room lined with wedges designed to absorb every erg of sound, so that any sound registered by the metering equipment in there is definitely not an echo. Doug shut your

intrepid reporter in the room just to make the point. He insists that the most efficient and reliable way of testing speakers is with the human ear. Electronic measuring devices can't pick up rattles, he maintains.

Up in the winding room Neil and David Young, joint managing directors, demonstrated the diaphragm press and coil winding equipment. The press tools and winders were manufactured by Vitavox themselves, as was a great deal of the equipment they use, simply because it's not manufactured elsewhere.

Robert Godfrey enthuses over the Thunderbolt system. He's particularly impressed by the unit's sensitivity, which is rated at 117dB at 1w at 1m averaged between 400Hz and 5kHz. Godfrey is impressed by the sheer amount of sound the Thunderbolts generated when fed a relatively low amount of power. The Enid use three bins on each side of the stage, and find this quite enough for all but the largest halls they play. At their gig in Birmingham Town Hall the volume managed to cause cracks in the ceiling. The passive crossover unit is housed in an accessible but protected position, and the mid range radial horn is housed inside the Thunderbolt body for transit. Heavy duty rubber tyred wheels mean that the Thunderbolt is a system guaranteed to win the affections of a long suffering roadie. But nevertheless the cabinets are beefy, weighing 210lbs apiece.

But this size is necessary to house the folded horn enclosure that Vitavox's research suggests is the best possible shape for maximum efficiency. The company is unique in that it conducts a great deal of testing, research and development on the premises. Sixty five workers are employed there, from machine minders to coil winders to sound technicians. Brian Timms is the man who keeps the production running smoothly, and Steve Michelis is the International Sales Manager, who makes sure that the product is marketed properly worldwide. At the time of our visit to the factory he was in Japan collecting the State of the Art Award on behalf of the company.

Attractive though the Thunderbolts may be, and they are widely regarded as the UK competition for JBL equipment, they are expensive. To put them within range of most bands who may need them only for a short while to use at a big gig, Vitavox have taken the decision to hire their PA system.

Thunderbolts have already been tested by our resident expert Ken Dibble. He said, "The Thunderbolt is an original design, using top quality components. It is not the usual copy of a JBL bin, fitted with this drive unit or that and an indifferent Fibreglass horn and low-cost compression drive unit, but a high quality professional two way loudspeaker system giving a better performance than many three-way systems . . . it must rate as by far the most convenient to handle of any

professional loudspeaker system of this type at present available."

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2. Name one member of the Enid.
3. What pressure unit does the Thunderbolt system use?
4. How much does a Thunderbolt weigh?

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In a maximum of fifteen words and from information given in the article say what you would consider to be the most valuable quality of the Thunderbolt system and why.

Entries should be sent to International Musician and Recording World, Grosvenor House, 141/143 Drury Lane, London WC2. Please mark the envelope "PA Competition".

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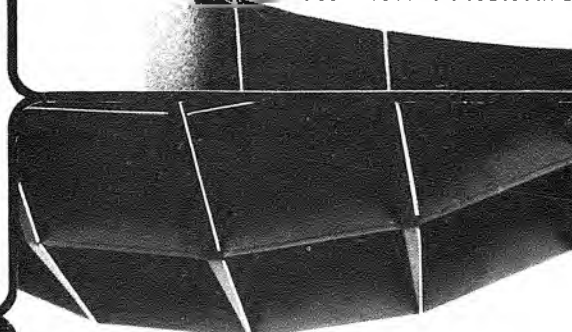


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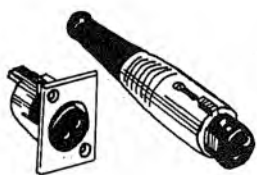
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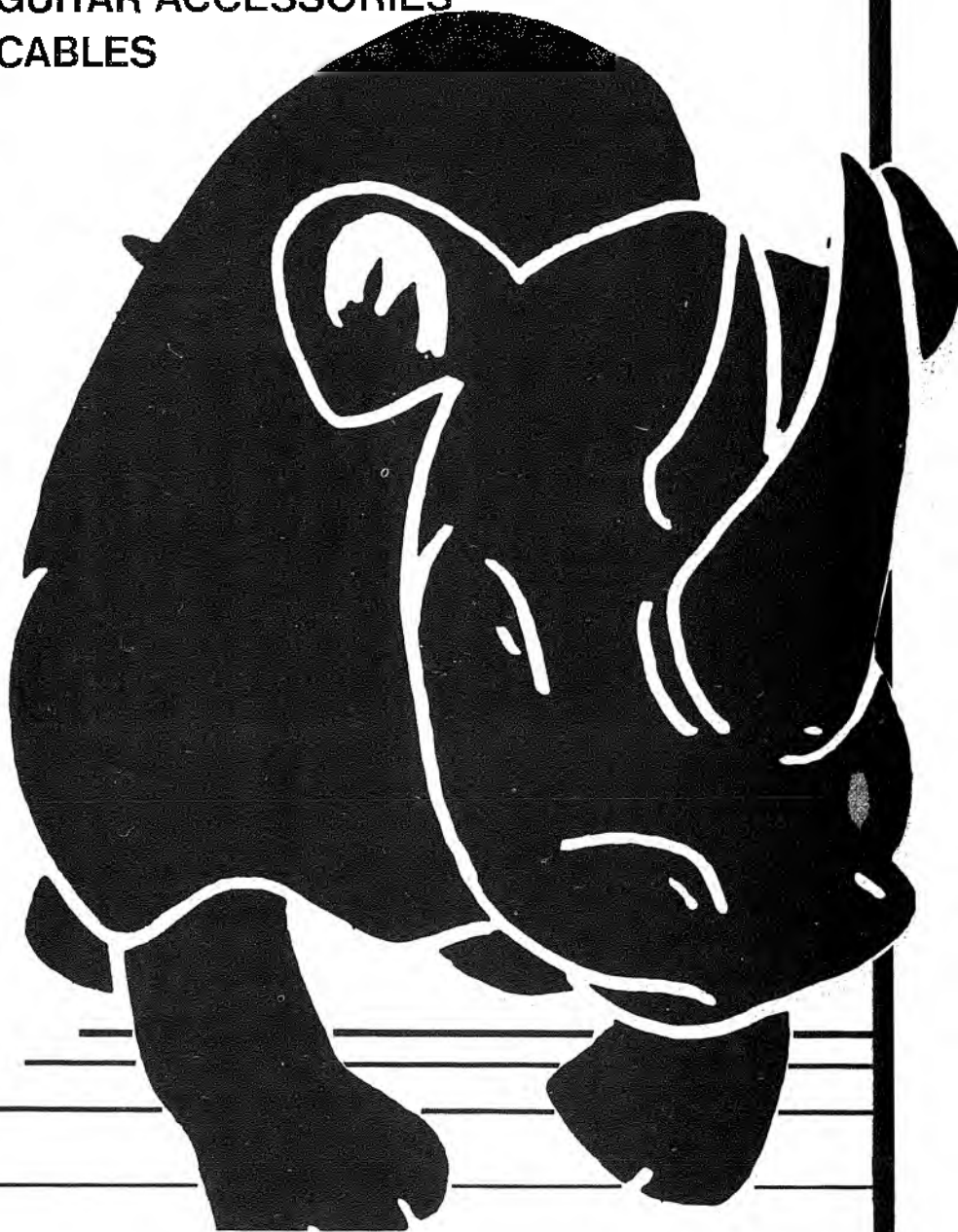


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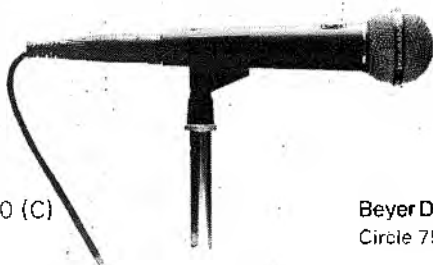
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STUDIO DIARY

Whos BEEN RECORDING WHAT, WHERE ...

Hi there! Well, there seems to be an awful lot of secrecy going on at the moment. I'm not terribly sure why but there you go. Abbey Road: although they would love to be mentioned, it seems that all their producers and artists have unanimously declared that the entire staff should be sworn to secrecy. Anyway, there's no lack of information from Trident. I think they must work around the clock, judging by the amount of sessions they manage to fit in. Canadian rock group **Rush** were in to mix an album which they recorded in Canada. Terry Brown engineered and the producer was Stephen Short... **Buggles** have been putting on some vocals and keyboard overdubs — producing themselves, with Chris Stone pushing the buttons... Chris was also engineering for two other artists, **Jonathan King** and a band called **The Biz**. Jonathan was performing and producing his new single called "Gloria"... The Biz were mixing their single with producer Rod Boukett... Disco still rules, well for **Loretta Stokes** at any rate. She was in recording a disco album with Colin Green engineering and Ian Levine producing... The same team were working with **Moirá Towland** on a new album... Also news from the cutting room. There was a new single by **Rocky Sharpe** and the **Replays** produced by Mike Vernon... **Random Hold** (who belong to Polydor) were cut with the aid of Peter Hamill... and they also did some cutting for John Punter (of Air Studios fame) of the fast up and coming **Marseilles**... (Oops! We seem to have got our wires crossed last month. The band signed to Essex was in fact **Writz** not **Roots**. The band were produced by Dave Rees and engineered by John Brand).

Sessions at the Roundhouse Recording Studios have also been plentiful. **Uriah Heep** were recording a new album with John Gallen engineering... Another

album can also be expected from **David Essex**, Ashley Howe was the engineer... The **Pictures** were in laying down tracks with David Bachelor producing and Phil Brown engineering... New Wave band the **Vapors** were in working with producer Vic Coppersmith and engineer Trevor Hallesy... **Goldie** have been hard at work with Martin Smith who was producing and Mark Dearnley was the engineer... The lovely **Dusty Springfield** was exercising her vocal chords with the aid of Ashley Howe at the controls and Alan Tarney producing... **Barbara Dickson** was working on her music with the same two gentlemen... **Roundhouse** had an exciting time when they were taken over, not for recording, but for filming. The film "Breaking Glass," which is all about the music business, was filmed at the studio...



John Cooper Clarke

Marquee, having got over the excitement of their new studio, have had some sessions — **Catherine Howe** and also the **Sweet** have been working with producer Pip Williams and engineer John Eden... In the **Remix Suite**, Larry Bartlett was engineering a session for Swedish singer **Ingerlise**, who was laying down tracks for an album. The producer was Henry Hadaway...

Over at **DJM** Alan Price has been working on some mixes and overdubs for his forthcoming album. His engineer and producer was Alan O'Duffy... concentrating on a single was **Rocky Sharpe** with Dick Plant engineering and Mike Vernon producing... trying their hand at self-production were **The Four Tops** alongside their engineer who was John Cooper... Dick Plant engineered some overdubs for **Wreckless Eric** and his producer Barry Farmer... and finally, the **Piranhas** were in for some mixing with, once again, John Cooper engineering, and their producer was the esteemed Steve Lillywhite...



Dusty Springfield

Down in Surrey, **Ridge Farm's Studio Manager, Frank Andrews**, opened their doors to **The Young Ones** who have been working on their first album for **WEA** (Atlantic). Mike Dunne was engineering and the producer was Bruce Fairbairn... Laying down a few tracks and overdubs was **John Cooper Clarke**. The engineer was Chris someone (sorry Chris) and Martin Hannett was producing. **Surrey Sound Studios** have had **Bill Bruford** in recording his album which will be mixed in the **Devonshire Sound Studio** in North Hollywood by Ron Malo. Musicians recording with him are Dave Stewart (keyboards), John Clark (guitar) and Jeff Berlin (bass guitar and vocals)... **Dave Fuller** and **Rob Spensley** also booked in for their new album which Nigel Gray is engineering and co-producing...

Back to London where the **Island Mobile** recorded the **Buzzcocks** for **United Artists** and **Rico** for **Island Records**... while in the Basing Street studio **Roxy Music** were recording an album with Rhett Davies producing... Another album on the way is coming from **Eno** — engineered by Andy Lyden... **Manu Dibango's** album was mixed for **Island Records** with Chris Blackwell producing... Alex Sadkin produced and engineered an album for **Runner**...

Rockfield Studios in Wales have been recording **Shake** for **Sire** with Bill Hartley producing... In studio two, Pete Gage was producing **Snapshot**... In the rehearsal studio **Pirates** have been writing and rehearsing...

Up in Liverpool at **Amazon Studios** they have been doing a 24 track remix of **Linda Wright's** new single for **Phonogram**. The producer and arranger was Kenny Maclean and Fraser Henry engineered... Three girl band **Distinction** were in recording 8 track for **EMI** with producer John Bagnall and their engineer was Geoff Higgins.

Janet Angus



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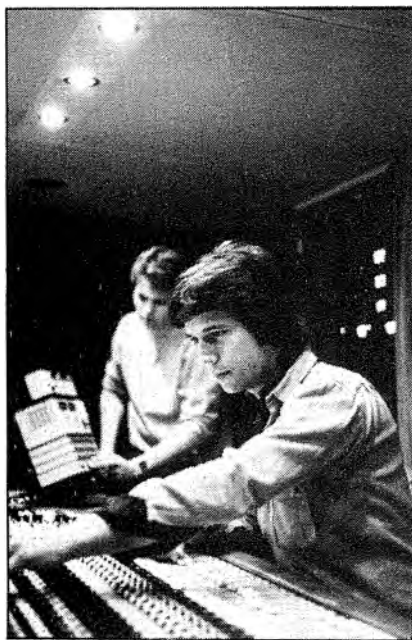
In 1964 the name Marquee took on a new meaning. Not only was it the year that the famous Marquee Club moved into London's Wardour Street from Oxford Street, but that year also saw the beginning of Marquee Studios. Having gone from strength to strength (their very first work was with the Moody Blues) the Studio has recently taken another giant step forward, and now, 15 years later, they have just celebrated another opening. No they haven't moved, but they have refurbished, and the studio has undergone some very carefully planned improvements.

Marquee commissioned Eastlake to redesign the studio, and work began in mid-September this year. The reason for the refurbishing was basically that the essence of the acoustics were designed in 1964. Obviously, since then, fashions and techniques have gone through many changes and they decided it was time the acoustics were redesigned. It has also given them the opportunity to modernise the air conditioning and improve the separation between the studio and the club. With bands playing at higher volumes these days, having the studio built on the back of the club was just beginning to cause problems, but the new extra sound proofing has put all that right.

They were aiming at creating variable acoustics in order to avoid confining themselves to any particular type of sound. Basically they can achieve a controlled live sound for rock music and a tight sound for MOR. Eastlake were deliberately requested to aim for a sound more live than their traditional one. Special features of the soundproofing include lead lining and "floating" the studio. The control room has been left almost entirely alone and the only things which have been altered are the monitor panel and the front, and new doors have been put in. In terms of actual square feet they have probably lost on the roundabouts what they gained on the swings

since, although they have utilised an old light well and now use it as the main vocal booth, the Eastlake design in acoustics and soundproofing takes up a lot of wall space and thus it has encroached slightly onto the floor space.

The studio now consists of a roomy main studio with a large isolation booth for string sections, etc., a drum booth, the main vocal booth already mentioned, and an additional small booth for vocals. It is a 24 track studio with an MCI 500 series 38/32 mixing console with JH50 Automation. The tape machines are also MCI, and monitors are JBL and Amcron. Other facilities include DBX and Universal Audio compressor/limiters and Lexicon digital delay. They have an Eventide Harmoniser, Kepex and Meyer Noise Gates, Orban and ITT Parametric EQ, MXR Quad Pack, Dolbies and EMT Echo Plates. They also have a very extravagantly equipped Remix Suite comprising a mixing room and overdub studio. Once again the desk is MCI (36/32) with MCI JH50 Automation and Plasma VU/PEAK Display. Tape machines are MCI and the monitors are by Eastlake and Auratone.



The studio is run by a non-too-modestly sized staff. Larry Bartlett is the manager — he looks after bookings and publicity, etc., apart from being a very good engineer. The management work is shared with him by Jerry Browse who looks after the technical side of things. Apart from Larry there are three recording engineers, three tape-ops, two technical engineers with administration in the capable hands of Cathy and Caroline. Having two resident maintenance

engineers may seem a bit extravagant but is certainly very praiseworthy. The justification is that Marquee aim to prevent problems rather than, as is so often the case, trying to put them right when things go wrong in a session and wasting everybody's time.

Marquee have recently created a link up with the club of the same name which enables them to record live gigs straight from the control room. This factor is illustrative of the company's motto which seems to be to plan ahead and aim to be one step in front of everybody else. It is their opinion that some of the fire is going out of Punk/New Wave music, and that bands and their music are becoming more and more sophisticated and therefore their recording needs are not going to be satisfied by live recordings. The increased sophistication requires studio facilities. However, they believe that video will be coming into its own in a big way in the very near future and that is when their unique situation will be in great demand.

They are a thoroughly independent studio and are equipped to record anyone and everyone who comes their way. They do not specialise in any one type of music, although each engineer's forte is in a different area and thus the studio has a lot of scope. The main bulk of their work in the past has tended to be more middle of the road than anything else, although this is more by coincidence than design. They have worked with a great variety of artists from Biddu to Bad Company, and from Sid Vicious to Vera Lynn and Lindsey de Paul.

Their aim of always looking ahead has enabled them to keep their rates at a very competitive level. Managing Director Simon White explained his business philosophy, "The British record companies are very lucky to have a highly sophisticated recording industry that has absorbed recent costs of the new high technology — automation etc. — and therefore rates have been kept low. But with digital recording techniques and the new video (and the likely increase in the use of video in connection with record production) there is bound to be a large increase in costs in the future." Their forward planning has enabled them to absorb costs and keep their price low. Their rates have stayed at a basic of £44 per hour studio time since 1977 and only now, with the new improved studio, is an increase being introduced. The new rate is, however, still very good value at £50 per hour plus the usual overtime and extras.

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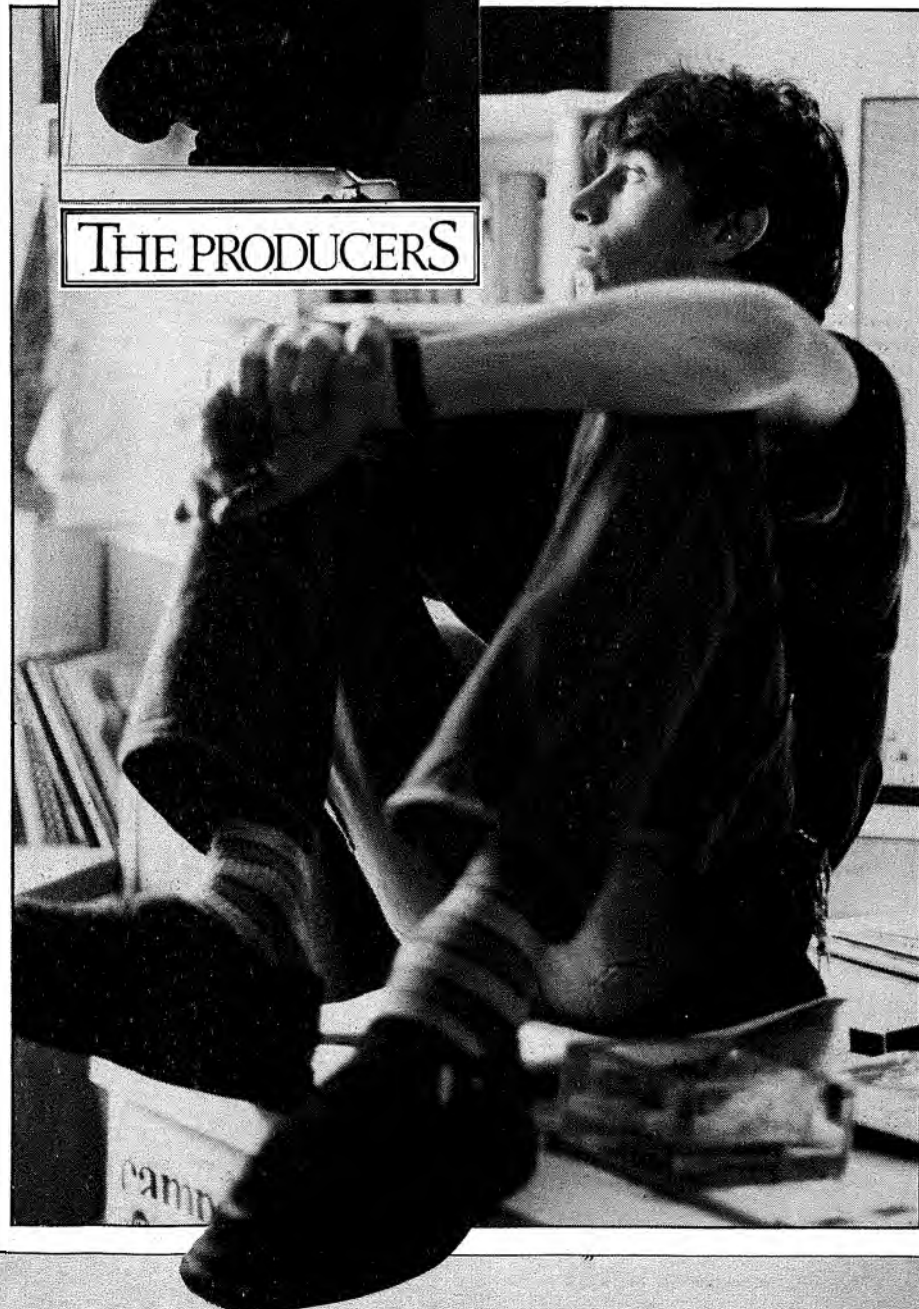
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Jimmy Pursey



THE PRODUCERS



Whenever there is a new movement in music, which often spawns its own fashion and culture, the media are always on the look out for one character in the thick of things who can tell them what it's all about. Someone who can string more than two words together and be relied upon for a controversial quote or two on anything from politics to religion.

Such a person is deemed, "Spokesman of the Generation". For the Punk movement it should have been Johnny Rotten, but he proved too difficult and inaccessible so the responsibility fell to one Jimmy Pursey of Sham 69.

Jim did not shirk his responsibilities, and as the popularity of the band grew so did the length of the interviews and (according to some people) the size of Mr. Pursey's ego. Both in print and on television screens he could be heard giving his views on a variety of topics.

As always, he was great value for money and maybe sometimes the whole point of the man and his music became a little clouded. Still there is no denying that Sham are a great rock'n'roll band, and from the outset Jimmy determined that he would have as much control over their music as possible. This inevitably meant involvement in production — and so the story begins.

Jimmy has had a hand in producing all three Sham albums but his efforts don't end there. He soon formed his own production company and sought out new raw talent to record, of which the Angelic Upstarts were the prime examples. He has also worked with the Pretenders and the Chords and is nurturing along a host of young faces such as the Cockney Rejects, the Kids Next Door, Jimmy Edwards and the Invaders.

Involvement in production by the artists themselves usually only comes after a few albums, but Jimmy has been into it from the start. It seems a little strange that such a charismatic live performer should opt for the relatively cold clinical producer's seat, but it's a role he enjoys.

"It is very important to me," he said, "I feel myself as someone who is totally into music, I believe in creativity in music. I got interested in producing when I started doing my own stuff. At first I was an admirer of Spector, then I started getting into all different types of people."

He is very wary of simply being labelled a punk performer and insists that apart from the Angelic Upstarts, his work has been very different from Sham. Jimmy feels it necessary to listen to all types of music and sees no reason why people shouldn't listen to Led Zeppelin or whatever they like.

As only to be expected, his views on studio work are very definite. "I get a tremendous buzz out of listening to music. I get a tremendous buzz out of finding something that I could never find in the studio. Engineers tell me, 'Oh no you can't do that,' so once they say that, I try even harder."

"You see engineers remind me of people who would go to a dog track and take £10 but only spend five. Whereas I'd probably go and lose all the money on the first race. I believe you've got to do it and worry about it afterwards. If you don't get on with it you've got nothing to argue about or nothing to think about. So that's why I like coming into a studio and saying, 'right come on.' Finding out if you can put a harmoniser with an echo or doing funny things like getting guitars to sound like organs. We've been slagged off for using different instruments, but you've got to keep trying different things."

However, he feels reluctant to use too many studio gimmicks to get the sounds

RECORDING WORLD

that he wants, preferring to make up his own improvised sound effects. Sham use hardly any effects pedals although there are certain pieces of equipment which he favours using like a Tama drum kit in the studio.

As far as actual recording methods, Jimmy, quite naturally, prefers a "live" situation. "Sometimes, say for a demo, I might just hang one mike over the top of the drums and one in the bass drum and say one near the snare for a Sixties type sound. I might even leave a mike hanging from the roof in the room just to pick up the bass and guitar sound. You block the drums off, do the drums on their own and you can get a Buddy Holly sound.

"People say you have to work a long time on the drums, but usually it doesn't take that long to get a drum sound, most important is the guitar sound. It's very important if you're working with beat records, and nearly all the groups I work with are beat bands — whether the talk about punk groups or rock groups, they're all into beat music with raunchy guitars. So I work ever such a long time on guitars.

"I like little bright leads here and there to brighten things up, like cutting with a Fender amp. I might sometimes stick a Fender amp through a Marshall cab to get a cutting sound."

As one might expect, vocals are something very close to dear Jim's heart, so in recording they come in for special treatment. "For vocals I might even leave four mikes in the room sometimes. In France I left four mikes in the room to get a really weird sound, they were all on and I smothered it in echo and it was as though you were using a great big hall, it made you feel you were doing it live.

"Sometimes I like making them feel as if they're on stage rather than in the studio so I turn most of the lights out, leaving just one on the vocalist and put masses of echo on so it's just like a gig. I love groups who just want to put it down and then finish it, that to me is rock'n'roll anyway."

Trying to get a band to sound like they do on stage is an aim Jimmy shares with many a producer. He doesn't like thousands of overdubs on a song, and can't see why a band have to do a number thousands of times in the studio if they're well rehearsed before they go in. He believes that the more times you do a number in the studio the less feeling you are likely to have, and it all becomes robotised.

The second Sham album *That's Life*, took this live concept a little further by having a story running through it. This presented it's own difficulties. "It was a problem because you're trying to put something in all the time to make it interesting. Like when you're reading a book, sometimes you get very bored

reading a book half way through. So I was getting to the stage where I didn't want any of the story to sound boring, I wanted to keep building excitement in all the time. I didn't want it to be just like *Quadrophenia*."

All the Sham albums have been co-produced by Peter Wilson who also pops up playing various keyboards. Jimmy regards Peter as a "very good engineer" and one suspects that it is he who translates much of what the Sham leader might want to do, into practical terms. It certainly seems to be a relationship which works.

Sham's last album featured the old Yardbirds classic "Mister You're a Better Man Than I" which became a successful single. Apart from being non-original (something which the band don't often do) it was also recorded to sound as close as possible to the original. "We did that because lyrically, it's the same type of thing that I'd write. It's the type of thing I'd sit back and listen to and say, 'what a brilliant record.'"

"And it was such a great sound that they got, it sounded as if they were actually playing live. That's what I loved about the Yardbirds stuff, same with Cream, it's very much there and then stuff. With the Yardbirds track I didn't want to lose what they'd got. I didn't want to try and better it because sometimes you can make it sound worse. All I wanted to do was to make it near enough an exact replica."

In common with just about everyone featured in the Producers series, Jimmy is an admirer of Phil Spector. He also likes Tony Visconti's work with Bowie because he's very much an "ideas" man. At the top of that category comes George Martin, "I'd like to have a long chat with him," says Jimmy who rates the maestro's work with the Beatles very highly.

As far as working in specific studios are concerned, he utilises the facilities at his record company headquarters, Polydor. Jimmy now calls it "my studio" saying that it was used by Chris Pally, a producer who is involved in recording New Wave acts. "I admire Chris as a producer because he will experiment. He would take a band like the Cure and experiment and it would be really good. Also when he talks to me he doesn't say, 'Oh you tried hard to produce.' He really likes what I do, which is great coming from someone who is a Producer."

Jimmy feels that producing is a key to finding a sound for the Eighties. Do we after all still have to rely on the tried and trusted formulas of the Fifties and Sixties. "Well those three chords came from that time and they experimented from the Fifties up to the late Sixties as to what they could do with those three chords. By the late Sixties anyway, Jimi Hendrix had

smashed his guitar to bits because he couldn't find any more chords to play. It was the same with Cream, they got bored. "What you've got to do is find those riffs and do something with them."

Apart from producing, Jimmy also works as a kind of A&R man, listening to tapes and seeing new bands and taking them to record companies to try and get a deal. Along with other rewards he also gets to produce these new acts. "I just like producing bands that nobody's ever heard of before, that's what I get a kick out of. I like getting the bands that no one else wants and trying to do something with them."

Jimmy Pursey might not be everyone's idea of a record producer, and in truth he has still to make a real impact with anything outside Sham. Still it's an area which obviously interests him and at least he has become involved in that side of the business at an early age, unlike many artists who by their sixth album think they should have a producing credit because it looks good.

Also JP makes no pretence to being the world's greatest behind the console and readily admits that there is nothing to compare with being the leader of Sham. "There's nothing like playing on stage with Sham 69." But I guess that producing new talent would be a very close second.

David Lawrenson



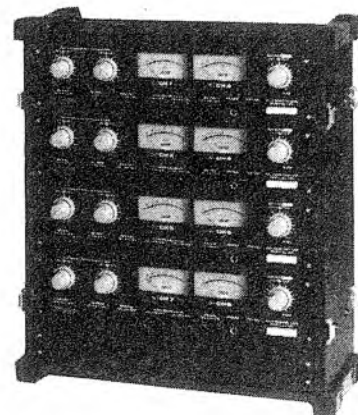
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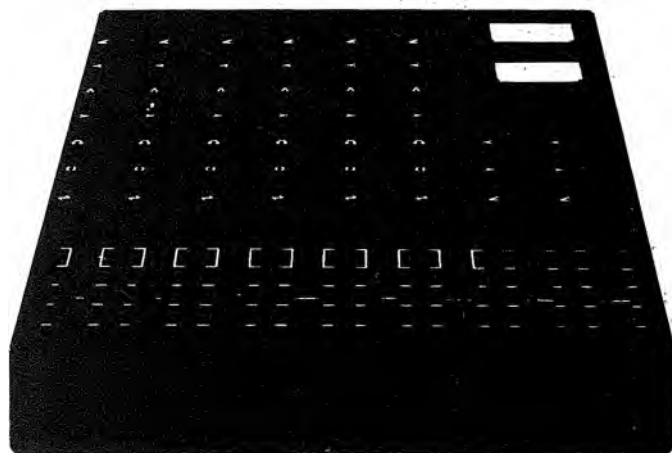
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Part 5. PERCUSSION EFFECTS

When making a multi-track recording, one of the first steps is often to lay down a timing track, which in its simplest form is nothing more than a series of clicks. This track then acts as a timing reference for the player(s) when subsequently recording all the instrumental parts. However, although regular clicks can be produced very easily with the synthesizer's LFO, as I described last month, with a little more effort the synthesizer can be used to generate the sounds of percussion instruments. These "instruments" can themselves be multi-tracked, three or four being sufficient for most purposes, and mixed down on to one track which then itself acts as the timing track for the parts added later. In this and next month's article, I am going to describe how to set about synthesizing percussive sounds, so that following one of the recording methods described in Parts 1-3 of this series you could produce your own multi-tracked percussion ensemble.

Synthesizing drums

Drum-like sounds are easily generated by virtually any synthesizer as shown in Fig. 1. The VCO frequency is reduced to a low value (resulting in a low-pitched

sound) and the ADSR or AR module is adjusted so that it produces the kind of waveform shown on the right. This waveform, which controls the amplification of the VCA, reproduces the essential characteristics of any percussive sound: fast attack (the sound starts very suddenly), followed immediately by decay, the sound dying away either quickly (e.g. bongos) or relatively slowly (e.g. bass drum).

Each tap on the keyboard generates a keyboard gate pulse which triggers the ADSR or AR module, allowing a short burst of "sound" through the VCA. Note: when using an ADSR module to produce percussive sounds, a useful trick is to set the Sustain Level control to zero and the Decay and Release controls to the same value. Whether you tap or hold down a key, the ADSR will then always produce the same waveform. When using an AR module, the keys must be tapped or the percussive effect will be lost.

The pitch of the "drum" is determined by which note on the keyboard is depressed (the keyboard voltage controls the VCO frequency). Low notes will produce "bass drums", higher notes "tom-toms" and "bongos". The

quality of the sound is determined by the choice of waveform and VCF settings; notice that in Fig. 1, the ADSR waveform is shown controlling both the VCF and VCA, the former adding "edge" by emphasizing the upper harmonics when the sound begins.

Keeping time

When recording the first track of a multi-tracked percussion section, the LFO can be used to trigger the ADSR module (see Fig. 1), resulting in regular beats at intervals determined by the LFO frequency. This usually only works as long as a key is depressed, which is a very helpful feature because it allows the regular sequence to be interrupted by releasing the key when rests are required (keep an eye on the LFO's indicator light during rests!). If the LFO's frequency is increased, the same set-up will produce a drum roll as long as a key is held down.

Cymbals

Because the basic constituent of a cymbal's sound is noise, the arrangement shown in Fig. 2 can be used to synthesize a whole variety of cymbal-like sounds. The noise generator is the basic sound source

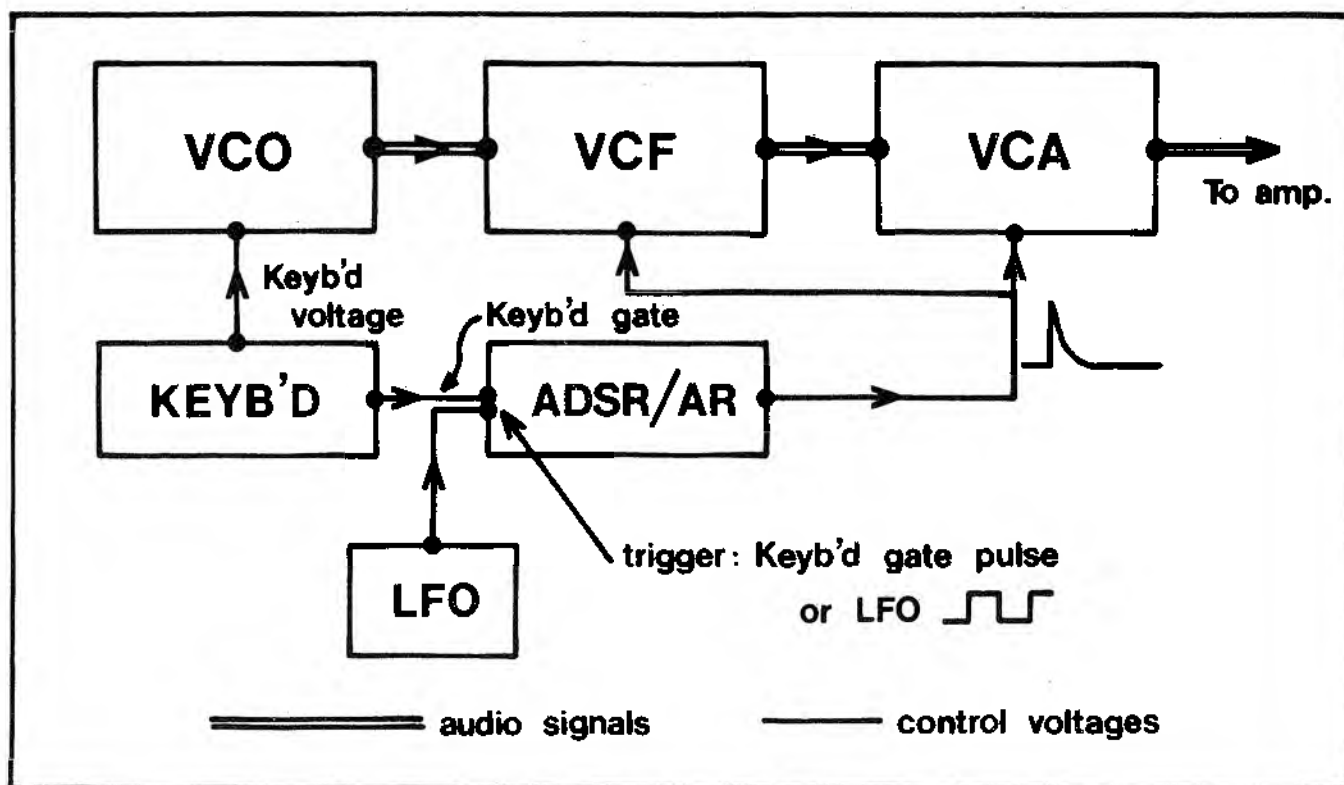


Fig. 1. Arrangement of synthesizer modules used to generate drum-like sounds. The ADSR or AR module should be set to fast attack and quick release times. The pitch of the drum can be altered by tapping different notes on the keyboard. Repeated beats or drum rolls can be produced by using the LFO to trigger the ADSR module.

but other components (see below) can be added to the sound in the VCF's audio-signal input mixer if required. The ADSR module's decay and release times will usually be longer than those used when synthesizing drums. Interesting effects can be created by using the LFO to shift the filter cut-off frequency, adding a sort of "swish" to the cymbal effect.

Again, as described above, the LFO can be used to trigger the ADSR module to produce regular cymbal crashes, or cymbal rolls — which incidentally will sound better if the decay and release times are shortened. When working in this way, if the LFO has a "keyboard trigger" switch, always turn it ON; the LFO will then start a new cycle immediately a key is pressed, which will result in a more reproducible and predictable sound.

Gongs and bells

These sounds are most easily synthesized using two VCO's and a ring modulator as shown in Fig. 3. The characteristics of the sounds are controlled by the relative frequencies of the VCO's (they should not be widely different) and sine or triangular waveforms tend to produce the best results. Noise can be introduced very effectively at the VCF's input mixer. Alternatively, relatively soft gong or bell-like sounds can be added to the cymbal sounds produced by the arrangement shown in Fig. 2 to great effect.

If you do not have a ring modulator, bell sounds can be synthesized by using the VCO's output as a *control voltage* for the VCF; the cut-off slider should be set about mid-way and the resonance control to maximum.

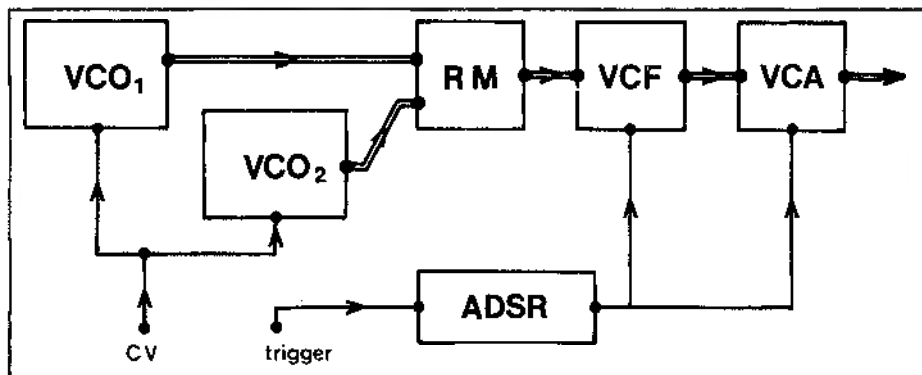


Fig.3. Two VCOs and a ring modulator can be used to synthesize gongs and bell-like sounds. The VCOs' common control voltage (CV), usually supplied by the keyboard module, determines the overall pitch of the sound.

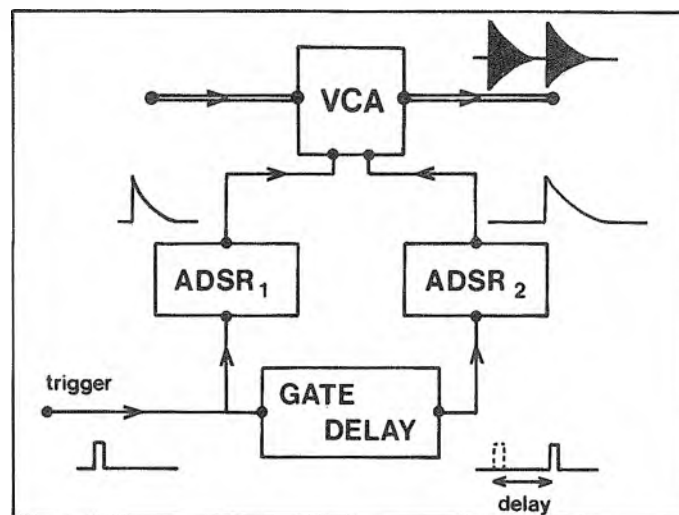


Fig.4. A Gate Delay module can be used to produce two "strikes" on a synthesized percussion instrument from one key depression (supplying the initial gate or trigger pulse). The time between the "strikes" is determined by the gate delay.

Double striking

Some synthesizers contain a "Gate Delay" module, which is used to produce two gate or trigger pulses from one key depression as shown in Fig. 4. The keyboard gate pulse acts as the trigger for ADSR, as usual, but in addition is delayed by the Gate Delay module, the output of which triggers ADSR2. The resulting output of the VCA is two sounds following one-another in quick succession, separated by the delay time as shown, and sounding like a "double strike" on the percussion instrument if the delay short or

a single echo if the delay is lengthened and the settings of the VCA's sensitivity control to ADSR2 is reduced. The Gate Delay module is therefore particularly useful for increasing the complexity of synthetic percussive sounds without demanding more effort on the keyboard.

Given these three types of percussive sounds — drums, cymbals and gongs, with all the possible variations on each of them — very effective varying rhythm patterns can be multi-tracked. Next month I will be describing how to involve a sequencer in synthesizing percussive sounds, and also how a synthesizer can be used to improve the sounds produced by electronic rhythm units.

by
A. Horsman, B.A., Ph.D.

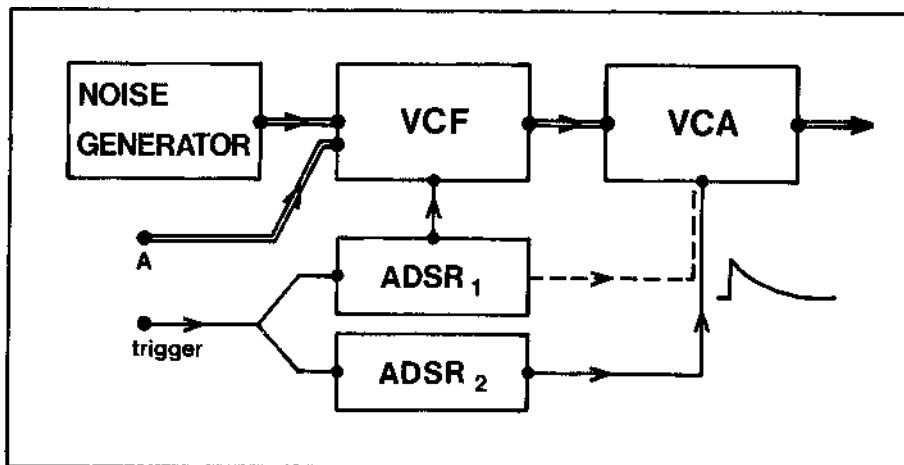


Fig.2. The noise generator is used to synthesize cymbal-like sounds. Sound colouration is introduced by adjusting the filter (VCF) settings and additional sound sources (VCOs etc.) can be introduced at point A if required.

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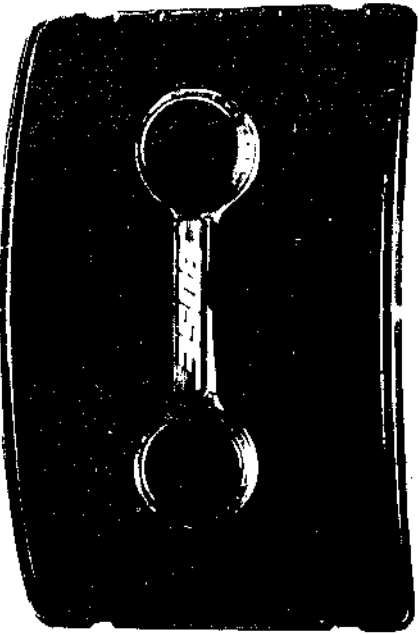
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Spotlight On The West End

STUDIOS

When planning this month's Spotlight feature it occurred to us that there was such a large number of recording studios in the West End area that it would be a pity to pass up the opportunity of visiting a selection to find out just what they all do. On our travels we came across what turned out to be a fascinating cross-section of the industry with studios specialising in anything and everything from demo tapes to advertising and soundtracks for films.

First stop on the studio tour was The Nova Suite (1) where the manager is Len Greene, and he is assisted by Pat O'Connor. Owned by Tommy Steele, the Nova Suite has been operating in its present form as a 24-track studio for the past two years. The main bulk of their work consists of jingles etc, although they have recently had in such artists as Barry Blue and Sally Oldfield (both recording albums) and Patti Boulaye. The recording team consists of Chief Engineer Stephen Allan, Graeme Jackson and their two assistants. They have a capacity of up to 30, and the hourly rate is £50.

Next stop was at 214 Oxford Street at the plush Air Studios (2) where they have four recording studios — all of which have full 24-track facilities and are fully Dolby equipped. Studios 2 and 4 have Quad monitoring, 1 and 4 have film facilities and Studio 3 has Necam computerised mixdown. Ancillary services include editing, mono-stereo, copying, film transfer, and multi-track copying. Hourly rates range from £40 to £60. The studio complex is run by Chairman George Martin and managed by David Harries. Geoff Emerick is their Chief Engineer and there are six other fully fledged engineers who are kept very busy since the studios are popular and many of the artists could be termed "regulars". Recent bands recording here include the Stranglers, Japan, Kate Bush, Sky, Marseilles and Siouxsie and The Banshees.

George Martin has recently opened a new studio on the Caribbean island of Montserrat which costs the grand sum of £8,000 per week to hire and accommodates up to 10 people. The studio is suitably extravagantly equipped to match the fee.

Over in Wardour Street is BMS Studios (3). Here we met Rowan Laxton (Chief Engineer) and Carole Humphrey who is the Administration Manager. The studio is owned by Standard Broadcasting Company UK Ltd. and has eight and four-track facilities. They deal mainly in music demos and commercials. The other engineer is Micky Rogers and recent recordings include Peter Welsh, Nurse With Wound and One On One — the house band. There is a full production service available, including copy writing,

casting, music, copyright clearance, sound effects and production co-ordination.

We arrived in Tavistock Street, walked up the steps of number 22, innocently opened the door, and were instantly descended on by two gentlemen yelling "Don't open the door"! Well — some of us just can't help being stupid! However, all was forgiven because Free Range Studios (4) are busy improving their premises — improvements which will culminate in January 1980 when the studio goes over to 24-track from its present 16. Brad Grisdale is the manager, and the recording staff consists of three full-time and two freelance engineers and two tape-ops.

The controlroom equipment includes a Midas Pro II desk, a Scully 16-track, Tannoy HPDs, Scamp rack and Revox and Ampex reduction systems. Other gear available includes a Steinway grand, Mellotron, Telecaster and an HH combo amp. The type of work they indulge in includes lots of demos, reggae albums and some audio visual work. Recent customers include Tubeway Army, Eddie and the Hot Rods, and Thin Lizzy. A point worth noting is that Free Range is probably the only studio in London which offers a credit card facility.

Over in Poland Street is Derek Hanlon — manager of Anenome Sound Music (5). This studio has come to specialise in cassette mastering. In the old days they used to do a lot of recording themselves including many film sound tracks for companies such as Charisma Films. However, since acquiring their own small Loop Bin they have been concentrating more and more on the cassette side of their business as the work keeps pouring in.

They make cassettes of almost anything you would care to name from tapes for schools (plays etc) to Blondie and Georgie Fame. An example of their work is the D'Arblay Sound Studio Workshop which readers may remember we featured in IM. So if you need any good quality cassettes you know where to go.

We made an appointment to meet one of the owners of Redwood Studios (6), and with a name like André Jacquemin, were expecting to find a tall dark gentleman of Gallic origin, and at least a trace of an accent. However, what we did meet was a very English, very mad and lively person who said: "I didn't do it, really I didn't." The fact that Redwood is the place where Monty Python recorded their LPs, a lot of the soundtrack for the new film 'Life Of Brian', and André "was lucky enough to be the co-writer of the film's theme song" might go a long way to explaining the air of madness around the place.

When asked what the studio records he replied, "anything", which is not far from the truth, since the work is very diverse ranging from speech and comedy (notably Monty Python LPs, Barry Humphries and Kenny Everett) to radio commercials and bands such as John

Otway and the Leyton Buzzards (who, incidentally, are managed and published by André). They provide a service which seems unique, and that is their own Music Library, which is, of course, a great help in a studio where a large proportion of the work involves television, film and radio. The studio is quite small, but with a high ceiling and a separate vocal booth.

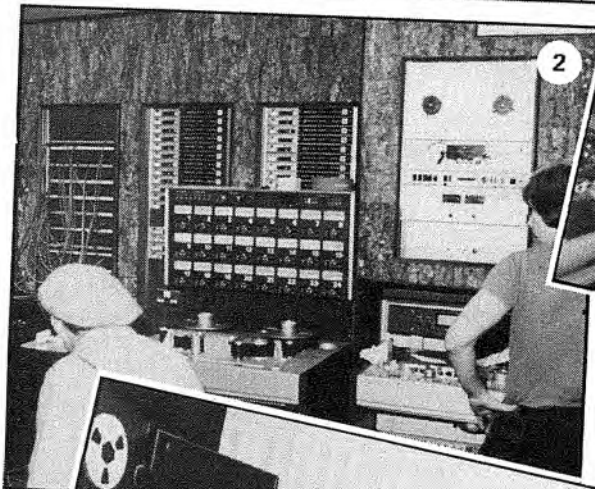
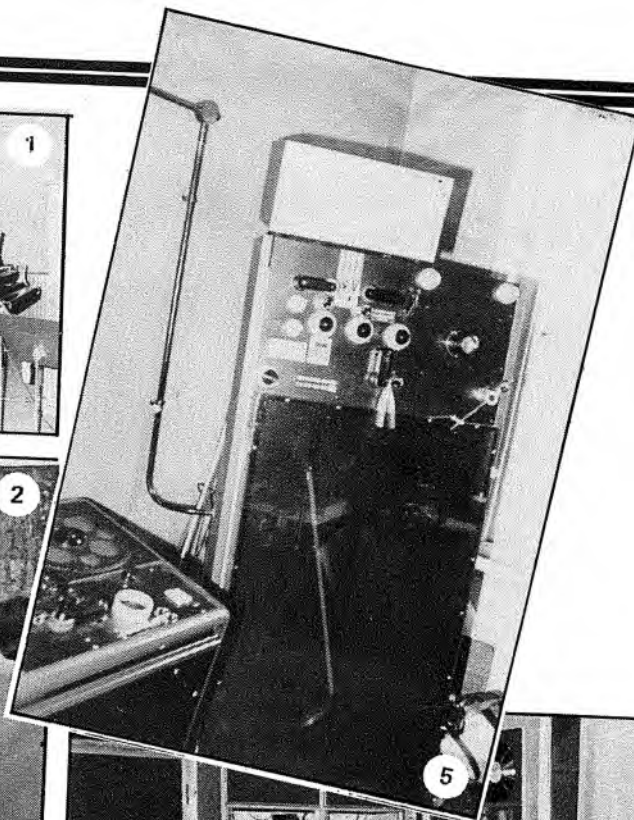
In the control room there is an eight-track Custom desk — built by Harry Day (builder of the first Neve mixing console). André and his partner Michael Palin decided to try to aim for the best eight-track studio in Europe, rather than go for anything bigger, and it certainly seems to have paid off. Other equipment in the control room includes an Eventide Harmoniser, 12-Stage Phaser, a Vocoder, Studer A80 tape machines and Neumann mikes, etc. etc. There is also a "Copying Suite" with some impressive equipment in it. The studio employs two engineers — Steve Rance (freelance) and Matthew Flynn. André considers their fee expensive at £28 an hour — we don't.

In Theobald's Road in WC1 is DJM Recording Studios. Bands recently recorded included The Tourists, Dr. Feelgood, Rory Gallagher, Darts, and overdubs for Wreckless Eric and Alan Price. It's a 46 track outfit with MCI Multitrack machines, MCI Series 500 desk, JBL monitors driven by BGW amps. Studio One can hold 38 musicians, while Studio Two can take 28. There is also a video link up for each studio. Dolby or DBX noise reduction is used throughout, and effects include Lexicon, Eventide, and AMS digital delays, Klark-Teknics, Orban Powersound equalisers. They also have a Marshall Time Modulator and an Aphex Aural Exciter. There are three balance engineers, three sound engineers, 4 tape ops and 2 maintenance men. DJM also have a dartboard and Space Invaders.

Odyssey Studios live in Castlereagh Street, W1, and have two studios — each identical to the other. MCI 56 track console and tape machines are the tools in use, with various effects such as AMS, Klark-Teknics DM70 harmonizers as well as a DM34 analogue delay. They have an Audio Design Scamp Rack. Studio One can accommodate 60 musicians, and has a balcony which can be used for extra musicians or video cameras. Studio Two is largely a remix and overdub studio and can take between five and eight people depending on the size of their instruments.

Celebrities such as Roger Whittaker, The Commodores and Brotherhood of Man have recently passed through their portals. Jonathan King, too, though they don't talk about him much. They have two engineers and two tape ops.

Down in the basement of 63 Charlotte Street one found Rock Star Studios (7) and John Springate (of ex-Glitter Band fame) — one of the firm's partners. Rock Star are a small firm specialising in production, publishing and running their



Spotlight On The West End

small 16-track studio. The other partners are Phil Chilton and Warren Ziegman. John's wife Lynne looks after the bookings and administration side of the studio. There is also another recording engineer on the staff — Steve Dewey.

The studio itself is very "live" which a lot of artists consider to be an important factor. Rock Star has an impressive list of artists on their books including such names as the Bay City Rollers, The Damned, Bethnal and Susan George. They also work with quite a few punk bands. Probably one of the reasons for their success, apart from the excellent recordings they turn out, could well have a lot to do with the fact that they give good value for money at £16 per hour for 16-track and £10 for eight-track.

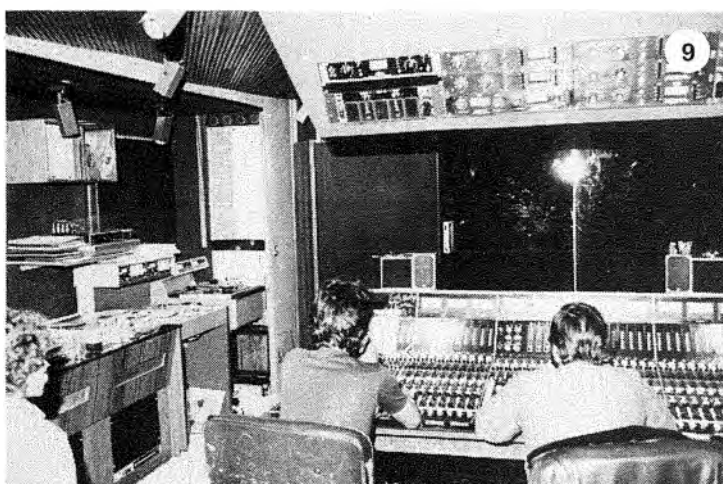
One of John's main motives in setting up a recording studio was not in fact to record other people, so much as to get down to recording some new work of his own which, if the tracks he played us are anything to go by, he is certainly getting into in a big way.

Just off Shaftesbury Avenue in Neal's yard can be found a studio which does hardly any music at all. Theatre Projects (8) is a dubbing and recording studio working mainly on voice-overs, soundtracks, audio visual, slide to tape and sound effects (of which they have a library). Equipment in the dubbing room includes Electrosonic 14/8, Revoxes, Teacs, cassette decks, Altec monitoring, HH power amps and AKG BX20 Reverb.

We didn't get as far as the studio itself, but the control room is kitted out with Leavers-Rich eight-track and four-track ($\frac{1}{2}$ "), a Theatre Projects 12/8, Klein and Hummer monitors (and the inevitable Auratones), a Scamp rack, EMT stereo plate and AKG, Neumann, and Beyer mikes. Certainly a different angle of the business.

Deep in the heart of Soho was our last call. Trident Studios (9), situated in St Anne's Court, just off Wardour Street, is a 46-track studio which seems to employ one of the biggest bunch of loonies in the business. Apart from that, the building houses one 46-track studio and a remix room, and also facilities for disc cutting and tape copying. There are three cutting engineers and three recording engineers.

They gave us an incredibly long list of equipment used which we can't possibly reproduce here, but all the prominent names are there: Studer A80 multi-track, Ampex, JBL, Cadac monitors, the mixing consoles are Triad A series (28/24 in the control room, and 40/8 in the mixing room — plus a 24-input Fleximix) etc. Trident left us with an impression of a very smooth running, and professionally operated studio, and recent clientele would seem to endorse this impression since they include Writiz, Dave Green-slade (recording his much anticipated new album), Real Thing, Bill Lovelady, Fantasia and Brand X. Trident also acts as



Trident

a "second home" for erstwhile IM consultant Robin Lumley.

We think that says it all.

Good Earth Studio, situated at 59 Dean Street is owned by the infamous Tony Visconti and has just opened its doors to the general music business (as readers of the November issue of IM will already know). The studio is run by a very small, very efficient staff. Jan and Diane look after the administration side and there are two engineers — Studio Manager Kit Woolren and his assistant Gordon Fordyce. The control room is very lavishly fitted out with a Trident TSM 32/24 mixing console, a Lytec tape machine, 2 Studer machines for mixing down, JBL monitors, Auratones, and many extras such as Digital delay, Harmonizer, Flangers, De-Essers, Scamp rack, Limiters and so on.

An unusual feature is that there are windows in both the front and back walls of the control room — one facing the studio itself, and the other facing an isolation booth. This can be very useful, for example, if the vocalist feels happier working at the same time as the band, he can be in the isolation booth, the band can work in the studio, and everyone can see what everyone else is doing without affecting the recording. There is also another isolation booth which was originally intended to be a drum booth. However, Kit usually prefers to use the studio to get his drum sound and finds the booth useful for other things.

The studio aims to make its clients feel as comfortable as possible and by all accounts they succeed. The lounge is very plush with a television, hi fi, easy chairs and facilities for making drinks etc. Their ideal is not to run just an ordinary studio, but a production workshop, since their view is that if the producer also knows everything there is to know about the studio and its mechanics, then the work will take half the time. For all this, the present rate is £42 per hour, going up to £47 after 6 p.m.



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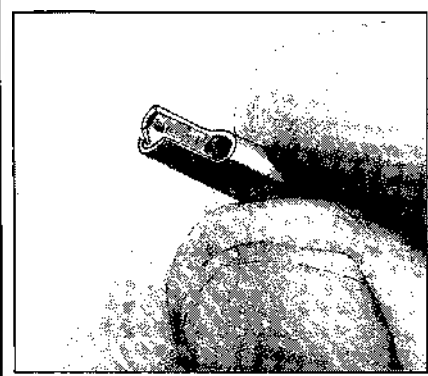
Small Things

We regret that the picture in last month's "Workshop", showing a screw-removing tool, was printed, reversed left to right.

According to this (incorrect) photo, the tool would cut best in a clockwise direction, and this would tend to drive the broken screw further in instead of lifting it out.

With many apologies, we reprint here a correct picture of an anti-clockwise cutting, screw-removing tool.

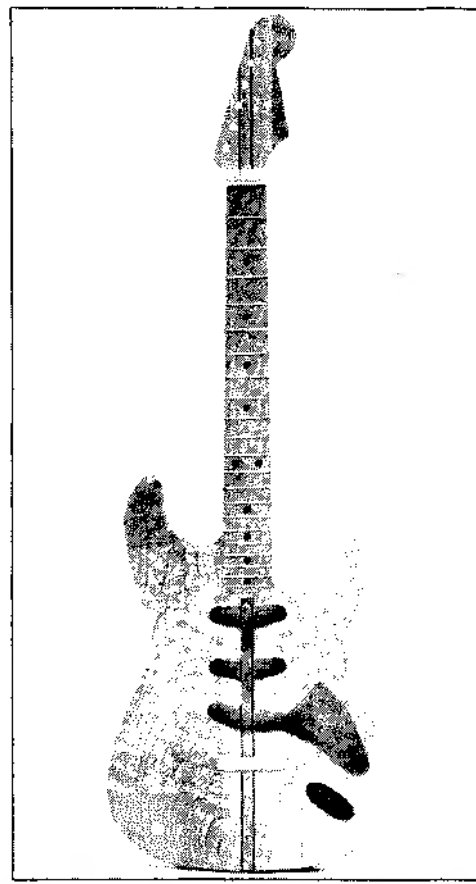
If you have made up a screw-remover from last month's picture and it works, don't worry. This kind of flat-ended drill is always a bit unpredictable. However, it is more likely to work efficiently if made and sharpened as shown *this month!*



This month's small thing is a naked body. However, in keeping with my wayward sense of humour you will see that it is a naked, *wooden* body, which bears more than a passing resemblance to a well-known guitar design. "So," you may say, "such bodies and necks we can buy already." Look more closely: this is a *one-piece* body and neck which you will soon be able to buy as a bare skeleton for adding your own choice of controls, pickups and finish. Result: your own 'one-off' guitar, but one with a straight through neck. No neck bolts, screws or brackets. However, it does come complete with frets, nut, all major holes drilled and a sealer coat of clear lacquer.

So far I have only seen one sample because this is the only one in the country and still officially under wraps. However, with no expense spared, we bring you a first look at it. This one comes from Mighty Mite and will be available through your local music shop. From Rosetti. It is so new that I don't even have a price yet, but I thought you might like to hear about it before you spend your money on anything else. This sample looks nicely made and should make a fine guitar.

Stephen Delft



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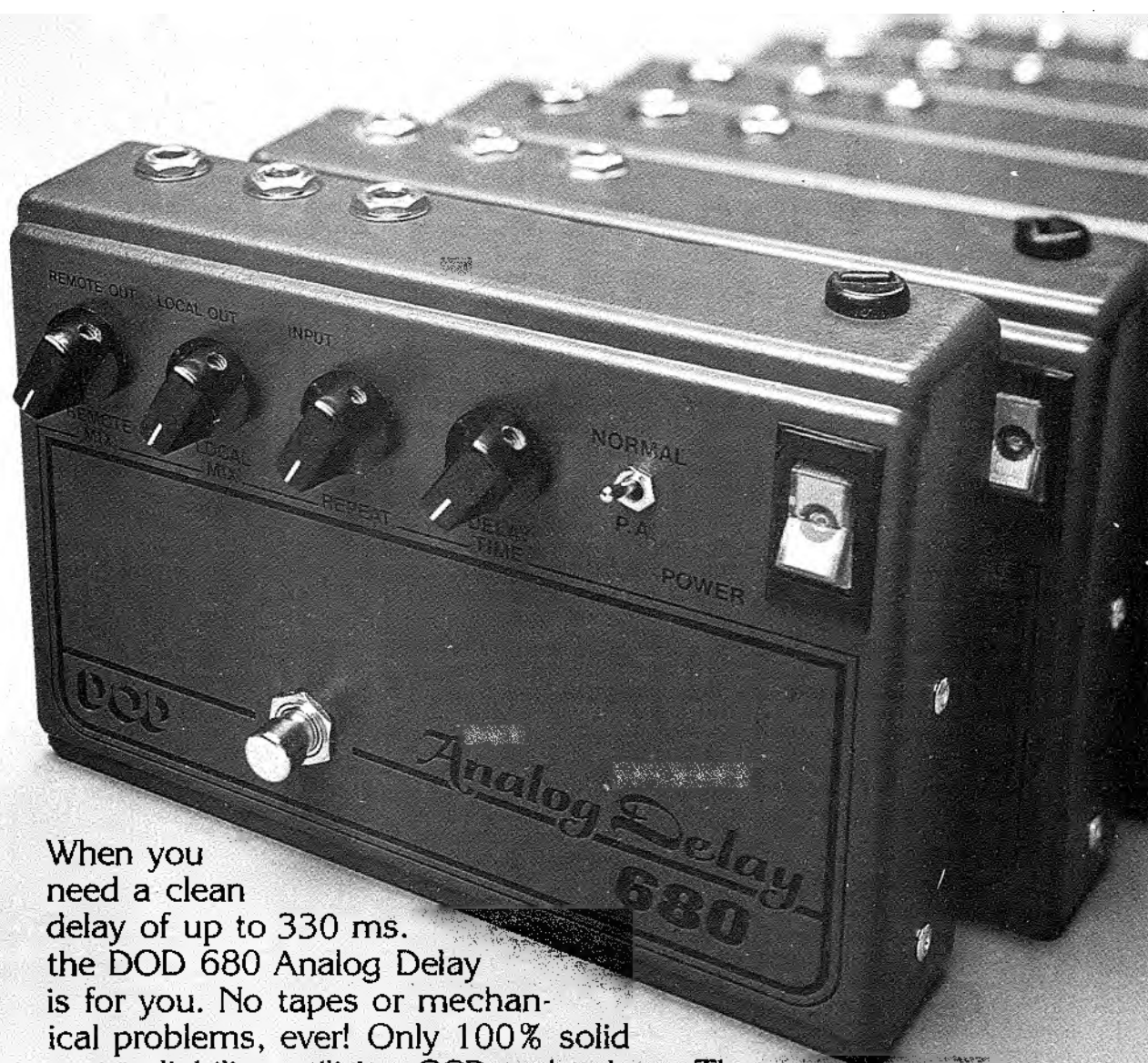
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STUDIO: In Brief

The RE 20 is the top model in the Electro-Voice range of professional microphones which is a little unusual as it is a dynamic microphone and the product range includes condenser microphones. Its retail price (£268 + VAT) dictates that it must be considered a competitor to established 'standard' studio microphones such as the Neumann U87 and AKG C414. Electro-Voice in fact claim the RE 20 to be "easily comparable to the finest condenser microphones".

The microphone measures 217mm long by 54mm in diameter (widest) making it rather large for some applications. Its size is principally due to a chamber behind the head, designed to give what Electro-Voice call "Continuously Variable — D" or more simply, much less bass rise when the microphone is moved closer to an instrument. There is a bass cut switch on the rear of the mike which, when operated, will remove any remaining proximity bass boost. The cable socket is a Switchcraft Latchlock which unfortunately seems very reluctant to accept Cannon XLR or Neutric plugs. These are probably the most commonly used plugs on microphone cables in the UK and this may cause some annoyance, however the microphone comes with a length of cable that has a Switchcraft plug on one end.

The construction is based around a rugged steel casing which would appear capable of withstanding heavy usage but it gives the mike a weight of nearly two pounds with the mike connector. This can cause problems if the microphone is attached to the standard boom mike stand with tripod legs, as extending the boom beyond half its length makes it very unstable. I had a RE 20 as part of a "crossed pair" high over a drum kit on one of these stands and watched the drummer accidentally topple a cymbal against the stand, causing the RE 20 to sweep a wide arc over the drummers head and hit the solid floor, seven feet below. The only damage done was a slight dent in the front grill screen and the rest of the microphone worked as before — a tribute to its solidity but watch the choice of mike stand.

Listening to the RE20, the sound is fairly "smooth" with no obvious peculiarities which is what one would

expect from looking at the frequency response supplied with the mike. The RE 20 performed well on most instruments but there is a certain "edge" to the sound which seems to give good results on percussion, drums, acoustic guitars and some grand pianos, if you have the time to experiment with positioning. This "edge" in the sound can be accentuated by a little judicious use of EQ to give a "big beefy sound" which is far from flat but very complimentary to rock music. The lack of the bass proximity effect takes some time to get used to as I had not realised to what extent this effect had become part of my close miking technique. It was however found to be useful in difficult acoustics or where acoustic spill is a problem, without having to resort to bass EQ cuts.

The RE 20 proved very complimentary to some voices and should be considered as an "alternative" vocal microphone if time is available for experimenting. It is relatively difficult to "pop" and although it has a fairly sharp cardioid pattern, its frequency response off the axis still sounds good. For singers who don't keep still while singing, this means a more even sounding vocal track and for engineers recording them, less times when you want to nail the singer's shoes to the floor. The RE 20 is however rather susceptible to handling noise and it could be advisable to use the suspension sling that Electro-Voice manufacture for this microphone in circumstances where this may occur.

How does this microphone compare with the two condenser "standards" mentioned earlier — the U87 and C414? On a straight A/B comparison over a wide variety of instruments and voices, two points became obvious. The first is that it has a rather low output level when matched against the condensers and so requires more gain on the mike amps, which may in turn make it a noisier microphone to use in some circumstances than the condensers. The second point is that it does not sound at all so "effortless" as the condensers, particularly the U87. If however a little EQ is added to the RE 20 it began to compete more favourably having acquired the "edge" to the sound mentioned earlier, although in comparison to the condensers, maybe "drive" would be a more accurate description. This "drive" was not found

in the condensers to such a degree not so easily. The EQ on the RE 20 had to be altered for differing instruments but with these allowances the mike proved it could be useful even if only on its own terms.

During tests on the RE 20, various engineers remarked to me on the mike's ugliness, size (How could I fit ten of them on a kit?), low output etc., but I found that it was becoming the microphone I was most likely to turn to if I wanted to try recording an instrument with a fresh approach.

I really don't believe that on a flat response basis it can be said to compete with a top condenser microphone but it can often present a better sound for treatment at the desk, rather than the condensers "smoother" response which is not always required in multitrack recording. I see the RE 20 as an "enthusiast's" microphone rather than a general purpose tool and would encourage anyone to try it, given that it has rather a high price for a dynamic microphone. It might be what you've been looking for.





The TEAC Model 2 is a compact 6 into 4 mixer primarily designed to be used in conjunction with the Teac range of four-track tape recorders. I will, however, be looking at the mixer as a separate unit and try and assess the quality which the unit is capable of.

The mixer weighs 15 pounds which comes as a surprise when it's size is only 13 x 10 x 3 inches. A brief look inside revealed a very solid frame and some high standard printed circuit boards containing more electronics than one would imagine a mixer of this simplicity would require. It was not possible to do any more investigation in the brief period we had it as the manual supplied contains no information at all on the electronics inside, apart from a basic specification.

All the controls are mounted on a top plate covered by a front panel with a grey/brown silk finish and all the legends are silk-screened in white. This combination is easily readable under most lighting conditions.

Located out of the way at the rear of the mixer are the mike and line inputs, jack and phono sockets respectively. At the top of each channel there is an input selector in the form of a three position slide switch giving line, mike and mike attenuation — a 20dB pad. Below this we have high and low cut filters offering fixed cuts of 12dB/octave at 5k or 10k on the high and 100Hz or 200Hz on the low. Both these filters are also three position slide switches with centre position being off. Apart from these filters there are no EQ controls on the mixer but this should not discourage you from using it. The filters are fairly effective when used correctly and the lack of EQ will encourage users to experiment with recording techniques to achieve the desired results. In

extreme circumstances an external EQ unit could be used.

Next comes the routing to any or all of the four output groups. This is in the form of four coloured push buttons. Unfortunately it is a little difficult to see which channel buttons have been depressed when the mixer is viewed from the operating position. Below this comes a rotary pan control which is engaged when more than one channel is assigned.

The level of each channel is controlled by a fader with a three inch travel that is one of the smoothest I have encountered in this equipment price range. The fader knobs are quite tall and look like they could be easily damaged but as they are removable I assume that they can be replaced if this should happen. The faders have brush dust strips along the travel and they look effective. However, the mixer looks like it could be extremely vulnerable to damage if drink was spilt on it, so keep it well away and avoid the temptation to use the area above the master fader as a drinks tray!

The master fader is on the right of the mixer and is identical to the channel faders in appearance but is in fact a four ganged fader. This means that the output levels of the desk in recording are not independently adjustable and so changes to individual output levels have to be made by moving the channel faders. This is not a problem in practice as it was found easy to leave the master fader in the optimum operating area (shaded area on the fader travel) and forget about it, treating the desk as if it was an "in-line" design. The only remaining control on the front panel is the mains power switch and its indicator light.

At the back of the mixer, above the already mentioned input sockets, are cut

outputs on each channel for feeding to headphones via a foldback system. On the outputs of the groups are two sockets — line and auxiliary — making it possible to drive two four-tracks or even four two-track machines. There is also a break point for an effects unit to be inserted in the group output and a bus input connecting up a second Model 2 mixer through the same master fader.

I used the mixer to record a five-piece band rehearsing in a small hall. The intention was to try to capture the sound they made live rather than making any compromises for the recording. This I felt would be a real test for the mixer.

The bass guitar was direct injected and surprisingly, gave no problems at all. The two electric guitar amplifiers were miked with AKG 224 but the output of these overloaded the mixer inputs and I had to switch the mike attenuator in. This, however, caused the sound to change and give less treble. I can only suppose that this changed the loading of the mixer and hence the treble response of the channel.

The drums were miked with an AKG D12 on the bass drum and a Neumann U87 overhead. I used the U87's own attenuator and made sure I did not push the level on the drums too high and they recorded very well. For the vocal I used an old Shure 55S and asked the singer to keep close to it all the time and so keep the changes in volume to a minimum. A limiter was really required but there was not one to hand.

I panned all six channels into a stereo mix — all fairly central excepting the two guitars which were half left and right. The output of the mixer fed into a high speed Revox A77 and recorded on Ampex 406 tape. All the monitoring was done on headphones and it is not easy to get an accurate mix with regard to bass and drums in this way. Therefore, I was not really sure what the tapes were going to sound like but when I got the chance to hear them over a good monitoring system that I was familiar with, I was very impressed. All the instruments were clear and there was no lack of attack on the drums — often I find a failing in small mixers. In fact by "accident" we had actually recorded one of the best live drum sounds I've ever heard but I feel the old wooden hall it was recorded in must take a lot of the credit for that.

I would have liked longer to play with this mixer and maybe try mixing down a four track tape, but it was not possible. However, it had proved to me it was capable of making good recordings and now knowing its limitations, I would like to use the mixer again for simple recording.

Keith Spencer-Allen

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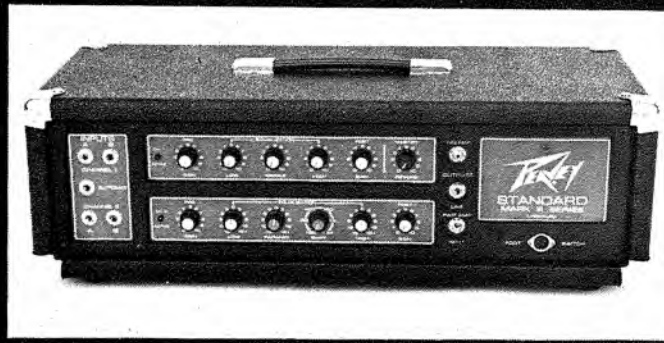
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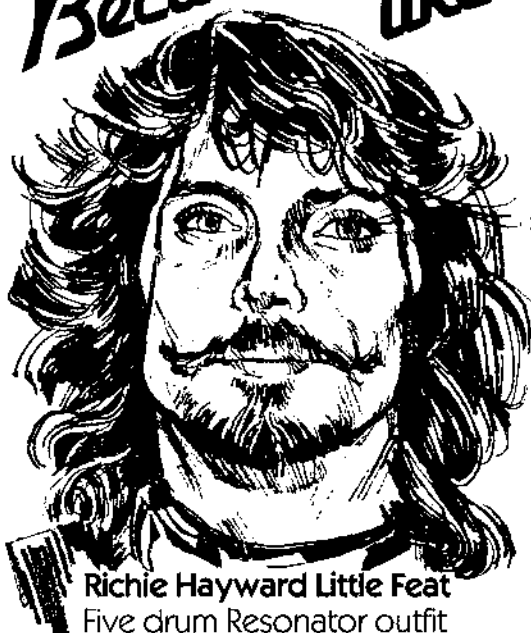
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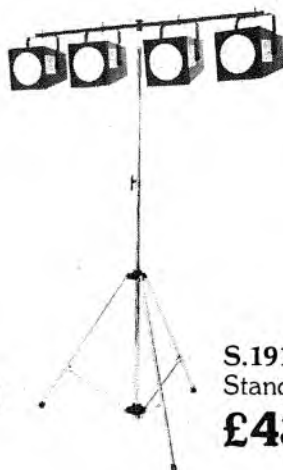
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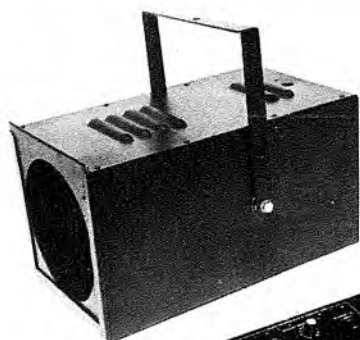
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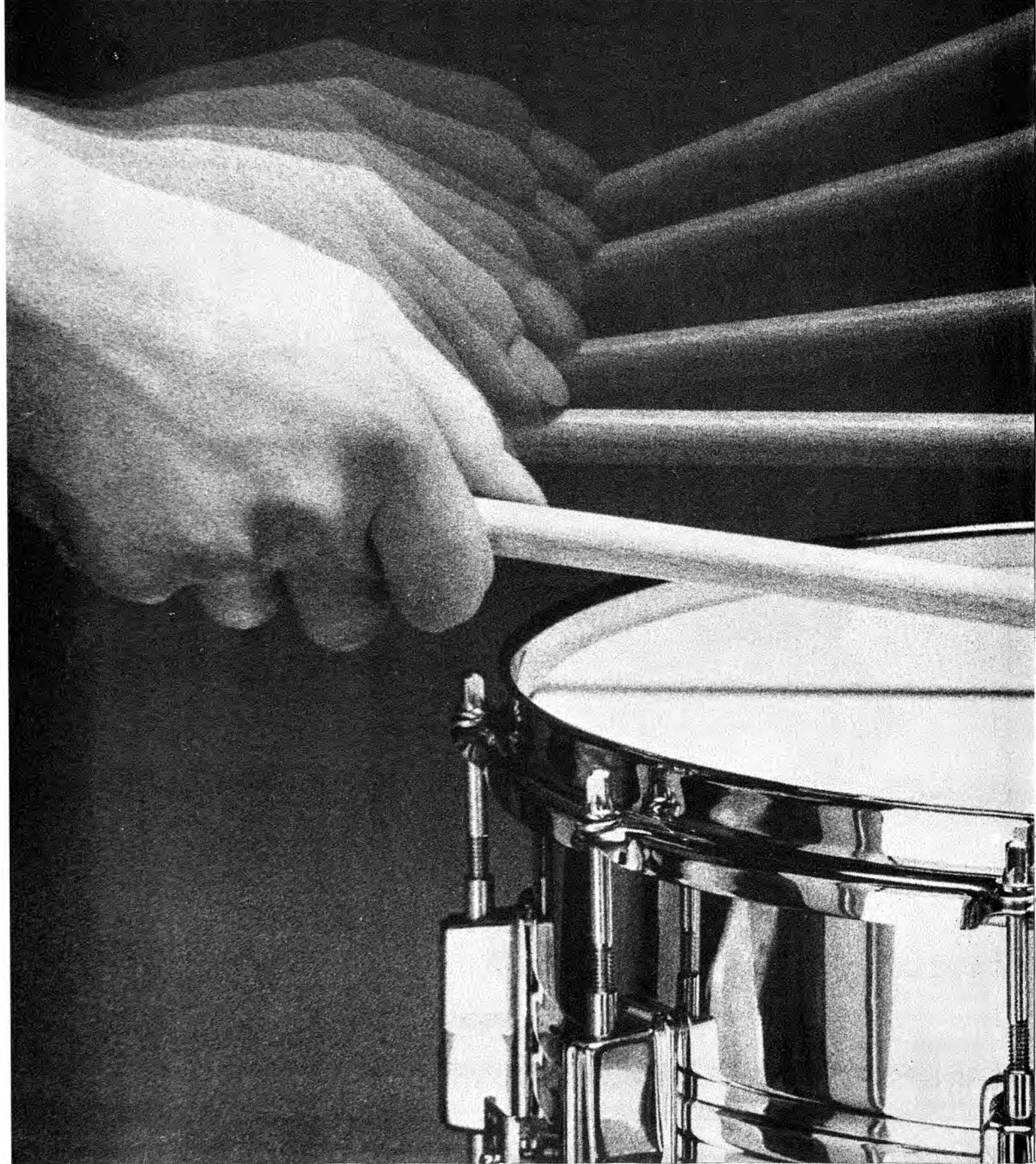


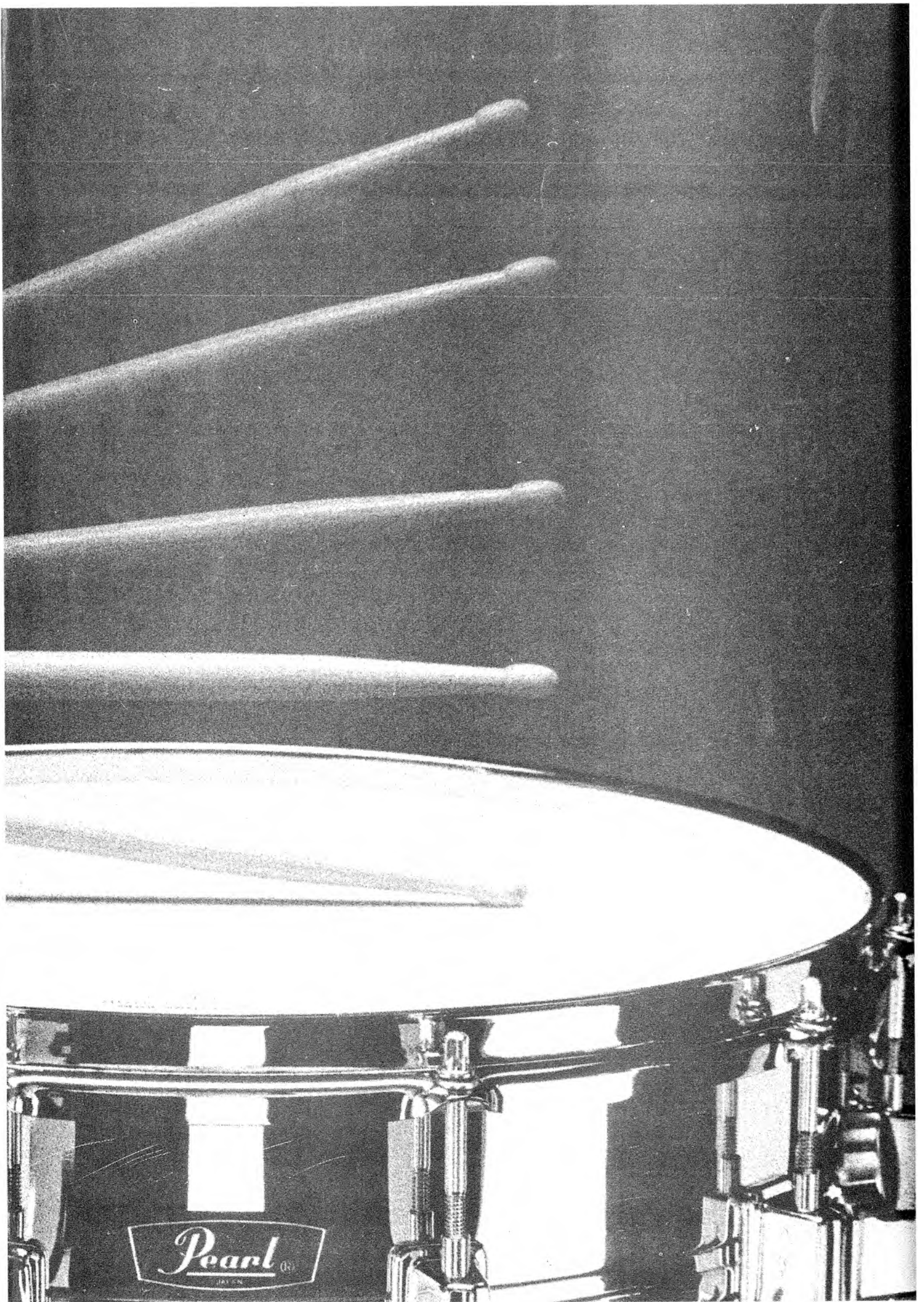
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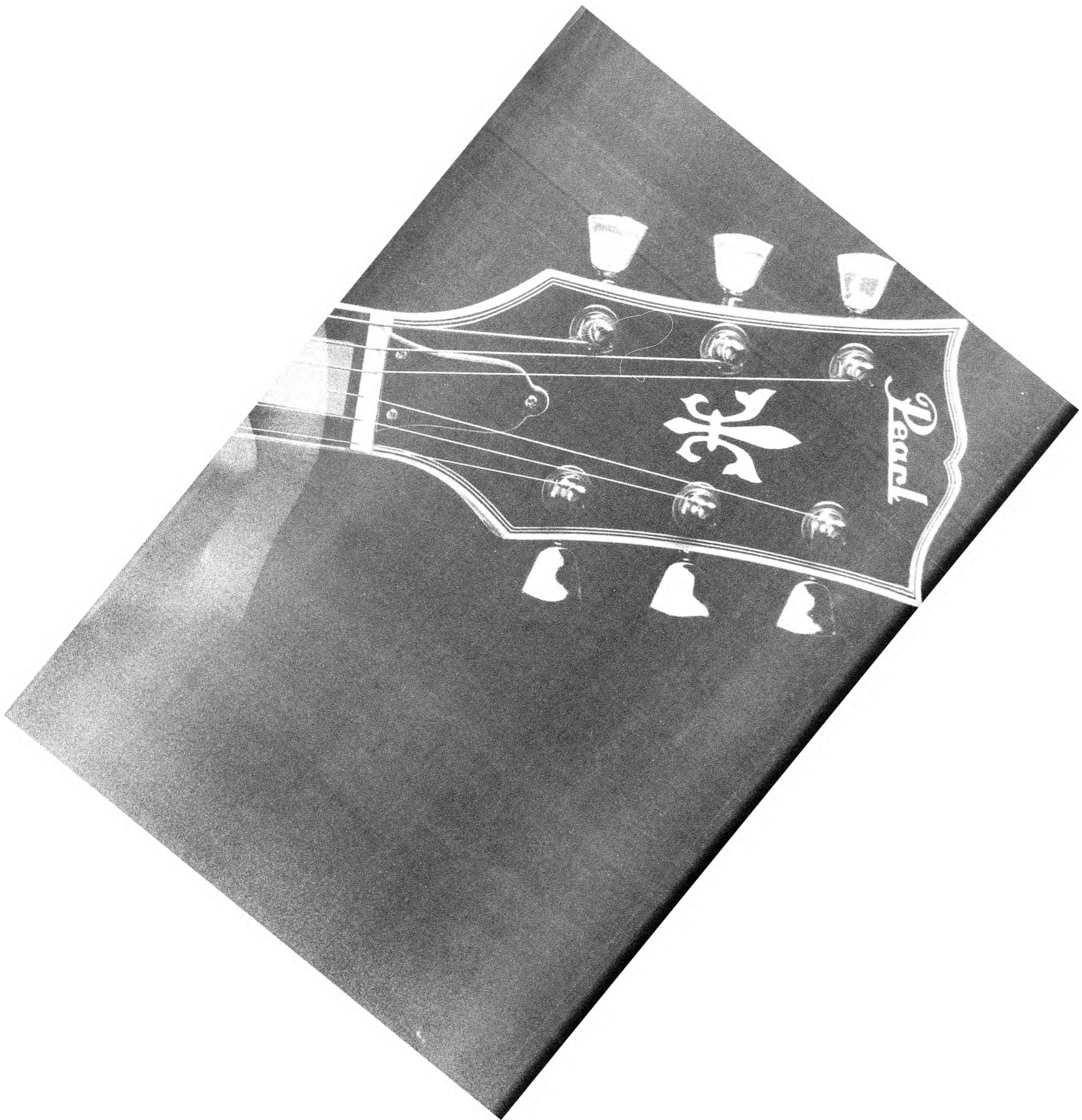
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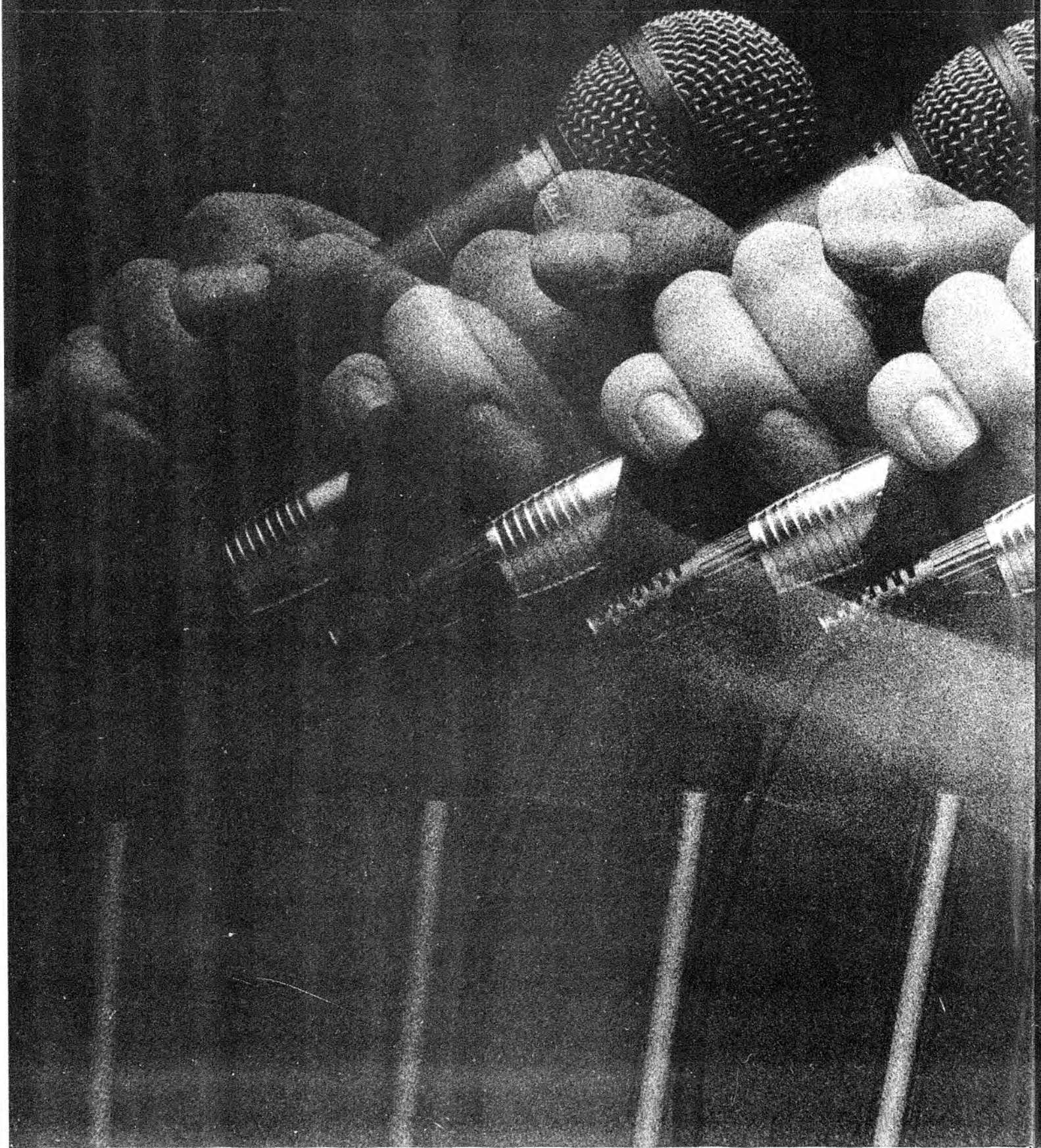


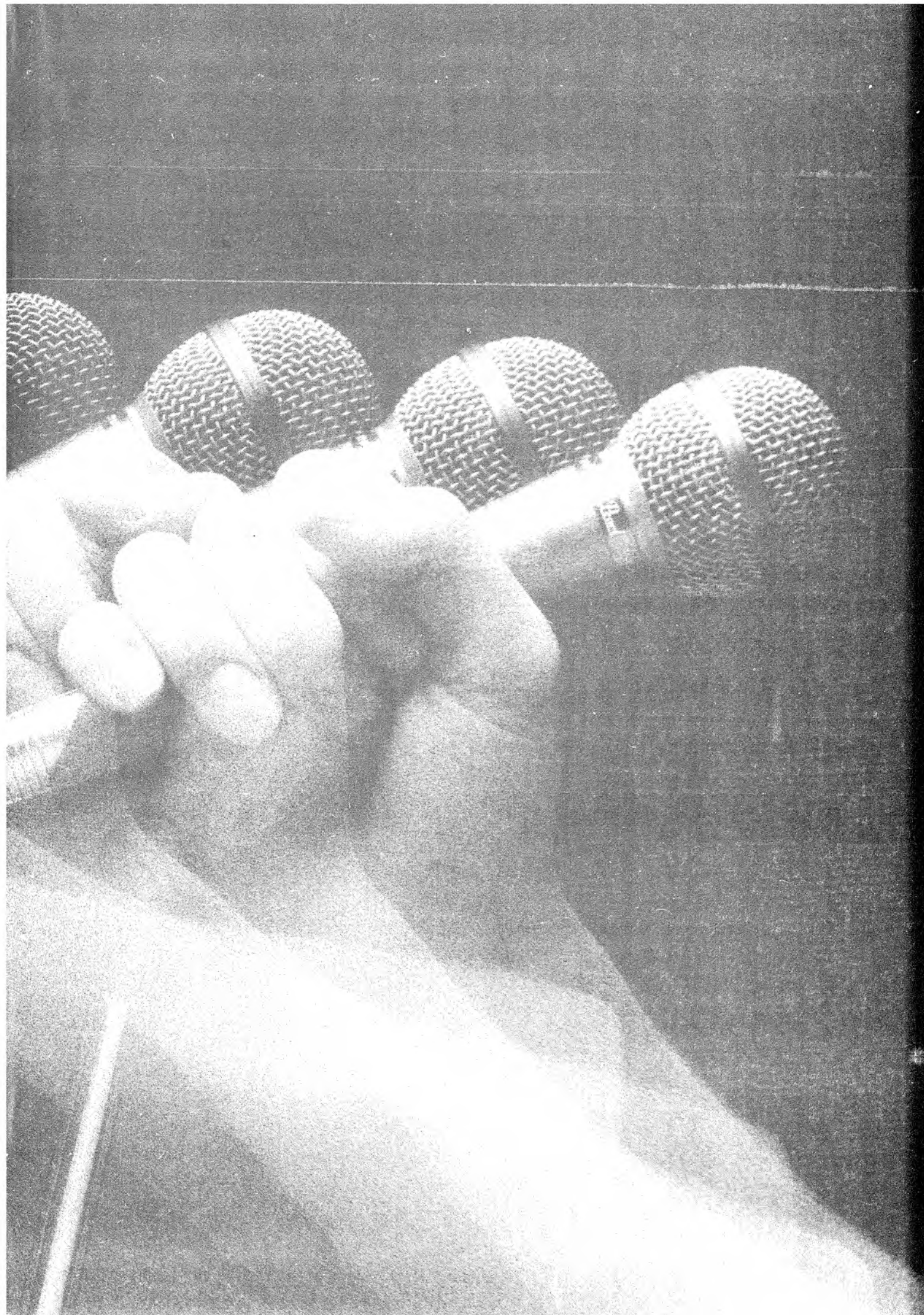
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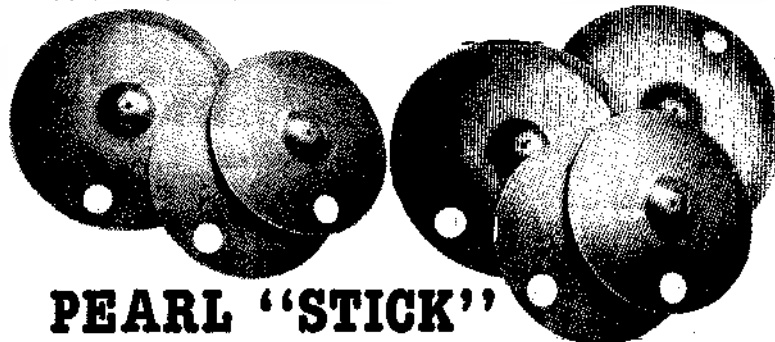
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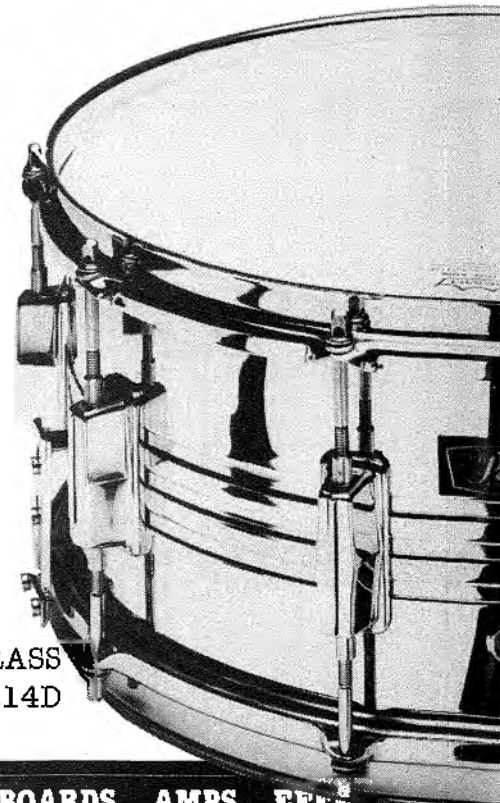
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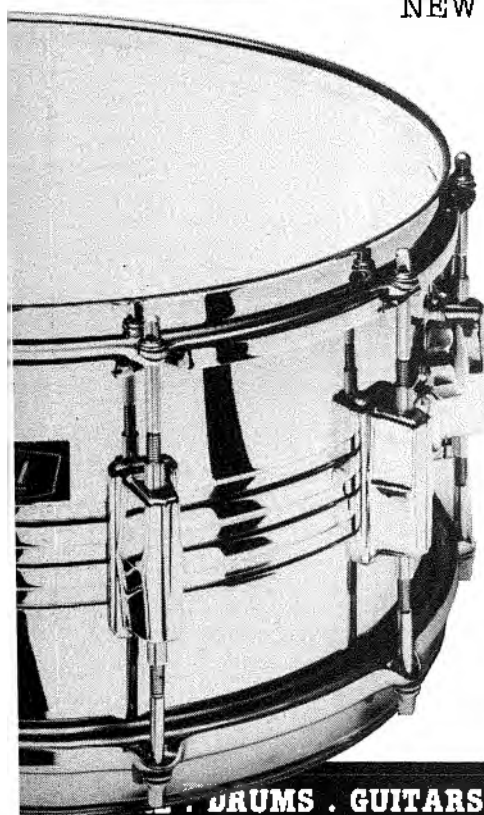
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The Hubbard Love Connection

**Steve Brennan
analyses the
latest jazz giant
to cross-over
to fusion**

Freddie Hubbard is the kind of name that gets mentioned in the same breath as Miles Davis, Louis Armstrong, and Bix Beiderbecke. Freddie Hubbard is a virtuoso of the trumpet. He's paid his dues with John Coltrane, Eric Dolphy, Art Blakey, Max Roach, and Friedrich Gulda, and his considerable reputation still stands to a great extent on his ability to blow the most astounding hard bop that's ever issued from the bell of a Bb horn. Hubbard was in New York when Archie Shepp and Ornette Coleman arrived in town to give everybody headaches. He even explored the area of new music for a time before turning back to modern jazz because of his preference for form and structure.

In short, Freddie Hubbard is a jazz great. So it's disturbing to see him following a lot of other jazz greats into the "fusion" or "crossover" area, where soul and funk-out disco meshes with the talent and musical dexterity of Grade Triple A musicians, who would much rather be playing the music they love, but instead opt for a healthy bank account.

Freddie was in London recently to play a couple of gigs and promote his new record *The Love Connection*, a downmarket fusion LP expressing love between man and wife as its main theme. "You know," says Freddie as he lays back in the comfy lobby armchair at his hotel in West London, "In the States, if you don't play fusion music it's very difficult to keep a band working. A lot of guys who've elected to stay with hard core jazz music haven't been able to sustain themselves or their band."

To make sure that *The Love Connection* reaches a broader audience Freddie used top class crossover musicians

in the studio — Chick Corea, Stanley Clarke and Chester Thompson, to name a few. On arrangements and strings he's employed Claus Ogerman, currently enjoying a reputation in the States as one of the better arrangers to have around when cutting an album. His best known work has been for George Benson, but Freddie has made sure that Ogerman worked his way.

"I told him to write something serious for this album even though he's worked for cats like Benson," explains Freddie. "Because when I think of strings I think of something serious. So this album is full of beautiful music. It's a collection of standards and originals, and it's funky."

Freddie maintains that in order to reach more people he's elected to play popular music, he wants to reach an audience that isn't so well versed in jazz. Partly for the finances that that entails, but also to educate people, too. He wants to gently introduce his listeners to mainstream jazz.

"The music is so spread out now, nobody really knows what they want to play, or listen to. There are a lot of musicians who've never heard of Parker, Coltrane; and not so much of Miles Davis, either. So in order to reach and school these people you have to say, 'here's a little bit of what Coltrane used to play that people dug, I hope you like it'. And move on from there. But at the same time, I find it isn't soul satisfying to be playing strictly for a mass market all the time, although the latest record is for a wider audience."

Hubbard was brought up in Indianapolis, Indiana, a place famous for the great musician's it's produced. He began blowing the horn at school at 11 but soon became a face at the local jazz clubs where such luminaries as Jay Jay Johnson, Slide Hampton, Leroy Vinyagar and James Spaulding would perform.

"It was amazing," claims Hubbard. "There was this small town with only 300,000 people in it, producing all of these talented musicians. I think it was due to the fact that Indiana University had such an aware and active music department at the time. In addition, Indiana is famous for its brass, that's where they make all the instruments. And it was easy for me to play because my elder brother was a musician, though never a pro. It was a heavy jazz town. And when I went along to those clubs to watch the players I was amazed because these guys were creating something out of nothing. They had no books or sheet music in front of them. After studying for so long I thought, 'Where the hell do those ideas come from?' So as a result of this questioning I became involved in the creative side of music. Anybody can pick up a trumpet and blow it, but there has to be a degree of genuine creativity involved, too. And some people just haven't got it and some have. That was always my forte,



to blow creatively with a good tone and lots of technique. The trend in those days was just to blow until some promoter or record agent came along to take you to New York city."

It was in New York that Hubbard carved a name for himself. He didn't create anything new, but became known for his flawless bop playing, refining Be Bop until there was nothing more to be done with it. It was around this time, in the early Sixties, that he was playing with Art Blakey's Jazz Messengers, like so many other jazz musicians before and since. Blakey is to jazz what John Mayall or Alexis Korner was to rock and blues in Britain, inasmuch as they all take potential stars under their wing and usher them into a greater public arena.

"It seems in that period there was a lot of music being created in terms of black people becoming aware of themselves," says Hubbard. "People like Archie Shepp, Marion Brown, Ornette Coleman, Sunny Murray, guys who weren't very well versed in Western music, by which I mean the classics and the notation of classical music, and they guided themselves more with spirit and feeling. So this was a breakaway from the traditional styles of jazz. This was something new and avant garde. I think it was probably bad for jazz in the long run, because it turned a lot of people off the music, even though Ornette came to Europe and was sort of popular. But that didn't last too long."

"It was a good thing because it opened up people's ears. Especially musicians; who realised that there was more to do than just blow the trad stuff like old Louis had been doing for so long. When Ornette came to New York it was a trip."

"He gave people earache, he nearly got dragged off the stage once and beaten up. Yet, there were guys like Leonard Bernstein and Guntar Schuller endorsing this new sound, so government grants were forthcoming to sustain the music. I was curious about all this. And when guys

I respected like Eric Dolphy, who knows about form and structure, began to play freeform, then I thought that I'd have to check it out. I learned a lot about emotion, because that's the only content of the music. But I believe that, like anything else, music has to have a base, and a form."

So Hubbard ceased his toying with avant garde and got back to playing modern jazz. But still he liked what Don Cherry, Ornette's sideman on trumpet, was doing, although Freddie thinks that Don didn't contribute too much to raising the general level of trumpet playing. Freddie puts an enormous emphasis on a good tone, and a good, clean technique, and to his mind, that's exactly what Cherry lacked in those days.

Hubbard is now considerably older and wiser, hence his smart move into the lucrative section of the jazz/funk market. But this is merely a period of transition in a man whose career spans a slice of jazz history that has been so creative and rich musically. His career is by no means finished, however. His plans extend beyond his current excursion with the likes of Clarke, Thompson, and Corea. He's had a symphony written for him, which he intends to perform and record in the new year.

"I've played Be Bop, I've played mainstream, avant garde, fusion, and funk. Now I want people to hear a little of Hubbard playing some serious music. Playing solos all the time gets boring. So does travelling all the time and putting up with bad conditions. I want people to hear a little more of the straight musician in me." Hubbard blows a Caligula trumpet because it's the best horn he's ever played. There's something about the quick action that he likes: "I can play really fast and the trumpet can keep up with me. I've practiced and played for so long that I've ▶

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got to have a good instrument. I'm trying for a more acoustic sound at the moment, and I'm staying away as much as possible from all that Moog synthesizer stuff.

"Firstly, because when I've got a band on the road I want to take as little equipment with me as possible, because it's so expensive to transport. Secondly, too much amplification kills the natural sound of the trumpet. I prefer acoustic sounds. I tried a Barcus Berry trumpet attachment once, but it killed my tone completely. A lot of bands think that volume is music, but electricity isn't music in my opinion. I say if you can play, concentrate on that. So many musicians can't, they just use electrical equipment to create a sound, and fool people into thinking it's as beautiful as somebody who practices and plays and spends time on his music. After I've spent so long studying and practicing I can't bear the thought of destroying my natural music."

This attitude isn't surprising when you consider that Hubbard's formative years were spent in an era that didn't have the advanced electronics of today, when players still relied on filling a gig with sheer music rather than watts. Freddie admits that his favourite players then were Stanley Turrentine and McCoy Tyner. Herbie Hancock is also a firm favourite. But Hubbard's tastes can go beyond the borders of jazz.

Dave Mason, the laid back British

West Coast soft rock specialist, is an unlikely enough person for Hubbard to be collaborating with. But after a gig in Malibu recently, Freddie was approached by Mason who confessed that Hubbard's playing had inspired him to write a song. This made Freddie take a listen to what the guy was playing, and he came away impressed because, even though Mason doesn't play anything remotely resembling jazz, he was convinced that Mason was communicating something, that he had something to say. And that's what Hubbard respects most of all.

"It's got to the point that me and Mason are gonna write a song together," says the trumpeter. "I think I can work with that cat. Strictly on a 50/50 basis, you understand."

"I played on some of Billy Joel's stuff a while ago, but I wouldn't be tempted to work with him at all. I did the record date because I knew that Joel is a top pop player, and that if I played some on his songs then I might get some commercial interest in myself. But playing with someone like that on a steady basis I wouldn't consider, because it would negate my creativity."

Recently Freddie was approached by a South African promoter from Johannesburg, who wanted him to go to SA and play in front of an audience that consisted of only 33 1/3 per cent blacks: "But how could I do that? How could I go to a racist country and play in front of a segregated audience? What do I say to the blacks out

there who ask me why I'm catering to the white man's tastes? Do I tell them I'm doing it for the money? I couldn't do it."

But still, he admits that in the States his audiences are predominantly white, because the black audience is still heavily into soul — Wilson Pickett, James Brown, Otis Redding and that stuff. He says that the whites have been educated to the point where they don't need to have their emotions projected into them, like with soul, but can listen and think and appreciate the music he plays. At a recent teaching job he had at Harvard, Freddie discovered that the Dean of the college knew more about jazz than he did. Which he found shocking.

But black people over there are tending to do it more, now, he says. The level of education seems to be rising, in the jazz world at least.

Unfortunately, this time over Freddie wasn't backed by the musicians on his album. But the performances were impressive for his sheer virtuosity. Watching Hubbard live confirms that he is a jazz great, the notes swarm from his trumpet, perfectly controlled and precise.

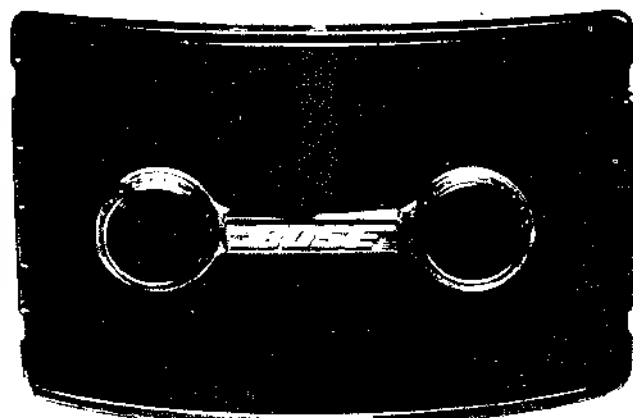
Asked what advice he could give to young trumpet players who want to play jazz, all he could say was: "I went to Miles Davis once and asked him how I should play and he told me: 'Whatever you do, don't play like me, I got enough problems earning a living.'"



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Types of Microphones (continued)

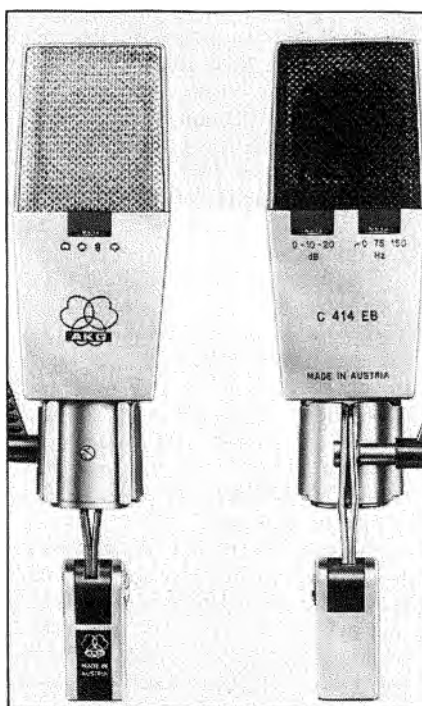
6. Condenser or Capacitor Microphones

As its name implies, the capacitor microphone employs nothing more than a specially designed capacitor as its voltage generating element. A capacitor consists of a pair of electrically conducting plates separated by a special insulator which is called the "dielectric". It is a characteristic of a capacitor that if it is connected across a DC voltage it will become charged — much like a battery. The amount of energy stored will depend upon several factors, including the area of the plates, the nature of the dielectric employed and the distance between the plates. In the capacitor microphone capsule, the capacitor is so arranged that sound waves incident on the upper plate cause it to move closer to or further from the fixed lower plate, thus changing the electrical charge stored by the capacitor and generating a voltage change that is varied in sympathy with the sound waves.

The signal voltage developed across the plates is so small and the source impedance so high that even the loading effects of a length of screened cable would be sufficient to "kill" the signal and so it is necessary that a pre-amplifier be built right into the casing of the microphone as close as possible to the capacitor capsule so that the output signal can be raised to a usable level and the output impedance reduced to a more manageable level. It follows that if the capacitor capsule must be charged up, then an energizing voltage will be required and in any event, a power supply will be necessary to power the built in pre-amplifier. Therefore, all capacitor microphones do require some form of external power supply.

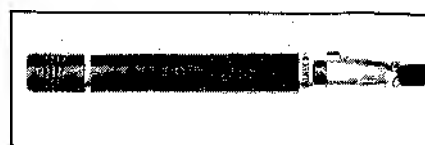
In the 1930's, the presence of the valve pre-amplifier within the microphone casing resulted in microphones of huge proportions (see last month's picture gallery) which required both "high tension" supplies — usually around 200 volts — as well as a "filament" supply of about 4 volts. The introduction of miniature valves did reduce the absurd size of these microphones to reasonable proportions, but these still required both HT and LT supplies. It was not until the introduction of the field effect transistor (FET) that the capacitor microphone as we know it today emerged, which can be powered from a single low voltage supply. With all this complexity of built-in pre-amplifiers, polarizing voltages and pre-amplifier power supplies, the question might well be raised — why bother in view of the excellent performance standards available from moving coil and ribbon microphones? The answer is twofold.

Firstly, that good quality dynamic mikes were not available to early broadcasters, and as the only high quality



microphones available were capacitor types, it made sense to develop these further. Secondly, good though the moving coil and ribbon types are, the capacitor is better from practically any consideration except that of cost — and this has been so, even back in the days when all capacitor mikes were full of valves. So, the capacitor microphone is at present the ruling champion for practically all studio applications, and as the products become more robust, they are rapidly gaining ground in live performance sound systems as well. They offer excellent frequency response characteristics, small physical size and light weight, relative freedom from handling noise and are virtually immune to variations in temperature and humidity.

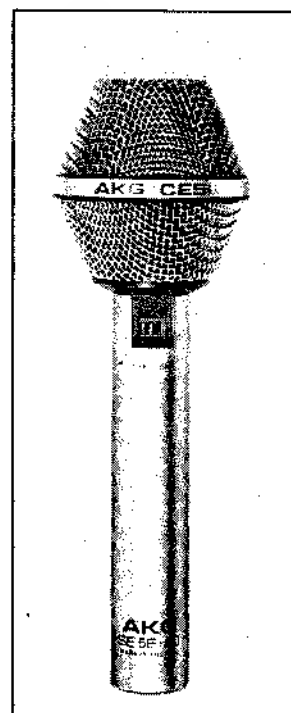
One other major advantage with the capacitor mike is that it can be designed so that the capsule is interchangeable. This means that by simply unscrewing the capsule and replacing it with another, the main body of the microphone which accommodates the pre-amplifier can be converted from say a flat response cardioid to an omni-directional, or a bass roll-off cardioid at will. Also, by the use of extension tubes, the capsule can be mounted at one end of a very slender boom arm, while the more bulky pre-amplifier casing and untidy cable is away out of sight near the floor. This facility is particularly useful for television work, as it permits the bulk of the microphone to be positioned "out of shot". Yet a further extension of capacitor microphone flexibility is that microphones can be designed with directional characteristics that can be changed by remote control. These are particularly useful for studio



work, and enables the engineer to change from say cardioid to figure-of-eight or to omni at the flick of a switch. This is achieved by the use of a multiple capacitor head assembly and using these either individually or in combination to achieve the desired polar response.

7. Electret Microphones

The electret is a more recent variation on the capacitor microphone theme. It works on exactly the same principles,



except that a special capacitor capsule is used which is given a once-and-for-all charge during manufacture which it then holds for its entire useful life. It therefore follows that a polarizing voltage is no longer required, and with modern solid state technology, the internal pre-amplifier can be powered by means of a small pen light cell which can conveniently be housed within the microphone casing along with the pre-amplifier itself, thereby eliminating the need of an external power supply source. Electrets do not as yet fully meet the performance capabilities of a standard capacitor mike, but are pretty good all the same, and tend at present to be used for less demanding applications such as domestic tape recording, semi-pro studio work, DJ's, local bands, industrial PA, studio talkback, etc.

Meet The Mike

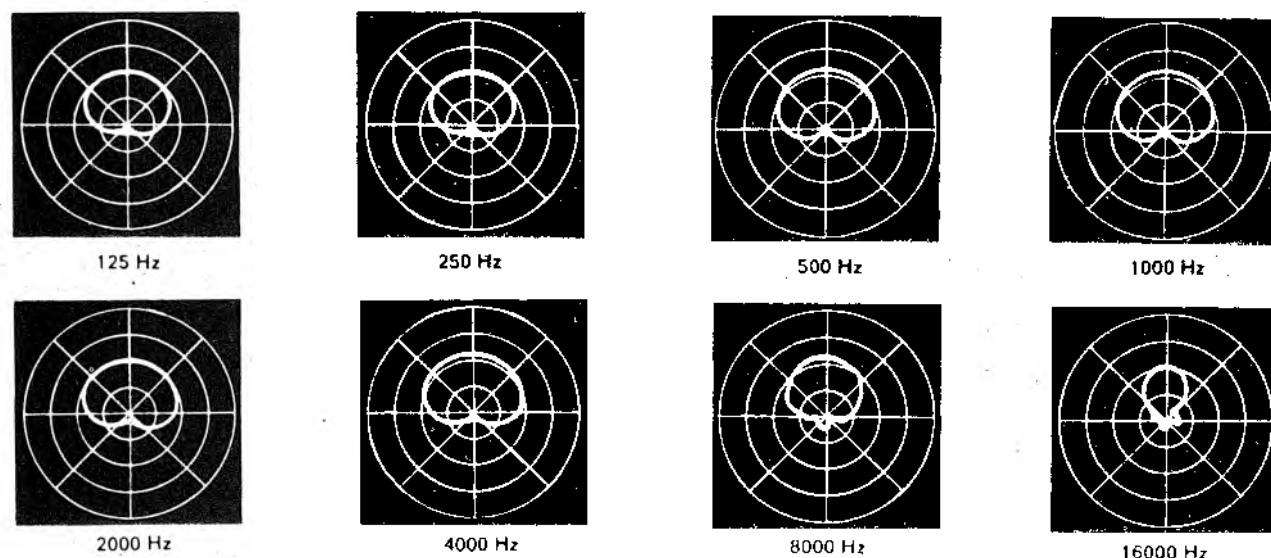


Fig. 6 Variation in cardioid directional characteristic with frequency.

Directional Characteristics

That just about completes our explanation of the more important basic types of microphone and should provide a reasonable idea of the basic principles on which these work. Now that the existence of the carbon, crystal and ceramic types has been made known, we shall not be considering these further but will concentrate mainly on the ribbon, moving coil and capacitor types as these are the microphones that are used in the music and recording industries. Try to keep clear in your mind the differences in terminology as applied to the different types of microphone as explained in part 2 in last month's issue.

We now move on to consider the directional characteristics. This is the factor that determines the sensitivity of the microphone to sounds arriving from different directions. This directional characteristic or polar pattern is usually indicated by a statement to give some indication of the general classification — omni, cardioid, etc. backed up by a circular graph to show the shape of the pickup pattern at various frequencies. It is important to remember that the pattern will vary at different frequencies. The curve drawn on the circular field shows the line of equal sensitivity at a given frequency. This does not mean that sound just cuts off outside this line, but the relative sensitivity is reduced. Figure 6 shows a set of idealised polar response plots of a typical moving coil cardioid microphone at various frequencies to illustrate the extent of the change in directional characteristic with frequency. A moving coil or capacitor element simply mounted in a case will naturally give an omnidirectional characteristic, while a ribbon will produce a bidirectional characteristic. In order to produce any of the unidirectional characteristics, it is

necessary to 'tune' the cavity behind the diaphragm in much the same way as one might tune the reflex port of a loudspeaker system. This tuning is achieved by various means, but always by venting to the rear of the capsule. In the more simple designs, a small vent is all that is used, whereas for a more sophisticated microphone, offering a more uniform directional characteristic and to minimise the changes with frequency, or to obtain some special directional characteristic, the vent will be further tuned by means of acoustic resistances, folded horns, transmission lines, etc. in the loudspeaker enclosure. Have you ever noticed that when you hold a mike with your hand wrapped around the head close to the top grille, it sometimes starts to feedback? This is because your hand is then blocking up these tuning vents and the microphone is reverting to its natural state i.e. omnidirectional. Some microphones — mainly the very high quality studio capacitor types, are fitted with a switch which enables any desired directional characteristic to be selected at will to suit any type of application. This is usually achieved by using two or more capsules and switching these in various combinations and phase relationships to provide the required characteristic. There are only three basic types of directional characteristic and these are discussed in the following paragraphs.

1. Omnidirectional

As the name implies, omnidirectional microphones are, in theory at least, equally sensitive to sounds arriving from any direction and a typical polar response plot is given in Fig. 7. Because of this, they are particularly prone to feedback problems when used for PA, but are very useful indeed in broadcasting and studio applications where it is desired to provide coverage of a large number of musicians or a group of persons speaking with a single microphone. Most domestic tape recorder microphones are omnidirectional crystal,

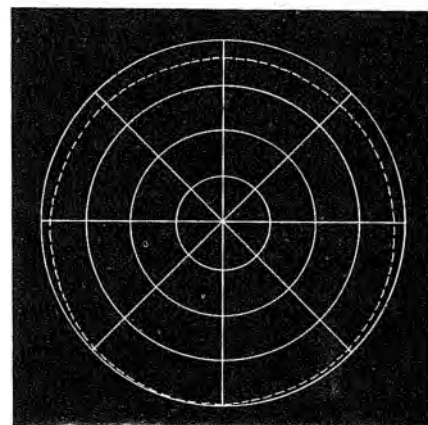


Fig. 7 Typical omnidirectional polar response.

dynamic or electret types, but professionally, high quality omnis are available in moving coil, capacitor or electret types.

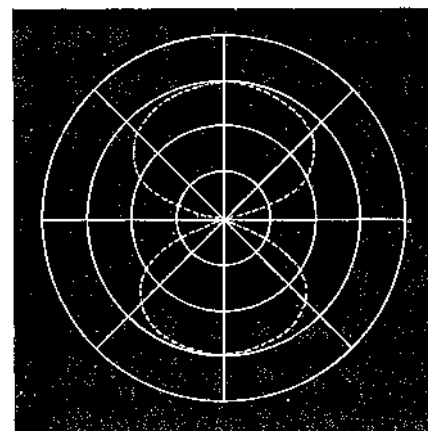


Fig. 8 Typical bidirectional polar response.

2. Bidirectional or Figure-of-Eight

Unless it is specially designed to be otherwise, a ribbon microphone will naturally offer a figure-of-eight polar pattern due to the nature of its construction (See Fig. 4). It follows that the areas

to the front and rear of the ribbon will be sensitive while to either side or to the top or bottom will not. Figure 8 shows the polar response for a bidirectional characteristic. It was this directional characteristic — which is generally fairly uniform with frequency, that was responsible for the ribbon microphone's popularity as a studio mike in the early days of broadcasting, as all the dynamic mikes of the time were omnidirectional at low and mid frequencies, but became increasingly directional as frequency increased. The old Reslo 'Hammerhead' mike, which was the standard band PA mike in the UK in the early sixties was a ribbon type, although this particular model was designed to offer a unidirectional characteristic. The bidirectional response can also be obtained by using two moving coil microphone capsules back-to-back and it is a particularly useful pattern where two sound sources are required to be picked up simultaneously — interviews across a table for example, or two vocalists singing in harmony. Feedback suppression is generally good due to the low sensitivity to sounds arriving from the sides, from above, or from below.

3. Unidirectional

This is something of a misnomer, as it implies that the microphone is sensitive only to sounds arriving from one direction. Not so. A unidirectional microphone does, however, discriminate considerably against sound arriving from the rear, and to a lesser extent against sounds arriving from the sides. There are several types of unidirectional characteristics and these will be considered separately in the following paragraphs.

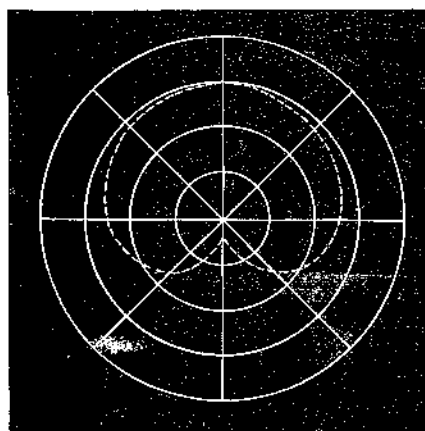


Fig. 9 Typical cardioid polar response.

3.1 Cardioid

Most unidirectional microphones are of the cardioid variety and a typical polar pattern is shown in Fig. 9. This characteristic can be better imagined in its three-dimensional aspect by pushing the head of a microphone into the neck of an inflated balloon. The resulting distorted shape of the balloon will give a fairly accurate representation of the sensitivity

area of a cardioid mike. To a greater or lesser degree, depending upon the effectiveness of the particular design, the shape can also be described as heart shaped, and this of course is the derivation of the name cardioid. This type of microphone has found almost universal favour among musicians for a number of very good reasons. Firstly, the rejection of sounds arriving from the rear almost eliminates unwanted noise from the audience and also makes the microphone insensitive to the output energy from its own loudspeaker system, thereby considerably reducing the effects of feedback. Secondly, the reduced sensitivity from the sides gives reasonably good separation between microphones, and by close miking, a good ratio of wanted to unwanted sound can be obtained. We will get back to this particular area of discussion later in the series when we discuss microphone applications.

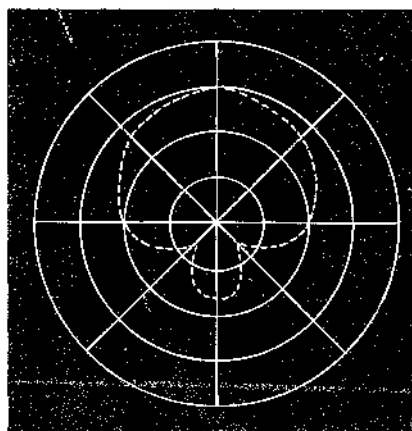


Fig. 10 Typical supercardioid polar response.

3.2 Supercardioid

As its name implies, this is a variation on the basic cardioid pattern to provide a tighter pickup pattern to the front of the microphone, with improved discrimination against sounds arriving from the sides. In so doing, however, it is usual for a small lobe of sensitivity to appear right at the tail end of the microphone, but this is usually so small that it does not present any problems in most practical situations. Figure 10 shows a typical supercardioid directional characteristic. For close miking applications, this type of microphone can be very useful indeed as even better feedback suppression and a better wanted to unwanted ratio can be obtained in certain situations. Prevailing acoustic conditions and specific application will have a considerable influence on the actual performance of these various directional characteristics and these aspects will be covered later on.

3.3 Hypercardioid

Due to the physical appearance of most hypercardioid microphones, coupled with their particularly narrow pickup angle, this type is usually termed a Shotgun or Rifle mike. These are the long

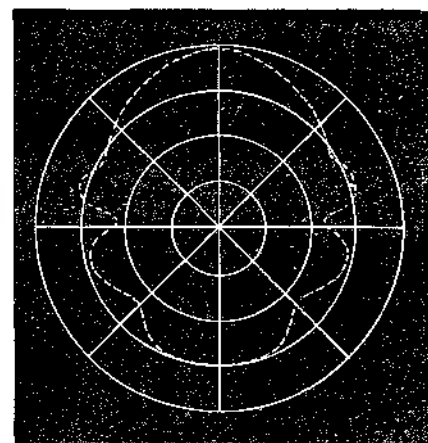


Fig. 11 Typical hypercardioid polar response.

tubular types of microphone that you sometimes see dropping into the top of your television picture when the boom operator swings too low into shot, or the cameraman shoots too high. A very sharp forward sensitivity area makes this type of microphone very useful for picking up specific sounds from a distance and is used mainly for news gathering, for television audience participation shows, for out-of-shot miking of a stage and for some theatre sound reinforcement systems. They are rarely used in the music business or in studios. Figure 11 shows a typical hypercardioid pattern, but this will vary widely between different types of microphone. Shotgun mikes are invariably of the capacitor variety, although there are a few moving coil types to be found.

We have now covered microphone terminology, the basic types of microphone available and the various directional characteristics. Next month we shall consider the electrical aspects like impedance and balanced or unbalanced lines.

Ken Dibble

Diagrams taken from "Microphones — How They Work and How To Use Them" by Martin Clifford.



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Gig Review

In this new series, we shall be taking a 'soundman's eye view' look at some of the more interesting acts on the road and reporting on the technical aspects of the concerts rather than the actual performance in musical terms. The idea is that I attend concerts at a variety of different venues armed with my sound level meter, meet the sound crew, take a look back stage, etc. and report on who is using what gear where, who the P.A. hire company is, whose equipment they use and how it is set up, who the mixing engineers are, how loud the sound is, and more importantly, what the sound quality is like. We kick off this month with two completely different bands playing in similar types of venue. First comes John Williams' new band, Sky, at the Dominion theatre, London and Boomtown Rats at Birmingham Odeon.

SKY

Venue: London Dominion Theatre
Hire Company: Righire, London.

Sky are not a loud band by modern day standards, but due to the semi-classical nature of much of their repertoire and the large number of acoustic instruments used, sound quality is obviously the overriding factor. This was indeed provided by the 6kW Malcolm Hill sound system which, in the hands of Righire's Andrew Jones, was able to maintain a comfortable sound pressure level of 100dB(A) without audible stress in this 3000 seater auditorium. This was quite loud enough to bring Sky's unique style of playing to life, and in fact, 100 plus decibels of amplified harpsichord at good quality was quite mindblowing. The peak levels measured were about 104dB(A), but at these levels there was definite evidence of harshness, if not actual distortion



indicating to me that the system was nearing its maximum volume capability. Sound quality was good and smooth, free from obvious peaks, and with even distribution over the entire theatre. The Malcolm Hill system is different in many respects from the more frequently used PA's and it might be of interest to look more closely at its composition.

Two fairly large speaker stacks were positioned one to each side of the proscenium arch. Each stack consisted of six Hill 2 x 12 direct radiator folded horn bass bins, each fitted with the special long coil versions of the ATC PA75 12" units, six smallish Fibreglass horns driven by ATC 9" midrange drivers and six rather unusual high frequency cabinets each fitted with four CTS 5" cone loudspeakers and one JBL 075 bullet. Crossover was three way active, with passive filters on the JBL bullets. The total absence of any big radials and compression drive units tended to produce a rather more smooth sound characteristic than is normally found with a largish PA rig, and while I cannot really see this arrangement being suitable for one of the noisier bands (Rats for example as in the following report), it worked very well indeed for Sky. The bass bins were powered by three Malcolm Hill 602 power amplifiers, the midrange horns by three Hill 203's and the HF cabinets by a further three 203's. Room equalisation was provided by two PA:CE 271/31 band 1/3 octave graphics and no auxilliary

equipment for effects was used at all — not even an echo or reverb unit. The main desk was a very large Malcolm Hill 30/8/2 which had been split into two sections by Righire as in its original form, the desk was too large and heavy for convenient handling on the road. One particularly interesting item was Righire's own active stage box/splitter unit. This consists of a 30 way stage box — all XLR as might be expected, with the desk feeds duplicated on multiways, with a mike-to-line amplifier and electronic three way splitting on all channels. This means that the mikes are fed down the multiways at OdBm line level instead of at mike level, with a considerable improvement in signal-to-noise ratio and almost total immunity to radiated interference from taxi radio apparatus, thyristor lighting equipment, etc. The three way split is to feed the main PA desk, the monitor desk and a broadcast or recording mixer. All 30 channels are fully isolated and all inputs and outputs are balanced. A very nice arrangement indeed and one which should overcome many problems.

Both John Williams and Kevin Peck used Ovation acoustic guitars which were amplified from the built-in pickups by Marshall 100W amps and Marshall 4 x 12 cabs, these being directly injected into the stage box. I must admit to some amazement over the very real 'classical' guitar sound that this combination produced in the hands of these two maestro's, although this was sometimes spoilt by the inability of the sound system to cope with a 'Rasqueardo' across all six strings without severe overloading and attendant distortion. Whether this was due to shortcomings with the Ovation pickup, the Marshall amplifier, the active stage box or the mixer input gain control being set too high, I cannot say. Kevin alternated between the Ovation and one of two electric guitars and John Williams was observed to pick up a Gibson RD electric now and again. Herbie Flowers used a Fender Precision with another Marshall amp and 4 x 12, but for some pieces, he used a miked up double bass. I was suprised to see Herbie not using his old Wallace 35 watt amplifier from which he has been inseparable for very many years — which must say something for the sound he gets out of the Marshall I suppose. Hitherto, he has been adamant



that only the old Wallace will produce the sound he wants. Again, the Marshall was drilled into the stage box and Bobbie's many brilliant bar breaks were handled very well indeed by the 12 Hill 2 x 12 bins. The obvious ability of these musicians and the way they used the various instruments available produced a fascinating evening's entertainment, and not once was this marred by any hint of feedback or by a single missed cue.

In fact, Andrew Jones did a fine job at the 32-channel desk under supervision from Sky's producer, Tony Clark. Of particular note was the stereo panning in evidence during one particular number which featured Tristan Fry in a particularly energetic performance on the timpani and other percussion. Most effective.

Another noticeable plus was the almost total absence of any system noise over the P.A. By listening *hard* I could just detect a slight amount of hissing and buzzing between numbers but I doubt very much if any of the audience would have noticed anything at all. A separate Malcolm Hill 10 into 6 monitor desk on stage was used to feed about five floor monitors and three side-fill columns, the floor monitors were 1 x 12 with three 5" cone fill units, and the side-fills were Court Acoustics/JBL Colinear Array columns, the whole lot again being powered by Hill power amps.

In my opinion, this concert was altogether most professionally presented and everyone involved really seemed to have got it together. The band were exceptional — as might be expected from the acknowledged musical competence of each member individually. Lighting — by "Gaslight" under the direction of Nick Fisher, was most effective and the sound fully complemented the music.

BOOMTOWN RATS

Venue: *Birmingham Odeon*
Hire Company: *Texserv, London and Birmingham*

The Rats are loud, raucous and exciting and Bob Geldof is concerned that his vocals can be projected over the top of a noisy band and a capacity audience of shouting, screaming and footstamping fans. Texserv's PA is based for the large part on Cerwin Vega equipment and even if the sound was a little on the harsh side at times, it certainly achieved good vocal projection and plenty of guts. In fact, Robbie McGrath, the Rats' tour manager and sound engineer, was heard to observe that this was the best PA they had yet used while we were talking backstage after the gig — which can be a bad recommendation.

There were four loudspeaker stacks, one large one on each side of the stage apron and two smaller ones flown overhead to provide reinforcement for the side fills. Each of the main stacks consisted of two massive Cerwin Vega 2 x 18 folded horn bass bins, two 18" and two 2 x 12" lower midrange cabinets — all Cerwin Vega — a total of eight Cerwin Vega radial horns — some with single compression drivers and some with twin drivers handling the upper mids while 28 piezo-electric tweeters per

stack provided the high frequency coverage. To each stack was added a further huge square horn fitted with four Cerwin Vega compression drive units. To sum up, there were six 18" cone loudspeakers, four 12" loudspeakers, nine horns driven by fourteen compression drive units and 28 piezo tweeters per side! Some stack! The flown systems consisted of a single Cerwin Vega 2 x 18 bin, two 2 x 12 and four twin-driver radial horns for the mids and twelve piezos for the highs per side. The various amplifier racks were housed between them — 24 Cerwin Vega A/1800 power amplifiers, two A/3000's and four BGW 750's.

The desk was a fairly modest Soundcraft Series II 24 into 4 into 2 item and the Soundcraft EX4S crossover was used with a pair of Klark Teknik DN22 graphics. All four auxiliary sends provided on the Soundcraft desk were employed to feed an Eventide harmonizer, a Roland RE-301 Space Echo, an Ibanez analogue delay unit and a Texserv home brewed flanger. In addition to these, an Audio & Design Vocal Stresser unit was used on Bob Geldof's vocal channel only and a Pioneer Dolby cassette deck was used to provide interval music. All these auxiliary items were neatly housed in 19" racks alongside the desk and the power amplifiers were similarly housed in racks behind each loudspeaker stack. A very nice Gelf 16 into 6 monitor desk was in use on stage feeding a variety of wedge monitors fitted with JBL K140 15" units and Cerwin Vega horns and compression drive units powered by Cerwin Vega A1800 amps.

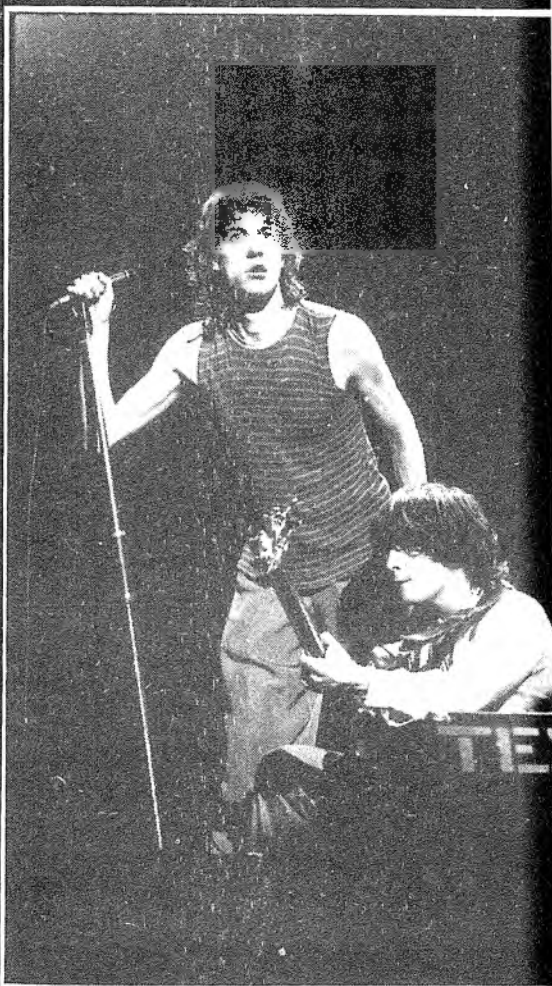
On stage, Rats keyboards man, Johnny Fingers, was using one of the new HH MOS-FET V-800 amplifiers and HH loudspeakers, guitarists Gerry Gott and Gary Roberts were using Custom Sound and Burman amplification and bassman Pete Briquette was also playing through Customs. Simon Crow's drum kit was Tama.

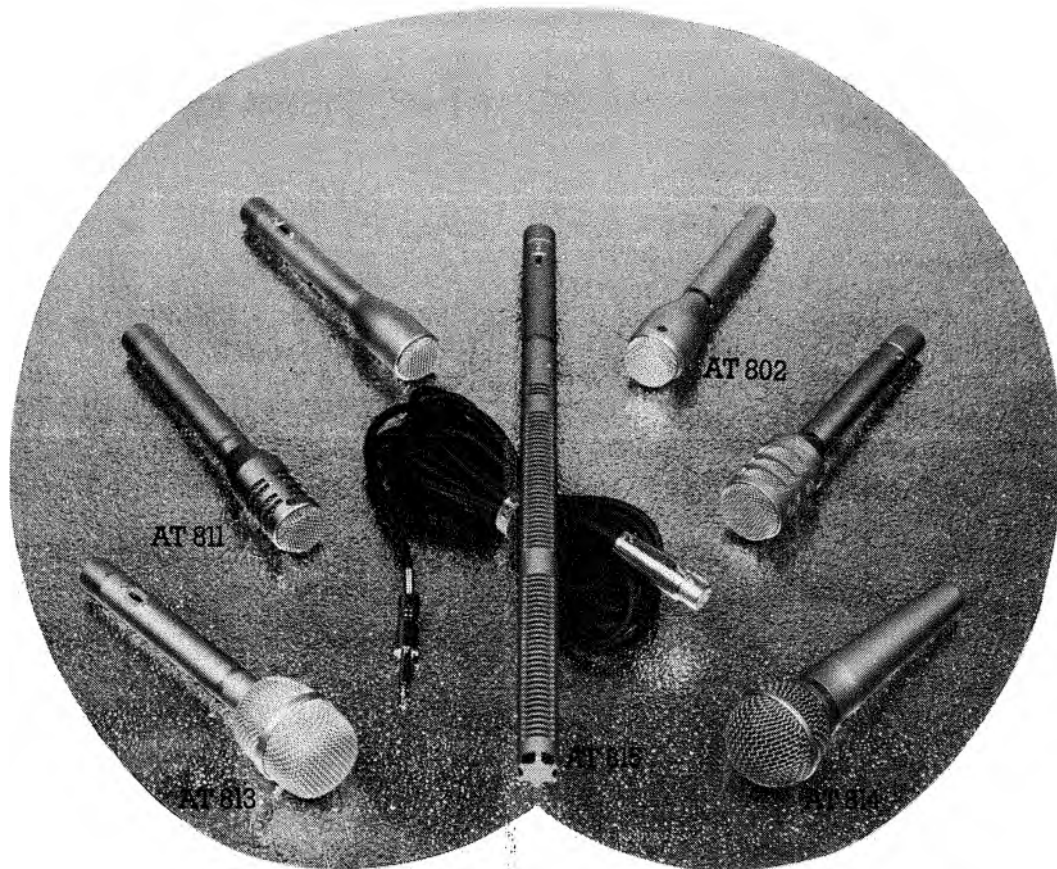
The Rats performance was electric right from the word go and Geldof immediately established an incredible rapport with the audience and had them dancing in the isles in their hundreds — much to the dismay of the theatre management and security guards. The sound system coped very well indeed in the cool and very capable hands of Rats' own soundman Robbie McGrath — while Bob Doyle of Texserv stood by with a watchful eye on the VU meters and overload LED's to ensure that the VU's did not hit the endstops too frequently and that the LED's were at least extinguished occasionally! During "Clockwork", the sound pressure level varied between 106dB(A) and 110dB(A), while for "Rat Trap" the SPL did not drop below 112dB(A) and peaked at 116dB(A) — at which level, the VU's were hard against the stops, all the overload LED's were on and the whole sound system was audibly under stress. The vocal stresser used on Bob Geldof's vocals certainly worked very well indeed and even at the highest sound pressure levels the vocals could still be discerned — if somewhat on the harsh side due to the lack of headroom on the

system. Although lighting is not to be a major part of these reports, I consider that "Supermic" did such a fantastic job that it warrants a brief description.

The backdrop to the stage setting was formed by a huge scaffolding frame made up like a "naughts and crosses" board. It literally covered the whole of the back wall of the stage from the floor up. In each section was a naught and a cross made up of high intensity white tubes which remained invisible until lit. Also, in zig-zag patterns across the framework were coloured striplights arranged to simulate lightning. This rig, in conjunction with the usual banks of spotlights on overhead trusses combined to produce some amazing effects, including vivid lightning flashes across the stage, naughts and crosses in almost every conceivable configuration — sometimes static, sometimes alternating in time with the music. The contrast between the dazzling whiteness of the naughts and crosses and the multi-coloured lightning flashes and coloured spotlights really was most effective, and was used with discretion and in so many different combinations that the audience were never given the opportunity of becoming accustomed to any one effect and for the whole show it never lost any of its impact. There always seemed to be yet another trick to pull out of the bag each time the music reached another high. Full marks indeed.

Ken Dibble





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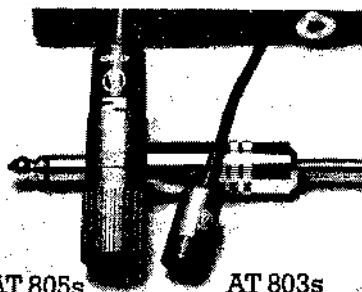
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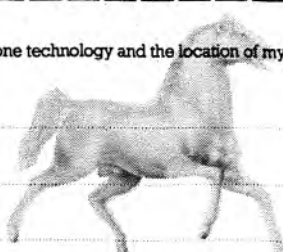
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HI-FI FOR MUSOS

James McGill

Still on the train of things you can buy for a song, this month's continuation on the subject of ancillary equipment and accessories rounds up a few more of those small things you just cannot afford to be without — or else you know someone who can't. Among the costlier items a section is included on a few inexpensive small "bookshelf" speakers which manage to offer more than most where space is at a premium. In many instances a speaker of basically low colouration on a shelf with a few books around it to help the bass along, will provide a clean unfussy sound which should not break the bank. On the practical side, some junction boxes and tape/disc storage systems of simple cost-effectiveness may be of interest, along with a roundup of some headphones for private listening. Unattended recording off the air is a small luxury suggested by some mains timers which should also be capable of providing a variety of other comforts. Lastly in this category three examples of "fast" speaker cable and pickup cartridge load equalizers follow up last month's suggestion on simple means of 'tuning' a system for subtler improvements.

Your attitude towards the record quality will depend on how much a musician you are when you listen rather than play. It will, of course, also depend on how hot your hi-fi system is in the first place. Maintaining your records as described last month or even treating your discs with the excellent Permostat record preservative is one way of making the best of commercial recordings as they exist. The amount of life dormant and often untapped in the vinyl groove, has amply been demonstrated with the "specialist" discs which have been bought by enthusiasts for some years. Here a lot of care has been taken at the recording, mastering, pressing and other stages with the idea of reproducing real instruments played by artistic souls like yourselves. Direct-cut discs, digital recordings, half-speed mastered "supercut" discs and such — if you can find some with music on them rather than the usual esoteric garbage for hi-fi freaks — can be an inspiring experience. At £8-15 each you are unlikely to buy or receive many.

With the true age of digital recording close upon us it is worth picking up a couple of these special discs just for reference.

Closer encounters

Rounding up on our headphone feature of October, a few models seem to commend themselves particularly to the sort of uses people in our line of country may have in mind. Generally speaking these are models also priced at around or under a figure of £35 — a good figure to aim for if you are looking for long term performance. To recap a little, headphones might be of the closed back type where an airtight seal around the ear cuts down on sound leaking in or out and also provides good bass performance. Open backed designs are generally more comfortable where an isolation from the immediate environment is not required. These are often lighter, designed more for hi-fi listening than for monitoring or other professional applications.

In the region of £20 four superb examples of value are the AKG K80, Audio Technica ATH 3, Sennheiser HD420 and Pioneer SE305. Common to all are the following details — they are relatively light around the head, allow adjustment for head height and around the ears for comfort, and are mechanically sound. Apart from the SE305, which is a closed-back type the sets are open-backed.

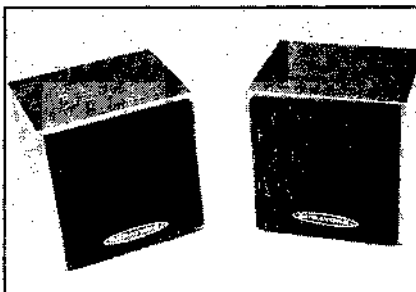
In the middle group at around £30 the Koss HV 2/A, B&* U70, Wharfedale ID2 and Beyer DT220/DT440 have a lot to offer. Out of these the Koss model, one of the original "high velocity" designs, offers a particularly impressive bass performance. The ID2 is a development out of the Leak Isodynamic of a few years ago and offers very low colouration even if it does take a fair amount of driving. The Beyer options include a closed back (DT220) and classic DT440.

At the top of the group the Stax SRX III electrostatic still takes a lot of beating. Like the Audio Technica ATH 7, also in this group, a separate energiser is used to power the sets from speaker outputs at the amplifier. The low mass of these

inherently low colouration diaphragms and their generally low distortion do (if the over-enhanced stereo effect is not a minus point), produce results only the very best loudspeakers could hope to match.

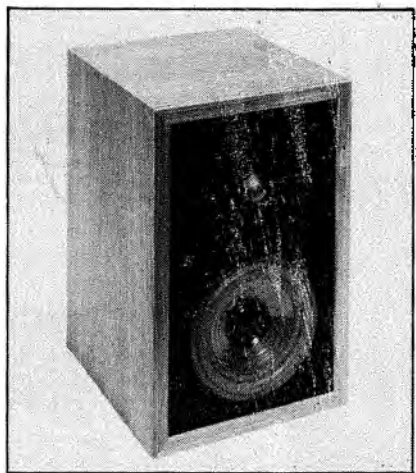
Musical bookends

Either side of the control desk of any Eastlake/Westlake studio an Auratone 5C Sound-Cube is there as a 'domestic reference' on which the tapes are balanced for the home playback of records. Many engineers now use the 5C in their homes. A single full-range doped paper cone, the 5C will put up to 40-50 watts to good use and while in no sense 'accurate' in the accepted hi-fi sense this can be superb on rock music. At a quoted price of £44.85 from Senic Sounds Equipment at 91-97 Dean Street, London, you could do a lot worse.

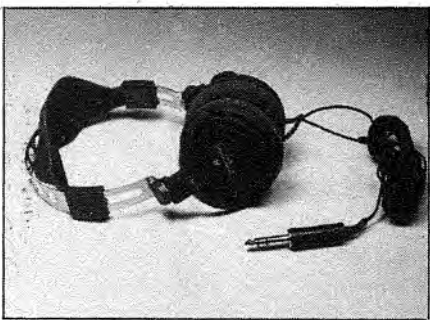


Auratone

The Videotone GB3 was developed out of their Minimax 2 which at £55 today is still very good news. A decent amount of power — 30 watts and more is required for best results and though the GB3 has apparent bass though it will accept a fair amount of bass boost without complaint. With this type of unit a clean midrange is half the battle won.



Tangent SPL1



Audio Technica ATH 3



Audio Technica ATH 7

At 11 inches high the Tangent SPL1 (£75) is no longer akin to car hi-fi brought home to roost. Like the GB3 the SPL1 is 'uncoloured' enough to appeal equally to someone whose tastes extend to symphonic and orchestral music.

At 15 inches high the Celestion Dition 121 and Castle Acoustics Richmond 2 are already beginning to outgrow the traditional bookshelf. The 121 is an unashamedly 'bassy' performer to match a 10-40 watt amplifier. The two unit Richmond offers a straight 98 decibels of

Build Your Own Guitar!

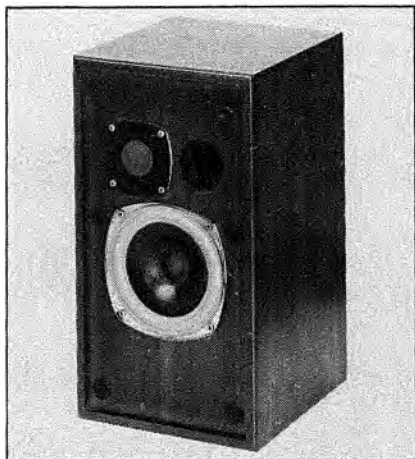
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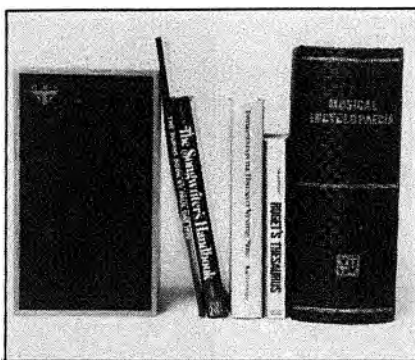


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HI-FI FOR MUSOS



Castle Richmond 11



clean acoustic output for as little as 10 watts in. A reflexed enclosure the Richmond 2 is designed as carefully as the SPL1 or GB3 but needs no help towards a healthy bass. IM's editors swear by these! Other examples of competent design among small speakers in the £35-80 area include the excellent Keesonic Kub, the Wharfedale Chevin XP2 and Denton XP2, Visonic David 302 and Leak 3020 or Goodmans Mini 2.

Ideally small speakers should be positioned at ear level on the shelf. Stacked among books and backed against a wall the stereo imaging suffers a little but the bass improves.

Fuba Swing S

A good aerial signal is as important to FM reception as a decent cartridge is to disc playback. A multi-element array on the roof with good quality downcable — air-spaced or semi air-spaced — allows the tuner to work at optimum and to discriminate effectively against interferences. Second best is an aerial in a loft if the costs of specialist installation or a safe access to the roof proves impossible. The Fuba Swing S is a possible way out for those with few options left as far as locations are concerned. An awful lot of us seem to live in flats, don't we?

The Swing S is an active indoor unit with an integral booster to step up the signal received at the aerial element. In appearance the unit comprises two clear acrylic 'wings', some 20 inches across, with a rotatable dial at the centre with which to tune in more precisely when the station required is a little weak. The single dipole is a strip of metallised foil running around

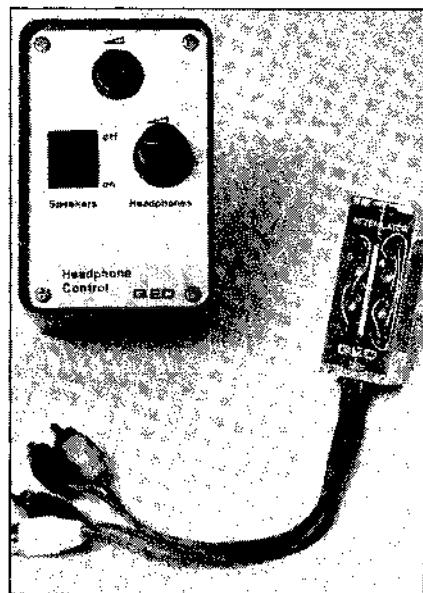
the edge of each wing. In use the Swing S seems useful only for local and mid distance reception — that is to say within, say, 25 miles of the transmitter in question. In a heavily built up area reception results can be unpredictable — under such circumstances it will therefore be important to check results in your actual home location prior to purchase.

The Swing S is available from Astra Aerials at 53 White Horse Road, Croydon CR0 23G.

TV Tuner

The sound component of a TV broadcast before it is degraded by the audio channels of a receiver is of as high a quality as FM radio. A television set with an output after the tuner section, can be connected to your hi-fi system for improved sound. On music particularly but even on drama when such fine detail as the rumble of trains/planes/automobiles or the rustling of clothes comes across, the difference is often welcome. Few TVs have such a facility and a separate UHF tuner can be very expensive.

The unit from Audio Electronics is a tuner similar to the type you would find in a television. Driven off a nine-volt battery all you need do — apart from putting it in a box if you so choose — is to connect the unit to the aerial socket of your FM tuner to receive a clean signal you can record if you so wish. The tuner may be set to a point on the dial where there is no FM transmission and its circuits will treat the signal like it does the regular FM reception. In a practical sense you might find it simplest to buy an aerial splitter unit for a few pence to allow the connection of both the converter and the television to your aerial. A second little box — a 'diplexer' for another few pence — means you need not connect or disconnect anything when you wish to switch from UHF reception to VHF stereo. The diplexer allows a connection of both the converter and your FM aerial to the one socket on the tuner. The converter is available from Audio Electronics at 301 Edgware Road, London W2 1BN and the cost is £6.50, plus 50p postage and packing.



Quite easily done

Once you start buying little boxes of things to add on to your system you may find you are one of those people who goes on adding little boxes. The QED range of accessories, in common with other ranges of similar description, includes a few rather frivolous items. QED devices are characteristically, however, quite well built. Their mains distribution units can be very useful if you have a number of components you wish to connect to a single wall outlet. Priced at £10.10 for a four socket unit and £13.34 for a six socket these use the new three-pin miniature six amp plugs approved in the new British safety standards. A range of interference suppressors, switching units and for tape decks and speakers, headphone controls and line attenuators complete their lineup of more useful accessories. The full brochure can be obtained from QED Audio Products Ltd., 112 Windmill Road, Sunbury-on-Thames, Middlesex TW16 7HD.

Less easily done

Last month's brief discussion on how a turntable mat is able to affect your disc sound may have taxed the credibility of those less steeped in the niceties of hi-fi reproduction. Well, whoever said there was a wealth of difference between one brand of guitar strings and another? Here are a few more little additions for the advanced courseman.

The sound of a pickup cartridge is affected by its loading by the amplifier — some cartridges are more sensitive to this effect than others. The sound of a magnetic cartridge might sound more shrill in the treble or a trifle recessive in the midband if the capacitance with which it is loaded is too low. The amplifier input will usually offer a loading of 80-150 picoFarads (pF), to which has to be added the pickup arm wiring and connecting cable to the amplifier — say another 50-150pF. The small print with most cartridges today will quote the loading at which the device gives its most flat frequency response — most are within the 250-450pF range though exact matching is rarely necessary. If you find your sound a trifle harsh/overbright/treble prominent and you are sure this is not a result of distortion it is worth examining the small print supplied with the amplifier and with your pickup to see if the addition of capacitance could help in taming a tendency to fierceness. The RTJ equalizers cost £6.35 post paid per pair and are simple plug-in devices available in 100, 220 and 330 pF capacitance values. These are available from RTJ Electromechanical Ltd., at P.O. Box 67, Barnet, Herts EN5 1LF. The equalizers are gold anodised to resist oxidation in the atmosphere with time.

In the same line of country the effects of cables on the finer qualities of a system's sound has received quite some attention in recent months among the hi-fi fraternity. Silver wires in the headshell, Litz wire connecting cables a la professional mike leads with gold plated

The new Celestion Ditton 332



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Specification:—

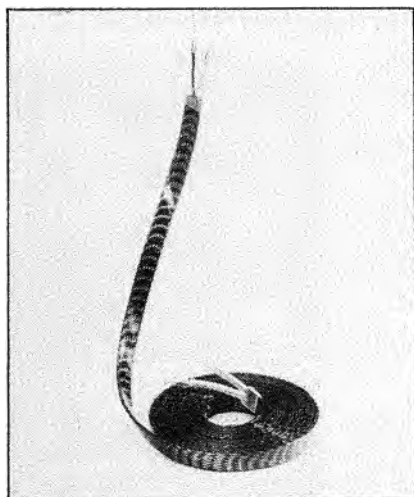
Dimensions: 650 x 356 x 285 mm **Amplifier Requirements:** 20 to 100 watts **Frequency Response:** 50 Hz to 20 kHz $\pm$ 3 dB, corrected into 2π steradians (half space) **Maximum Rated Power:** 100 watts programme **Sensitivity:** 2.8 watts pink noise for 90 dB at 1 metre on axis

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HI-FI FOR MUSOS



Monitor Audio Sound Cable

terminations, have each joined the ranks of basic necessity in getting that last ounce of "fi" out of the musical high. While these sort of nth value considerations are in most cases valid it takes not only an ear for detail but a disposition to make nth values crucial to that final enjoyment.

"Fast" speaker cable is a fairly sane concept to try to swallow. Current theory suggests that as the frequency of an electrical signal increases, the signal moves from using the whole diameter of the cable to travelling only along the skin of this conductor. It therefore follows that a cable with a great many fine strands will, all other things being equal, result in less high frequency losses. As the frequencies at which this 'skin' effect becomes marked is far above the range of human hearing the improved subjective definition conveyed with the use of superior cable calls for a deeper explanation than this. The purity of the conductors, the net impedance of the length of cable in relation to the speaker impedance at given frequencies and the manner in which the cable strands are displaced relative to one another — are points which weigh into an increasingly sophisticated dialogue.

If you must buy cable to connect your speakers to the amplifier you may as well use quality cable if your system is of high performance. At the small costs involved this plausible, and to some audible, piece of mumbo jumbo certainly does little harm. QED produce some very cost-effective 79 strand cable at 60p per metre and 42 strand at 30p. The Monitor Audio flat Sound Cable is priced at £15 for a pair at 3.6 metres (10ft) each. The cable, each strand individually insulated, is plaited to break up the fields a cable carrying electrical signal generates. Sony's RK5 is made of high purity Litz wire and is priced at around £24 for 5 metres. Each of these three are generally available from specialist hi-fi stores. And if you find £3, £15 or £24 a lot of money to pay for a couple of lengths of cable, maybe you ought to upgrade your hi-fi to make it all worthwhile.

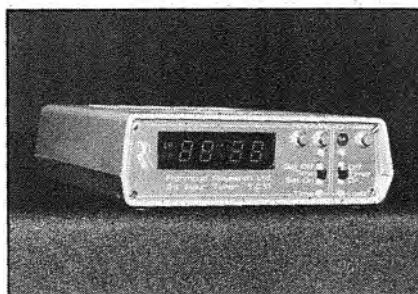
Time gentlemen please!

Mechanical timers such as used for central heating, hot water tanks or, like our two examples, produced for general home use by Smiths Industries and by Superswitch — will usually offer an accuracy out of a 24 hour setting of less than 15 minutes. A certain amount of 'backlash' in such mechanical systems is the reason, we are told, such devices more often find themselves looking after your electric blankets and getting your toast out on time while you are in the bath rather than switching your hi-fi on to record FM programmes for when you return. In practice you are not likely to set a timer to record a programme 24 hours before the event. The loss of a couple of minutes of your cassette time is therefore no great loss. An advantage with these mechanical timers is also that you are able to programme a sequence of on/off periods within a 24 hour period.

Professional applications will usually call for an electronic timer when such



Minim Digital Timer



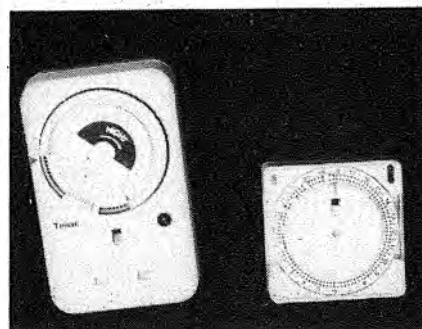
Richmond T031



Lynwood LE13

programming is required. The sort of accuracy available here is within 60 seconds out of 24 hours. The disadvantage, if this it is, is that only one on/off programme is usually possible though a repeat feature is almost invariably added. All three units featured here appear to employ a particular range of General Instruments Integrated circuit.

The features offered are therefore quite similar though the appeal will vary. The Lynwood and Minim designs have a 1-1.5 kilowatt maximum loading though the former uses a heavy duty 10 amp relay which with small modification will accept a load of up to 2.5 kW. Lynwood are to be found at 20 Stourcliffe Avenue, Bournemouth, Dorset. Minim supply by mail from Lent Rise Road, Burnham, Slough SL1 7NY. Richmond Research (215A Uxbridge Road, London W13) have on their drawing board a new design which will deliver a start pulse to trigger the solenoid controls of a Revox, Tandberg, etc. Other additions to the expected new Richmond device include logic to perform channel change operations and battery backup against breaks in the mains supply — this normally resets a clock to zero. Lynwood also produce a professional grade tape switching unit, a variant of which uses buffer amps to permit multiple dubbing and also with attenuators to equalize signal levels.



Smiths Industries Time Controller and Superswitch are available for £10-15 from electrical stores.

Direct-cut

You pay £8-15 for an "audiophile" or "supercut" disc, whatever the material musically. Direct-to-disc or direct-cut records maintain more of the texture and immediacy of instruments by virtue of their having been mastered without the intervention of tape. What is basically a live session in a studio is fed out of the board directly to the heads of a cutting lathe. This means any playing or other errors call for a completely new take of the whole LP side. The musicians who play on such sessions are often ace players, session people or classical instrumentalists used to playing an entire piece through without too many errors. Limitations here are that the musicians might tend to play safe rather than stretch. Furthermore only so many pressings (usually 50,000 or less) can be made from one master. These are then basically too limited in commercial promise to interest big record labels. Where major artists are involved — this is more often in the jazz associated arena than anywhere else — it is usually the result of enthusiasm on someone's part.

One of the earliest rock releases after direct-mastering again became fashionable in the early Seventies was a recording at the Mastering Lab featuring Thelma Houston and a string of players including Larry Carlton, Jim Keltner and



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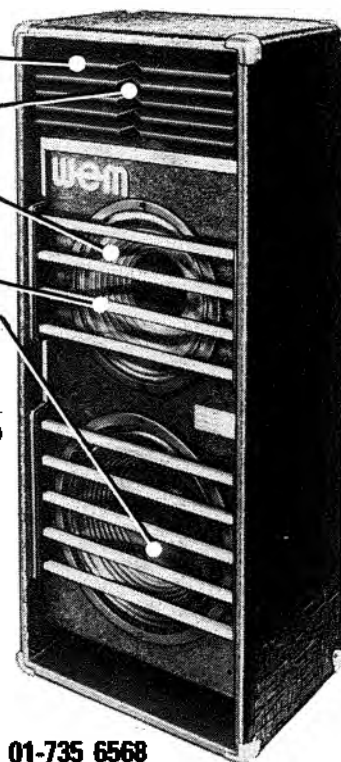
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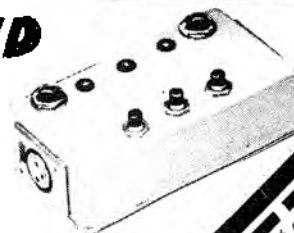
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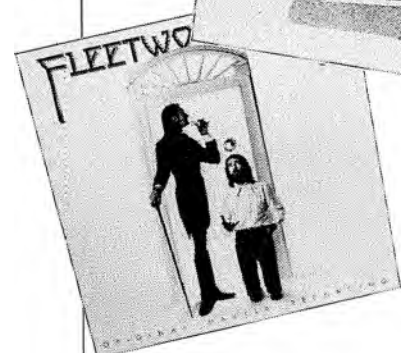
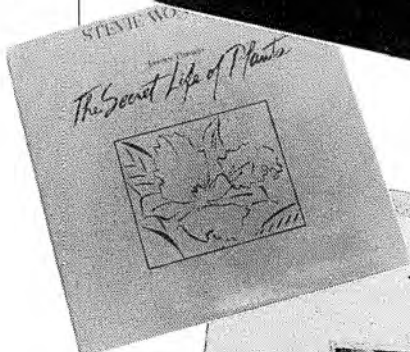
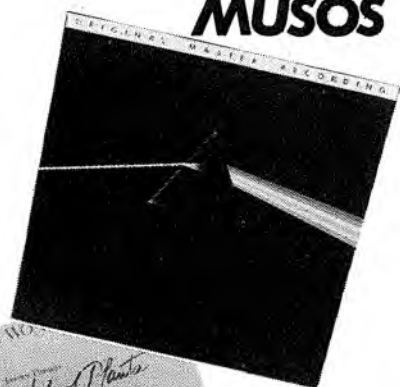
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Tom Scott (*I've Got The Music In Me* — Thelma Houston & Pressure Cooker, Sheffield Lab 2). A band of 25 in the studio running through such numbers as Fairweather Lowe's *Reggae Tune*, Stevie Wonder's *To Know You Is To Love You* and the title track, the power of Houston's vocals and the truiness of a cut by Mike Reese himself, makes for a classic among discs of this genre. The funny thing is a recording like this is no better than good reception of a well-mixed FM live transmission. It is really only when you hear it coming off a turntable that one comes to realise how much is missing in the usual common denominator commercial disc!

Sheffield Labs have a roster of nine or 10 titles including two by Harry James Big Band and an absolutely superb recording of *Romeo & Juliet* from Prokofiev played by the Los Angeles Philharmonic with Erich Leinsdorf. If, like me, you know very little about symphonic/orchestral music, this should give you a chance to realise just how good music can sound for the *sound* alone. At £10.64 this magnificently packaged work — you should see the cover — should make a great gift to a classical fan. Sheffield discs are available from Regent Accessories at Carrington House, 130 Regent Street, London W1 6BR. You

should also find them at some hi-fi stores.

From the UK distributors of Thorens hi-fi equipment, a range of direct cut discs on different labels are again available. Metrosound UK import and distribute the Nautilus catalogue, which involves four labels. In the offing is a new release from Taj Mahal, *Live and Direct*, recorded before an audience and on which he reworks his "Giant Steps" classic. This month a Four Tops recording titled *Better Than Live* is expected.

A recording on one of the Metrosound labels is by Victor Feldman (*In My Pocket*, Coherent Sound CSR 1001 £9.75). The teaming up of Hubert Laws on flute, Chuck Domanico and Harvey Mason holding the bottom end, Fred Tackett on Guitar and multi-instrumentalist Feldman on piano, Rhodes and assorted pieces, produces a fluid and energetic mix where all the funk is where is ought to be. The purity, dynamics and natural balance of midrange instruments playing together is assisted by a recording process which does not weld the timbres together. If you are into easy, soulful jazz and you are destined to own only one direct cut disc make this the one. A Cal Tjader recording on an associated label ("Huracan", Crystal Clear CCS 8003) features some tasty Latin-jazz fusions with veteran percussionist Willi Bobo in attendance. The trumpet and sax textures and finesse of the brass attacks invite you to play this one very loud indeed. You will realise at this point that "loud" does not have to hurt the ears at all. Metrosound are at 4-10 North Road, Islington, London N7 and a full catalogue brochure is available on request.

Supercut

The term "supercut" has really come to prominence with the practice of remastering discs from archive tapes. It has long been recognised that the cutting stages, processing and actual pressing of a record squeezes a lot of the soul and the life out of what was a pretty good sound on tape. Cutting the disc at 16 2/3 rpm to play at 33 — i.e. at half speed — gives the cutting head a little more time to make a more accurate sound replica in the groove. It is never quite as simple as this but results using such techniques have so far been impressive — a little more care is also maintained along the chain than is observed for usual junky commercial product.

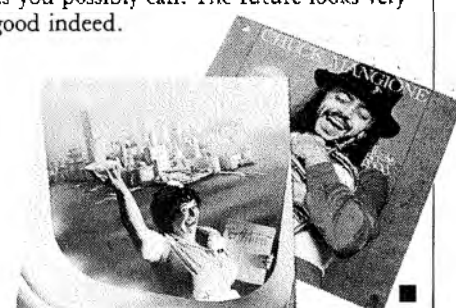
The use of half speed mastering suggests some very exciting developments. It becomes suddenly possible to make enough quantities for record labels to get interested. The "audiophile" market has shown the promise of quality recording and as one spokesman for A&M said — A&M being the first major record company to bring out supercut discs under their own auspices — "there are people out there who are prepared to pay a higher price for a better quality product." Are you?

Mobile Fidelity is an outfit from California which leases first generation master tapes from labels. Stan Ricker, who should need no introduction, re-cuts

laquers from these tapes without the constraints major record labels feel they need to observe. Firstly, compression need not be applied to get a "loud" cut for impressive airplay and neither does the EQ need to be designed to sound good on the worst of systems. The electroplating and other processing stages have to be performed in Japan as no-one else seems to be able to do it as well and the vinyl itself is the "supervinyl" developed by JVC for their CD-4 quadraphonic discs. This vinyl can be thin as a slice of British Rail braised beef and still lie flat. It does not wear out as fast and does not attract static in the way cheaper vinyl compounds do. At the end of the day all that has happened is that a little bit of caring has been applied to what happens after the master tape. And it often sounds like new music.

Mobile Fidelity have a roster of recordings which are not only high fidelity but valid musically. Their present titles include George Benson, the Crusaders, Steely Dan, Fleetwood Mac, Emmylou Harris and Joe Sample. The Floyd's *Dark Side Of The Moon* has come in for the treatment, as has the live double from Little Fear, *Waiting For Columbus* and that musicians' album, Al Stewart's seminal *Year Of The Cat*. The Who are to come. As few of these albums need any real introduction it really only leaves to add that the albums cost around £15 for singles and that brochures and direct supply is available from Lentek Audio at Edison Road Industrial Estate, St. Ives, Huntingdon, Cambs. PE17 4LF.

The level at which the discs are usually cut are often a little lower than you will find on commercial recordings. The quality vinyl used has a quieter noise residual. A low distortion, low noise hi-fi system should do the rest without having to push the vinyl and cartridge to their limits. With the Floyd and Al Stewart particularly, the huge presence region boost in case of the former, and the tiring midrange boost of the latter, appear to have been brought back into balance. In both instances the big difference is that the re-mastered disc has more to do with a masterly production by Alan Parsons than anything so far heard outside the studio that made the tape. As with many of the specialist discs so far discussed that high frequency "wash" you often get when this sort of EQ is applied is absent — allowing you actually to get the ambience of the room space, the space between the instruments and the air around the voices. It is difficult to describe, but I really do suggest you pick up at least one of these and listen to it quietly — and then as loud as you possibly can. The future looks very good indeed.



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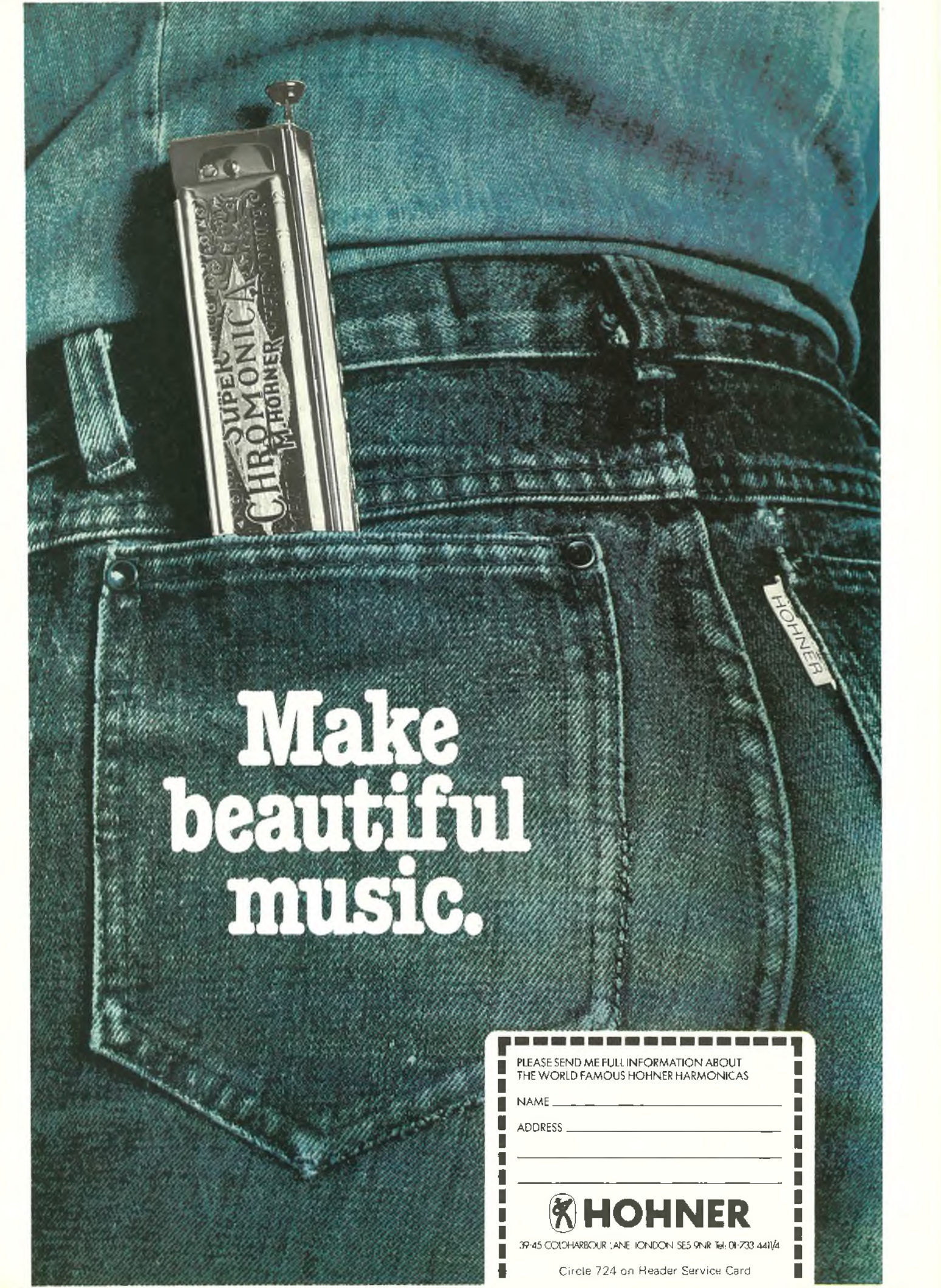
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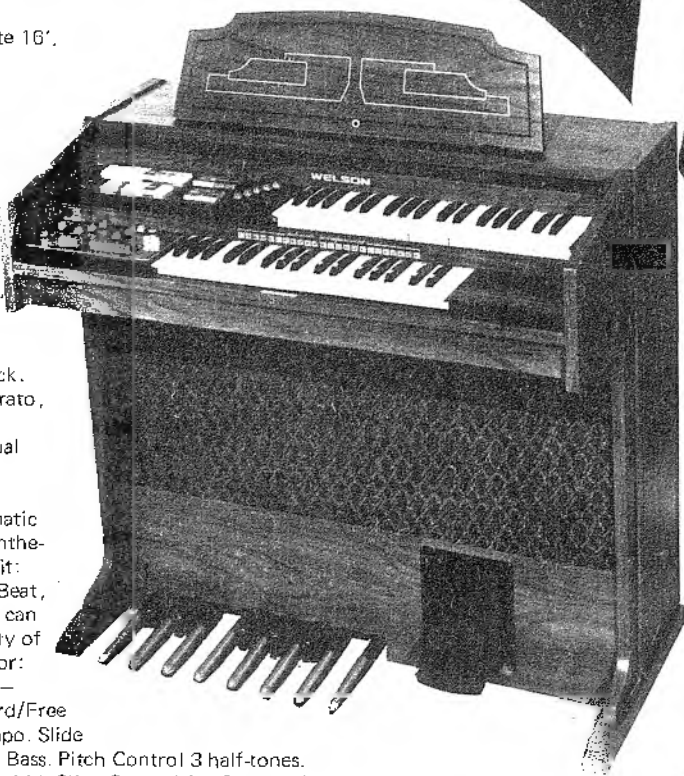
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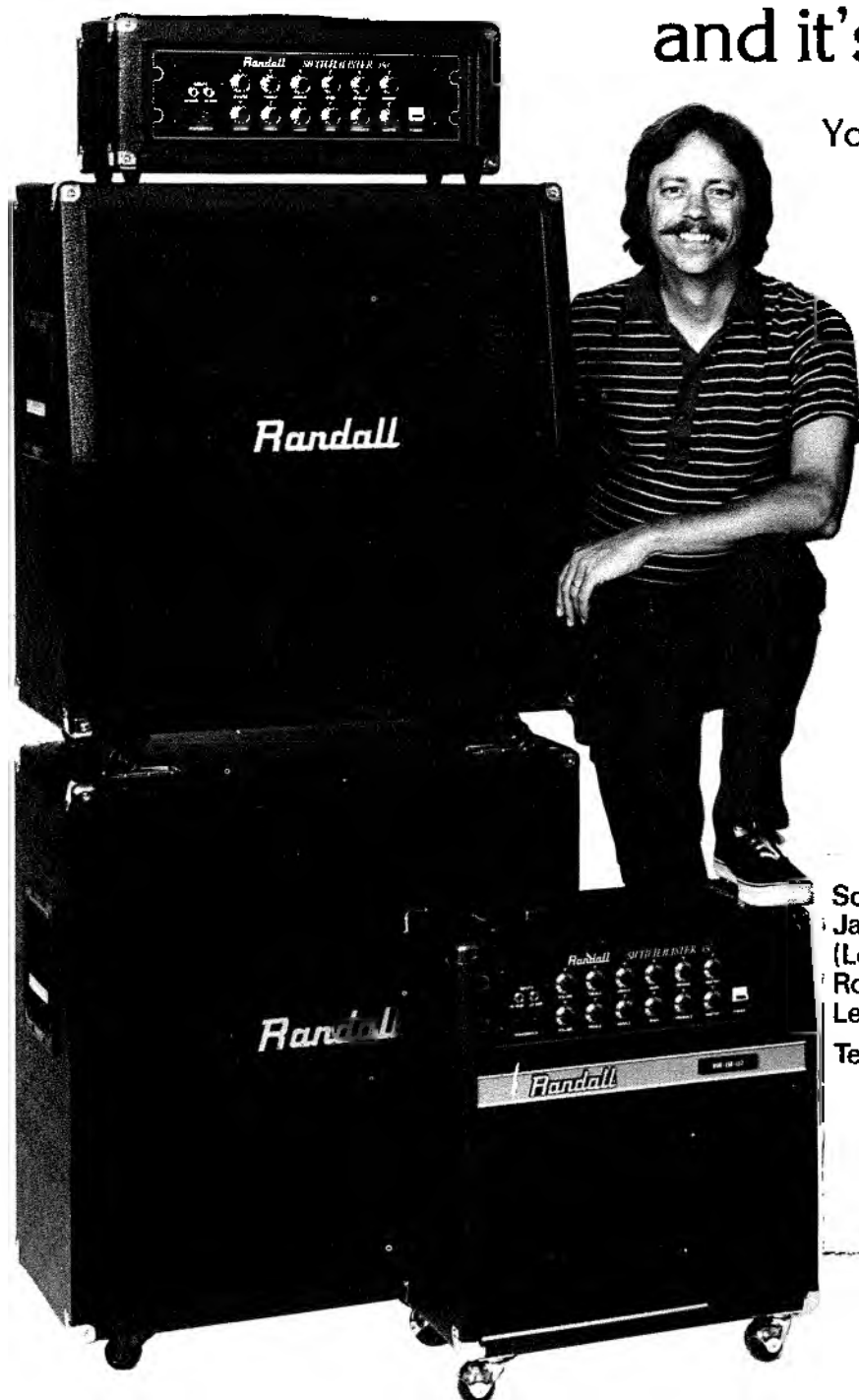
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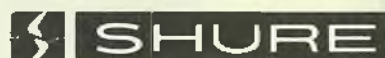
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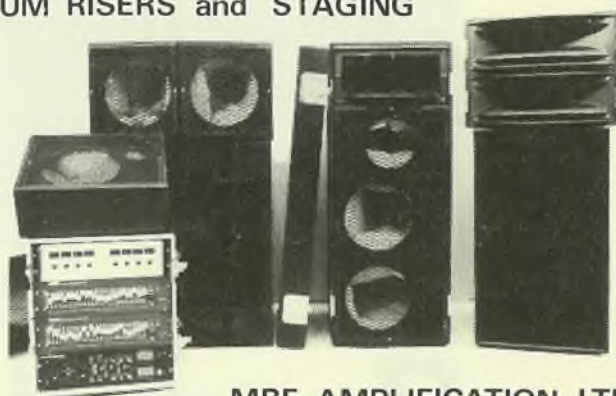


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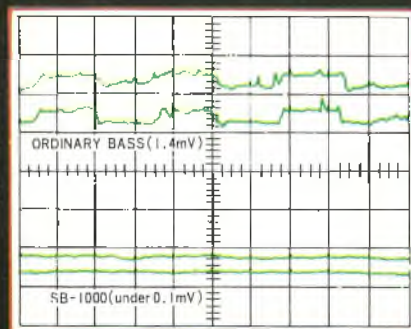
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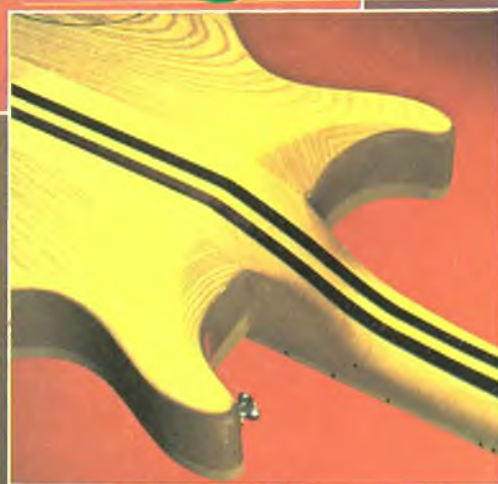
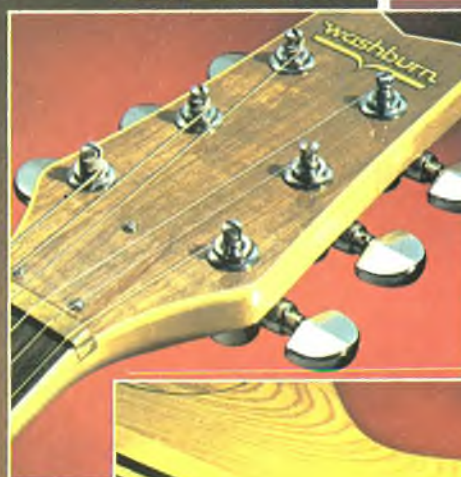
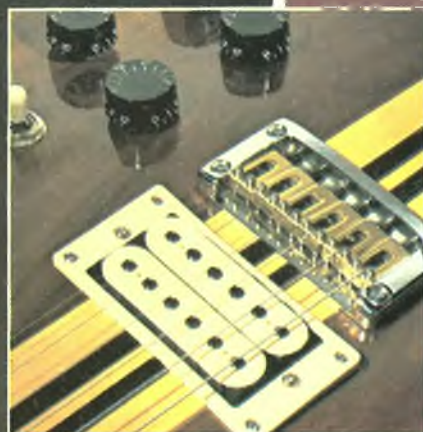
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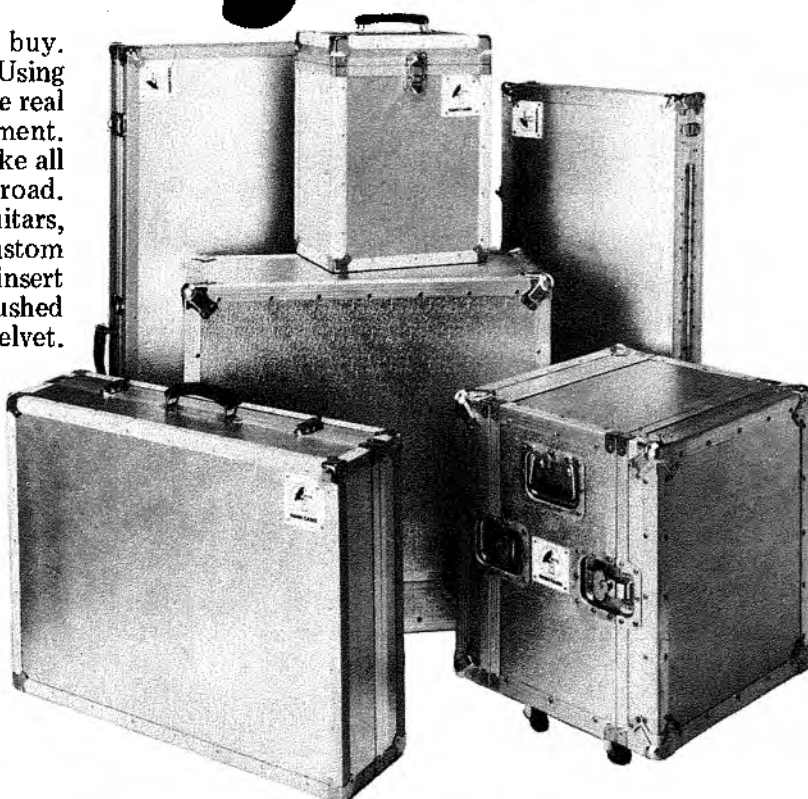
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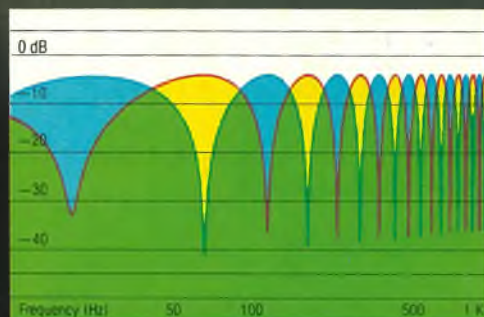
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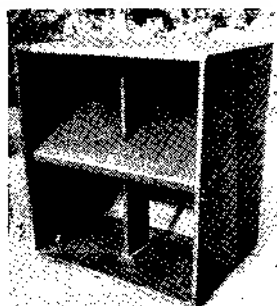
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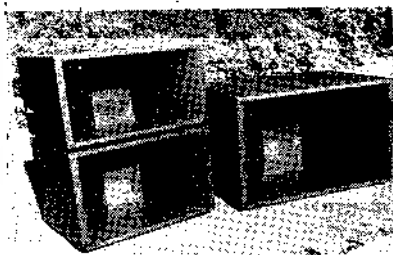
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FHB



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EP112

EP115

MID-RANGE

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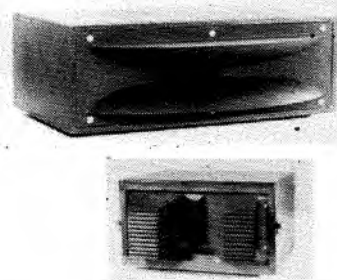
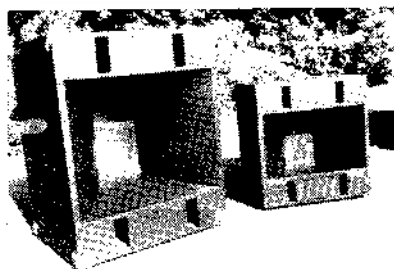
three angled versions
(with metal grill)
2 x 9, 2 x 12, 1 x 12

FULL RANGE FLARED

1 x 12 and 1 x 15"

EP115PX

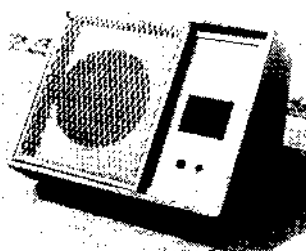
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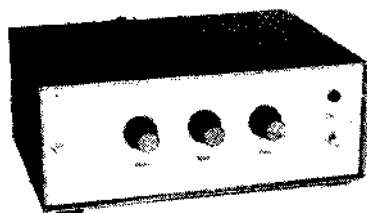
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FHA/15	1 x 15"	838(33)	495(19½)	457(18)	£58.50
FHB	2 x 12"	838(33)	762(30)	597(23½)	£90.50
FHC/15	1 x 15"	914(36)	597(23½)	597(23½)	£76.00
FHC/18	1 x 18"	914(36)	597(23½)	597(23½)	£76.00
FHD	2 x 15"	838(33)	914(36)	597(23½)	£99.50

Exponential Mid Range Cabinets

EP109	1 x 9"	318(12½)	597(23½)	457(18)	£50.50
EP112	1 x 12"	368(14½)	597(23½)	457(18)	£50.50
EP115	1 x 15"	483(19)	762(30)	597(23½)	£65.50

Infinite Baffle Mid Range Cabinets

IBA mid	1 x 12"	406(16)	597(23½)	457(18)	£30.50
IB212 mid	2 x 12"	406(16)	762(30)	508(20)	£53.00
IB209 mid	2 x 9"	318(12½)	597(23½)	368(14½)	£50.50

Ported Exponential Cabinets (Bass/mid)

EP112PX	1 x 12"	648(25½)	597(23½)	457(18)	£67.50
EP115PX	1 x 15"	914(36)	762(30)	597(23½)	£82.50

Full Range Infinite Baffle Cabinets (Vynide covered)

IB112	1 x 12"	406(16)	406(16)	318(12½)	£24.50
IB212	2 x 12"	762(30)	406(16)	368(14½)	£37.50
IB212H	2 x 12"	838(33)	406(16)	368(14½)	£40.50

(with horn space)

Instrument Cabinets (Vynide covered)

IB215	2 x 15"	914(36)	597(23½)	457(18)	£62.50
(infinite baffle)					
RH212	2 x 12"	686(27)	762(30)	368(14½)	£69.00
(rear loaded horn)					
IN112	1 x 12"	508(20)	597(23½)	318(12½)	£49.50

Monitor Cabinets. Wedge Type 30 /45

		Baffle Size	Depth	
M112	1 x 12"	508(20) x 508(20)	357(14)	£32.00
M115	1 x 15"	508(20) x 508(20)	357(14)	£32.00
M112H	1 x 12"	508(20) x 612(24)	357(14)	£36.00
M115H	1 x 15"	508(20) x 686(27)	357(14)	£39.00
M212	2 x 12"	508(20) x 762(30)	357(14)	£43.00
M212H	2 x 12"	508(20) x 914(36)	357(14)	£48.50
M215	2 x 15"	508(20) x 914(36)	357(14)	£48.50

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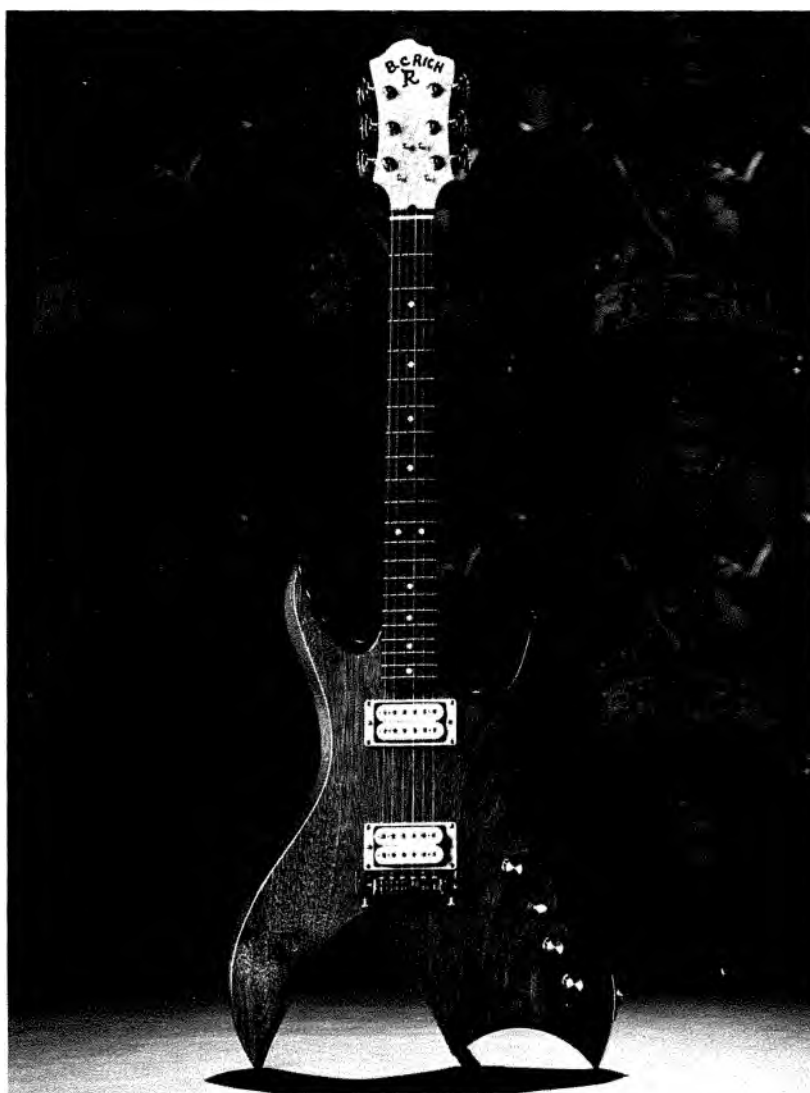
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The Jupiter-4 is a four voice polyphonic synthesizer with built-in computer memory. Eight different sounds can be "patched up" before a performance and held ready for instant re-call. In addition the Jupiter-4 offers an unlimited variety of programmable sounds, 10 pre-set sounds and special features such as an "Auto-Arpeggio" make you feel like you've got three hands. The Jupiter-4 interfaces happily with most modern synth equipment and full line in/out and remote control facilities are included.

The RS-505 is a paraphonic string machine offering unbelievably realistic string sounds with the range of a symphony orchestra. The three sections of the RS-505—strings, synth and bass, can be played either separately or together. Three modes of pitch shift are available: manual, automatic and pedal and a pitch slider is located on the front panel for convenience. A 49 key six octave keyboard allows full technique to be employed.

The MP 600 has proved to be the ideal piano for live performances. The 64-note keyboard has a weight-balanced action and a built-in graphic equaliser allows the player complete control over sound shaping. A damper pedal provides realistic control over sustain. See the Key Three at your Roland dealer now.



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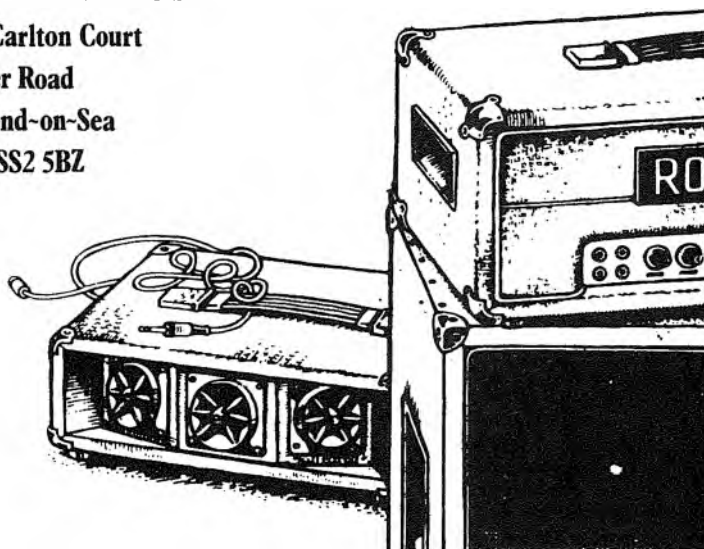
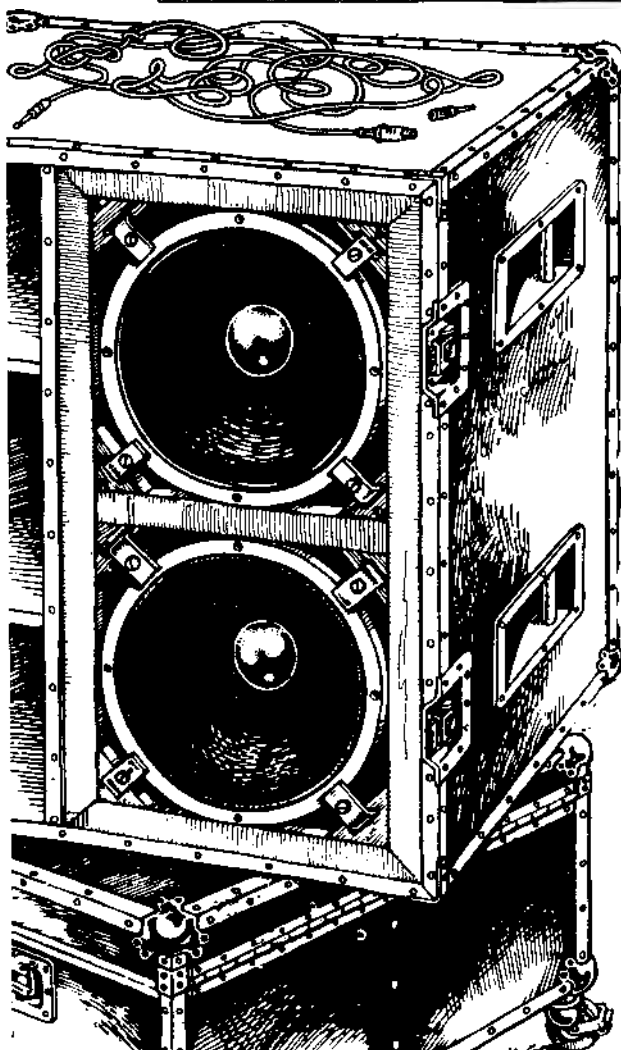
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CARLSBRO

going into the Eighties

Students of the sound equipment market will not have failed to notice the "re-emergence" of a notable British amplification range recently. The name Carlsbro is a familiar one to many musicians, but the products which now bear that name may not be.

Let us explain. Carlsbro in many ways typified all that was best in British sound equipment manufacture. It was always reliable, and gave great value for money. However, time never stands still — certainly not in the music business, and over the last few years amplification technology has rivalled the space industry for advances and sophistication.

The results make the musician a more discerning customer, so old values, while being very acceptable, tend to be left behind. At Carlsbro they realised the need to match musicians' expectations and yet retain those qualities of value for money and reliability which were the cornerstone of their reputation.

The company therefore embarked on a comprehensive redevelopment programme which was designed to bring Carlsbro into the Eighties. The aim was not only to update products, but design new features which incorporate sophisticated technology and really open up new areas for musicians. According to Sales Manager Tony Taylor it is a new image with new designs and exclusive features.

The result is a whole new range of Carlsbro back line equipment which puts the company right back in the forefront of the amplification market. What they have done is to join together new technology with the practicalities of being a working musician.

This combination is best illustrated on the digital channel switching facility, which utilises a four-way footswitch. This enables the musician to have two completely different settings on the amp, and then switch from one to the other by means of a handy footswitch. Not only that, but you can also control sustain and reverb and bring in the Carlsbro delay line, which offers chorus, vibrato and ADT at the press of a button. Altogether a musician's dream.

One of the technological breakthroughs which Carlsbro have made is the



provision of parametric equalisation on their amps. Using just two controls for cut and boost, it gives the player absolute control over the sound. More effective than a graphic and more versatile than a middle, it's ideal for today's discerning musician.

Some form of chorus or automatic double tracking has become a must for many guitarists; Carlsbro thought they may as well provide their own. All this is inbuilt into the footswitch unit and it also incorporates a compander, to make sure the signal-to-noise ratio is always correct. As you will have gathered, any new feature that Carlsbro build into their products is accompanied by a facility to ensure the purest signal and least noise. After all, what's the point of having a whole host of best effects in the business,

if all you can hear on stage are hisses and hums?

As you can imagine with all these features available it would be difficult for the musician to keep tabs on just what effects he is using. So all the Carlsbro amps have a complete LED system to show you exactly where you are and what you are doing.

The problems of bass players have been a particular concern of the Carlsbro design and research team, so they have designed a unique system for their bass amp. This centres around band pass filters which shape and control the actual bass sound. And if you want to take your Carlsbro into the studio or even plug in directly to a mixing console on the road, there is a 600 Ohm direct injection output.

Probably the first thing that hits you about the new Carlsbro products are the vivid colours — well they aren't there just to look pretty. Each colour denotes what the particular piece of equipment is for, so green is for bass use, gold for guitar and orange/red for multi purpose, all of which means that you don't have to bother with endless questions about matching up your gear, it's all there.

Just as much time, effort and research has gone into making the equipment safe and roadworthy. There are protection circuits in the power amps for ultra safety, while the front panels on the max amps are of three dimensional extruded aluminium with recessed controls. Even the handles have been specially designed to take all the humping around.

So there we have it, a completely new and fascinating range of products which already have the industry buzzing. One of the best things about this new look Carlsbro is that it shows how British products can compete with any others in the market place, while retaining the old Carlsbro qualities. As Tony Taylor summed up, "I think we have kept all the advantages of reliability and value for money, but added unique styling and features. It's all about refinements which are acceptable to the musician, and I'm sure they'll find many accepting musicians."

CARLSBORO'S NEW BACK LINE



PROBABLY THE FIRST NEW RANGE OF AMPS FOR TEN YEARS

What, you may ask is so new about the Carlsbro Back-Line range?

After all, most 'new' amplifiers are like 'new' cars — the old model with a set of new fins.

Not the Carlsbro Back-Line range.

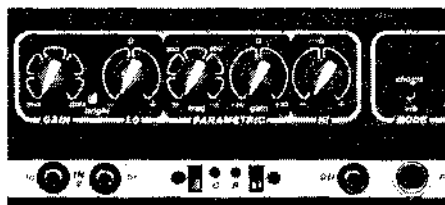
Digital Channel Switching

Take the Digital Channel switching circuit, Carlsbro have tapped computer technology to give you the degree of control you'd get with a control panel on your sleeve. — far greater than has ever been possible before.

Set up channel one for a bright clean sound, perhaps with a little EQ. Then set up channel two with overdriven sustain for a really dirty sound.

Now the unique digital switching circuit enables you to chose either channel using the remote footswitch.

Each has a different volume level and completely different settings. All of a sudden you are playing two amps instead of one!



Four-Way Foot Switch

Then there is the remote four function footswitch which lets you change channel, control sustain, reverb and bring in the Carlsbro delay line with a flick of you lizard skin boot.

It's attached to the amp by six metres of heavy duty multi-core cable with locking connectors. So now you can change your sound without interrupting your act.



Parametric Equalisation

But the heart of any amp is the sound it makes. Not only do the new Carlsbro amps sound great, they'll also give you any great sound you want.

This astonishing versatility is achieved by parametric equalisers which give cut and boost of $\pm 20\text{dB}$ over the whole frequency spectrum. And you don't have to spend hours setting your levels because the Carlsbro parametric EQ is ergonomically designed to respond to just two rotary controls.



Delay line

So what else is new?

Well there's the Carlsbro Delay Line which gives musicians one of the greatest variety of effects ever built. into one circuit.

You can develop a rich thick 'chorus' effect or you can select pitch shift to provide the most amazing

vibrato you've ever heard. — You can even play single note duets with yourself.

And to ensure that your effect always sounds exactly as you intend, there's a built in 'compander' which sets the signal to noise ratio at the perfect level.



Band Pass Filters

And for bass players there's something that really is different.

The Carlsbro Band Pass Filters are a unique answer to the unique problems they face. These filters operate on pre-selected frequency bands to shape and boost your bass sound into a particular shape. No wonder they have become so famous among bass players all over the world.

There's no two ways about it, Carlsbro amps produce a fabulous sound.

There are 6 models in the Carlsbro range so there is bound to be at least one that's perfect for you. See them at your dealer today. You won't have heard anything quite like them before.



CARLSBRO

Carlsbro Sales Ltd.
Lowmoor Road Industrial Estate,
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Tel: 0623-753902. Telex: 377472.

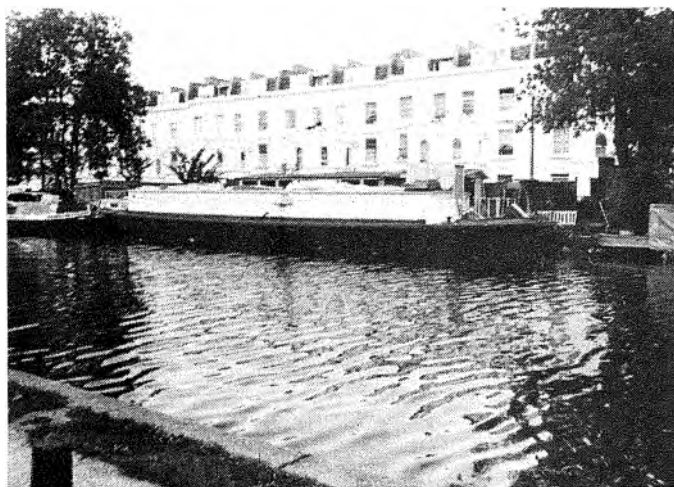
Studio on a Barge

Here's an 8-track studio with a difference. Situated at Blomfield Road, Little Venice in London you will find this studio floating peacefully on the waters of the Regents Canal. Owned by Virgin, the studio is run by Studio manager John Rowland who is also the Chief Engineer. He is assisted by tape op Simon Philips. There are two studios, one of which is used solely for speech and voice overdubs. Ideally they prefer to concentrate on small acoustic ensembles. They are geared more towards the professional side of things preferring to do masters rather than demos. They find that during the day time

they are almost completely booked out for recordings of commercials and similar things for which they have a good reputation.

Originally the studio was built and designed by Tom Newman (producer of Tubular Bells). When he sold out to John and another friend it was redesigned for the purpose of recording jingles. Then two years ago Virgin took over.

The reason they have for having a floating studio is that water seems to be a great conductor and has proved to be very good for soundproofing purposes — the studios themselves being below the water line.



New Distributors for Amcron

HHB PA Hire & Sales are now the sole U.K. distributors for Amcron products in the professional audio and hi-fi markets.

All Amcron products are available ex-stock from HHB's London warehouse, including the newest of the Amcron amplifier range, the PSA-2. This unit looks set to topple the DC300A from its long-held position of industry standard power amplifier, with a hefty output of 220 watts RMS per channel into an 8 ohm load, and numerous extras such as high and low pass filters, a variable threshold compressor, low frequency protection, etc., etc... The main technological innovation of the PSA-2 is Amcron's patented built-in analyser which continuously monitors and corrects the output devices with reference to their safe operating limits, with the effect that the likelihood of transistor death is considerably diminished.

200

Full service facilities are offered from HHB at: Unit F, New Crescent Works, Nicoll Road, London NW10 9AX. Telephone 01 961 3295

Musicaid Moves into Overseas Markets

Musicaid, the British musical instrument manufacturers and distributors at St. Albans, are moving into the North American market. They have now set up a sales distribution network with full service station facilities, covering the USA and Canada, primarily to market the Simmons drum synthesizer in its four channel and two channel versions.

Seven main distributors have been appointed by Musicaid in North America and the service station facilities have been established in Florida.

Negotiations are also being completed for the appointment of distributors in Mexico, Australia, South Africa, Holland and France.

Musicaid are at 176, Hatfield Road, St. Albans, Herts. Tel.: St. Albans (0727) 33868

The Vox goes on

If you thought Vox amplifiers were relics of the Sixties, you're wrong. Rose-Morris and Company have invested a considerable amount of money in purchasing the amplifier brand from CBS/Arbiter Ltd and they've now embarked on a programme to put the Vox name back on top.

Rose-Morris' Chairman and Managing Director Peter Clarke told *IM* how his company views the product line:

"Vox has an excellent reputation. We intend to build on that reputation. We've had a great deal of experience in promoting and establishing amplification with Marshall and we're confident we can do the same thing for Vox."

Vox amps were the standard "rock" amplifier for the Sixties. The Beatles, the Shadows, Gerry and the Pacemakers, Billy J. Kramer; the list of users and endorsees was endless. But a combination of unlucky events and commercial mistakes led to the brand's decline. By the early Seventies the line had almost ceased production and it wasn't until four or five years ago that modern musicians "re-discovered" the sound of the AC30. At that time the craze was for using the "original" AC30s rather than buying the current production models but the AC30 was produced as per the original and in the last few years it has become an accepted, if minority taste, back line amp. Peter Clarke:



"We're certainly going to continue to produce all of the existing models in the range.

But we're thinking of introducing some new models during 1980. We're already doing some considerable market and product research and I think there are some very exciting new things coming along."

Rose-Morris is a recognised leader in areas such as distribution, after sales service and in-field promotion. In overall charge of Vox marketing is R-M Marketing Director Keith Drewitt.

"In the beginning we're planning to make Vox available through dealers who have the expertise and service to handle the product properly," explained Drewitt replying to a question about product franchising. "We don't intend to appoint franchised dealers, but we will be making sure that the product is marketed in a healthy environment. In the short term we're leaving the product's market position alone although some new product launches will alter the image somewhat."

Vox amplifiers are totally British built. For the moment the amplifiers will continue to be made at their existing manufacturing facility but for corporate reasons, marketing is being carried out by a new Rose-Morris subsidiary, Vox Ltd.

"We didn't want to get into a situation where we had duplication in the Rose-Morris catalogue," explained Peter Clarke. "We felt it was better that Vox should have its own company."

New Appointment

Mr. Ron Fone has been appointed President of Teledyne Acoustic Research as of the 15th October 1979. Formerly General Manager of the U.K. operation he is now responsible for Worldwide activity and will reside in the United States.

Essex International Music Fair

A new instrument fair will be held at Southend Airport Hotel Exhibition Centre from 13th to 16th March 1980. The exhibition will be open to trade and public and will be extensively advertised in the UK and on the continent. Attendance will be published in January. The address is "Meteor House", Meteor Road, Westcliff, Essex. Telephone: 0702 337997.

Neve goes to Kinks Studio

Konk Studio, the London recording studio operated by the Kinks, has now added the Neacam computer-aided mixdown system from Neve. They chose a retro-fit to the Neve 8038 32 channel 24 track console which they have been using for the past three years.

Retro-fitting is a feature of all modern Neve consoles and means that any new equipment can be updated by the addition of the Necam mini-computer and servo powered faders at any time.

John Rollo, the studio's manager, is full of praise for the new installation and claims that it is "the ultimate in perfection". In John's view, the computer-aided mixing system relieves the sound engineers of all the tedious and routine tasks involved in a complex multi-track recording and allows them to concentrate on the more creative work of mixing. Neve's unique system of allowing the faders to move under the control of the computer give an instant visual indication of what is happening and allows changes to be made quickly and easily.

Using the Necam, the mixdown time is reduced to $\frac{2}{3}$ of that of other studios. This coupled with the fact that the studio now gets exactly what is wanted every time, means that the installation is a complete commercial success.

New Appointment at S.E.S.

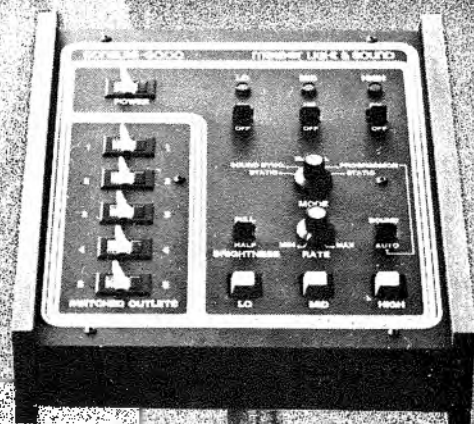
As from October 3rd, 1979, Jon Raper became the new Technical Manager at Studio Equipment Services Ltd. Joining the team as sales manager is Steve Holmes. These two changes increase the flexibility and efficiency of the company.

S.E.S. is well known in professional circles for the supply and installation of sound recording equipment and for their service and repair facilities.

S.E.S. would also like to announce that they have a new telephone number which is 01-452 01980 and a new telex number — 87515

In last month's Keyboard check the price quoted for the WLM Hu Organ was incorrect. The price including pedalboard is £1499 inc. VAT, without pedalboard it is £1390 inc. VAT.

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Dealer of the Month

WOODS of Bolton

Woods' success story isn't an overnight one. There has been no sudden, dramatic flare-up of sales, no bright star unexpectedly appearing in the firmament, no claims of flash whizz-kidery from smarmy, smug sales directors. Woods isn't like that. Woods reflects the true virtues of its Bolton surroundings, virtues such as thrift, hard work and service that have steadily constructed a dependably successful business over a period of 33 years, when Freddie and Hilda Woods first set up business as a second-hand furniture store.

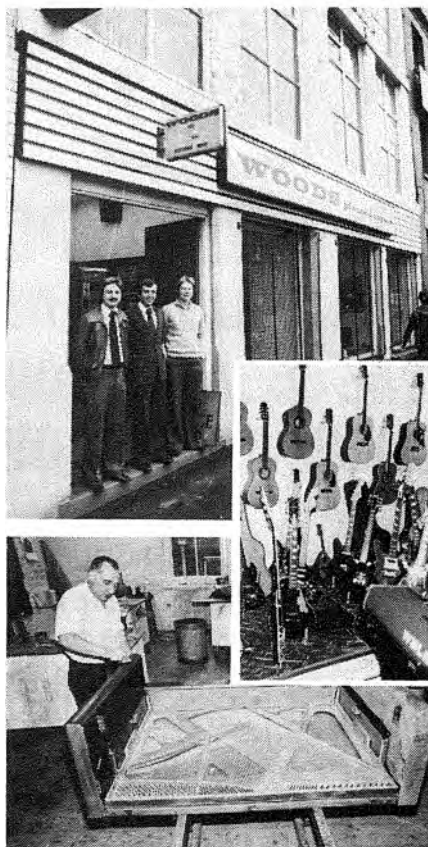
Now the company is in its second generation of directors, and is turning over a million pounds-worth of pianos, organs, guitars, amps and drums a year from three retail outlets and the wholesale business. The major part of all this trade, almost 95 per cent of it, is accounted for by organs — Welson organs.

As well as three-storey premises in Bolton, Woods' has shops in Burnley and Preston. The latter store has the Premier drum agency and does the most business in group gear.

But Bolton is the HQ of the burgeoning Woods operation, and it was this shop that we visited. The ground floor is devoted to organs and a small section of display space is given over to group equipment — guitars such as Takamine, and amplification such as Carlsbro, Park and Guyatone. The area is well-lit and nicely laid out, with a small split-level back left featuring a couple of display keyboards. A door leads out to the storage area which in turn leads out to the car park which can accommodate about 10 cars. The organ repair shop is in the former area. Keith Harris, company secretary since October '78 and our guide for the day, assures us that any organ can be repaired and overhauled here. He also assures us that a Welson organ spare part can be turned around in 24 hours. This performance is indicative of the operation as a whole — the Woods reputation is built on service. Their reasoning is that, one day, a potential customer with an organ for repair may use them, be impressed and stay. It's cast-iron Northern logic that seems to be paying dividends.

On the second floor is the piano centre. More than two dozen pianos occupy a carpeted and comfortable floor. A lot of these are renovated instruments, and renovation is something that one doesn't come across easily nowadays. The third floor, in addition to the offices and canteen for the 26 employees at the Bolton shop, houses the piano repair and renovation workshops, where craftsmen work steadily at their appointed tasks.

At the shop on the day of our visit, as well as Keith Harris, were Peter Shaw, sales assistant, and Stan Holland, shop



manager, who demonstrated the versatility of the latest Welson — the "Riviera Royale" organ complete with microprocessor. Star Wars never sounded so good! The co-Managing Directors, Ken O'Brien and Roy Bolton, were away, as was Jackie Bolton, wife of Roy and daughter of Freddie Woods, who is the official overseas buyer and lives in Germany.

The latest addition to the wholesale range of goods offered by Woods is the range of Takamine guitars that are being imported from Japan, and for which Woods is the sole UK distributor. These were premiered at Olympia this year, the first batch of which (450 guitars) has been distributed to Woods' 250 outlets, and the customers are screaming for more. The Takamine acoustic electric boxes employ a special pickup system called Palathetic, in which the pickup is mounted on the wood to amplify the resonance of the wood, not the strings. Already the product is taking off abroad. There is no reason why the

same shouldn't happen here. To ensure proper promotion Woods have retained the services of Interlink, an ad agency in Manchester, a member of the Lopex Group.

As well as Welson organs, Woods handle Wurlitzers, too. They also deal in Knight, Bentley, Rogers, Chappell and Kawai pianos. The next target for expansion is amplification, once the guitar promotion is underway. Woods consider themselves to be relatively small at the moment compared to other nationwide dealers, but they're determined to expand. But that doesn't mean that present quality of service will suffer. The direction they're seeking is expansion on a bedrock of good service and friendly custom, while maintaining the good relations that exist at the moment between management and workforce. They're adamant that these three factors will not be sacrificed to expansion, and adamant that expansion on these terms can be achieved. The latest project is a new retail outlet opening in Stoke-on-Trent with a concert by Jimmy Smith, the organ virtuoso. A record of Smith is available, too, at the moment, with the player exploring the vast potential of the Welson Riviera Royale. They are producing a flexi-disc give-away record which will be featuring the Viva and Comet models.

Woods didn't start in musical instruments. Freddie and Hilda Woods, who is now deceased, began with a second-hand furniture shop, and when the odd piano came in they noticed that it would sell within 24 hours of them picking it up. This prompted them to specialise in pianos, and then to start manufacturing them with the help of an Italian maker. This state of affairs never lasted long, but retailing and renovating did, and it's from this that the present strong specialisation in keyboards developed. Woods was later to become the UK distributor of Conn organs for four years before Conn set up their own UK operation.

Woods views the future with quiet optimism: "We're all set for the Eighties, now," claims Keith Harris. "We've got a young, progressive staff and our expansion plans are well underway and progressing nicely."

One fly in the ointment, which is a problem to be experienced by every dealer, is the rise in the lending rates, particularly harmful just before Christmas. But Keith looks back to the rise before last Christmas and states that sales then weren't harmed significantly, and he maintains that Woods have an excellent relationship with Mercantile Credit, the company that does their HP. He also points out that between February and August of this year, when most shops sales aren't usually so good, Woods turnover remained steady.

It looks as if their policy of Northern hospitality to the customer is going to pay off in a big way during the next decade.



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Acoustic 406 cab	357
Acoustic 402 cab	262
Acoustic 403 cab	292
Acoustic 125 guitar combo (100 watt)	473
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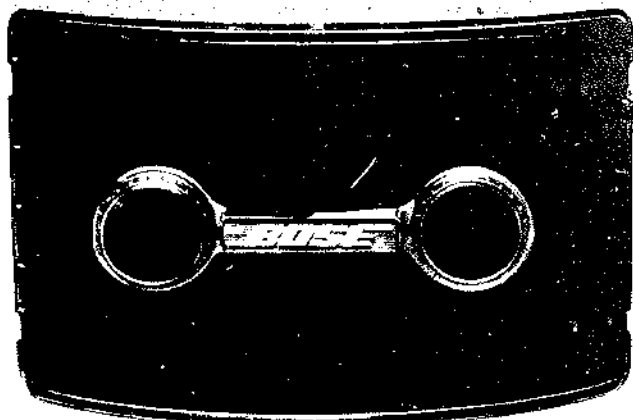


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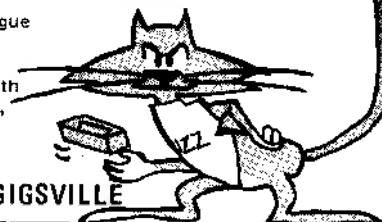
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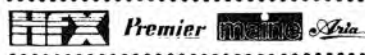
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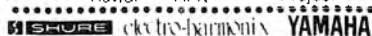
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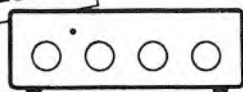
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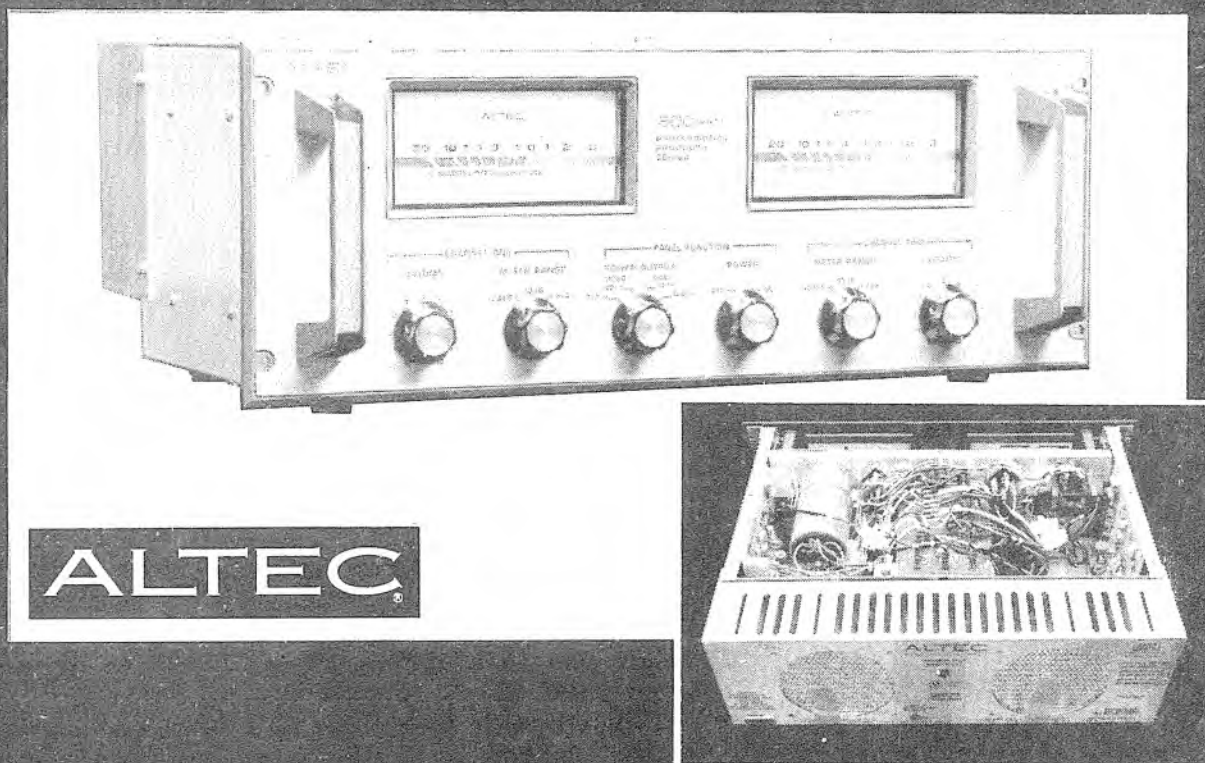
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The 9440A is capable of operation from a 120V or 240V ac source.

Circuit design provides fail-safe protection for the output transistors and the load.

Two accessory fans are mounted on the heat sink shroud for greater cooling of the output circuitry.

Illuminated VU meters indicate full wave average output level of each channel at selectable ranges of 0 dB, -10 dB and -20 dB.

Designed for rack mounting, the 9440A occupies only four vertical units of rack space (7").

SPECIFICATIONS

Input Sensitivity: 0.6 V r.m.s. into 15K ohms (unbalanced) for rated output (600 ohms balanced with optional transformer).

Signal/Noise ratio: > 100dB

Channel separation: > 80 dB

Output Both channels driven: (min. 4 ohms): 200W/8 ohms, 20Hz - 20kHz < 0.25% T.H.D.; 400W/4 ohms, 1kHz < 0.25% T.H.D.

Bridge (Mono) operation: (min. 8 ohms): 800W/8 ohms, 1kHz, < 0.25% T.H.D.

I.M. Distortion: < 0.1% 0.01W - 250W

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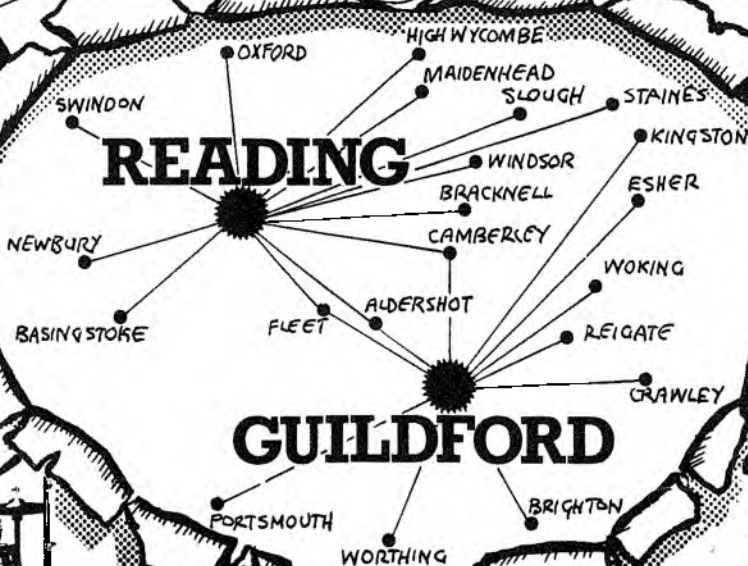
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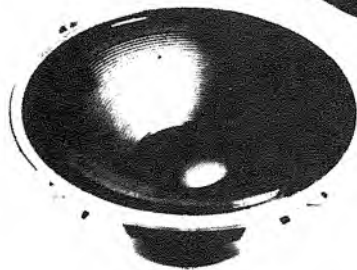
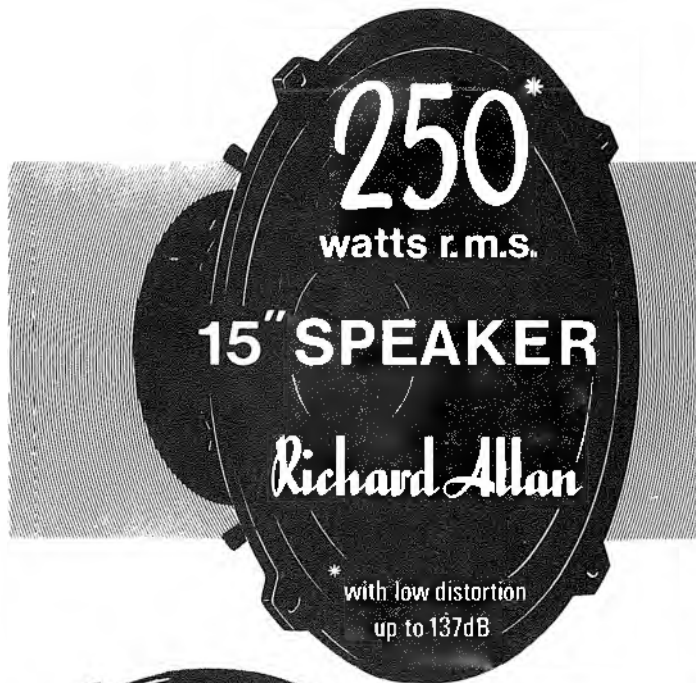
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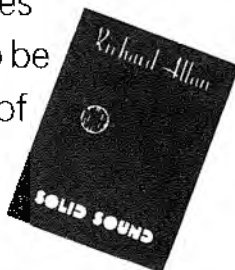
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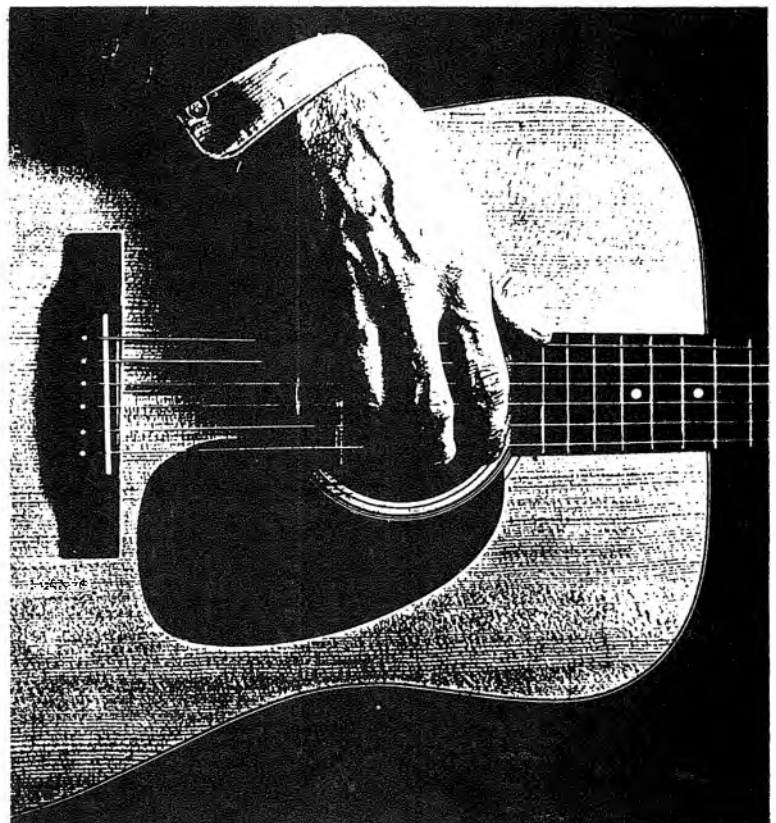
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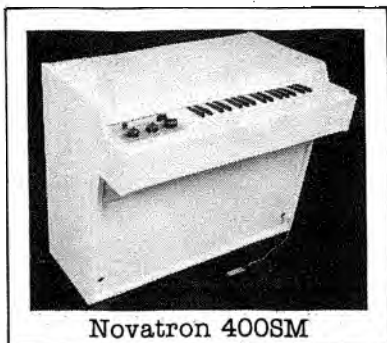
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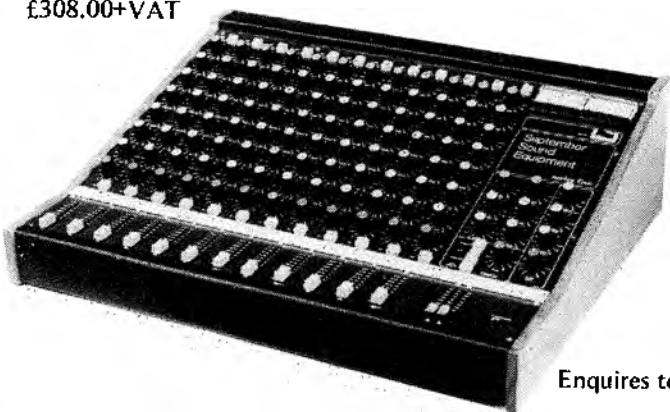
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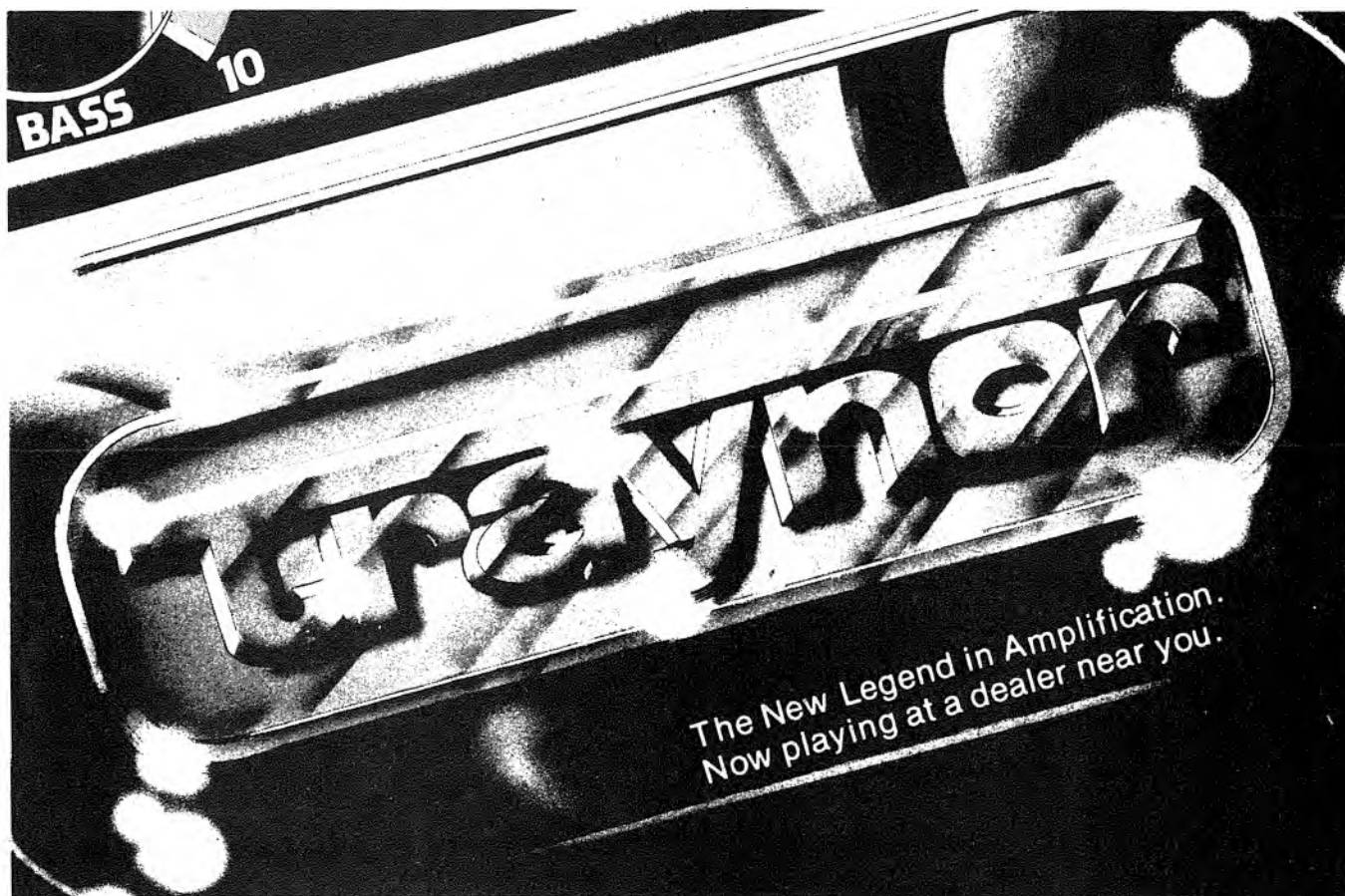
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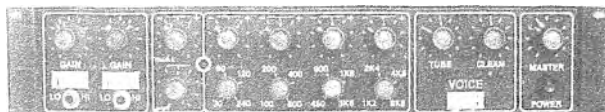
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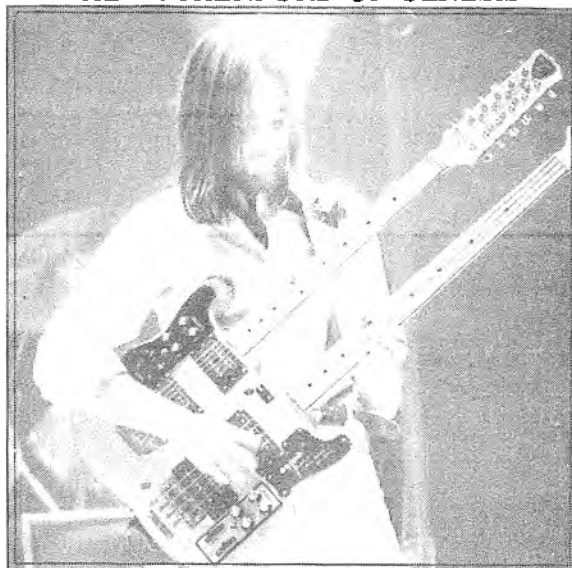
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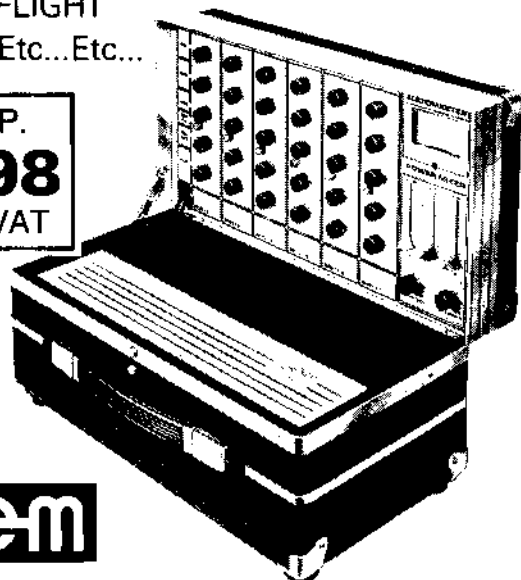
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4T £4.50 p/h Cap 6, ft. R-R, R-C, d-t, (K.A.G.D.ba) Ac.ba. M.S.SM.ba.

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4T. £5 p/h. £30 p/d. D. ft. R-R, St. CP. Ka. RC. Mix. M. dt. S. VS. AC. ba. SM.

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8T Cap 20 From £10 p/h or £70 p/d. D. All ft R-R, CP, Kba. (Grand Upright String Synth) Dc. No OTC. M. S. SM. (all types) by arr. Acc by arr. Food and drink available on premises.

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8T. Cap 20. £10p/h. R-R, CP, Ka. R-C. D-T. S. VS. Ac/ba. SM(ba). Mix.

CSS
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5 Theobalds Road, London WC1X 8SE.
24T. Cap. 30. £50p/h. £45p/h. 2 St. D. ft. R-R, CP, Ka (Steinway). RC. Mix. R-Cr. Comp. Mix. dt. Q. OTC £15p/h. M. S. AC. ba. SM. ba.

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Enquiries Pat 01 493 7403
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SM.

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Mix.

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061 228 2022
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full acc. Cap. 12. DC/ba R. DBX. SM. R-R.
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p/h	per hour
p/d	per day
D	Dolby
tr	Transfer facilities
R-R	Reel to Reel
St	Number of Studios
CP	C Copying
tba	to be advised
Ka	Keyboards available
R-C	Reel to Cassette
Mix	Mixing Facilities
R-Cr	Reel to Cartridge
DC	Disc Cutting
Comp. Mix	Computer Mixing Facility
d-t	Disc to tape
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OTC	Overtime charge
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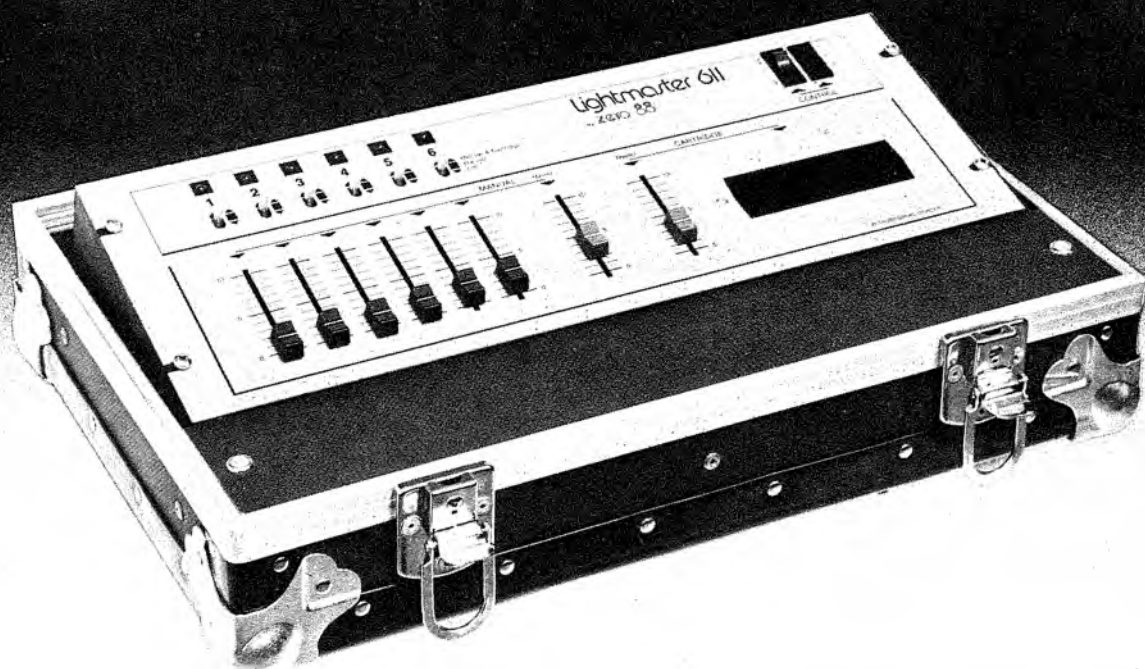
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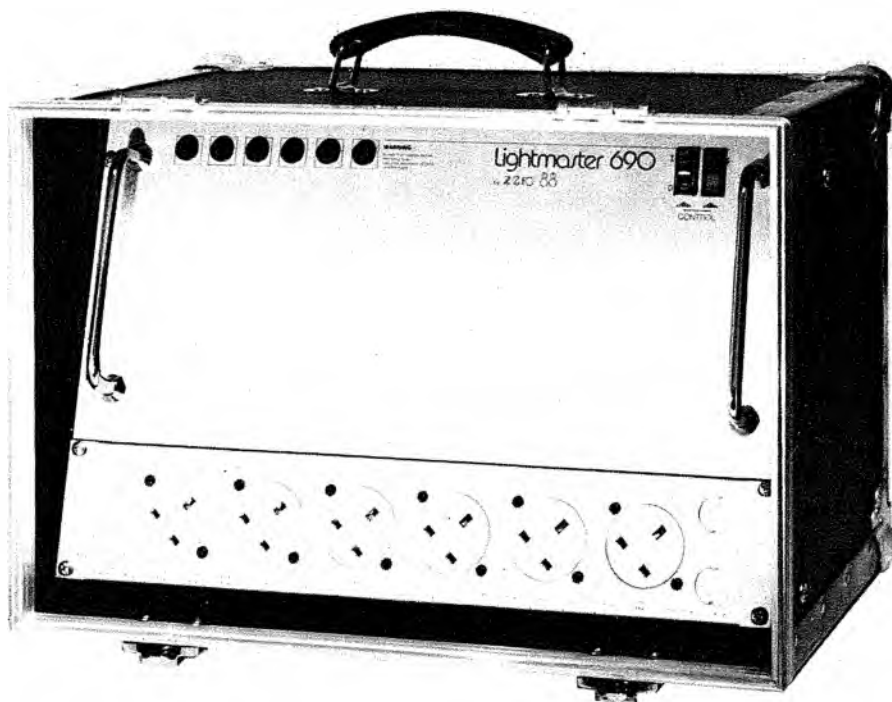
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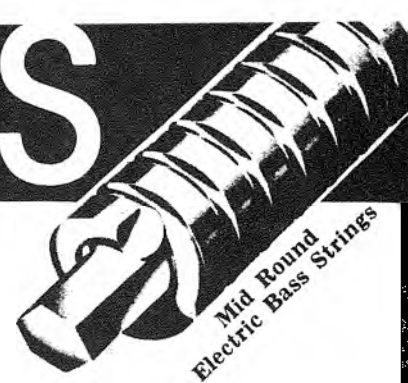
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