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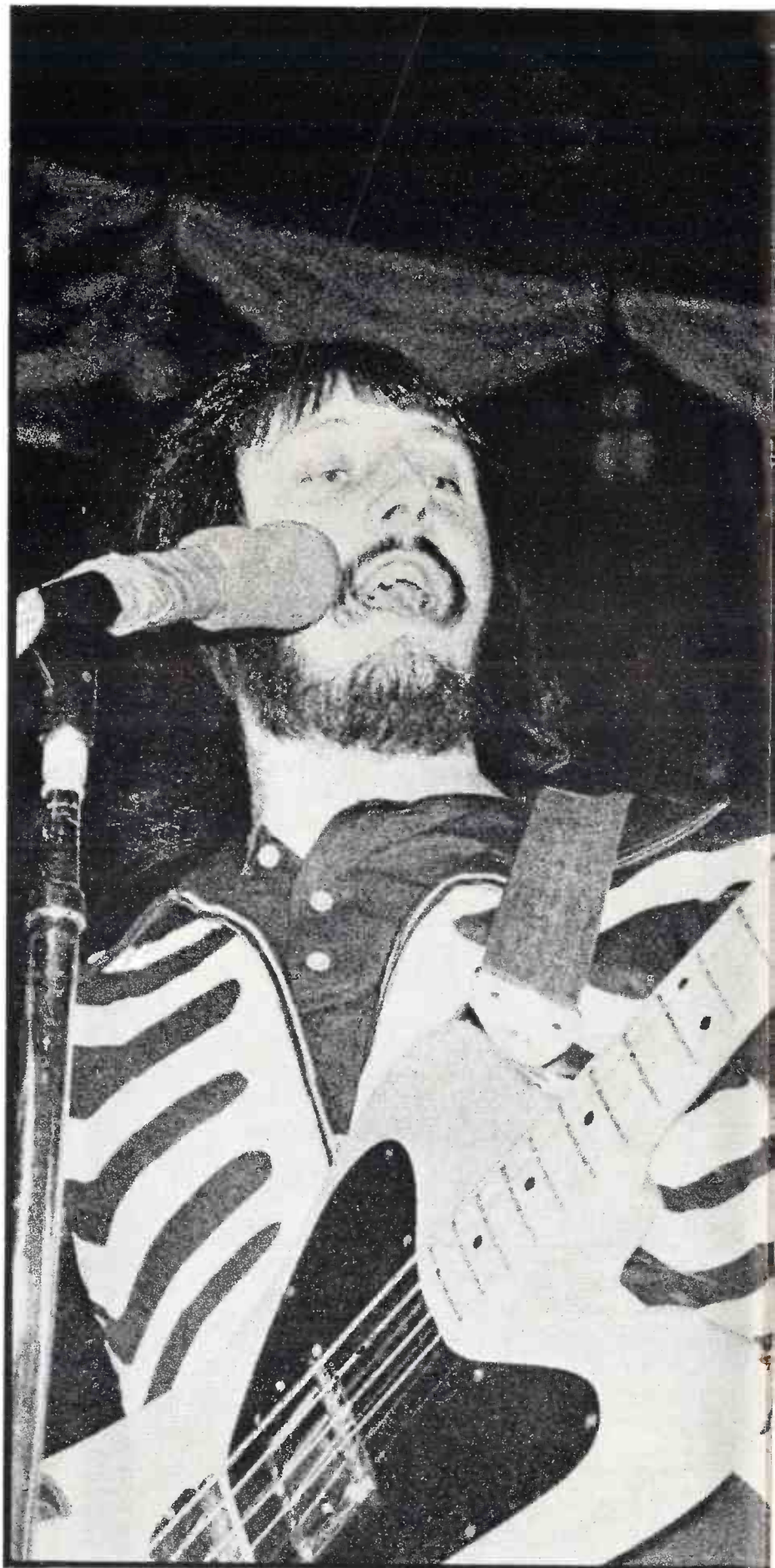
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JOHN ENTWISTLE

A WHO'S WHO OF BASS PLAYING

by Gary Cooper





If any one instrument pure and simple has changed its style over the past few years more than any other then it's the bass guitar. Although the range of keyboards, guitars and drums on the market has expanded out of all recognition it is the bass, still much the same in design as when it was first introduced about twenty five years ago, that has undergone a revolution of playing style.

As every revolution must have its revolutionaries, so must a massive change of use in an instrument—perhaps the first revolutionary of the bass then was John Entwistle from the Who. It was Entwistle who broke away from the tradition of a bassy bass sound, who was perhaps the first to depart from the almost obligatory 18" speaker, who pioneered the use of Rickenbacker basses and then re-introduced the Fender when others were still picking away at their round-sounding Gibsons. It was Entwistle who broke with all tradition by including a short bass solo on the Who's anthem/single *My Generation*. And it was Entwistle who inspired a whole generation of bass players to carry the instrument over from the basic rhythm function it had become tradition to employ, to a style that was to become known as lead bass.

At John's quiet home in the London suburbs of Ealing I asked questions about that style, his equipment and just where he was going in the future to try and discover what can be learned from Entwistle—an ox with nimble fingers.

How do you see your role in the Who with an extravagant drummer like Keith Moon and a guitarist like Townshend?

"Well, Pete and I both play a very strange role really. He doesn't do that much lead work as far as single notes go and I suppose I tend to supply the lead figures when he's playing chords and I play the chords when he's playing the lead figures."

Does that ever make you wish that you played lead guitar rather than bass?

"No, but it does make me wish I were playing lead bass. I prefer to play solos on bass because to me it's that much easier, I suppose I've made it my baby to make bass into a lead instrument."

Was that an accident or did your sound and your style come as a result of a conscious move?

"Well, we were the first band to use big stacks and we were the people who forced Marshall to make 100 watt amps (up until then he'd only made 50 watt ones). That all came about because I was having great difficulty in getting the bass to cut through our sound. I'd been a great fan of Duane Eddy and so our manager said why not use a lot of treble and go a bit towards that sound. So I put a lot of top on the bass and the sound worked — I found myself playing a lot better and it began to change my style into what it's become since. Now I've managed to find a really good 18" speaker — a Vega which is used by Sunn — so I've got four 18's and two 4x12's. Two of the 12's have got bevelled fronts like PA cabs and also two of the 18's are like that so I've got the normal pressurised cabs to get the sound on stage and the others to push the sound out into the audience. With

the Sunn cabs I've got Sunn power amps and Alembic pre-amps but they're too clean for me so I'm going to be trying out two stereo Stramp pre-amps soon because they seem to give more or less a valve sound. I've tried just one so far and it was amazing."

Do you really need that sort of volume on stage now that you are using such large PA systems?

"Yes, because I don't trust the soundman out in the audience to get my sound nor to understand what volume my bass should be at. So I supply high volume on stage so that if I'm playing at an average sized place I don't need to go through the PA at all. If it's a really big place then they mike my sound through the PA but going through the desk with no EQ at all. Anyway, we're not the kind of band to play quietly on stage and let it all come out of the PA; we need the inspiration that the volume gives."

Following on from that combination of your sound and your style, have you ever been tempted to try a six string bass?

"No, I've got a couple of six string basses but I wouldn't really consider using them on stage because you soon start running into trouble with the balance of the strings. If you play a low 'E' and then a note on the top string, the 'E' will sound like a bass, whereas the top note will just sound like a six string guitar. Personally I prefer an eight string bass and I'm waiting for Alembic to build me one now which I plan to use on stage."

What happened to those Gibson Thunderbirds? Have they been totally replaced with Alembics?

"Yeah. I couldn't get enough top out of the Thunderbirds and I came across the Alembics which seem to be fine. I bought one secondhand at first but it didn't really strike me as anything special at first — until I tried it on stage. It's so much louder than a normal bass and I'm now able to get as much top as I want, so I've got five now with Alembic making me another three which I'm waiting for."

Why on Earth do you need so many basses?

"I feel very insecure if I go on tour with only a few basses" (grins). "It was like this last tour when I smashed one bass when I lost my temper on stage which left me with one but even having two isn't enough because of a wear problem I get. I change my strings every gig and as I stretch them out they wear away the nut which on the Alembic is brass so you find that after a while the strings start rattling."

You use Rotosound and I've heard it said that they are so hard that they can wear down frets pretty quickly — do you get that problem?

"I don't know really, because I never seem to have a guitar long enough to find out! I go backwards and forwards to and from the States a lot and the necks seem to go out and as I've got such a low action (lower than most lead guitarists use) the slightest neck warp and I've got buzzing strings."

Continued on page 6



Part of Entwistle's home studio and his flying-V bass

JOHN ENTWISTLE

Continued from page 5

We've seen what became of the Thunderbirds but what about the other basses — the Rickenbackers, for example?

"Well, I had the first Rickenbacker to come over here and I also had the second because the first one had to go back because there were teething problems with that one. Then everyone else started buying them but as I had the first one mine was also the first to have the neck warp — so far that about half-way up the neck the action was about $\frac{1}{2}$ " off the fingerboard, so I got rid of that and got a Jazz Bass and then a Precision which I stuck with for quite a long while."

How did you fare in that finger-style versus plectrum business that was going on between bass players at the time?

"Well, I started off just using my thumb and then in the early days, before the Who started making singles I had an old Epiphone Rivoli which I used to play with my fingers. That first approach to fingering came because I had been playing trumpet, French horn and piano using all my fingers and so I thought 'well, why shouldn't I use all my fingers playing bass?' When we started making singles though there seemed to be a lot of a damped plectrum

sound that I had to reproduce on stage, almost right up until the end of Tommy and then I changed my bass to the Gibson Thunderbird and I found that I had to play totally differently so I went back to playing with my fingers from *Who's Next*." **Any special things about that finger style?**

"Well no, except that I use all four fingers" (at this, mere amateur bass playing journalist decided he'd definitely give up) "Especially if I've got a bass player sitting in the first few rows, then I make sure I do" (at this I decide that Entwistle is a natural sadist).

What about strings, any changes in that department?

"Well, I was the first to use the Rotosound wire wound of the type they're doing now which came about after I'd spent the afternoon at the factory with them. I'd had a lot of problems finding strings that vibrated properly. Fender strings were then about ten guineas and I'd had a lot of trouble with them — it was hopeless with them for me because the 'E' string never vibrated properly. Then I went onto La Bella but I had the same problems there so I went down to the factory and stood there while they made me string after string until I found an 'E' and an 'A'

that worked properly. Eventually, Rotosound came back to me with these and asked if they could put them onto the market which they did as the Swing Bass set."

Do you have any unusual playing tricks?

"Well, I do a bit of slurring and if I play a chord I'll often play an open string with my little finger or if I'm playing an octave 'A' on the 'D' string I'll often flick the open string with a fingernail. I play a lot of slap runs with a lot of dropped notes in them that are more thumps than anything else, and that depends a lot on how much you dampen with your left hand, using sometimes the little finger of the left hand as a pad to dampen down the note."

Do you suffer from any problems with your fingers or are there any things that you can pass on about that aspect of it?

"Well, it's hard to say but I do have to be a bit careful. After a few weeks on tour there's a permanent groove worn in the fourth finger of my left hand and I find myself coming off stage looking as if my fingers are rotting away. I find that I do have to keep soaking my hands in soft water to remove some of the callouses otherwise when I lift my finger off, the callous actually plucks the string!"

A final question. Assuming that the Who are going to break up some day, do you see your solo career being more as one of a songwriter or as a bass player/songwriter?

"My next album is going to be very bass orientated — there's going to be a lot of lead bass on it possibly because I've been writing a lot on the bass recently, especially on the eight string bass. I got a taste for playing a lot of lead bass solos and things with Ox and that opened up a new dimension, it completely changed my style of writing, for example. The song I wrote for *The Who By Numbers, Success Story* was all bass with the guitar mixed down so low that even I can't really tell where it is. I'd reckon that my next album will be more like that — it's certainly the style my music is going in at the moment."

Having covered Entwistle past, present and future it was then the time for a quick look at the collection of equipment he still has at his Ealing home, the majority now being safely stashed away at a new house he has just bought in the country. In a converted bedroom a studio has been created which is almost as well stocked as a West End music store. Synthesizers, amps and a drum kit are stacked around the walls with just a few of John's guitars being lined-up in a rack at the back. Most of his guitars are now in the countryside where the collection must be getting like a bass museum.

An interview with John Entwistle is a pleasant affair. He makes no moves to avoid questions and is more than ready (and obviously well equipped) to talk in detail about bass technique. Perhaps most gratifying of all his assertions is that he intends to continue (in fact can't consider giving up) the improvement in the growth of his style which will be reflected in his forthcoming work. The man who invented lead bass and brought the instrument out of the shadows (pun intended) is going on to prove that he's still got a trick or two up his sleeve.

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YOUR LETTERS AND QUERIES

Budget Valves

Dear Sirs,

I have recently become a subscriber to your excellent magazine, so perhaps you could help me with a problem.

I play lead guitar and prefer valve amps to get the overload/sustain sound. Until now I have been using a WEM Dominator 11 combo but now find that I need more volume.

Being a student I have a very limited budget and so I wonder if you could suggest a good 50 watt combo under about £200 (preferably valve type with reverb and a master volume control).

I have been considering the Peavy Classic combo; I am told that this has a transistor pre-amp stage and a valve power amp. Would this give the valve sound I require at various volume levels using the distortion (master volume) control?

If you have any other suggestions I would be grateful for your advice.

Yours faithfully,
Phillip A. Nunn,
Enfield,
Middx.

Unfortunately, the £200 price limit that you've set is just about the borderline of where amps with features like master volume controls and reverb start. At around that figure you should look at the Hi-Watt SA 212 (50 watt at about £168 + VAT), or the Hi-Watt SA 212R (100 watt with reverb at £217 + VAT). Both of these are excellent amps. Obviously you should try the Marshall combos although these are quite probably too expensive for you at £223 for the 50 watt Artist combo.

The Peavey amps are good value for money but we've not had the opportunity yet to try the Classic and so couldn't really say whether or not it gives the valve sound. If it performs like the other hybrid circuit units we've seen before then it should be o.k. but you'd be advised to go to a shop that stocks all the gear you're in-

terested in and make direct comparisons with your own guitar. The choice between Peavey, Marshall and Hi-Watt is certain to be one of taste as all are good quality units.

Gibson Faults?

Dear Sir,

I am about to buy a new amp and guitar and have narrowed my choice to a Gibson L6S Custom in Maple or an SG Standard. I prefer the L6S but I have not seen any in the shops to the extent that one sees the inevitable Les Pauls SGs and Stratocaster's. One person I know said that he disliked the L6S—is there something wrong with them I don't know about?

Secondly, I wish to buy a Hi-Watt SA 212R Combo but my sponsor is unwilling to part company with the cash necessary and it is for me to prove that (a) valves are not prone to need replacing every 10 minutes and if not how long can an amp go without regular use and (b) that valves are easy enough to procure if needed.

Yours sincerely,
R. W. Negri,
Tunbridge Wells,
Kent.

We don't know where anyone can have got the idea that there's anything wrong with the L6S which we reckon is a fine guitar. Of course there are more SGs and Les Pauls in the shops, these models have been around for years and have a far wider acceptance by the public than the L6S which is a relatively new model and has yet to sell as many examples as the others which are well known and trusted by guitar players. As far as we know, the L6S is a well made guitar and, if you prefer it, then fine, go ahead and buy it.

As far as valve amps are concerned there really is no reason to worry overmuch. Certainly, valves are becoming scarcer as more and more musical amplification makers go over to solid state equipment

and the rest of the electronics industry abandons valves. Nevertheless, valves are still available and should be for many years to come.

The point about valves being subject to excessive wear is a bit of a joke. Ask any musician who has lived with a Marshall 100, Ampeg valve amp, Vox AC30 or anything else with 'bottles' in it how well valve amps take being thrown into the back of vans and he'll tell you that any reasonably well made valve amp will stand phenomenal punishment before it gives up. Tell your sponsor to stop worrying—if you like the valve sound then there's no reason at all why you shouldn't buy a valve amp.

Strat Problems

Dear Sir,

Just over three years ago I purchased a new Fender Stratocaster for which I had saved for two years. I was very young and inexperienced and did not really know what to expect from a guitar of this class. I have never been very happy with it because it would not stay in tune. I have now joined

a band where there is another Strat and a Tele and compared with these my guitar has very little sustain unless high volume is used and even then I don't get much. Is there anything I can do to correct this? and how can I stop it going out of tune. It is not fitted with a tremolo and I use Fender strings. I hope you can help me,

Yours Sincerely,
Iain Goddard,
Hoddesdon,
Herts.

P.S. Thanks for your useful and enjoyable magazine.

Without trying our guitar, it's impossible for us to say what could be wrong, but it would certainly sound as if something is. As the instrument is now out of guarantee you have two options, one to go to an independent repairer (which could be expensive) the other is to take the guitar back to C.B.S. Arbiter (who handle Fender in the U.K.) and tell them exactly what is wrong. The address to go to is The Fender Soundhouse, 67-87 Hampstead Rd., London, N.W.1. Let us know how you get on.

Continued on page 10



Marshall 100-watt Lead Combo.

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100 watts RMS with an extremely wide dynamic range to handle musical instruments as well as vocals with super fidelity; 4 channels with volume, bass, treble, and reverb controls on each channel; a very functional master section containing controls for overall volume and reverb; professional response and maximum portability make the Peavey PA 120 the ideal PA amp for small clubs and auditoriums.

STANDARD PA

130 watts RMS; 4 entirely separate channels with two wide range inputs along with volume, bass, treble, and reverb on each channel; master section containing controls for overall volume, bass, treble, and reverb for professional PA effects; a monitor output jack for driving an external monitor system; ultra modern design and extremely wide dynamic range create a versatile, rugged PA amp that is without question the finest in its price range.

PA 400

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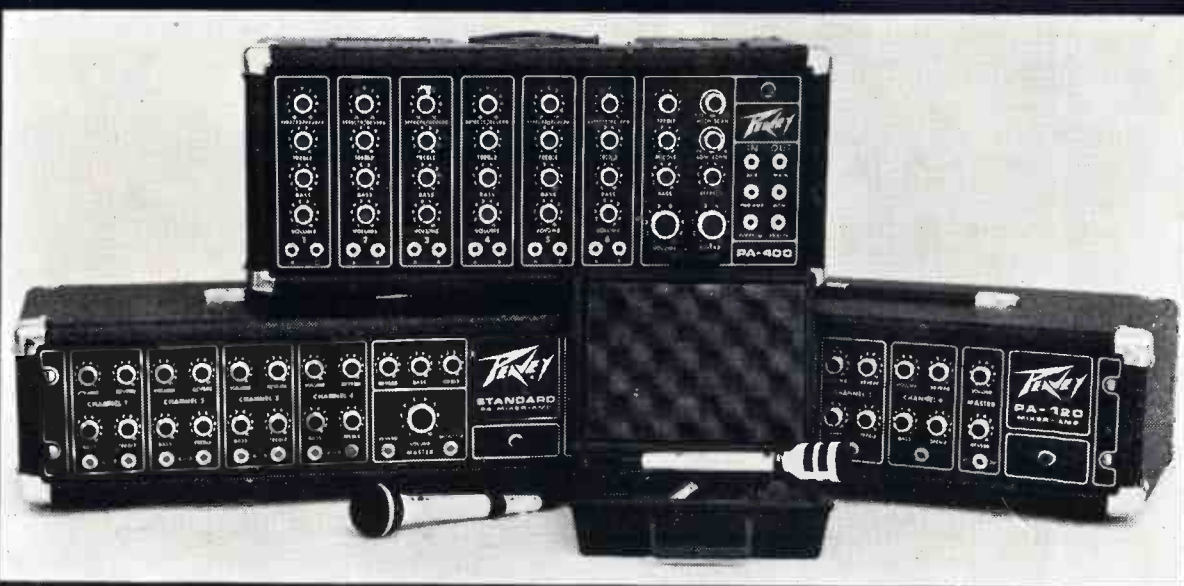
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YOUR LETTERS AND QUERIES

Continued from page 8

Burns Split-Sonic

Dear Beat,

I have a problem regarding the sound produced by my guitar. I have an old, rather battered Burns Split - Sonic which I bought at the princely sum of £25. Unfortunately, when plugged into my amp (a Traynor YGM-30 watt) with a clean sound, and no effects used, the sound is rather dull and clunky, with a rather bassy thump and no particular note. Utilizing the treble-boost on the amp does not really help. By the way, when I purchased the guitar, a somewhat difficult re-wiring job was needed, using four switches, and a mains transformer in reverse (meaning it stepped up the signal instead of reducing it); I wonder if this could be the problem.

I would be most grateful for any help rendered, as the position is rather irritating, having to play with the "Fuzz" effect all the time to cancel out this sound.

Yours,

Mitchell Keen,
Green Meadow,
Swindon, Wilts.

Without actually seeing your guitar it is obviously hard to give a positive answer to your query but, from your description of the re-wiring job, you are probably correct in assuming that this is causing the sound problems. Presuming that all the switches are wired correctly, it is almost certainly the use of a mains transformer that is at fault: the windings of the transformer's coil are probably acting as an inductor (choke) and forming a low-pass filter, which blocks the passage of high frequencies. Best thing that we can suggest is for you to replace the mains transformer with a small 'low to high' audio transformer — either that or contact a music shop that has a guitar repair department . . . it may cost you a little more, but at least you'll have a guitar that actually sounds like a guitar!

Peavey speakers Ricky strings

Dear Sir,

As a regular B.I. reader I found you the only person to approach concerning my two queries.

I recently purchased a new 200 Watt Peavey Dual Channel bass amp and a new Rickenbacker 4001 Stereo Bass guitar. Could you please tell me what type and rate 15 inch bass speaker Peavey's using and secondly what type of strings the Rickenbacker is fitted with when delivered here in South Africa.

Yours thankfully,
E. Harris,
Port Elizabeth,
South Africa.

We contacted Rod Bradley from Top Gear (who distribute both Peavey and Rickenbacker over here) and he kindly told us that Peavey are using what they call Peavey Ram Driver 15" speakers which are rated at 100 watts each. The strings fitted to the 4001 Stereo Bass are Rickenbacker 4440 Flat wound light gauge, these are factory fitted and would apply anywhere in the world. Just for the record, it seems that Peavey are now on the verge of producing their own speakers which will be known as Peavey Spiders.



Broken Glass.

Bottleneck tips

Dear Beat Instrumental,

I am a guitarist with a lot of problems. I have been playing for about a year and a half and I concentrate mostly on playing lead. I have a Columbus N8S which I find has a nice sound for its price. I was wondering though which strings would give the best sound for both lead and bottleneck guitaring and with a fast action and bend?

My main problem, though, is my amp. I could only afford a little 'Leo' 7 watt one which buzzes and distorts badly. What would you recommend as a good amp and speaker of reasonable price, say around 50 watts? I recently saw a Selmer Treble 'N Bass 50 and speaker for £60, would this be a good buy?

Ta very much and keep up the good work with BEAT.

Yours sincerely,
Phil Blight,
Luton,
Beds.

We're afraid that its impossible to say which are the best strings because if there ever were to be a 'best' anything at a reasonable price no-one would be able to make anything else and find a market for it. Strings are very personal and you should try as many different sets as you can get your hands on. If you're into bottleneck and bending then you should try to get a plain third as opposed to the more normal wirebound variety and we'd be inclined to recommend a look at Picato, Rotosound or Ernie Ball. One point, bottleneck calls for a fairly high

action and fairly heavy strings to get the best sound and you may have to compromise on gauge and action to get the best of both worlds.

The amp combination you were offered seems OK but you don't specify what type of speaker—beware of just any old 12" speaker in a box. If the speaker's good then it's not at all a bad buy. Perhaps a little more suitable for lead work would be an AC 30 if you can get one at a fair price. Scour the local papers as occasionally these are available though their quality has tended to push the secondhand price up out of all recognition of late. An old Marshall 50 or 100 would also be superb to use but again, prices are high for good second-hand examples. Marshall combos are good to use and easy to handle, keep your eyes open for one at a fair price.

Broken Glass

Dear Beat,

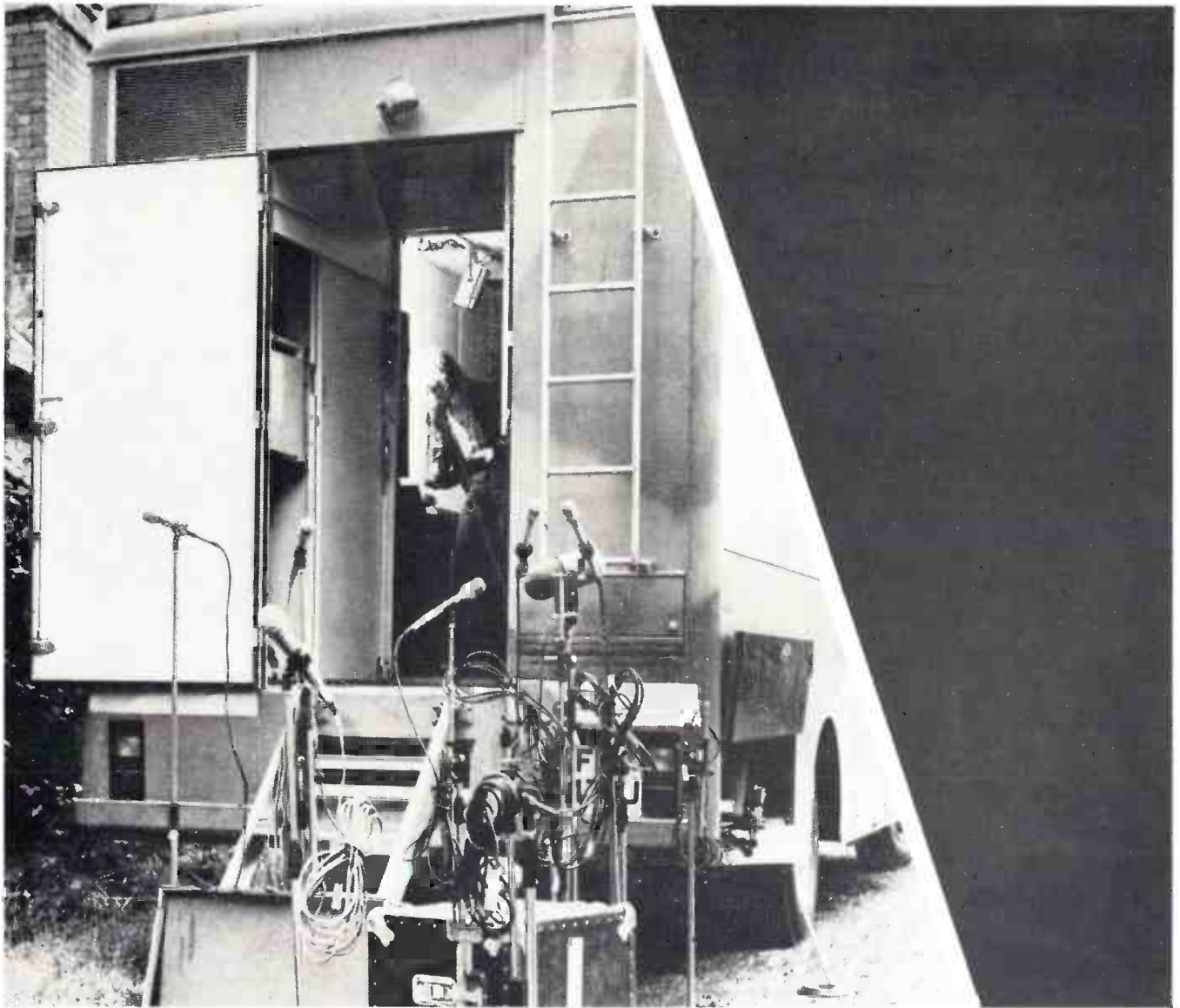
A couple of months ago you reviewed an album by Stan Webb's Broken Glass which I've been looking for ever since, one or two shops I've been into say that they don't know anything about it— can you give me the info?

Thanks,
P James,
Canvey Island,
Essex.

It's not surprising that you haven't been able to get this one as we were reviewing an acetate copy kindly brought into the office by Barry Mead, the band's manager. The album has just been released on Capitol EMI Records with the catalogue number E-ST 11510. Having now had the chance of more than one listen to it we'd be inclined to say that it's a classic British Rock album at the genre's best. Go along and pester the shops again 'cos this is a good 'un!

Do you have a query or do you merely want to air your views on any musical topic? Write to:

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PLAYER OF THE MONTH

ANDY McCULLOCH

MOST people who want to play music have an initial decision to make as to what instrument to play. I never had to make that decision. For me it was always the drums — I was never interested in any other instrument at all." So says Andy McCulloch, ex-King Crimson and Greenslade drummer, who, like Bill Bruford and some others is a constant contradiction to the idea that the percussionist is necessarily simply a time-keeper. Andy's drumming added a considerable amount to the overall sound of Greenslade, one of this country's brightest hopes until through management difficulties in January of this year, the band was forced to fold. His playing is driving but complex, tight yet colourful—no wonder that Bob Fripp should have chosen him to play on one of Crimson's most exciting albums, *Lizard*. In fact his short-lived period in King Crimson was Andy's first sortie into the real front line of the rock world, his previous experience having been playing in local bands down in Bournemouth, where he was spotted by Greg Lake and Keith Emerson, who reported their discovery to Bob Fripp.

"I suspect I annoyed quite a few drummers when I was younger," says Andy. "I had a habit of getting as close to the drums as I could — the drum-

mer would look round in horror in the middle of a solo to see a spotty boy peering at him from the side of the kit! Funnily enough it's only been over the last year or so that I've got into chord structures and so forth, which are to most people the basics of music. I got a military drum first of all, when I was quite young and that was about it until I was eighteen when I bought a kit and practised at the local youth club."

Andy spent a long time in the south of England playing in all kinds of outfits before he teamed up with Bob Fripp. "Funnily enough I never saw Crimson live at all, though I'd heard their albums and I'd heard that they'd broken up when I met Fripp. Bob was really good at arrangements and the melodic part of Crimson was one of its strongest points. So few bands these days are getting into melodies, and I think that's a great shame."

Environment

"It was through Bob that I really began to *think* about music. It wasn't until I came into Bob's environment and we started to think about not one or two, but ten or twelve different ways of playing a particular thing. Every now and again we'd stop and say, 'Why play that? Why play the proverbial crash of the cymbal at

the end of every bar?' and so on. We questioned everything we played and that's how you really become yourself as a performer. We spent the whole of the time with Crimson rehearsing and the experience did an awful lot for me."

Andy did *Lizard* with Crimson, but his stay in the band was to be short-lived because Fripp at that time wanted to get more into playing a freer kind of music and Andy felt that he could not play the type of thing that would be required of him so he left the band, and after a short period of time spent in Fields, a band got together by one of the ex-members of Rare Bird, and an even shorter period in Arthur Brown's Kingdom Come, he eventually came to join Greenslade, the band in which Andy's reputation was finally established.

So how did Andy get the percussion job with Greenslade? "I didn't know anything about the band until somebody told me that Dave Greenslade was putting a band together and that the only instrumentalist still needed was a drummer. I went along and it just happened instantly. In some ways, the Greenslade thing I still really feel for. After all we spent three years building it up — all right, so we had little bits of reputations, but they don't really mean much after a bit — and we so nearly broke really big. We broke up for many reasons. Financial, managerial—we were at a crossroads, because we were going to get new record deals, management things etc. together.

"The financial risks were becoming too high and we were at that stage where we had to decide whether to sign again



for another five years or to break loose and do something else and it was this that we decided to do. With that set up I had a feeling that that was as big as we'd ever be, so it was time for pastures new.

"You see we built up Greenslade into quite a big thing by the end. We were getting all the Gary Glitter type fans in at the end, and they knew all the songs too!"

English

All the bands that Andy has been involved in so far have been very English-sounding and they have relied on highly arranged material, besides showing some signs of having been influenced by some of the ideas that classical music uses — light and shade, strange time signatures, grandiose melodies

and so on. Had it been pure coincidence that Andy had been playing this sort of music or did his own tastes determine which way the music had developed?

"I like music that has depth in it, a lot of the things I like are purely to do with sound and atmospherics. I like things with very strong melodies and I like good structures. But I've gone and watched bands that I love dearly and been horrified because they're playing away there and they're not reaching a soul. You have to be easy to understand and play for the audience.

"You see I love the sound and the atmosphere of being on stage. And also I like the fact that you're committed, you can only do it once and there's no going back. A live performance can never be recaptured and I like that. In the studio you can stand up and say, 'I think I can

do better,' and that can go on and on!"

So what had Andy been doing since he left Greenslade and what were his future plans?

"I've done a couple of sessions here and there, nothing much. However I have a number of plans for future ventures. When I left Greenslade I realised that there were only a very small handful of bands that I would have really liked to join and I realised that the drummers in those bands weren't likely to drop dead immediately. There didn't seem to be much point in doing something that was just going to tread water, or something that I didn't really want to do at all. So now I'm beginning to think in terms of doing something where I have a larger say in what's happening — not that I want to be or could ever be the Great Dictator — but I'd like to be on the Bridge rather than in the Engine Room from now on. With that in mind I'd like to work in a concept where one could play to an audience for an hour and a half and take them through every emotion.

"To pull people out like a good story or a film does and really involve them in what's going on onstage. With that in mind myself and Dave Lawson are now searching for a bass-player/singer to complete the line up of a band to fulfil this aim. I intend to have just the three of us in the band and because it's too much to acquire the material from just the three of us, I intend to commission people to write for us. I want to take from writers in all fields that I admire and in fact I've already got some material to work on.

"The core of the band will be Dave Lawson, myself and our as yet unknown bass player (bass players take note — Andy would like to hear from you!) but besides this we'll be using tapes, mime etc. This, by the way, is going to be made possible for us by the technical bods of PA:CE in Cambridge. What I want to do then is to take the music that I want to play, the people that I want to play it, and see if I can fit it all into a financial structure that will work."

At this point, at last, we started to talk about drums. Had Andy investigated any

other percussion instruments outside the orthodox drum set-up?

"I want to get some tubular bells and I'm also looking into the possibilities of glass percussion instruments — I know some people who make glass things and I'm hoping that they're going to be able to make me some Siamese bowl type things which you just have to flick and they give beautiful notes. You see I want to build up a whole section of unorthodox percussion things, I'm really into pure sounds like that."

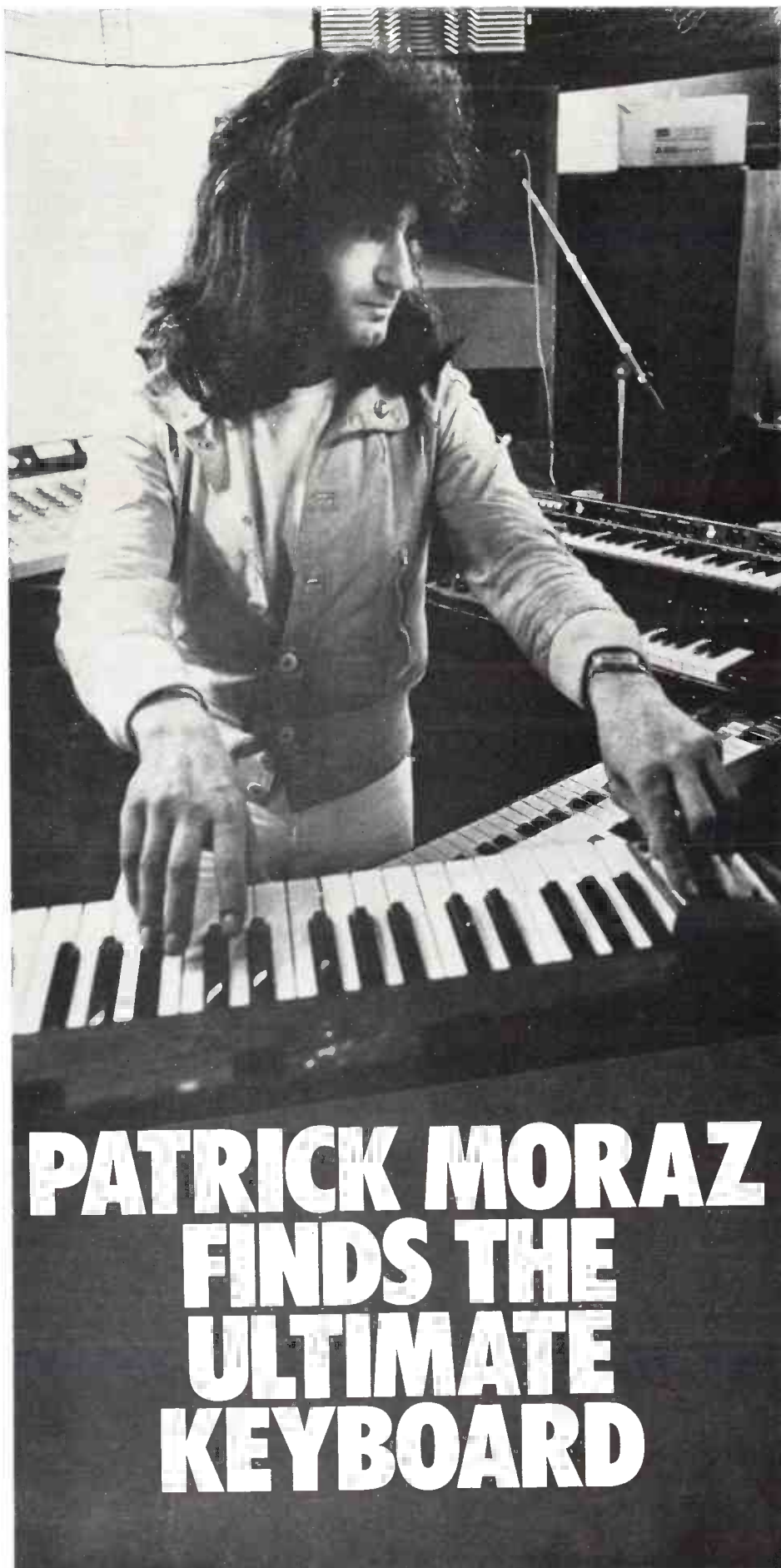
Andy's equipment at present comprises two 22" Fibes bass drums ("I've always liked the idea of the double bass drum set up and I've never had any difficulty with it"), Ludwig tomtoms (one 16 x 16", one 16 x 18", and 12 x 8", 13 x 9", 12 x 14" tomtoms. He also uses a Ludwig snare and has his sticks specially made for him by Footes, and he says that he uses about two hundred pairs a year.

Fitness

Andy is really concerned with physical fitness at the moment and interviewing him made it clear to me for the first time just how important a factor this is to a percussionist. He hates one-off gigs because he begins to ache all over almost immediately and it's only when he's two or three gigs into a tour that he begins to feel totally physically on top. Not only has he given up smoking and drinking, but Andy goes out for runs on his racing bike and practises "almost all the time" up in his music room, where he has constructed himself a huge practice kit. "I'm beginning to go back over the rudiments now," he says. "I think it's very important to keep improving one's technique, and although I can read music slowly, I'd like to be able to sight-read."

His main objective at the moment, however, is to get his new project off the ground.

"Dave and I are really excited about it, particularly because we have PA:CE on our side. We're hoping to do something a little different, and God and finance willing, it should be really interesting."



PATRICK MORAZ FINDS THE ULTIMATE KEYBOARD

THERE'S been a lot of talk in this issue about revolutions. First of all we talked with John Entwistle about the revolution he began in bass playing, now it seems that we're faced with another revolutionary in Patrick Moraz keyboard star (well, we're bored with terms like 'wizzard' and 'virtuoso') of Yes.

Moraz was certainly not the first man to start using banks of keyboard equipment like he was playing music to benefit the manufacturer's bank managers, but he has now become one of the most influential via his work with Yes, his contribution to both Chris Squire's and Steve Howe's solo albums and now his own solo project *The Story of I*.

Album complexity

A lot has been made in the weekly press of the complexity of Moraz' album both musically and conceptually. It's fair to accept that it has great musical depth and that the playing, writing and arranging is of an order which we have *not* been accustomed to outside the work of the very best classical composers and conductors, but despite Moraz' use of a fantasy story of a hotel in which sensation and enlightenment seekers come to experience the ultimate in whatever life has to offer, the idea is still a basic love story — a fact which Moraz will readily agree with.

But the ideas behind the album (however fascinating) are subsidiary for our purpose to the playing and choice of equipment used on it.

Moraz makes quite a thing about the equipment he uses, taking the almost unprecedented step of printing a list of it inside the album sleeve. To give you some idea of what he used, here is that list: Grand piano, Hammond C3, Mini Moog, Micro Moog, Polyphonic Moog, Taurus bass pedals, Mellotron Mks. 1 and 2, Orchestron B, Supersonic Vocaltron, ARP 2600, Pro-Soloist, Axxe and String Ensemble, Rhodes 88, Clavinet, AKS Synthesiser, harpsichord, marimbaphone, PA:CE drum synthesiser, DPM digital sequencer, electronic Slinky, and, of course, Alpine horn. It's a long, long list and is pretty much representative of what he'll be taking on tour in the States soon. Asked about his tour gear, Moraz smiles and explains that certain elements are still undecided.

Stage equipment

"I've got a main bulk of keyboards where I play about half the programme and that comprises about fifteen keyboards including a Hammond, Fender Rhodes, clavinet, two ARP's, double Mellotron, two Mini-Moogs built into one, string ensemble, Taurus bass pedals, Micromoog, a spare Moog, and two EMS synthesisers for special effects. On the left hand side of the stage I have a grand piano and another double Mellotron, another Fender piano another Moog. On the other side of the stage, over by Steve, I'll probably have Polyphonic Moog and possibly a harpsichord but that's not decided yet."

Quite obviously this is a daunting amount of equipment to both move and play for and one musn't forget that each of these instruments will need tuning before a show can start, so Yes have a

clause in their contract that a keyboard tuner will be there for work on the pianos, leaving Moraz with the awful task of tuning the electronic instruments which defy a traditional tuner's skills. Did all this equipment cause tour profitability problems, we asked?

Influential band

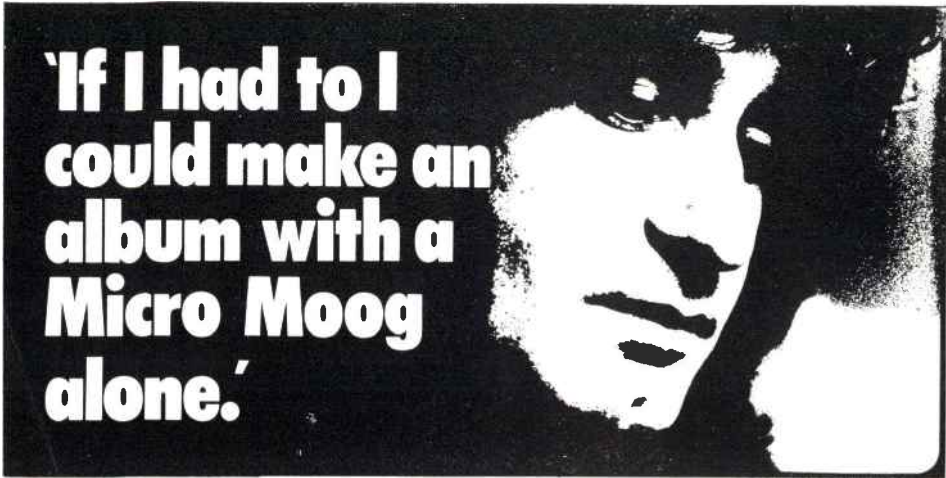
"It's difficult but Yes is a very influential band and has a quite definite role in music to show what *can* be done. If Yes doesn't do it then someone else will do it. We feel that we owe it to our audiences to put on a good show and if we feel we've got to do it then we've got to do it and profit doesn't really come into it."

The question at the back of many people's minds however, is whether players like Moraz and Wakeman are, in fact, making it increasingly difficult for young players to come through. Some hold that audiences have an unpleasant tendency to judge a musician by the size of his gear (this applies, of course, more to keyboard players than guitarists) and that because only the very top men can afford the gear, young players tend to get off with a bad start simply through lack of bread. While Moraz accepts this to an extent, he doesn't feel that all the equipment is necessary.

Simplicity drive

"Oh yes, you can certainly make creative music without all these instruments. I mean I'm going to be making an album soon using just a piano. I want to be able to prove to people and myself that I can create without all the electronics. In a way it's less easy to create *with* them because if you've got twenty or thirty keyboards you have to keep making choices about which to use and you have to be very much in control of them so that they don't run away with you. I mean, using all that equipment on the album really meant that I had to work my arse off to hold it all together. If I had to I could make an album with a Micro Moog alone. Don't forget I didn't start with a lot of keyboards, I evolved to it over the years and people will always be able to do that."

Talking of cutting down equipment we asked a Desert Island Discs question. If he were forced to lose all his keyboards, which would be keep?



'If I had to I could make an album with a Micro Moog alone.'

"I'd keep a piano because it can be anything I want it to be. A piano is probably the most universal of the keyboards although I'll admit that this is probably going to change over the next five years as polyphonic synthesisers get better and more available. These *could* replace a piano but at the moment, if I were teaching and had to advise I'd tell people to start with a piano.

In a way this all reflects on what I was saying about equipment on stage. Eventually I might be able to use just a polyphonic synthesiser, plus maybe one or two other things. One of these days I'm going to cut down on all my instruments because I'll find a polyphonic synthesiser that is going to replace them. The polyphonic Moog I used on the album was great but I don't think that it will be ready in time for the tour.

But I do understand your question because it sometimes makes me wonder, where is it all going to go? But now, if you look, you can see companies beginning to make some good small and inexpensive equipment that can do a lot of different things. But look at Korg! I've just seen a polyphonic synthesiser of theirs which costs about £600 and that's not a lot of money. It seems very good for the price although I've not looked at it that closely and there are a lot more instruments like these that will change things a lot."

So Patrick, like many other keyboard

players, sees the polyphonic synthesiser as being the best potential future for rock keyboard players. Readers might well be interested in looking at Alan Townsend's piece on synthesisers elsewhere in the issue to see several points he's made about them.

New wave players

The solo album, although it employed some European musicians, also made use of several of the new-wave American's like Alphonse Mouzon and, although he has a great deal of respect for Chick Corea and Stanley Clarke plus other American rock/jazzers, Patrick sees a great virtue in European musicians even being, if anything, less well skilled than their American counterparts.

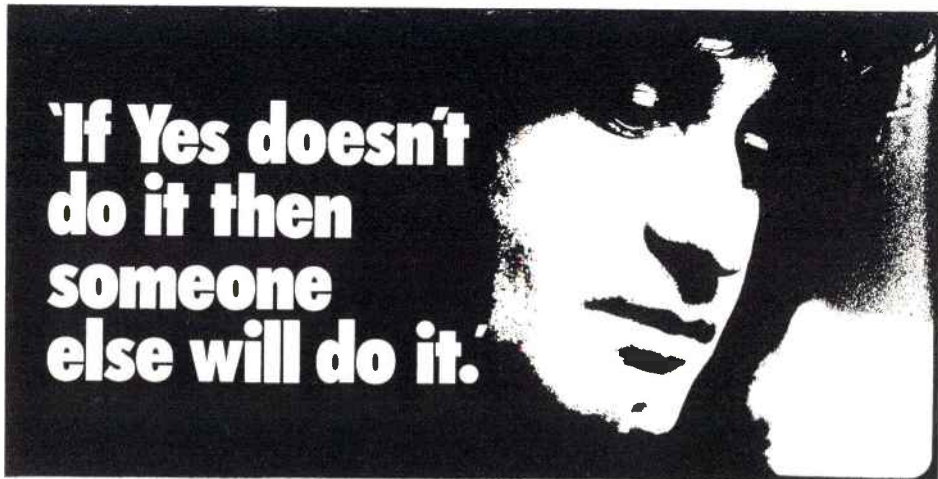
"In America most of the rock/jazz musicians are well schooled in music and most of them are technically very good but in Europe there aren't very many jazz schools. Nevertheless, English musicians are definitely more original than Americans and a lot of this is because they *aren't* schooled — they have to work with quite often very limited technique but that makes them come up with new ideas and makes them extend themselves, making them so much more original than many American bands."

Moraz's solo album is a triumph of modern rock keyboard work. He has *not* let his undoubted technical ability run away with his style and maintains a close check on that happening — as he puts it. "I use technique to carry emotion — that's all. I dominate that technique to give out my emotions and that's very important."

The popular British misconception of the phlegmatic Swiss is a bit of a joke in the face of Patrick Moraz. He's a passionate human being who expresses himself volubly and excitedly with a total care about his ideas and the future of music.

The album itself is a fine record indeed because Moraz has the lucky combination of both the ideas and the technical skill to carry across his music. With their tour of the States on the immediate horizon, Yes look set to smash that market wide open—helped by one of the best keyboard players around—and someone who just happens to be a vivid and pleasant personality as well.

By GARY COOPER



'If Yes doesn't do it then someone else will do it.'

STREETWALKERS -HARDENED PRO'S

MICK HOUGHTON LOOKS AT BRITAIN'S MOST EXCITING NEW BAND AND BEAT'S TIP FOR SUPERSTARDOM DURING 1976.



"I've been playing in bands, well the same band really, Family, for more or less ten years. I really needed some breathing space after Family broke up. It changes your attitude because you begin to see different aspects of what you're doing to what you've done in the past. But it wasn't too long before I wanted to get back out there again. I wanted to be part of a good solid rock band again, and that's what we set out to put together with Streetwalkers."

Roger Chapman is indeed back with a good solid block-busting rock band, and a band that unlike Family, has the kind of one directional, high energy output that should see Chapman, and his long standing cohort 'Charlie' Whitney, finally recognised as premier talents in the current rock scene.

Family

It's unfair, though still inevitable, to dwell on Family, but it's worth a look back at Family's long and winding road to the top because it explains much about the nature of the subsequent Chapman-Whitney band.

Family, it always seemed, were their own worst enemies at times. They readily trod unknown territory and sought out original directions at the expense of their own commercial acceptance. But it was no conscious effort to be original, that was just the way it happened. Like when the old Farinas, a popular mid-sixties

club band based in Leicester, evolved into the group that became Family.

"All of a sudden we went from playing blues and soul to throwing new ideas in. We'd get the urge to try something and we just went rampant musically on stage. None of the soul punters were into it at all. I remember one promoter coming up after one gig and saying, you're taking the piss out of me aren't you? you're doing that on purpose'. They couldn't understand that we were getting off on it all. We just grew into that approach that Family had, it was inbuilt in us, we didn't have to work it out. That's probably why we lasted as long as we did."

Streetwalkers, on the other hand, was more a preconceived idea of a band with a single minded purpose. Perhaps it was ever a reaction to the more haphazard evolution of Family, with the many personnel changes that they always seemed to take so well in their stride. For Chapman, that is another pleasing facet about Streetwalkers, that since their inception eighteen months ago, there've been no comings and goings, a far longer period than any of the later Family line ups.

Sessions

What was the thinking behind Streetwalkers? "The first album was put out (*Chapman-Whitney Streetwalkers on Reprise*) was just me and Charlie using mostly session players. And when that album came out we did a short tour but with

what was more of a pick up band. The first Streetwalkers was really just a continuation Family though only the Chapman-Whitney side of it. We decided to keep the name for the new band, but it's just Streetwalkers, this is a band with five people in it, not Chapman-Whitney and three other guys. And we really are a band. There's far more of a feeling of cohesion than with Family."

Tench

The band is completed by Bobby Tench, guitarist, and no mean singer in his own right, Jon Plottel on bass and Niko on drums. Bobby Tench is the best known. He'd been through a similar kind of experience to Family in the mid-Sixties with a mod-soul band called Gas, and then, without doing too much in between, was asked to join the post Rod Stewart/Ron Wood line up of the Jeff Beck Group. What few people realised at the time was that Bobby was also a fine guitarist, which is his main role in Streetwalkers, complementing 'Charlie' Whitney in the group. As a singer he's prepared to let Roger Chapman take most of the honours but it was always the aim of Chapman and Whitney to have strong harmonies in the band. It's an aspect of the band not fully developed yet but which does have considerable potential.

The Streetwalker's rhythm section is ideal for the gutsy fierce sound Chapman, Whitney and Tench create up front. Bas-



Niko, Jon Plottel, Roger Chapman, Charlie Whitney and Bob Tench.

sist John Plottel and drummer Niko make a formidable pair, especially in a live situation. Something of the way they work together and pull their weight behind the band on stage has so far been missing from the two albums, and it highlights the most telling weakness in the band at the moment—bringing their recorded Sound to the peak of their live performance level.

Family were an erratic live band it had always seemed, the blend of instruments the multiplicity of aims, always making them something of a hit or miss band. Had that influenced Chapman's thinking in setting up Streetwalkers as a basic two guitars, bass and drums unit?

Original

"It's a fallacy to think that a variety of instruments makes for an original sound. People associated particular instruments with a particular sound. Like, when we started using the violin people made certain assumptions, and the vibes, people think of vibes as a jazz instrument, but Poli Palmer always played them in a rock style. Now, because Streetwalkers have a more basic line up that doesn't mean we're not original. It's more challenging but there's as much creative potential.

"Family really could have there off nights and play badly. Obviously we have nights when things don't go so well but this band just has so much drive

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FAMILY COULD BE.'

and energy we'll never be as bad as Family could be. We're a high energy band—that's how we like to play."

On the two albums to date from Streetwalkers, *Downtown Flyers* and the latest, *The Red Card*, there certainly is that relentless single purpose approach to hard-driving rock music. In fact *The Red Card* is more extreme than *Downtown Flyers*, there are no Familyesque acoustic numbers like *Raingame* although stylistically they are expanding within the framework of the group's sound. Charlie Whitney and Bobby Tench seem to be feed-

ing off one another well for ideas.

Streetwalkers sum up the course of British rock over the past decade. Musicians like Jon Plottel and Niko may be less well known but they've been through the same mill as the others. Plottel played with Casablanca and did considerable backing work with American soul singers on extensive British tours, and Niko broke himself in with Blossomtoes. It's fitting that the Who should have chosen them for the prestigious 'The Who Put the Boot In' tour, since both bands have their feet firmly in that British

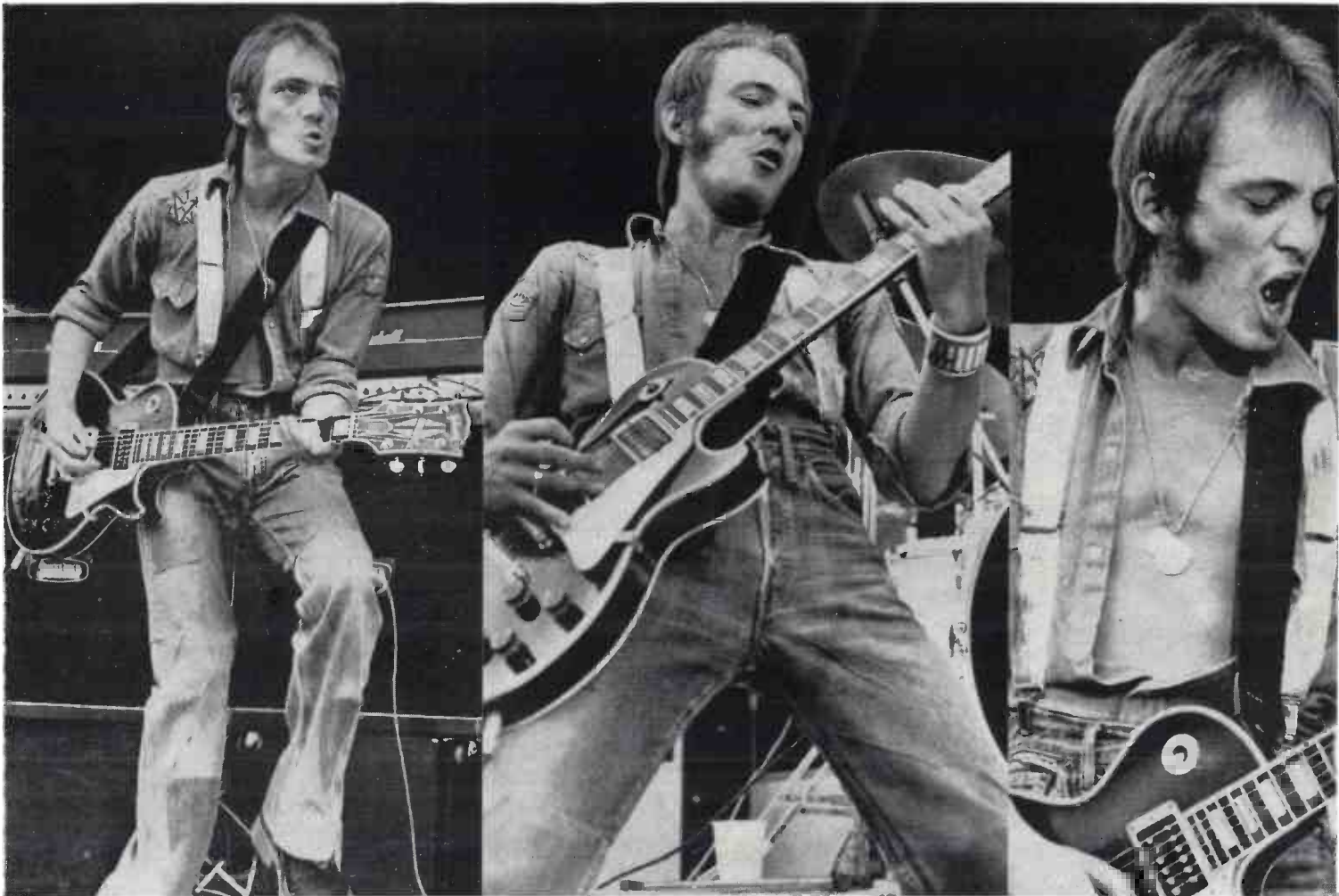
tradition. Streetwalkers even have the same er... reputation as the Who for wild off stage behaviour. It's not for nothing their new album is called *The Red Card*.

Streetwalkers, Chapman feels, are now poised to break into the big league. From the start they set about doing everything right calling on all their vast joint experience; rehearsing for months before recording their debut album, *Downtown Flyers* and before going out on tour. Now, with the Who dates, their own extensive tour, and a more than creditable album in *The Red Card*, they should be able to break through. Their sights are perhaps ever more firmly set on America. Chapman and Whitney saw total success in America elude them time and time again with Family, and Chapman realises that with the contracting number of British venues, American success is absolutely vital to the survival of new British bands.

Confidence

He's confident about the future of Streetwalkers, the ex-Family tag is still with him but now he's recognised as a member of Streetwalkers first and foremost. "People are at last seeing Streetwalkers as a new band. When we started me and Charlie were singled out all the time, but the band has got its own identity now and it can only get stronger. We're getting there."

MARRIOTT'S RETURN...



STEVE MARRIOTT is still one of the most well respected guitarists and musicians in the rock business — although many rock people were a little sad that his last band, Humble Pie, dragged on for so long. The last months were counter-productive, for the albums which appeared were not representative of the band's capabilities on either the writing or performing sides.

So the latter Pie works rather dragged Steve's reputation through the mud. When the inevitable break occurred, Steve was left on his own. But what might have been a sad end to what had been a promising career has turned into a personal triumph. His first solo album, *Marriott*, has had a good reception in the business as a whole.

The album consists of one English and one American side. The latter is rather less in the

style one has come to expect of Marriott, with a mixture of rock and blues, ballads and ravers. As for the British side it's little of a departure: a collection of "heavy" rock 'n' roll numbers in his raunchy usual style, concluding with the typical *Wam, Bam, Thank You Mam*.

Enlightened

Steve enlightened us on the places the album was actually put down: "The American part was recorded at the Record Plant, and the other bit (the English side) was done in the garden!"

That is a slight over-simplification — the latter part was recorded in the studio which Steve has built in the grounds surrounding his picturesque 15th century cottage in Essex. Steve was, he confessed, "a little out of it, a bit merry" but

promised another time to take *Beat* round it.

We managed to ascertain that in America he enlisted the help of nine top Stateside musicians, including David Foster on keyboards; Ben Benay on guitar; Red Rhodes, pedal steel and guitarist David Spinozza. In Britain he was assisted by ex-Crimson drummer Ian Wallace; Mickey Finn on rhythm and Steve's ex-colleague Greg Ridley helping out on vocals and bass.

Our meeting was on the eve of Steve's visit to the States — a trip which looked set to become very important for him, as after some time in their chart wilderness his new album had actually made quite a few stations' playlists. Apart from that, Steve was still suffering from the after effects of a late night, and his visa-less and unpacked state wasn't making him feel any better. He did perk

up enough to tell us about the visit, from one Mr Lane, which had exacerbated his sorry state.

"Ronnie was here last night, and we sat up rapping and playing. We drank about 84 cans of lager, and he didn't go until about six this morning. We talked and drank so much that my jaw and my head ache now!"

Faces

"He had this amazing cassette: it had just about every Small Faces' number on — it was incredible, you know, listening to just about six years of your life like that. They were good years, happy years too. I'm certainly not ashamed of them in any way. It was really great."

Inevitably, after that we had to ask him about the much muted but not yet evident Small Faces re-union. Will it ever happen, and if so, when?

PHOTOS BY LOVE



"Yeah, sure it'll happen. We'll get it together. That's what Ronnie was talking about — we think it'll be some time in July, but nothing's actually fixed yet. One thing we do know, when we do do it if we tour we'll take all our ladies and kids along — just like one big happy family."

Steve's quite a family man himself now, his lady Pam having recently presented him with a brand new son who Marriott calls Toby ("It's as near toe rag as I could get" Steve jokes). In fact the son was very much in evidence, and the conversation was spattered with phrases like "Who'd have thought I'd ever have a son".

As you can gather, the atmosphere was hardly conducive to serious conversation about matters of music: although they were rather more so than they had been on the first occasion when we'd tried to get to him, as he hadn't

turned up in time! Steve is usually a friendly and highly articulate person — we gather he was just having a bad patch!

We did discover that, re-union or no re-union, Steve is going to co-operate with another ex-Small Face or someone else's project: "Mac is going to do the Bobby Womack album with him, and I think I am too! Guess I'll find out for definite when I'm in the States."

As he didn't seem likely to answer any more taxing questions than that, we decided to leave him — he looked much more likely to snuggle back into the bed he'd just part-raised himself from than even prepare for his trip. But we did get one final comment from him:

"I think it's a good album — we went for more of a studio sound than a live one and I think it worked. You could say the album cooks quietly."

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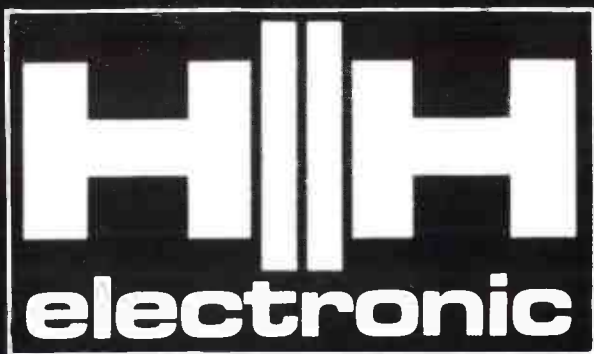
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NOEL REDDING

Clonakilty cowboy rides again!

NOEL Redding says that he feels he's getting a bit old for the rock musician's continual gigging programme. One moment later he admits that if and when his band were to disband he'd probably go straight out and get another one together, proving that once addiction to music making has struck it tends to stick.

Playing bass with Jimi Hendrix in turns with Billy Cox, it was his time with the Experience that provided him with a strong enough platform from which to set up other bands, and since the demise of the Experience he has moved through Fat Mattress and now formed the Noel Redding Band. He is faintly embarrassed that it has been necessary to use his name for the band, originally preferring to call them the Clonakilty Cowboys, now the title of the first album. A couple of gins ease an initial shyness we both share, and he recalls the formation of the band.

"I've known the keyboard player David Clarke since 1971, and I was originally going to produce him. We started writing some songs together, and in June '74 I thought of getting a band together." Noel was at his home in Ireland (in Clonakilty, get it?), and he wrote to ex-Thin Lizzy lead guitarist Eric Bell asking if he wanted to join. The answer was yes. "Our first drummer dropped out, and we got Les Sampson from Stray Dog. Right near where I live is a perfect practise hall, so we moved in there, and after that we fixed up management and the recording deal."

Tightness

He's not into any image assistance: "I just want a straight rock band to get some nice songs over. There is already a tightness about the band, which I greatly enjoy." His main problem so far has been leading the band from his position as bass player, but this has largely been resolved by the ease with which he and David Clarke

write together, and by the fact that he also doubled on rhythm and acoustic guitars on the album. "I'll probably add another member on rhythm so that I don't need to do that again, as I would like to concentrate more on the production."

Although Noel did all the song arrangements, Muff Winwood produced Clonakilty Cowboys. "On the whole I am very happy with the job he did, although he tended to put on too many keyboards. I would have preferred it a little more bassy. We have already cut some more tracks for the next album, some at de Lane Lea, and some at 16 track studio in Texas, called Sugar Hill. It's fantastic—they're just a bunch of doped out cowboys, but they really understand the equipment at their disposal. We will do the mixing at Strawberry."

One thing Noel has had to get used to is his past record as a member of the Experience,

and he's come across the odd front row maniac who spends the whole gig screaming 'play some Hendrix'. I wrote *Little Miss Strange* in the Experience so we play that. Actually," he adds with a smile, "we've had calls for Fat Mattress as well!" There are some gigs to follow soon in England, and possibly Europe, and Noel has already been pleasantly surprised by audience reaction. He dislikes doing encores, but was forced to play one in Glasgow to avoid a stampede ...

Repair

On the gear side, he hasn't deviated from his original choice of a Jazz Bass. In America recently his frets were going and he sent the axe off for repair. The repair was too late for the gigs, and he had to buy a new one. "At the end of the tour my girlfriend asked me where the muscle on my shoulder had come from, and when I

picked up my old bass I realised how much lighter it was! So I'll be writing to Fender to build me a new one to the design of the old."

He plays through Sunn, and had a similar experience there. "Their new amps don't use JBL speakers anymore, and before I discovered this I blew out a few. So the answer now is to just get the cabinet from Sunn and then add the JBL." He's not a sound fanatic, but he won't plug into anything; he's eager to volunteer a view of dissatisfaction with the current trend of transistor amps. That's getting a bit of an old chestnut in Beat (viz. Jimmy Page interview recently) but there is an inestimable number of musicians still sticking to five year old models.

There, then, are the current activities of Mr Noel Redding. But remember, if you bump into him and he tells you he's getting a bit tired of the gigging game, take it with a pinch of salt!



ALL ABOUT P.A.

Part 3

LOUDSPEAKER SYSTEMS

by Nigel Jopson

FOR two seemingly contradictory reasons, there are widespread misconceptions about the operation of loudspeaker arrays. To the uninformed, their operation seems deceptively simple (. . . it's just a 'speaker in a box, isn't it?'), and to the regular concert-goer, the complex appearance of professionally designed systems, defying visual analysis, often suggests incorrect assumptions as to their acoustic function. Although superficially 'box shaped' usually for ease of portability, the loudspeaker baffle or enclosure is the one determining factor for the final performance of the loudspeaker itself, and is an integral part of the acoustic reproduction apparatus.

Sound pressure level, polar frequency distribution (angle of coverage), and frequency response of a system are all defined by the combination of loudspeakers and enclosures, rather than just by the loudspeakers themselves. Thus the actual choice of loudspeaker system will to a large extent be dictated by the size of venue, and type of music to be amplified through it. There follows a brief description of how different types of enclosure work, and what their applications are: It is not really relevant to consider *why* they work — as long as you know enough about the subject to choose the right P.A. for your group, then the electro-mechanical theory of its operation is

really only of academic interest!

The most basic form of enclosure is the 'direct radiator' type, of which the Closed or Infinite baffle is an example likely to be most frequently encountered by the musician. Although the term "Infinite baffle" is not strictly accurate in a technical sense, it does give a good idea of this cabinet's function. If the loudspeaker was not enclosed at all, as the diaphragm moved forward to generate a pulse of sound, a momentary vacuum would be created at the rear, thereby 'cancelling' the energy coming from the loudspeaker — this effect is most pronounced at low frequencies as their large wavelengths take longer to develop. Another essential function of a

"baffle" is to act as a radiating surface, a sort of auxiliary reflector to assist the setting up of the wave motion and to give the sound an additional send-off into space. Thus an Infinite baffle enclosure would theoretically present an infinitely large baffle surface and rear volume to the loudspeaker, isolating the front propagating wave from the rear of the drive unit.

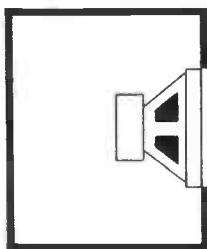
In practice this is clearly not possible, although 'Infinite baffle' enclosures will function quite effectively if they are made the right shape, are sufficiently large, and are of a rigid and airtight construction. Nevertheless, the loudspeaker's basic efficiency has not been substantially improved, indeed, much of its work is wasted, as the rear energy it develops is lost as far as useful acoustic output is concerned. One method of overcoming this and other drawbacks of the 'direct radiator' design is to make a vent or 'port' in the closed box, so that the rear energy can be made to do useful work.

Bass reflex

The operation of this design, commonly known as a 'bass reflex' enclosure, is not quite as simple as this however; in order to make use of the rear wave it must first be delayed sufficiently so that it emerges from the port 'in phase' with the wave motion from the front of

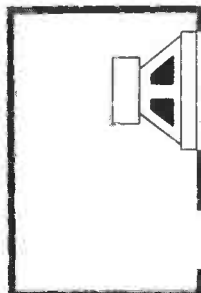
Diagrammatic cross-sections of major types of loudspeaker enclosures

1



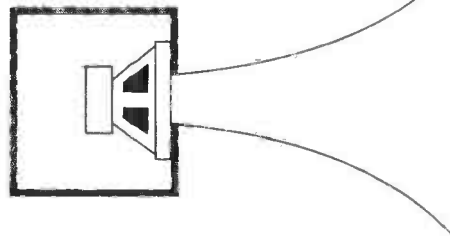
Infinite Baffle

2



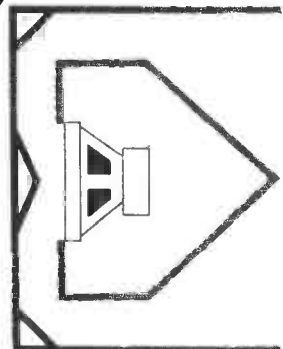
Bass Reflex

3



Compression Driven,
straight exponential -
flare horn

4

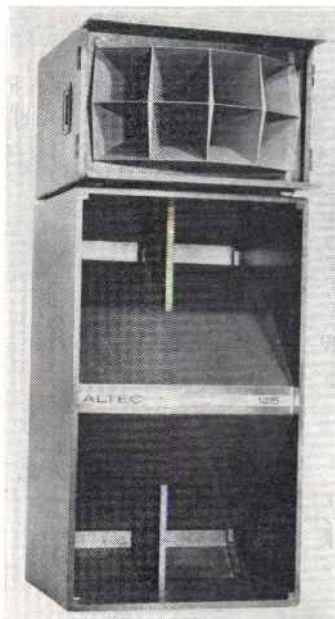


Low Frequency,
compression driven,
folded horn

the loudspeaker. There are basically two factors upon which the operation of the bass-reflex enclosure is dependant: the volume of the enclosure, which has *acoustic capacitance* (stores the sound so that it emerges in phase), and the area of the port, which has *acoustic inductance* (equivalent to electrical inductance, presents opposition to the flow of high frequency currents).

The combination of these two elements forms what is known as a resonant circuit, the resonant frequency of which is dependant upon their values — in practical terms, the volume of the enclosure and the area of the port. When these are adjusted so that the enclosure resonance matches the 'free air resonance' of the loudspeaker, this natural resonant frequency is replaced by two new resonant frequency points, situated approximately one octave above and below the original frequency. A loudspeaker is most efficient at its resonant frequency, so by creating an integrated cabinet-loudspeaker system that extends this area, and also reduces the amplitude of these new peaks through radiation resistance and close coupling of port and speaker, resonant "boominess" is replaced by a relatively smooth unpeaked response over a wider low frequency region. For higher frequencies, the port opening presents a high inertia, so that the enclosure operates as a direct radiator for the mid and upper ranges.

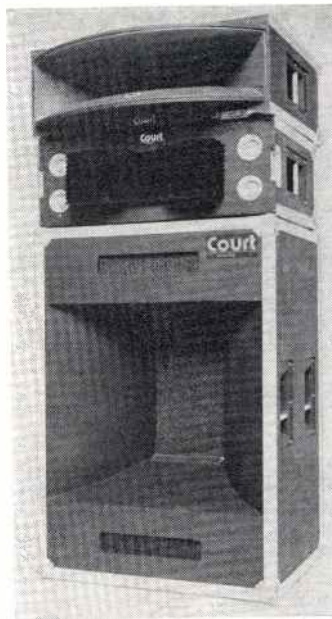
Despite the improvement in low frequency response achieved by the bass-reflex enclosure, this type of design does have



Altec Multicell and Folded horn (4).

its disadvantages as well. The cushioning effect of a volume of air trapped in a closed box, as in the Infinite baffle cabinet, is no longer present. This means that it is possible for the loudspeaker cone to 'overshoot' causing severe distortion when loud peaks occur in the program material. No real problem when pre-recorded music is being reproduced, as this will invariably have already undergone some form of dynamic range compression, but this can have a detrimental effect in a live environment when high power amplification is being used, and 'quick attack' signals, such as a miked — up bass drum, are present.

Another type of enclosure, known as a 'Compression-driven Horn', has both a sealed rear chamber and a very high efficiency over the frequency range set for it. The term 'compression driver' is, in this case, applied to a cone loudspeaker because of the provision of a stiff rear air cushion, which restricts backward motion of the loudspeaker diaphragm. The principle of operation of a horn is actually as old as the proverbial hills — the first time a man cupped his hands round his mouth when shouting, or used the most primitive form of megaphone, he was using the horn as an acoustic amplifier. What actually happens is that a small diaphragm or throat with a low radiation resistance undergoes an 'impedance transformation' along the length of the horn to its mouth, which has a large radiation resistance because of its size; in simple terms, the air space caught in



Court Acoustics radial horn, Lens and bass horn (5).

the mouth of the horn becomes the vibrating diaphragm.

One very important property of a horn with regards to its radiating efficiency is that it acts a high-pass filter; in other words, it will only reproduce sound above a certain frequency. The horn's 'cut off' frequency is dependant on two factors: it must be long enough for the lowest wavelength to be reproduced, otherwise the sound pulse will not have time to be established, and will diffract back around the mouth and into the horn — thus failing to radiate.

Horn

The horn mouth itself must also be large enough to transmit the required frequency — for a frequency of 50Hz, its area would have to be about 16 sq. ft for it to transmit into 2π radians (horn placed in centre of floor), and about 2.5 sq. ft for a frequency of 300 Hz to transmit into 4π radians (horn placed in 'free space', as when at the top of a stack of cabinets). Thus low frequency horns are long and have large mouths, whilst high frequency horns are short and have comparatively smaller mouths. Bass frequencies, because they have long wavelengths, diffract round corners easily and radiate fairly evenly over a wide area. Bass horns, therefore, can be 'folded' to fit into portable cabinets, and their design may, in practice, be slightly altered to accommodate the limitations of carpentry.

High frequencies, however, tend to 'beam' on axis, because of their shorter wavelengths.

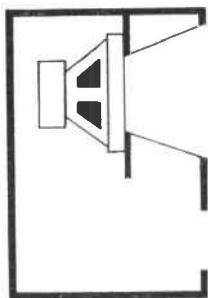
To avoid this, treble horns are designed to actually mould the sound field into a desired pattern, in order to give a controlled wide angle distribution. Five types of horn generally used with small, light diaphragm, compression drivers are: Multicellular, Sectoral, Radial, Acoustic Lens, and Diffraction. The Multicellular Horn distributes a field pattern made up of separate beams radiated by an arrangement of small individual horns, placed next to each other in an arc. The Sectoral Horn spreads the sound by deflectors or vanes placed at the mouth of the horn. Both these designs achieve wide angle distribution, but tend to create irregular 'lobes and valleys' in the overall radiation pattern. The Radial Horn is probably the best general purpose radiator, obtaining wide angle coverage by the controlled expansion of its flare.

Acoustic Lenses are perhaps the most misunderstood units of all: they do not 'point the sound downwards' — an assumption perhaps encouraged by the appearance of the J.B.L. Lens Horn — in fact they control the directional spread of sound by placing a specifically arranged geometric pattern of obstacles in the path of the sound beam. Because its dispersive effect is dependant on the size of these obstacles, their spacing, and the frequency involved, the Lens provides a wide angle response — but at the expense of a lack of smoothness in the required plane of dispersion. The Diffraction Horn has the appearance of a slit, expanding in the vertical direction, but unflared in the horizontal; pressure builds up along the straight side, and is then released in a horizontal plane at the mouth. As the frequency gets higher and the wavelength smaller, this effect is reduced; nevertheless, angular response is smooth and un-broken because of the lack of beaming devices.

A very basic professional P.A. rig might consist of a 1x15 inch or 2x15 inch bass bin, and a radial treble horn per side, for a stereo 'two-way system'. If size is at a premium, then the bass cabinet might combine a bass-reflex part for very low frequencies, and a small horn for mid-range. Court Acoustics, Turner, Vitavox and Wing Music are all manufacturers of suitable high-quality units.

Next month the subject of multi-speaker systems, along with cross-overs and Foldback set-ups, will be looked at in greater depth.

5



Combination enclosure bass-reflex part for lows and horn for mids

LIZZY'S FIGHTIN' GUITARISTS

Thin Lizzy have two guitarists in Scott Gorham and Brian Robertson. How does it work in practice? We check-out how they avoid clashes.



FEW bands could support two lead guitarists, whether for musical reasons or the fear of personality clashes. Yet Thin Lizzy have done so quite happily for two years, and in that time have gone from strength to strength. With their current album riding high in the charts and their popularity as live artists at its all-time peak, Beat asked Scott Gorham and Brian Robertson why they think in their case it has worked.

"You've got to have respect for each other — when Scott's off doing his job I let him, and he does the same for me. I might tend to go off on a solo, or dwell a bit longer on something than I should, and keep going because I'm really getting into it. But he knows when I'm going to do that. When I do, he just lays back and lays it down — the same way as when he goes off on a solo then I lay back and let him take it. If he's taking off then he's taking off, and that's the only way to look at it, the only way to run it."

RULES

That's Brian's point of view, while Scott adds "It's an un-said rule between us — we've never even talked about it before. I'd never bounce in on him when he's doing something, and he never tries it on me. It would just make for a sloppy show that way."

There are other bands with two leads, notably Wishbone Ash, but few of those pairs actually play the same make of guitar. Scott and Brian do, they each have a Gibson Les Paul Deluxe. What's more they both use Marshall 100 watt amps, and 4 x 12 cabinets although Brian has a Leslie cabinet too. Doesn't that make things even more difficult?

"No—in fact it's not really even strange, it's just practical. We're not getting the same sound but it's similar. When you're doing the guitar parts and harmonies they're going to blend a lot better than if you've got say a Stratocaster and a Les Paul. Anyway, the guitars aren't identical — I've had mine about three years now, and it's about two years older than that I suspect. Brian's is different anyway.

"Yes," added Brian, "Mine's an American one — basically the difference is in the wiring, and the finish on mine is a brown sunburst. Of course they have a completely different feel to them too — and they have different necks. We can play

each others, but I wouldn't want to play his all night and he wouldn't want to play mine."

"True enough. My guitar's got a whole feel of its own. When I put it on I feel like it's mine, it feels like a part of me. When I put Brian's on it feels foreign, and it weighs a bit more than mine. I think the pick ups are heavier too.

VARIETY

Their attitudes to their guitars are slightly different too. While Scott sticks to one for both stage and studio work, Brian likes a little variety:

"I use several guitars, depending upon what I want to do in the studio. Live I stick mostly to my standard one, but in the studio I'll go through eight or nine different ones. I borrowed a lot on the last album, I borrowed one from Steve Hackett of Genesis, Bobby Tench's twelve string bass, and a couple of Les Pauls — I use a flying V sometimes too. We use a flying V as a spare on stage, whichever one of us breaks a string or whatever rushes over to the side of the stage and the roadie thrusts it into their hand."

GIBSONS

Most guitarists have a favourite guitar which is more of a hobby than an instrument to them, and Scott and Brian are no exceptions:

"At home I've got a Gibson ES 145. It was valued as a 1947—I don't know if I believe that or not. That's what everybody's told me, but as it's got no numbers or tags on it it's a bit hard to prove," Scott explained. Brian also has a guitar he believes dates from 1947.

"Although Les Paul's weren't supposed to have been made before 1952. This one's supposed to have been a prototype, that's the reason they gave me anyway. The neck is a strange shape, like someone's planed a bit off it or been at it with a knife. They tried to tell me it had been hollowed out. But I took it home, and looking at it they'd have had to slice a very thin piece off the back, hollow it out, and stick that bit back on.

"So I had it traced. Mickie Ralphs had it before me, but he said he didn't much like it. He liked the stereo sound but he didn't like it live. It's a beautiful guitar to have, but it's impossible to use quite often because it's so hollow."

Obviously Brian is something of a connoisseur of guitars, although Scott seems to be less

“You've got to have respect for each other”

Brian Robertson

“I'd never bounce in on him ... and he never tries it on me”

Scott Gorham

interested. But despite those slight differences of opinion, they work together like a team, and when playing are willing to make sacrifices, as Brian explained.

"There might be a couple of numbers where I've been taking the solos and they've been all right. The feel's been O.K. too, but something's been wrong which I couldn't put my finger on. Then Scott'll come up and say 'Let me have a go' and suddenly it's really clicked. The same thing's happened in reverse, and there's never been any animosity over it at all."

Another essential when attempting to make such a line-up work is a good sound system. Thin Lizzy have been working on this, and now seem pleased with what has emerged.

"We've changed the sound a lot. Everyone is miked up really well, through 5-6,000 watts of P.A. The set up is a Martin — it's basically the same as the one that Supertramp used at Reading. At the New Vic (the New Victoria Theatre, London) we had 7,000 watts, two on monitors and five up front.

SPARES

"We used Colac on the last tour — they're an extremely good set up. There was none of this lark like we've had before of being on tour in say Germany and something blowing out, and them having to send to England for a replacement. They carry spares of everything with them, and they're so together. The guy who mixed our sound was Mr Efficient. You could get to a gig hours before, and our roadies wouldn't even have our

stuff ready and there'd be Will, with all his stuff set up, waiting to do a sound check".

"The lighting guy was Colac too," Scott added. "He was a great guy, he really gave me stick all through the tour. 'You still here?' he kept saying. We bought a new lighting rig, an American one that cost about three and a half grand. But he didn't like it, so he took out all the lights and replaced them with tight beam number ones. He didn't like the desk either, so he brought in his own, just so that he could do the best job for us.

ROAD CREW

"What's even more important, their guys got on with our own road crew really well — on the road they'd all be up drinking together for hours, and they worked really well together too! Being Jon Hise-man's company, and with us knowing him really well, it all worked just great.

"I know one thing, I'd be quite happy to use them on any and every tour I might use in the future. I've never come across a set up like it, they're so good."

It's a sure sign that things are coming together for Lizzy when Scott can comment". The crowd's were really great on this tour — it was a 30 date tour, and yet before it had hardly started it had finished. Yet we did a short tour before that was only about 9 dates and it seemed to go on forever."

Returning to the subject of their dual duelling guitars, Scott explained how the concept works in studio terms, and in general.

"I've never played with an-

other guitarist—it's not a very common thing having two lead guitarists, is it? You're figuring that there's always going to be friction there, but it never seems to work like that. Even in the studio there's never been any argument about who should take what solo—we'll probably just sit in rehearsals, get smashed, and play the song a few times. There'll be about five different solos, because we've been playing the number for about 20 minutes, and then we'll decide what to actually use.

"I won't say we never argue about anything — that just wouldn't be natural inside any group — but the problem is never caused by our two lead guitars. And I'm the first one to admit that it's surprising!"

The only other cause of friction in the group might possibly be the predominance of Phil Lynott in the writing stakes — neither Scott nor Brian have a track on the album that's one of their numbers, although they both write. Brian in particular writes his own material, so we asked him why their material didn't appear on Lizzy albums?

WRITING

"There isn't a whole track we wrote, sure. But there are parts of different tracks: in some places harmonies, in others just the arrangements that are our work. Most of the stuff that I write is recorded, but never gets on to the albums somehow — there's no room. So I save it all up, and one day there'll be a Brian Robertson solo album. That's something that I've been planning for ages.

"The number of mine we recorded for the last album which just didn't go on, we've included in the stage show. And the strange thing is that it sounds better live than it did when we recorded it. I wasn't too keen about the way the whole album sounded: we did it as a total sort of group concept, but next time I'd like it to be a bit looser."

Brian's obviously learning to compromise with problems which might crop up — and its this spirit which probably means that this line-up will last a lot longer than other Lizzy ones have done. He and Scott obviously have the sort of relationship which is conducive to the production of some good music: and the success of Lizzy must be partly a testimony to the fact that having two lead guitars can work.

CRYING TOUGH WITH NILS

All of a sudden Nils Lofgren has made it big. Mick Houghton traces his roots and tries to explain his success.

It seems hard to credit that less than a year ago, when Nils Lofgren released his first solo album, *Nils Lofgren*, his appeal lay only with a devoted collection of aficionados. Throughout most of his short British tour at the end of last year the concert billings read Nils Lofgren: Ex Neil Young And Crazy Horse. Today, with his follow up album, *Cry Tough*, a vintage rock 'n' roll title for a vintage rock 'n' roll album, riding high in the album charts, he's demanding attention in a month that also sees major British tours by Bowie, Elton and the Stones. Nils Lofgren has arrived. Last tour he came on like a star, delivered the

goods and made people believe he was a star. Today he is a star.

Surprisingly though, Lofgren, who plays rock 'n' roll like he was born to it, didn't pick up on it till he was fifteen years old. Born on the South Side of Chicago his chosen instrument from the age of five was none other than the accordion, and his musical background totally classically orientated.

"I had never even heard of Chuck Berry or Elvis Presley until the Beatles. The Beatles were the first rock 'n' roll band I ever heard in my life. I had no concept of AM radio. I just wasn't aware of any music other than classical. So when



Lofgren's use of the Fender Strat is quite amazing

the Beatles came out my commitment was total and really intense to rock. I loved it."

He'd moved to Washington, D.C. by this time where his passion for the new-found rock took him through a series of high school bands like the Crystal Mesh, until at around seventeen he formed Grin. He'd realised his destiny: "Up until Grin I'd never sung or written seriously. I was just a guitar player. My role in Grin was like a logical progression. I realised

it was all I wanted to do and I just dropped everything else."

Grin were a fresh-sounding and inventive trio, who for over a year played little beyond their local patch, and who seemed to be going nowhere pretty fast. Then, Nils created the necessary break for the group, by cockily introducing himself to Neil Young and Crazy Horse backstage at Washington D.C., and impressing them more than enough to be taken seriously. Is that how



most of the songs off the first (Grin) album. It's ironic that I've been condemned for imitating the Crazy Horse sound. We had just both arrived at a similar point. The Grin sound. That was the way it happened. We had the tunes pretty well arranged from playing them and the way they came out on the album was pure Grin. As far as similarity goes with Crazy Horse it was mostly a melodic chordal similarity. So Neil liked it and helped me to get together with David Briggs."

PRODUCER

Briggs was, and still is, Neil Young's producer and a year after that backstage meeting the first Grin album was released, produced by Briggs and dedicated to one of Lofgren's heroes, Roy Buchanan. Lofgren's next time in the studio was for Neil Young's *After The Goldrush*, then the first Crazy Horse album, *Crazy Horse*, then the second Grin album *I + I*. Both the Grin albums (soon to be re-released by CBS as a budget price double package) represent the essence of Nils Lofgren's warm and exciting style, that this past year, thousands have come to recognise and love. On *I + I* Lofgren split the two sides into a 'Rockin' Side' and a 'Dreamy Side' that still characterises his music today. Already there are the chunky chords that express Lofgren's love for Keith Richard's rhythmic playing with the Stones. There too, is the melodic sense of an avid Beatles fan. There too, is the realisation that on album the classic rock 'n' roll cuts are three minute songs with no ponderous stretching out. On stage, Lofgren does spread his guitar playing out a little more. It's mostly the same tight and economical way he plays on album, but his jerky, urgent showmanship, Eddie Cochran stance, and prowling manner on stage, with his ability to hold an audience transfixed also reveals his having taken good stock of another of the great natural guitar players, Jimi Hendrix. And Hendrix, like Keith Richard, is another of Lofgren's idols.

Despite those two fine albums, and two later ones, the fourth, *Gone Crazy*, only released last year by A&M, Grin never made the big league as a band. They never headlined a tour or sold albums extensively. Nils at the time was still associated with Crazy Horse and Neil Young. After

the sessions for *Goldrush* and *Crazy Horse*, on which one can hear the individual musicians plainly inspiring one another, Neil and the band assumed Nils would join them. But he stuck with Grin, and flew back home to relative obscurity. Why did he persist with Grin when Crazy Horse would have advanced him far more rapidly?

"My commitment was to Grin because that was my band. I always made it quite clear I was willing to do the sessions but didn't want to join them. They were disappointed and tried to convince me it was a mistake to go back to Grin. Basically I was having a good time with Grin and I didn't want to throw it all up for someone else's trip. Crazy Horse was my trip but it was never that special. That album was just a good rock 'n' roll album. My heart wasn't into moving to L.A. to join Neil's back-up band. And I didn't want to be bothered with Neil's managers. I'd rather be first on a list with people who like what I'm doing than play second fiddle to CSN&Y and Joni Mitchell."

But Grin was to break up anyway, and Nils did tour with Neil Young on the tour that is associated with the *Tonight's The Night* album. For that tour Lofgren apparently wore special boots, with platforms to make him taller and with ankle weights to stop him dancing around on stage. That would have looked out of place. It was a traumatic tour, the tensions, the highs and the lows are all laid bare on the album. Lofgren feels some of the rough edges should perhaps have been touched up but it stands as a remarkable, open album and a rare glimpse at an artist totally bearing his soul to the world.

OWN WAY

That artist was Neil Young. Nils Lofgren had meanwhile found that right management, Art Linson, and a record company, A&M, who had signed the fragmenting Grin, to both get fully behind him. He did his part and came up with one of the most pleasurable albums of last year, *Nils Lofgren*. It seems now that his insistence on going his own way has fully paid off.

It was the strength of that first solo album that finally moved Nils Lofgren into first gear. The astute back up and careful management would have meant nothing without it. *Nils Lofgren* was very much in

the old Grin mould. He also stuck to the trio format (although Grin in their latter days were a fourpiece with the addition of Nils' brother, Tom) using only the best musicians to accompany him, Wornell Jones on bass and Aynsley Dunbar on drums. But apart from Nils' exuberant guitar playing that Grin fanatics knew and loved, the real revelation on his first solo outing was his piano playing. Listen to the interplay between the savagely beautiful guitar and the deliberately simple piano patterns on *If I Say It Ain't So*; or the emotive guitar on Nils' tribute to Keith Richard, "the greatest living rock 'n' roll writer", *Keith Don't Go*; or the virtuosity of the piano work on the oldie *Going Back*; what we have in Nils Lofgren is a writer and musician of rare sensitivity, ability and taste.

TOUGH

It would have been difficult to cap that album, and in all honesty, with *Cry Tough*, Nils Lofgren hasn't produced an album as delicately poised, as exhilarating or as exciting, but the sun has far from set on the boy yet. About a third of the album features Aynsley Dunbar and Wornell Jones, and the production credits, as on his first album go to David Briggs, but for the rest Nils has brought in the ubiquitous Al Kooper. Kooper's approach is fuller and more heavy handed than Briggs'. The rhythms are more solid and the textures are rougher and harder. The finely judged frailty of *Grin* and *Nils Lofgren* is largely absent. That said, the second side of *Cry Tough* is a delight. Three Briggs' produced tracks, *Can't Get Closer*, showcasing Lofgren's skills as a slide guitarist; and two Kooper - produced tracks that are wholly successful. The album seems to suffer through the typical inconsistency that mars Kooper's work, rendering *It's Not A Crime* a mess but highlighting Lofgren's performance on *You Lit A Fire*.

Nils Lofgren is a vital force on the scene today and what is still refreshing about him is that his basic desire is genuinely just to play. "I'm trying to develop as best I can — and success helps. I'm able to play live where I want now and record when I want, and I don't care about much else. I'm too young and too busy and love playing too much to give that up and start worrying about how many albums I sold yesterday."

it happened? Some stories have Nils virtually tearing Neil Young's guitar from his hands and forcing them to listen to his songs.

"It wasn't like that at all. I just walked in on Neil and the band upstairs in the club. Grin had been going for a bit by then and I just wanted to talk and get a bit of advice. I'd never really heard Neil Young at that point. After a while Neil asked if I felt like playing a few songs and I played him

HOW TO ENGINEER YOUR LIVE SOUND

Beat examines the vital question
of how to get your band's
sound across to your audiences

MUCH has been written about the physical functions of mixing consoles, indeed, the subject was dealt with in the April issue of this magazine. This article, then, is written on the assumption that the reader actually possesses a mixer, or at least has a practical knowledge of a console's lay-out. It is also written from a subjective point of view, as every sound engineer will have different ideas as to how the subject should be approached: it is merely hoped that those without the benefit of experience may derive some ideas of the matter from this description of a personal approach to mixing.

Right . . . having arrived at Gigsville hall, a good few hours of toil have been spent setting up the P.A., hooking up the amps, laying out the mike and power cables, running the multicore down the hall (much circumnavigating of pillars and sticking of Gaffa tape), and positioning the mixer. For the

sound engineer, *that* was the easy part: now he faces the problem of extracting a coherent sound from all this equipment—a sound that will please both audience and musicians, and satisfy whatever personal standards of music that the engineer sets himself.

Confused

This latter point is very important, as the shortest way to an unbalanced and confused sound is for a group to have an engineer who approaches mixing 'from cold', winding levels up and up in an attempt to compensate for instruments made inaudible by the general cataclasm of sound. Any engineer really worth his salt should not only have an intimate knowledge of the group's music, and of the sort of sounds that the individual musicians have in mind, but should also develop some form of 'production technique', based upon a working knowledge of the tools at his disposal and

of the properties of sound.

One of the most essential things for an engineer to be aware of is the nature of the different input program material that he has to process and mix together, in order to produce a balanced and pleasing final sound. Sound 'sources' in a Rock group have widely varying dynamic ranges — there is no way, for example, that even a vocalist with mammoth sized lungs is going to be able to sing as loud as a 100 watt guitar stack can blast out. A Mellotron's output can vary from a whisper to a 'needle bending' roar, and the explosive initial sound of a drum being struck must be faithfully reproduced at the same time as subtle little noises like 'stick rattle'.

In order to be able to achieve some sort of balance between instruments with large and small dynamic ranges, the input attenuators or 'gain controls' of each of the microphone input channels must be

adjusted accordingly. In practical terms, this means that a vocalist's microphone will be given much more initial 'gain' than the mike that is used to pick up the guitar stack. Once this has been done, the vocals can be given enough level for the lyrics to be clearly audible above the music, and for expressive vocal sounds like 'breath noises' to come across. During instrumental passages, there will be enough headroom available for solo instruments to be 'brought forward' by slightly increasing the level via the appropriate channel fader.

Positioning

The loudness of any given sound is totally dependant upon whatever reference level has been set: if the overall sound is consistently very loud, then all the finer points of a solo will be lost, as beyond a certain volume level the human ear finds it rather hard to effectively discern any real change in loudness or tone from an individual instrument. Solos, or crescendos in the music, will always have a greater impact on the audience if the music is allowed to follow its own natural changes in level, rather than if the engineer is sitting at the back of the hall playing snakes and ladders with the faders.

The first stage of the mixing process is to obtain a 'good sound' on each of the microphone channels. The importance of this process cannot be overstressed, as it lays the foundation for everything that is to be subsequently achieved, and—if done well—greatly simplifies the task of mixing the final sound. The real mark of a good engineer is the speed and ability with which he executes this initial operation. That the whole band are needed for this 'sound check' is a fallacy, what is really required is intelligent mike positioning, judicious use of equalisation and gain controls, and some close work with the individual musicians—especially the drummer — on the sound of their instruments.

Drums are really the bugbear of live sound engineering, an unfortunate fact, as all too often it becomes an excuse for a shoddy sound . . . "well, the acoustics are all *wrong*, man!" The way *not* to mike-up a drum kit is to litter microphones around it like so much confetti, and then let the levels 'all hang out'. This usually results in a ridiculous 'larger than life' sound, with a cacophony

of brain-stunning thumps hurtling out and around the auditorium like a herd of buffalos on heat. When faced with a situation like this, the only real solution is to tear the whole mike rig down, and start again!

Percussion

A drum kit is a finely-tuned percussion instrument with a coherent sound, and should be treated as such. The first thing to check-out is what actually *needs* miking on the kit. Un-amplified, the Bass Drum and Ride Cymbals will probably be fairly in-audible, Snare and regular Hi-Hat work muted, with the predominant sound a rhythmic rumble and crash, becoming a little more defined during 'fills'. To bring the Bass Drum back into the picture, place a fairly robust moving-coil mike, such as the A.K.G. D12, centre front and perhaps slightly 'off-centre'. If the drummer doesn't normally remove the front drum-head, don't make him do so: if that's his sound, use it—a front 'head' will give you more level anyway, and extra felt dampers can always be added to eliminate unwanted vibrations.

Next, add a pair of overhead mikes to pick up the Ride Cymbals, the Crash Cymbals, and drum 'overhang' and harmonics—in fact, a good pair of flat-response cardioid mikes (for example Shure Unidyne IV) will revive the whole 'presence feel' of a kit. These microphones must be very good quality dynamic or condenser units, and care must be taken over their positioning; bring them in fairly close on boom stands, pointing vertically downwards at around the drummer's head height.

Level

The Snare Drum will probably sound a little 'wooden', so mike this up with a uni-directional microphone placed very close in, with the head aimed at the edge of the top rim. Drums invariably sound best when miked from this position, as all the harmonics are picked up, and the sound is sufficiently 'crisp and bright'.

The four mikes already mentioned are really the essential minimum for amplifying a kit; the Bass Drum and Snare mikes will probably need between 50 and 30% attenuation at the channel gain controls, whilst the overheads will need as much level as can be given. When a Hi-Hat is only being picked-up by an overhead, the sound is a little



Try not to get yourself tangled in wires!!!

'clicky'. A microphone placed at its side will pick up mainly the 'sssh' sound, and should be faded up at the desk by just enough to give the Hi-Hat a natural sound. If the 'kit-right' overhead is fairly high up, and if there's more than one floor Tom-Tom, it may be necessary to add another microphone, wending its way in on a boom and aimed at the point at which the drum rims are closest together.

Rejection

If guitar stacks need to be miked at all, then quite a bit of attenuation will probably be needed at the mixer end; rotating speaker cabs such as Leslies should have separate microphones for bass and treble sections, always placed in the same vertical plane, and as far away from the rotating elements as practically possible in order to avoid wind noise. All other instruments should be 'close-miked' with cardioid (heart shaped pick-up pattern) microphones, in order that maximum rejection of unwanted sounds may be afforded on each channel.

Once individual channels have been set up, then a quick run-through of a number with the complete group should give a good idea of the sort of mix required. The main thing is to be *aware* of what is happening on stage: use equalisation and pan controls as sparingly as possible—use the stereo capability to build up a 'sound picture', with instruments aurally positioned rather than continually whizzing about from left

to right. Important channels to have close to hand are solo instruments, such as keyboards, guitars, and vocals; a mixer is just as much a personal instrument as any other, so it is really up the individual to perfect his own 'playing' technique.

As long as the subject is

approached with practical knowledge and a few basic reference points — some of which have just been discussed — then there is no reason why the sound engineer may not exercise his creativity and make a valid contribution to the sound of the group's music.

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"CALL me a loser, call me a rebel..."

Those defiant words from the title track of John Miles' hit debut album *Rebel*, have brought him a lot of criticism: criticism of his stance as a 1976 James Dean, emerging conveniently on the crest of a tidal wave of Dean nostalgia; criticism of the suddenness of Miles' success, which has given him hit singles with *Highfly* and *Music*, a British tour supporting Robin Trower, a European tour with Jethro Tull, future tours of Britain (alone) and of the USA supporting Elton John, and snowballing interest worldwide.

Yet ironically those words quoted above refer to previous critics who used to say exactly the opposite: 'you'll never make it.' Like every apparent overnight success these days, John Miles has a long story to tell. It starts in that traditionally rebellious North-Eastern town, Jarrow.

ROCKERS

"I started out in groups at school at the age of thirteen," says John, 27, reciting the old rocker's canticle. "Then I went on to semi-pro groups, had a job just to keep going, y'know. Then I formed a group called the 'Influence, which was me, Vic Malcolm who used to play with Geordie on guitar, and Paul Thompson on drums, who now plays with Roxy Music."

Coincidences, coincidences. John says he and Paul were the younger members of the band, and that he learned a lot from Vic Malcolm, adding guitar to his already competent keyboard abilities.

"We didn't do any original material," John continues, "because at that time nobody could do that in Newcastle. We used to do Led Zeppelin and Stevie Wonder songs, like *I Don't Know Why I Love You*. It lasted about three years, having a great time, but then the music scene changed and everyone was buying bigger gear than everybody else, had more roadies than everybody else.

"Anyway, Influence split probably because everybody was on each other's backs all the time, playing in Newcastle and not getting anywhere. It's a pity because it was a really good group.

"I had a manager at the time who took me completely the wrong way, into cabaret. I was doing things like *Love Grows*

REBEL~ BUT WITH A CAUSE!



A HIT SINGLE AND A HIT ALBUM FROM NOWHERE — BEAT ASKS HOW

Where My Rosemary Goes and *Aquarius*, and I had to rely on house bands. It was great money, but the music was suicide."

After doing that for about a year, John found the first links in the chain that would haul him to fame: bassist Bob Marshall and drummer Barry Black.

Calling themselves the John Miles Group, they began playing Newcastle discos as a three-piece, with John taking both guitar and piano duties.

Pretty soon they moved to London, where Cliff Cooper, an old mate of John's, had established himself with the Orange business, which now boasted a record label. They released a couple of disco type records on Orange, but nothing happened except one gig supporting America's top street funkers, the Ohio Players, at Hammersmith Odeon.

DECCA

Eventually, however, the guys cut a demo (or rather, about 150 demos from which they chose the best four songs!) which enticed several record companies. Decca was chosen, a move that has proved to be the most important of John Miles' career.

Since *Highfly* broke into the charts, the band has added an Australian keyboards player, Gary Moberley. The jigsaw is complete, and the public obviously likes the picture it sees.

Onstage the band rocks hard, with John's guitar sounding furious on some of the longer solos. His voice is strong, and Bob, Gary and Barry give a rock-like support. In fact John's two hit singles are not very representative of his repertoire, which is mainly concise, riff-based rock. If you get the chance to see him in action on his June tour of the UK, grab it, because the chance may not come again soon: with *Music* already charting on the Continent and probably taking off in the States, it's quite possible that Miles will be constantly on tour abroad in a few months' time.

TOURING

The Tull tour was a foretaste of that life style.

"It gets to the stage where you don't realise where you are," he grins. "You try to pay for things in Holland in French francs. It's really weird."

And do you get out much?

"No, not a lot. We usually try to get an hour's drive or something. It's great when we stay somewhere for two days, because it gives us a chance to get to see it."

There's no need for John Miles to worry too much on that score. He's going to be seeing a lot of the world in future — and it's going to be seeing a lot of John Miles.

album reviews

ALBUM OF THE MONTH

Having last month had a situation where we had two albums of the month we're afraid that this month's crop of releases, although it's thrown up some quite good records, has failed to show anything that stands head and shoulders above anything else. Rather than just award arbitrarily we've decided to leave it in the hope that next month looks a little better.

PARIS
PARIS
CAPITOL RECORDS E-ST 11464
 Paris is the brainchild Robert Welch, sometime bon viveur and darling of the French jet-set (so the handout tells us), sometime guitarist with Fleetwood Mac and now the leader of one of the heaviest bands we've heard in the last four years.

Paris is just pure heavy metal sweat but not a grinding of meaningless riffs, more a return to the principles of late sixties acid rock that gave birth to heavy rock by Led Zeppelin out of the Yardbirds.



In fact Paris owes a lot to that era. Welch's guitar work is very much early Cream (ie it's bloody good) and the bass work of Glenn Cornick is equally vital. Drummer on the album is one Thom Mooney but between recording and release he's been replaced by Hunt Scales, one-time drummer with Ray Manzarek and once with Naz and Todd Rundgren's Utopia.

According to our sources at Capitol, Welch had the idea for the band decided about eleven months before the project came

together when he and producer Jimmy Robinson got the idea to form this type of band. Knowing exactly what they wanted to do, they waited till it was right and recorded what we have here.

And what we have here is a right old mixture. Side one is quite brilliant — *Black Book* and *Religion* carrying Welch's lyrics across (check them out by the way, they're a distinct improvement on the 'my baby done gone left me' variety) with stunning ease as the riffs weave their way through some heavy echo and latest knob twiddling techniques to achieve some really good effects. This band plays with fire and skill and taste.

Side two, though, is premature. Paris need the services of a good A&R man to insist that before an album like this is released they sweat even harder (and I have no doubt that this was a difficult album to make) to keep everything up to the standard of the first three tracks on side one. I'd hate to be an A&R man saying that to a band, but someone should have as the material here on the second side doesn't do credit to the sheer energy the band shows it's capable of on side one.

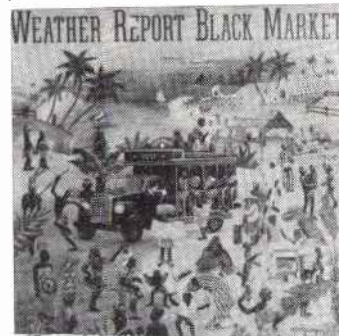
In short this is a great metal album — a record to swing bike chains to — but one that needed just a little clipping here and a little cutting there to get it just right. For the most part though it roars along like heavy rock had just been discovered yesterday and finds its way into some interesting places, in some ways sharing that acid/astral feeling that Armageddon have. Try it!

G.R.C.

WEATHER REPORT BLACK MARKET C.B.S. 81325

Amazing: the dynamic duo Zawinul (keyboards) and Shorter (Sax and Lyricon) have produced yet another exceptionally fine piece of music, ably assisted by musicians both new and old to the Weather Report fraternity. Their musical approach has become much

more direct since the *Tail Spinning* album, Thompson's drumming adds a particularly forceful feel, which remains unmodified by the atmospheric percussion work of Domum Ronau, who has been replaced by Don Elais. Ronau's use of bells and similar 'ethereal' sounding instruments is perhaps no longer appropriate: Don Elais' staccato percussion parallels Zawinul's synthesized sounds of trains, boats and fireworks — a carnival mood anticipated by Mc Macken's cover picture.



On *Tail Spinning*, Zawinul's chief use of the ARP 2600 was as an effects producing machine. *Black Market* features the synthesizer extensively as a lead instrument in its own right, and the Oberheim Polyphonic — at times reminiscent of a swirling Hammond — adds depth and texture to the music. Musical themes are stated firmly, Shorter's extensive and inventive work on the Lyricon, (Computone electronic wind instrument), matches Zawinul's synthesizer playing, and Alphonso Johnson's fluid bass moves the whole thing along in true Weather Report style.

New bassist Jaco Pastorius appears on only two out of the seven tracks, but on his own composition *Barbary Coast* proves that he is an intelligent composer as well as a fine musician. Conga player Don Elais is featured on the title track, as is Mahavishnu drummer Michael Walden, who plays on this, and one other piece, at a much less frenetic pace than usual.

Weather Report's music may be hard to associate with, because of the lack of immediate reference points for the first time listener. Pace and rhythm are set from within, and owe little to the vagaries of contemporary life: it is refreshing that Zawinul and Shorter can continue to draw the inspiration to produce yet another fine album, which takes the Weather Report theme another step forward in musical excellence.

N.K.J.

JETHRO TULL TOO OLD TO ROCK 'N' ROLL: TOO YOUNG TO DIE CHRYSALIS CHR 1111

As ever, all the various Tull ingredients are present in abundance, and the gauntlet is down for the consumer to try and analyse what makes Ian Anderson tick. Anderson's ace is of course his subtle knack of never revealing too much, and the faint air of mystery surrounding his intellect has always stood him in good stead. First we have the concept (here the help comes from the cartoon strip on the sleeve), and this is layered with the usual intense and personal lyrics; the music completes the package. However many facets there are, though, this is after all an album, and it wouldn't be too presumptuous to take the social commentaries for granted and turn instead to the music itself.

Too Old undoubtedly represents some system-cleaning on behalf of the band — like *Minstrel in the Gallery* Anderson hired a cottage in Europe to allow himself a relaxing environment in which to get it together, and their situation has been made even more conducive to creative work with the recent acquisition of their own Maison Rouge Mobile (examined last month in Beat).



The enlistment of John Glascock on bass has been neither for better or worse, and he does well to come to terms with a limited role. Martin Barre has a limited but distinct repertoire, and his sparring with the flute and acoustic guitar is as disciplined as ever. What we have, then, is an album that largely displays a new lease of life, for all that the execution is readily recognisable.

There are the occasional disappointing sections, but what albums don't have that? Here the rest of the material is strong enough to carry the few weaklings, and this, considering the vulnerability of a 'concept album', is praiseworthy indeed.

It's quite good enough to justify the huge sales which will follow, and the record will continue to grow. When, in three years the time is right for another compilation set, there will be material here worth repeating.

C.S.



**EDGAR BROUGHTON BAND
BANDAGES
SONET SLP 1432**

After three years, an album from the Broughton Band — and if you think *Out Demons Out* was where they began and ended, then just listen to *Bandages*. As well as being expressive, their music is surprisingly fresh, and arranged with an awareness of dynamic 'light and shade'. The band were apparently given unlimited studio time at Arne Beniksen studios in Oslo, and the tracks were recorded during June, July and August of 1975. The band produced themselves, and the album was remixed by Edgar and Steve Broughton with Mike Oldfield, at the latter's studio in Kingston. Oldfield plays on three of the tracks as well, featured instruments being Dulcimer, Steel Guitar, Harp and ARP.

The instrumentation on this album is as varied as the lyrics are *interesting*; as well as the obvious vocals and guitar, Edgar Broughton plays Bango, Harmonica, Mandolin, Moog, and 'Tapes'. Other members of the band are: Steve Broughton (Drums), Arthur Grant (Bass and Keyboards), and John Thomas (Guitar). One or two of the riffs you may have heard before, but the key to this album's musical success is the intelligent use by the band of all the means at their disposal to communicate with the listeners. There's a touch of the old Broughtons in tracks like *Love Gang* and *Signal Injector* ("I rather have your mommy anytime"), something a little more subtle on *Speak Down the Wires*, and madness on *I Want To Lie!*

Musical accomplishment from America is all very well when English Rock is lying dormant,

but when an English band pull something as good as this out of the bag it makes me feel happier, sadder and madder than anything from across the seas. What a pity that E.B.B. had to go to Norway to find a suitable environment in which to record their album.

N.J.

**UFO
NO HEAVY PETTING
CHRYSALIS CHR 1103**

One thing that's nice about reviewing albums is watching a band grow over a period of months and seeing what you've hoped for actually come to pass. I know it's arrogant to quote yourself, but in my review of the last UFO album I praised their attack and criticised their songwriting while drawing reader's attention to the skills of German guitarist Michael Schenker.

I'm glad to report that Schenker is now in even better form and that one or two of his fiery solos on this album show great promise in the 'we've got ourselves a new guitar hero' stakes.

No Heavy Petting is a pretty-much straightforward rock album with some Deep Purple speed-freak rages through numbers like the first track *Natural Thing* slowing down to some really quite creative ballads elsewhere.



As I've already said it's Michael Schenker who shines with some nifty runs which (although one or two are rip-offs) are moving up into the 'Johnny Winter Speed Playing the Easy Way' class. Make no mistake about it, Schenker is very, very good and a few year more maturing of his style which should add a bit of the feeling and originality he currently lacks) should make him a world class player. He blatantly rips ideas but there's a furious amount of attack in his work and he gets a really nice sound which promises great things. Vocalist Phill Mogg is getting

better as well, a bit like Ian Gillan in places but also moving on up there.

UFO are certainly destined for better things than the slogging round the halls circuit they're on now — this album is better written and better played than their last one and Leo Lyons' production has veered away from the clinical feel it had on *Force It*.

At a guess I'd say that there's a chance that UFO could move up into the sort of rock complexity of a Wishbone Ash eventually — basically still playing Rock and Roll, but doing it with an understanding of melody and style which will lift them above any number of Bad Company grunters and grinders. Nice one UFO.

G.R.C.

**STARCASTLE
STARCASTLE
CBS/EPIC EPC 81347**

Oh, come on CBS, this has got to be a joke! Surely it's just early Yes out-takes that you've snaffled from Atlantic? Don't try and tell us that this band Starcastle really has the bare-faced cheek to go on stage in the States and play such obviously derivative material and *charge money for it?*

Well, I suppose that CBS (however big they are) wouldn't play a joke on us like that, but really this is America doing the Japanese 'we can copy it' bit to the Nth degree. The vocals are so close to poor old Jon Anderson's that he'll sleep uneasy at nights for fear of a takeover bid from Starcastle's Terry Luttrell and as for bass player Gary Strater's Chris Squire impersonation, well, it's not *bad* but what's the point when we've got any number of Yes solo albums to choose from and the promise of a new band album on the way?

Still, there is a good side to this one as the rip-offs they do they manage well with quite considerable musical ability and quite competent and imaginative songwriting. In a way that makes it all the worse, because if they *have* this amount of talent kicking around then they should try to make their sound more original than this. As it is the album would be greeted with quite considerable praise were it not for the prior appearance of a band who do the same thing with a great deal more conviction and have done so for a number of years.

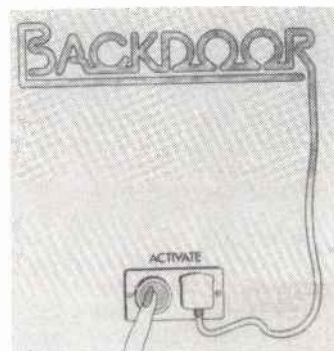
So, if you're sick of waiting for the next Yes album and you're prepared to close your eyes and imagine that it's the

real thing, well that's your privilege. Personally it's rather like the comparison between Coca Cola and the local supermarket's 'own brand' — nearly the same thing but it leaves a funny taste in the mouth!

G.R.C.

**BACK DOOR
ACTIVATE
WARNER K56243**

A few listens of *Activate* persuaded us that it was one of those records which starts off 'good' and will keep getting better on each listen. Back Door have been threatening big things for quite a while now without breaking through completely, but there were more than enough seeds in the last offering to suggest that the



follow-up could be the clincher.

The key as ever rests with the buyer, so we can only wait and see if *Activate* gains the success it deserves. Being a three piece, as well as sporting an unusual choice of instruments, each member has to work overtime to maintain fullness of sound, and this is achieved with fair helpings of both skill and spirit and adventure. Drummer Adrian Tilbrook has not only succeeded in the difficult task of replacing Tony Hicks, but has also assisted the accomplished Aspery and Hodgkinson in the writing of three numbers. The latter has the unenviable task of playing bass up front, supplying both rhythm and melody, and he emphasises his virtuosity by the inclusion of a fretless bass, sliding all over the place like a musical ice skater; from notes to grunts and back again in two easy bars!

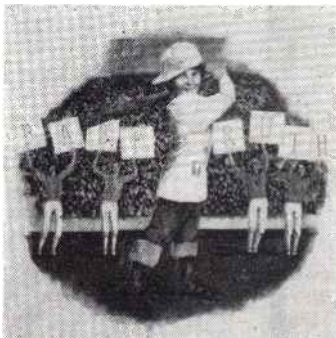
Production by Carl Palmer has no doubt played an important part in the consistent cohesion of the music, although it could be ventured that he has only improved on what was there already in uncut form. Now at last we can enjoy the full benefit of experience allied to skill.

C.S.

album reviews

BABE RUTH KIDS STUFF CAPITOL E-ST 23739

Babe Ruth seem to have been changing their lineup with alarming regularity recently, and it seems as if both Jennie Haan (Cooooorrr! Sorry, got a bit excited there) and Alan Shacklock, the guitarist and founder-member, have left for pastures new. Their replacements, Ellie Hope and Bernie Marsden (he wrote most of the material here) are certainly adequate, though since both the leading lights of the band have gone, I'd have thought it more sensible to have started from scratch and formed a completely new band. Still ours is not to reason why, as the poet said. Actually, having said that, even at the time or recording it seems as if the lineup of the band wasn't really settled, certain tracks boasting the names and talents of Neil Murray and Don Airey, both of whom are now in Jon Hiseman's reformed Colosseum.



Actually I rather like this album—the songs are straight along the line, the exception stylistically speaking is the instrumental *Nikelodeon*, by keyboard player Steve Gurl (poor lad, fancy having to go through life with a name like that!) which has certain affinities to the work of Genesis keyboard supreme Tony Banks. My favourite tracks are *Sweet*, *Sweet Surrender* and *Keep Your Distance*, which feature some rather nifty guitar work.

In fact for a band who have not been together for all that long, Babe Ruth certainly cut the groove on some of the numbers here. The opener, *Oh Dear. What A Shame* is a good

example of that, and it shows off Ellie Hope's superb vocal technique as well.

In the final analysis there is very little one can say about an album like this. It certainly isn't breaking through the barriers of modern music and yet at the same time it's been very professionally written, played and recorded with moments of real inspiration floating about here and there. I suppose the secret is that the musicians involved are neither new on the scene and bursting with new revolutionary ideas or tried and trusted superheros whose word is like manna from heaven. They are professional musicians, make professional music and are, I hope, content with that.

P.F.D.

BAKER GURVITZ ARMY HEARTS OF FIRE MOUNTAIN TOPS 111

Hearts of Fire is pretty well what one might have anticipated as the successor to the two previous Army albums, making up for lack of character with muscle that comes from habit. This time around Baker has been content to contribute only one track, the opener *Hearts on Fire*, which grinds along resolutely, while the Gurvitz brothers have taken the bulk of the songwriting duties.

The band is much better during the heavier moments, when the material suits the buccaneer attitude they give out, while the slower tracks place too much emphasis on the lead vocals of Snips. For all his efforts to match the vocals with the tracks, his contributions are invariably more contrived than those of the others.

The main attraction, then, is not in the staple diet rock music, but in the evergreen charisma of Baker himself. While his own drum passages are often subdued, there is enough of the old style to remind the listener of his pedigree. No doubt the key to the enjoyment of the album hinges on how seriously we are to take it, for if they enjoyed making it, we could laugh and share the fun, but if we are to

analyse it as a weighty contribution to modern rock it just doesn't figure. Production by Eddie Offord ensures steady overall sound, but despite his assistance, *Hearts* is mediocre. Sales will, of course, be large.

BUDGIE IF I WERE BRITANNIA I'D WAIVE THE RULES A&M AMLH 68377

Since I've been at Beat I think I've survived the constant onslaught of heavy metal with the sang-froid characteristic of a true Englishman, Editor Cooper's ceaseless entreaties to me to listen to the finer points of a Sabbath album (often accompanied by the meticulous bashing of his head on his typewriter) have met with haughty disinterest, so much so in fact that the man is a shadow of his former self, a gibbering buffoon, incapable even of fingering a Major E chord.

But life's full of surprises ain't it, and it came as a major shock to discover not only that Budgie's latest album was palatable, but that I was enjoying it immensely every time it graced the office gramophone. Can this be the man who brought an element of sanity to the Beat office by constant requests for Average White Band articles, you ask? Yes indeed, folks. Budgie are a very fine band indeed. Theirs' is not a simple skull-crushing sound, they play with a good deal of variation and sense, and although none of them will ever be anything like world-class instrumentally, their musicianship is quite sufficient for them to make albums that slowly find their way into your consciousness, rather than by boring a searing hole into the side of your head.

Budgie sound curiously like Man at times — both bands use the same repeated bass note figure and the guitar work is very similar at times. A very good example of this is on *Sky High Percentage*, the opener on *Side Two*, which also demonstrates another of Budgie's plus points. Their ability to take a simple rock formula, a riff or whatever and subtly change its feel mid-song.

Another thing in Budgie's favour is their production. They produced this album themselves, and they've made an excellent job of it. In fact the more I listen to it, the more I think that it's the production that is at the bottom of my sudden admiration for their

music. Their sound is full, but not overwhelming, and they make good use of acoustic instruments, especially on *Heaven Knows Our Name*. On the other hand, they know how to coax a good strong sound from the electric instruments, and do so to full effect on *Black Velvet Stallion*, for example. Nice one lads.

P.F.D.

DRUID FLUID DRUID EMC 3128

The title and contents of this album has inspired the office wits to even greater heights than usual, and rightly so, for it contains some of the most derivative, limp-wristed music I've ever heard, Chris Squire, Jon Anderson and Steve Howe have got a lot to answer for. Not content to submerge us in solo albums, they've given birth to a school of mini-Yesmen (and it looks as if it's becoming a disease)

Harsh words perhaps, especially in the case of Druid, who are a very new, young band and who have a lot to live up to having won the Melody Maker Folk/Rock competition a couple of years ago. The fact is that there are enough elements of promise here that I'm sure, should they shake off the Yes influence once and for all, that they could develop into a fine little band, but at present

The chief offender is the lead singer who, not content to imitate Jon Anderson's falsetto has even managed to capture the slight burr on his r's. Those vocal mannerisms that are his own are even more embarrassing; at one point he sounds as if he's trying to imitate the bleating of a sheep and at another he's an operatic soprano. Whoever introduced the bass player to the delights of playing a Rickenbacker deserves to be taken quietly out and shot or something, for he spends his time imitating Squire badly.

The point is that when I think of all the young, struggling bands up and down the country, ever hopeful of getting a contract many of them bursting with creativity (watch out for Cado Belle), it makes me weep to see a band who've been given it all on a plate throw it away like this.

One positive point. The production on this album is excellent. Anybody interested in getting into this side of this business should try to take a listen to it. Otherwise I'm afraid it just doesn't cut it, I'm afraid.

P.F.D.

After 100 gold records, thousands of concerts and millions of miles, only the strong survive.



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SYNTHESISERS- THE KEYBOARD PLAYER COMES OUT OF THE SHADOWS



Alan Townsend
—Demonstrator of ARP
Synthesizers in the
U.K. for Boosey &
Hawkes—talks about
the development and
use of this complex
and fascinating
instrument

The author (above) and the ARP family (below)



THE electronic music synthesiser has dramatically changed the capabilities of the keyboard performer. The reasons, then, for the current demand are quite clear. When bands started using loud amplification in the late 1950's keyboard players faded into the background of pop music. The acoustic piano, a very expressive instrument in its own right, simply could not compete in volume with electric guitars and other amplified instruments. The keyboard player was forced to use electronic organs, electric pianos and other early electronic keyboard instruments, many of which were inexpressive and unresponsive. For these and other reasons the keyboard players during that period were resigned to providing background 'fillers' for instrumental groups and vocalists.

The synthesiser changed all that because it was the first keyboard instrument since the advent of loud amplification systems to bring the keyboard player out of the shadows and into the limelight. Synthesiser technology has given performers expressiveness and the capability of playing sustained musical lines that have interest and can convey emotion.

Available

This is a tremendous breakthrough and has revived the whole image of the keyboard musician in popular music today. Now that synthesizers are commercially available, keyboards are again playing an integral part in music, just look at bands like Yes, Genesis, Tangerine Dream and Seventh Wave!

But keyboard players alone are not the only ones to be fascinated by the synthesiser. This is understandable since a musician can only express himself

within the limitations of his instrument and a guitar has quite limited tonal possibilities when compared with a synthesiser. Non keyboard players like Jimmy Page find the synthesiser an extremely valuable aid for both composition and recording. Pete Townshend is another guitarist turned synthesiser player using several ARP synthesisers both on stage and in the studio. Although primarily a guitarist, Tony McPhee of the Groundhogs recently completed a series of one-man shows in which he used three synthesisers. Although synthesisers are being used increasingly in rock, jazz and pop music almost everyone involved in the day to day use of these instruments would agree that, as yet, the surface has just been scratched. Since about 75% of all synthesisers have been sold in the past two and a half years we can expect a lot more experimentation and a higher level of sophistication to develop as these synthesiser owners become more accomplished.

Identifiable

At present the heaviest use of these instruments is occurring in the Top 20 field with artists, producers and engineers finding that the instrument is particularly useful in creating a 'hook', a readily identifiable sound that is new, different and memorable — vital ingredients in getting a hit record. There have been many records produced in the past two or three years that depended on the sound capable of being produced by synthesisers. For example, it is difficult to imagine how Edgar Winter's *Frankenstein* could have been recorded without extensive use of the ARP 2600 and Sailor's *Glass of Champagne* benefits from the rich bass lines produced by the same machine which is built into their Nickelodeon.

The musician has a number of choices of type or brand of instrument open to him. With just a basic knowledge he can make a fair comparison of features, functions versatility and price and, most important, sound.

Because I demonstrate ARP synthesisers all over the U.K. musicians often ask me which type is best for them. This is difficult to answer because it depends a great deal on the type of sounds needed. There are basically, though, two types of synthesisers; the preset and the variable.

The ARP Axxe, Odyssey, the 2600 and the Mini Moog fall into the category of variable synthesisers. On a variable all the controls are adjustable by the player. The particular controls necessary to produce the sounds vary from instrument to instrument and it is wise to choose an instrument that not only has a number of physical features but one which also permits a great number of connections between them. Perhaps the most important aspect of the variable synthesiser is that for stage use the instrument has to have been well designed for quick and accurate manipulation.

Memory

As the player adjusts the controls of the variable synthesiser himself he has virtually unlimited sound capabilities. The other type of synthesiser, the preset, offers a limited number of sounds that can be obtained very quickly, usually at the touch of a tab.

On the ARP Pro-Soloist, a preset type, the settings for thirty different sounds are stored in a computer-type memory. When a switch labelled 'trumpet' is pressed the computer reads out sixty or seventy different parameters that comprise the production of the electronic sound. Because the memory performs these control adjustments instantly and automatically. That makes an instrument like this valuable for lead line playing where a musician has an electronic piano or organ to play chordal accompaniment. The speed at which you can change from one sound to another makes it possible to produce expressive musical devices that would not be practical on a variable.

Because of the ease and speed with which it can be operated, an instrument like the ARP Pro-Soloist could well be a much better synthesiser to start out with than one of the more complex variable synthesisers.

Ensemble

Another development which has increased the capabilities of the keyboard player is the advent of string units. These allow the entire section of a symphony orchestra to be conjured-up because many notes can be played at the same time. In addition to its purpose of making string sounds, the ARP string ensemble, for example,

makes use of this 'polyphonic' property to function as the keyboard element the ARP Polyphonic System. The polyphonic signals from the String Ensemble can be processed through the filter and control circuits of a variable ARP synthesiser which can then produce strikingly rich, organ, electronic piano, clavinet and brass chorus sounds.

New trends in synthesiser technology are emerging still. A current debate is over 'polyphonic versus monophonic or duophonic' synthesisers. An important point to remember is that polyphonic and monophonic instruments are played completely differently.


People who play trumpet, saxophone and other traditional lead line instruments don't feel resentment about the fact that they can't make a chord because melody, by its very nature, is one note at a time. When playing in a polyphonic manner even with exciting new sounds a keyboard player gets back to harmony and structure rather than melody; so chording capabilities do not improve the player's expressive ability as far as melody is concerned. Therefore, it appears that while poly-

phonic synthesisers will continue to be developed, monophonic or duophonic 'melodic' synthesisers will continue to grow in popularity. Each has its own purpose and each will continue to be useful.

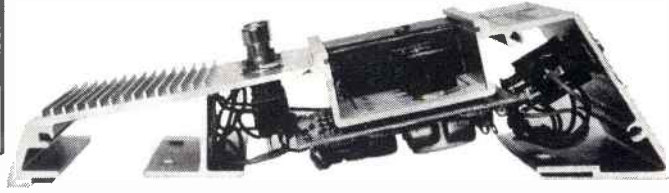
Renaissance

All of these synthesisers — presets, variables, strings and polyphonics indicate a popular trend towards multiple keyboard arrangements. There is certainly nothing revolutionary in this for back in the 17th and 18th Centuries, when people started building pipe organs seriously, they found that there were certain limitations that made it necessary to have multiple keyboards. A look at any pipe organ will reveal levels of two, three or four keyboards which permit completely different musical sounds to be produced at once.

The trend towards multiple keyboards is a natural expression of the musician's desire to have a wide variety of sounds available to him. It is truly a renaissance for keyboard players everywhere and, because of the synthesiser, it is happening at an increasing rate.



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INSTRUMENTAL NEWS

TRIDENT RECEPTION

ON the 12th and 13th of April, Trident's Wardour street studios became a show-room for the new Fleximix mixing console from Trident Audio Developments. The preview was well attended, with representatives from all sectors of the music industry turning up to sample the refreshments and chat to Ian Levine and Malcolm Toft of TRIAD about their new "baby".

There to appraise the console's mixing ability were Mick McKenna of the Stones' Mobile, D.J.M. studio manager Chris Lewes, Chas Herrington from Studio G, and representatives from Central Sound and K.P.M. studios. Also seen watching the flashing L.E.D. indicators, and listening as the Fleximix pro-

cessed a demo track, were Carlos Olmes from Polydor and Chris Stone from Chapells, Impact Music's Etienne Lammé, all the way from Oregon U.S.A., Dave Wood from Jigsaw Music, and personnel from Island Records, Fuse Music, and Artist Finance & Management.

The versatile Fleximix system has applications for Live music as well as studio use, and bands seen showing interest included Peter Klemm, engineer for James Last, and the group Split Enz. If you missed the reception, then there's another chance to see the Fleximix at the APRS exhibition, which is on the 17th and 18th of June, at the Connaught Rooms, Kingsway.

SISGO IMPORT NEW GODWIN ORGANS

SISGO's Walter Street has just announced that the firm is currently taking delivery of the new Godwin SC/555 organ shown in prototype form at the Frankfurt Fair. The model is similar in looks and size to the already popular SC/444 version, but contains various innovations which might safely be expected to cause quite a stir in the keyboard market. The SC/555 combines the properties of the theatre and sine-wave organ and includes piano, harpsichord and spinet presets. Of these, the piano is of particular interest, having 'touch dynamic' operation like that of a real piano.

Although the organ also has the usual swell pedal, 'touch dynamic' means that volume

can be controlled by the firmness with which the keys are depressed, the capabilities of the brass section too have been increased with the inclusion of an attack control which reproduces the authenticity of brass sounds. The organ comes in two manual form, forty-nine keys per manual, with seventeen pedals.

SURVEY CORRECTION

In last month's Effects survey, we mentioned that Hornby Skewes were handling both the Roland Effects range and the Zenta 'Exciter' effects pedal. They are no longer handling either of these products.

ROSE-MORRIS STILL GROWING

THE Rose-Morris expansion programme is gaining new momentum with the announcement of significant top management changes. New Executive Chairman Peter Clarke has been appointed to bring the company closer to its dealers and their requirements worldwide, while Chris Jones' financial expertise will be playing a large part in the instigation of various schemes since his promotion to the board. Derek Baxter, previously merchandise manager, now moves up to become purchasing director, and his brief, in line with the

new policy, will be to gradually widen the base of the company's activity through both new range and product acquisitions.

These domestic appointments have been supplemented by a renewal of the firm's export expansion drive. Tony Morris, with the company for eleven years, is taking over the new export sales manager position, and his already extensive experience of the European market will be of great assistance in the re-establishing of distributorships.



Tony Morris and Peter Clarke.

MM ELECTRONICS

French's Mill, French's Rd., Cambridge

Currently provisions are being made to manufacture Graphic Equalisers, Guitar Amps and Combos. Details will be released in the near future. For further details contact TONY GIPP (0223) 66559.



12 CHANNEL STEREO MIXING CONSOLE

- 1 The MM Electronics MP175 with 4 band equalisation giving 12 dB cut and boost at frequencies: 100Hz, 2kHz and 10kHz.
- 2 Continuously variable pre-fade fold back and post fade echo.
- 3 Stereo headphone amp incorporating VU metering.

PERFORMANCE

Noise reference to input -125 dBm. Distortion better than .05% typically .01%. Overhead level at 22 dBm all outputs buffered. Black fascia as standard option. £250 retail.

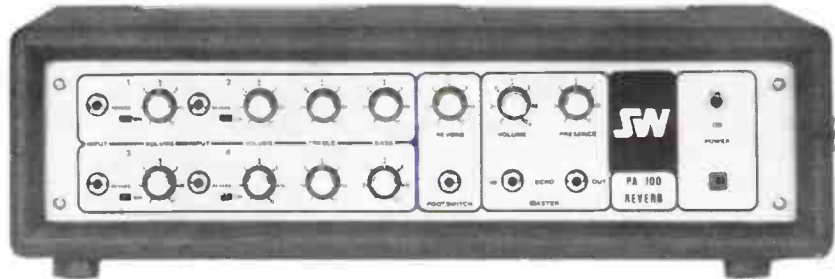
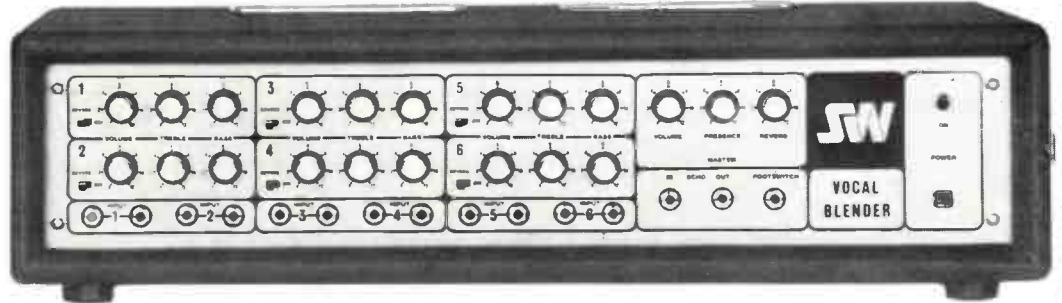
ANNOUNCING:

A 16 channel mixer featuring: 7-way graphic equalisation on output, 2-way electronic crossovers and pre-fade listen bus. £490 retail.

12 channel export model built into a CT flight case designed along similar lines to 12 channel stereo mixing console. Features XLR sockets as standard fitting. Black fascia with white lettering and white flight case with black trimming. Internal regulated power supply with toroidal mains transformer to alleviate any mains pick-up problem.

Also an 8 channel stereo mixer with similar features to the MP 175 12 channel stereo mixing console, 16 channel extended version of MP 175 and 12 channel 4-track mixer.

New is PA plus



Above: the new, compact 6 channel Vocal Blender (with Hammond Reverb) teams with two SW H100 Universal Cabinets. The VB gives you 100 watts RMS into 8 ohms. From just 27½" x 11¾" x 6¾", and costs £199.95. Full specification on request.

Below: the new SW PA100 Amplifier (with Hammond Reverb) and two 12054 Horn Columns makes a compact, powerful, reliable PA set-up of moderate cost and massive impact. There is a full range of other columns and cabinets, amplifiers and combos. Full details on request.

Because it is designed for utter reliability. With capacious heat sinks and built-in air vents. With light strength in chassis and cabinet. With thoughtful layout, tested components and new systems of construction. For example, the whole range of amplifiers springs from just three basic printed circuit boards. Each is easily replaceable, complete, in minutes. And spare PCBs are immediately available. And can be free, not just during warranty, but throughout the life of the amp.

Another because is the sound of SW. Crisp, clear, solid, big, beautiful, controllable sound. Sounding like amplification should: when you buy it and while you live.

A third because is the Rosetti back-up. They want no problems and make no fat promises. Which is why they offer you an illustrated leaflet and full specification sheet on all the amps, columns, cabinets and other gear in this new SW range. So you can sit and make up your own mind. So send the coupon. Be convinced.

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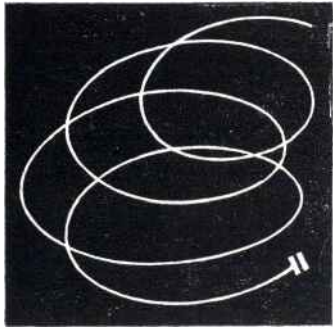
Please send me full details of all the new SW amplifiers, combos, columns and cabinets. I enclose 6½p stamp to cover postage.

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BI 6/76

STRING SURVEY



A brief guide to the activities of six of the major Musical Instrument String manufacturers.

GENERAL MUSIC [STRINGS]

Picato, Monopole, Red Dragon and Ambassador — all are

famous names with guitarists, and are all manufactured by General Music Strings of Treforest in Glamorgan. Amongst those who swear by the products of this long-established firm are Rob Davies of Mud, Tony Iommi, Francis Rossi, Ritchie Blackmore, Jigsaw

and Medicine Head. Promotion man Dick Thomas makes a special point of talking to musicians and asking exactly what their requirements are in a guitar string. GMS export to eighty countries, with further visits planned to places as far apart as Chicago and New Zealand.

A classic example of the "old family firm", GMS grew out of the dedication and perseverance of Michael Stein who escaped to this country in 1938 for fear of Nazi persecution; he managed to bring with him his son Alfred. From this inauspicious beginning, luck soon began to move in Stein's favour. He took up the offer of a factory building near Cardiff, and this, combined with a chronic local unemployment situation, enabled Stein to set up business again.

The war was a period when people—quite naturally—craved entertainment, and GMS gradually expanded their production, both in output and in the range of strings available. Thus, by the time skiffle arrived in the early fifties and there was a sudden demand for guitar strings, they were well able to cope with it, having been a major supplier to more traditional entertainers for years.

As time went by they were barely able to keep up with the ever-increasing demand. With Trevor Meredith, who is now the Works Director, Stein designed and built new machines that were a vast improvement in terms of production. The most recent automated equipment can now put out a daily total in excess of seven thousand strings. GMS employ some two hun-

dred people.

The recent appointment of Derek Morris (formerly with Rose-Morris) as joint managing director, and the promotion of Dave Martin to the position of Sales Director, has ensured that the firm continues to expand. The latest development is the Westerner series. These strings are wound with American bronze wire, and are already being recognised as amongst the finest currently available. The series numbers are: 600—light gauge, 660—medium gauge, and 612—twelve-string.

The Japanese market is an area where the excellent Picato range is selling particularly well. For some inscrutable reason the Japanese especially favour black nylon bass strings.

Today GMS make just about every kind of string, and pride themselves on being able to supply the rarer ones, for dulcimers, mandolins and suchlike, often requiring the use of brass and bronze as well as steel.

JAMES HOW

Think of bass guitar strings and the chances are that the first name that will come to mind is that of the Rotosound range manufactured by James How. How began to really come to prominence as a string maker during the 1950's when his company began supplying two of the major English equipment makers, Burns and Vox

Continued on page 42

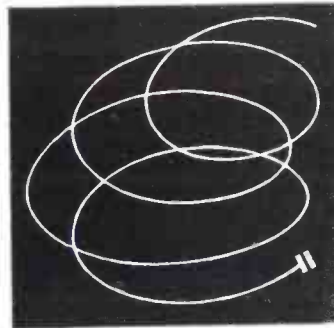
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Continued from page 41

with strings for their guitars. At the time the big seller was Shadow Supermatic string, well identified by the packet front which showed a shadow of the Shadows. Equal success was scored by How when he introduced the special black nylon bass for the famous Burns Black Bison bass.

But fashions in sound change and as the Shadows faded away a bass player by the name of John Entwistle changed the course of bass string design by working with How to create

the wire-wound Swing Bass set which is very much par for the course these days among bass players. How also does, of course, Rotosound flat wound which go under the name of Jazz Bass.

Of course Rotosound aren't just bass strings; among prominent users of Rotosound six string sets are the brilliant Brian May of Queen, Tony Bourge from Budgie, Dave Cousins of the Strawbs and Mick Box of Uriah Heep.

As instruments change How is constantly designing new strings to get the sound that suits the machine. Recently, for example, he has had correspondence with Rickenbacker to design strings for Chris Squire's and John Entwistle's eight string Ricky basses. If Rickenbacker decide to sell these in bulk James' amiable son Martin assures us that an appropriate string set will be available.

In addition to making guitar strings, How has an enviable reputation among classical players for his violin, cello and double bass sets—no easy market to satisfy.

New developments on the way will include the probable

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Special American
Bronze Wound Strings

ACOUSTIC LIGHT GAUGE No.600 £2 incl. VAT
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Tel: Treforest 2571

**Picato makes the professional
sound internationally perfect**

introduction of a flat wound gauge selection of bass strings before this year's Chicago Trade Fair.

This, of course, follows How's introduction of the Swing Bass gauge selection which have proved to be a great success.

Rotosound offer a complete range of strings including acoustic guitar sets and nylon strings.

CARDIFFMUSIC STRINGS

Despite being a relative newcomer on the scene, Cardiff Music Strings seem to be major manufacturer with many successful brand names.

The names on the market are Sound City (a brand name which they purchased and relaunched relatively recently), Cathedral, Summitt and Londoner. Currently booming is the market for Sound City bass strings which the ebullient Alan Marcuson tells us are pushing Cardiff into the No. 1 in Britain position. Alan is very proud of the fact that Cardiff Music Strings, a British Company headed by George Ost-

reicher, is exporting massive quantities of strings against strong competition from the Americans. Price according to Marcuson, is proving to be a decided advantage.

Although at present, Cardiff don't offer a gauge selection system, they plan to have a Custom range available in August which should prove a worthwhile addition for musicians who like to balance their sets for themselves.

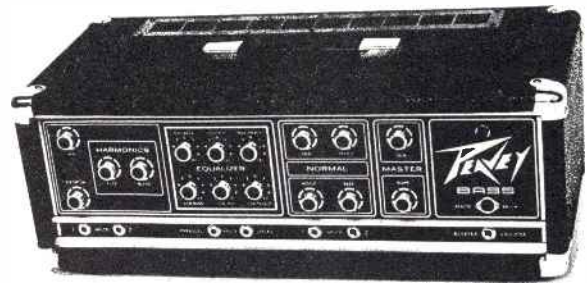
The major items of interest for lead guitarists are, of course, Sound City guitar sets which come in four sets at present, Super Ultra Light Gauge, Ultra Light Gauge, Extra Light Gauge and Light Gauge, these carry the distinction of having been recommended by Eric Clapton. Watch out, however, for Sound City bass strings which seem to be catching on in a big way.

SUMMERFIELD

Manufactured in New York, D'Addario strings have the important legacy of eight generations of experience, and

Continued on page 44

The Peavey Bass



Three of the most versatile bass amps money can buy!

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"The equivalent of," we say, Automix is why.

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... what ever you wish, and never miss a beat. Add to this the versatility of six channel equalization, separate fuzz and distortion circuits (for the valve sound if you like), a "slope" control for tailoring the low end rolloff, and master gain for sensitivity and/or overload at low volume levels, rolled into a power amp that delivers 200 watts (@ 1% THD) of real RMS power, and matches perfectly to any one of a host of highly efficient Peavey bass enclosures, and you've got the ultimate in professional bass guitar amplification.

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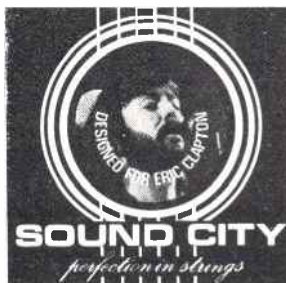
SOUND CITY STRINGS

	Rec. Retail Incl. VAT	
Gauge (ins)	£	each
STANDARD—SET 1000 (semi Acoustic)		
1001 1st Plain	.010	0.09
1002 2nd Plain	.13	0.09
1003 3rd Plain	.025	0.17
1004 4th Wound	.032	0.19
1005 5th Wound	.040	0.22
1006 6th Wound	.053	0.24
1000 Set of 6 Strings		1.00
COUNTRY & WESTERN—SET 2000 (Bronze)		
2001 1st Plain	.013	0.17
2002 2nd Plain	.016	0.17
2003 3rd Plain	.026	0.36
2004 4th Wound	.033	0.46
2005 5th Wound	.041	0.49
2006 6th Wound	.057	0.60
2000 Set of 6 Strings		2.25
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3001 1st Plain	.0095	0.20
3002 2nd Plain	.012	0.20
3003 3rd Plain	.015	0.20
3004 4th Wound	.025	0.55
3005 5th Wound	.030	0.65
3006 6th Wound	.038	0.70
3000 Set of 6 Strings		2.50

	Rec. Retail Incl. VAT	
Gauge (ins)	£	each
SUPER ULTRA LIGHT GAUGE—SET 3000SU (Nickel)		
3001SU 1st Plain	.0085	0.20
3002SU 2nd Plain	.011	0.20
3003SU 3rd Plain	.015	0.20
3004SU 4th Wound	.024	0.55
3005SU 5th Wound	.030	0.65
3006SU 6th Wound	.038	0.70
3000SU Set of 6 Strings		2.50
BASS GUITAR WIREWOUND—SET 7000 (Nickel)		
7001 1st		1.10
7002 2nd		1.31
7003 3rd		1.86
7004 4th		1.86
7000 Set of 4 Strings		5.95
EXTRA LIGHT GAUGE—SET 4000 (Nickel)		
4001 1st Plain	.010	0.20
4002 2nd Plain	.013	0.20
4003 3rd Plain	.015	0.20
4004 4th Wound	.028	0.55
4005 5th Wound	.032	0.65
4006 6th Wound	.040	0.70
4000 Set of 6 Strings		2.50
LIGHT GAUGE—SET 5000 (Nickel)		
5001 1st Plain	.011	0.20
5002 2nd Plain	.014	0.20
5003 3rd Plain	.017	0.20

	Rec. Retail Incl. VAT	
Gauge (ins)	£	each
5004 4th Wound	.028	0.55
5005 5th Wound	.035	0.65
5006 6th Wound	.043	0.70
5000 Set of 6 Strings		2.50
MEDIUM GAUGE—SET 6000 (Nickel)		
6001 1st Plain	.012	0.20
6002 2nd Plain	.015	0.20
6003 3rd Wound	.023	0.40
6004 4th Wound	.029	0.55
6005 5th Wound	.037	0.65
6006 6th Wound	.045	0.70
6000 Set of 6 Strings		2.70
CLASSIC NYLON—SET 9000 (Silvered Copper)		
9001 1st Plain		0.12
9002 2nd Plain		0.13
9003 3rd Plain		0.15
9004 4th Wound		0.30
9005 5th Wound		0.36
9006 6th Wound		0.39
9000 Set of 6 Strings		1.45
SOUND CITY TAPEWOUND—SET 8000 (Nickel)		
8001 1st		1.26
8002 2nd		1.55
8003 3rd		1.96
8004 4th		2.18
8000 Set of 4 Strings		6.95

* BASS GUITAR sets or singles are available in long or medium scale.



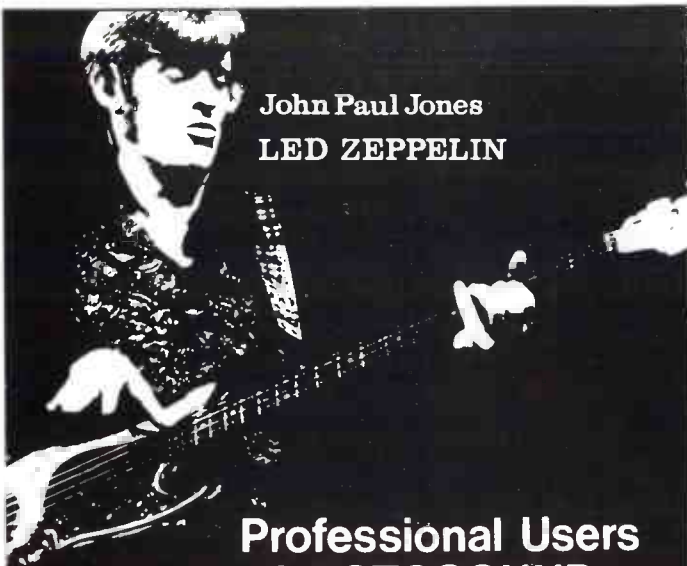
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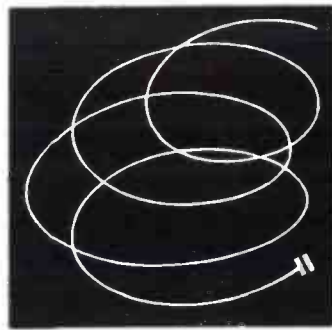
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TRIOS PARANOIAS
NEIL BREWER.....DRUID
JOHN CAMP.....RENAISSANCE
CHAS CRONK.....STRAWBS
PETER CROWTHER.....MR. BIG
STEVE CURRY.....T. REX
JOHN DEACON.....QUEEN
STEVE EMERY.....STRETCH
JOHN ENTWISTLE.....THE WHO
HELLMUT HATTLER.....KRAAN
COLIN HODGKINSON.....BACKDOOR
DEREK HOLT.....CLIMAX BLUES BAND
RICKY JOHN HOLT.....SASSAFRAS
GLEN HUGHES.....DEEP PURPLE
GREG LAKE.....E. L. P.
JIMMY LEA.....SLADE
PHIL LYNOTT.....THIN LIZZY
DEREK MOORE.....NEKTAR
ROGER NEWELL.....RICK WAKEMAN'S
ENGLISH ROCK ENSEMBLE
BURKE SHELLEY.....BUDGIE
RAY SHULMAN.....GENTLE GIANT
CHRIS SQUIRE.....YES
CHARLIE TUMAHAU.....BE-BOP DELUXE
OVEREND WATTS.....MOTT
MIKE WEDGWOOD.....CARAVAN
JOHN WETTON.....URIAH HEPP

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Continued from page 43

they occupy a position of prominence in the American 'string scene'. Their efforts to cover the industry as widely as possible have included such activities as investigations of new materials and the production of both hand-wound and machine-wound strings.

While their range covers the electric and acoustic departments, folk and bluegrass players may care to investigate Addario's Heritage strings, which were especially developed to satisfy the needs of bluegrass and bottleneck slide guitarists. The Blues-Bottleneck and Bluegrass sets were designed in conjunction with Stefan Grossman, who studied the guitar with famous blues and ragtime guitarists like the Rev. Gary Davies and Mississippi John Hurt.

Acoustic Guitar strings are offered wound in phosphor bronze alloy as well as the regular brass winding. The phosphorous content, which is about 8%, means that this alloy is very strong, and enables more tension to be applied while winding, which produces a string with longer life.

The firm have also developed their own string winding machines to control these variables, and also process their own raw nylon. English distributors are Summerfield Brothers, supplementing the D'Addario range with several others.

TOP GEAR

Top Gear distribute D'Angelico and Guild strings in this country. D'Angelico strings come in many different styles — there is the bronze type of which

there are four sorts (extra light, light, medium and heavy); the soul rock type (skinny, regular and heavy); the 12 string sets are bronze also, and these are in different gauges — from extra light to heavy.

In the classical range, D'Angelico have the black nylon classic set, the top three of which are plain and the bass three. D'Angelico also do bass strings — the soul rock wire-wound and bass guitar flat-wound and nylon-wound strings.

Top Gear also distribute Guild strings and these are available either for acoustic instruments or for electric and bass guitars. The acoustics are available in brass alloy light or extra light sets and the electrics comprise super light and extra light gauge "sidebenders" or "vibraphonic" strings and the bass guitar sets are flat-wound and wire-wound medium and long scale.

Ernie Ball Strings are distributed by Strings And Things and the various types and gauges of these are almost innumerable! These vary from the Super Slinky selection to the Bass Guitar and Pedal Steel Guitar sets.

All Ernie Ball strings are gauged and these range from .008 (Extra Slinky first string), which is the smallest of the gauges, to .060 (really heavy gauge sixth string). Heavier strings are available, too, and are used for special application to the steel guitar.

CLEARTONE

Cleartone's main line of guitar strings are, at present, the Picato and Monopole ranges from G.M.S. but they have just introduced a new range of American Strings which promises to be very big. They are called Nashville Straights and are unique in that they are packed in long straight boxes, hence the name. The idea behind this novel form of packing is that to coil strings up, as most manufacturers do, is harmful to the string in that it can damage the windings and therefore harm the performance of the string.

Cleartone are aware that many people are likely to try to write the idea off as a gimmick but they point out that the idea is not actually original, for good quality violin strings have been packed straight for years. This, they suggest, proves there is something in it after all.



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1 ditto with golds	230
1 pair Cadac Monitors and amps	450

	£
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Klark Teknik Dual II Graphic Equaliser	350
2 Electrovoice rifle mics	65 each
Various AKG Types C28, C60, 202, etc.	
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HOW TO PROMOTE YOUR OWN GIGS

With bookings getting harder to find as the summer gets under way, Nigel Jopson tells you how to go about making your own gigs a success

FOR a young group, there are both disadvantages and advantages to be gained from promoting their own shows. It will no longer be possible to just play and be paid, as at a normal booking, but it *will* be possible for the group themselves to exercise a far greater degree of control over all the proceedings.

The most obvious advantage is that by promoting your own show it is possible to cut out the 'middle man', and thus to reap the full financial rewards for your labours. A proportionally greater amount of administrative and organisational work will have to be done however, so it could be maintained that you are really only paying yourself the extra for labour that would normally be performed by others. A far more attractive bonus offered by self-promotion is the chance to choose *when* and *where* you play: it will be possible to play much larger and more congenial venues, and because of this, to perhaps finally attract more attention, draw larger audiences, and hence earn more money.

A very important point is that any band contemplating self-promotion must be united from within before attempting to present their artistic product to the general public. However well the group get on musically relationships are bound to wear a little thin if, when it comes to organising promotion, the bulk of the burden falls on the shoulders of one or two in-

dividual members. It is a fact of life that some people are better at organising things than others, and the job of overall co-ordination should naturally be left to them. This does not mean that others should not participate—only that responsibilities should be divided according to aptitude and ability. Keeping the dressing rooms tidy and selling tickets are just as important as handling press and publicity, and each area of responsibility must be clearly defined and allocated.

In charge

Duties that have to be performed can be roughly categorised under six headings: Co-ordination, Administration, Equipment, Personnel and Security, Publicity and Tickets and Sales. The first task will obviously be assumed by the group's manager or mentor, as it is his job to make sure that everyone else is doing theirs, and that the whole show will come together in time. This may seem like a cushy number, but things always seem to get done most efficiently when there is one person nominally in charge, and whoever it is who performs this function will be the one to finally 'carry the can'.

Administration, in the situation we are discussing, really means the person who looks after the expenditure of money, and who's job it is to ensure that the whole operation is logistically possible. Again, it is much more practical to have one individual holding the purse strings, as the group's budget will probably be very tight, and it is usually much more reassuring for hall owners and promoters to talk money with one long-haired young man, rather than with a whole group of them!

Equipment will obviously be the domain of the group's sound engineer, and although the subject is really outside the scope of this article, it is important to note that this duty includes making sure that all gear arrives on time, *and* that it can be stored somewhere safe and accessible at the venue.

'Personnel and Security' is very, very important for anyone promoting their own show. There's always one member of a group who is good at "chatt-ing-up" people. Let him go to work on the Vicars and nice old ladies who invariably seem to administer local halls and theatres — have tea with the vicar and talk about "commun-



'Any more tea, vicar?' . . .



Poor old 'Bill Stickers' is liable for prosecution . . .

icating with young people," take the lady flowers and talk about drama — it's wonderful how a few pleasantries can bring the £'s toppling off the hiring fee!

If a group are contemplating self-promotion at all, they will undoubtedly have built up a small following of hard-core fans: if approached in the right way, some of them will probably be quite willing, for the price of a pint and the pleasure of being associated with their local heroes, to man the box office, sell a few tickets around their favourite haunts, and perhaps help out 'on the door' for the Gig. The person chosen for 'Personnel' will also have to be polite to janitors and hall cleaners. Although usually very concerned about the value of their jobs, these dignitaries also usually have charge of all essential keys, and know where everything is kept; in return for a little bit of respect, it is sometimes possible to acquire a drum rostrum and tables to put the P.A. on.

Promoter

Some venues may require a promoter, 'by law', to provide his own security. If brawny Dads and Uncles aren't acceptable, then it is absolutely essential, if the Gig is big enough, to seek advice from reputable and established companies, such as Sturico or Artistes Services, who specialise in such matters. The sur-

est way to turn a Gig into a nightmare is to hire a local bunch of bruisers who turn a bit nasty after a few beers.

Publicity is the great decider for a Gig as regards success or failure financially: even if everything else is perfect, if no-one comes then you've lost out in time, money and self-respect. The most obvious form of advertisement, posters and

placards, is also the most doubtful as regards validity. Do people notice them or actually read them, and where do you put them, anyway? In Britain poor old 'Bill Stickers' is liable for prosecution, and, when he is caught, it's worth remembering that every illegal poster is fined separately. The most useful places to put them can really be narrowed down to the following: the local record shop, local public houses, schools, youth clubs and meeting places, train and bus stations (only with permission), and outside the venue itself. If there are suitable people to distribute them, then 'hand-out' leaflets probably have far more impact: it would be well worth the group's while to investigate the various firms who advertise package deals of both leaflets and posters, but local printers may be more convenient, and possibly cheaper, for just leaflets.

A good form of promotion is an advert in the local newspaper, and, if you approach the matter fairly intelligently, it might be possible to get an interview. Journalists like 'news', so be prepared to provide them with something concrete and relevant — a typed 'press release' adds a professional touch. A good black and white photograph will save their staff photographer some leg-work, and remember that newspapers have press-dates,

so get in touch well in advance.

Local radio stations may be prepared to announce the date and place of the Gig, and personal visits to schools and Youth Clubs invariably insure some measure of attention. The best advertisement for a group, however, is actually to play a Gig in the town — so when you book the venue the first time, try and arrange a tentative future date as well — no publicity acts as fast as word of mouth!

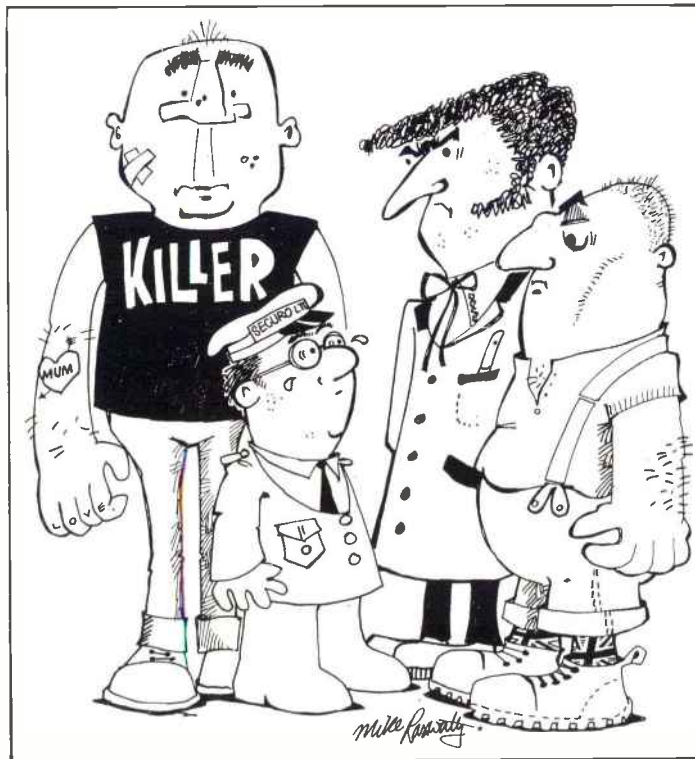
Tickets

Finally, someone must take responsibility for tickets and other sales. If you are interested in filling the hall, *don't* over-price the tickets. In this day and age, human beings have a psychological resistance to parting with a crisp green note for the purpose of their entertainment — 50p is nearer the mark. If there is a box office, have it open at all times when there are people about . . . a little bit of street hawking often brings a certain amount of success. Give the local record shops, music shops and boutiques free tickets for all their staff, and get them to do a little bit of gentle ticket selling for you. Persuade friends and fans to take tickets around the pubs — when people are feeling jolly and spending money they may not be averse to spending a little more. If you want to fill out the hall in order to impress important guests, *don't* give out tickets in the street, go to the schools and colleges and catch the kids as they go home.

Reception

The hall may have a suitable ante-room for a bar: if it does, try approaching a publican who provides portable facilities for receptions and functions. Another source of profitable income can be provided by the sale of records of the group 'on the door'. It doesn't cost that much to have a couple of demo tracks made into a single, and the ideal time to catch your public is just after they have been impressed with hearing you play. Also, it gives them something to remember the group by — a function that the tickets themselves can perform if reasonably attractively produced.

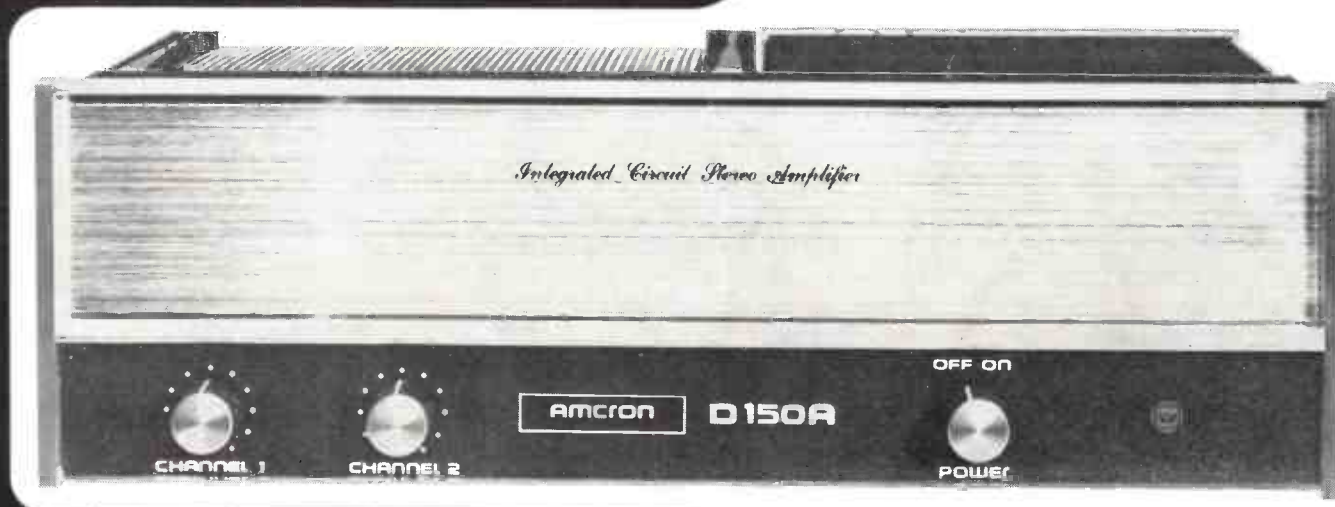
Well, all that really remains to be said is "Good Gigging" — and don't forget to send us some free tickets!—Ed.'s Note: What . . . Beat Instrumental? You should be so lucky!



Security: avoid beer swilling musclemen

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As a logical follow-up to the world-beating DC300A, AMCRON have introduced the D150A power amplifier to replace the old D150. This superb new amplifier will operate into loads down to 1ohm, is DC-coupled throughout, provides up to 200 watts rms from one channel, and has newly designed heatsinks to handle the extra power. Other features include level controls on the front panel as well as a mains power switch, and mains warning lamp. On the rear of the D150A is a switch which allows the user to select either a Mono or Stereo operating mode. As a monitoring, or PA amplifier, the D150A is really a delight, and is said to be a 'baby' DC300A! Certainly where the higher power of the DC300A is not required, the D150A is the obvious choice.



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APRS '76 PREVIEW

Beat Instrumental takes its annual look at the equipment and services to be demonstrated at this the 9th International APRS Exhibition to take place at London's Connaught Rooms on June 17th and 18th. As usual, we have made the Preview as extensive as possible, not only as a full diary of products for engineers and musicians, but also with the aim of anticipating the trends and developments of a fast growing industry.

MACINNES LABORATORIES Ltd.

Macinnes Laboratories Limited will be showing the full range of Amcron Power Amplifiers, the Amcron CX844 4 track in line Tape Recorder, and examples of the massive RTR 25" Bass driver Speaker. This unit will handle power in excess of 300 watts, has a free air resonance of 12 Hz, and features a 6" voice coil with internal spider.

The Amcron amplifiers now have a restyled front panel, and all models are provided with a mono/stereo switch on the rear panel. The new IC150A pre-amplifier replaces the original IC150 and features lower distortion, improved hum and noise figures, a precision step-

ped attenuator for the volume control and a headphone outlet on the restyled front panel.

In addition to the Amcron equipment on display Macinnes will be showing the new Macinnes sound mixer which is available as either a 16/2 or 16/4. Among its comprehensive facilities the mixer offers two foldback sends, two echo sends, mike/line switching and phase reversal. The complete mixer is built into a strong aluminium flight case.

ALLEN AND HEATH

Allen and Heath will be exhibiting their complete range of sound mixing consoles and will also be launching four brand new products. The ten channel production mixer is one of

these; it is designed for the semi-professional and professional studio where the mixing of pre-recorded material and live material is necessary. Allen and Heath have tried to bring the fully professional broadcast mixer to a market which normally cannot afford such expensive equipment.

Also on show will be two limiters/compressors. One of these a very simple unit for use with the Allen and Heath Minimix system. The other will be a fully professional feed forward limiter/compressor. This unit has the facility of sensing a signal to be compressed before it gets to the compressor. This totally eliminates any transient peaks being allowed through the limiter/compressor.

Finally there will be an effects unit, which incorporates an automatic double tracking and phaser unit in one. This is a fully professional unit which has proper phasing characteristics. It is designed around a digital delay system.

Allen and Heath will also be exhibiting their 16 x 8 with 16 track monitoring studio console, the 8 x 4/10 x 2 Quasi Mixer, their very successful 16 channel Minimix system stereo PA mixer and of course the very successful Allen and Heath minimix system.

Also, Allen and Heath will be exhibiting their new Associate Company — Brenell Engineering's products. Brenell will be exhibiting their new Mk. 7S professional tape recorder, also a new ¼" quadrasonic machine and an 8 channel tape recorder. Brenell Engineering Sales are now based at Pembroke House, Campsbourne Road, Hornsey, London N8.

CETEC AUDIO

Cetec will be showing the Gauss range of loudspeakers at the Trade Fair. The range of cone driven loudspeakers come in three different sizes — 12in, 15in and 18in — each of which is available in four basic series: the Model 41, full range general purpose; the Model 40, Universal Bass speaker; Model 42, which is a horn-loaded bass; and Model 31, an ultra low bass.

A distinctive characteristic of all Gauss loudspeakers is the large, black, finned heatsink at the rear of the drive unit. This is made of anodised aluminium and bonded to the Alnico magnet assembly in order to dissipate heat. Two separate "spiders" support coil assembly and govern the motion of the coil within the gap.

All Gauss transducers are tested in an anechoic chamber for a minimum of 10 minutes at a power of 150 watts rms. The final test is the application of 70lb of hydraulic pressure to the loudspeaker frame while simultaneously feeding it an audio signal.

Apart from the items mentioned already, Gauss also supply a 90° radial horn to go with the model 4000 compression driver. Retail prices for speakers will be dependent on model and quantity required, but should be about £130 for an 18in, £115 for a 15in and £190 for the model 4000 compression driver.

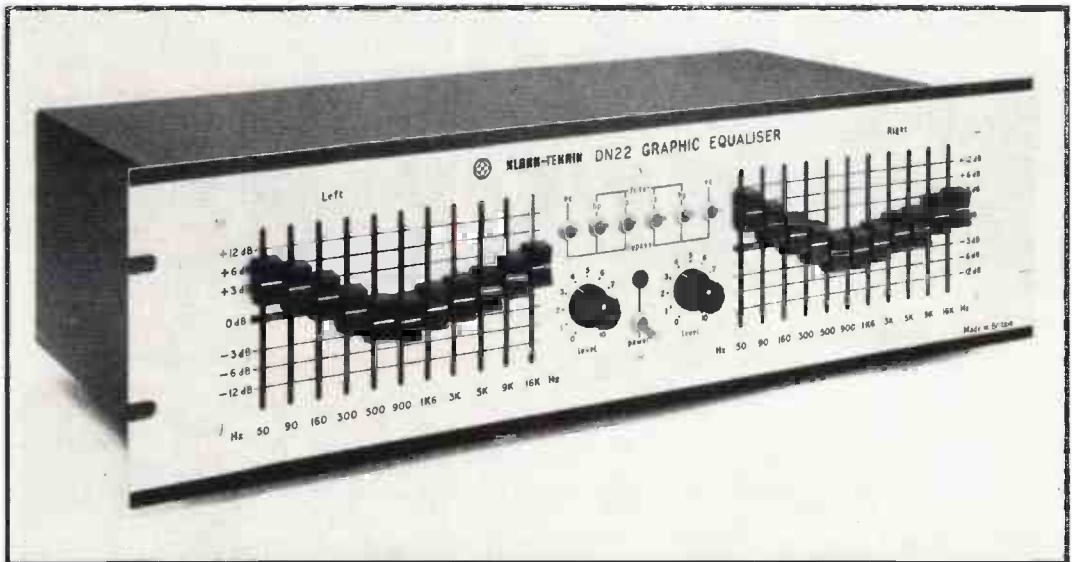
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KLARK-TEKNIK Ltd.

Klark-Teknik will be exhibiting their range of Graphic Equalisers and their new 1/4" Master Recorder, now in full production.

The SM2 Recorder features two models, one for typical studio use and one for broadcasting which has been designed for the B.B.C. The SM2 is a high technology recorder with very sophisticated control. The broadcast version is available with individual audio requirements which has already proved popular with several of the major buyers. Features of the machine are as follows:— Phase-locked D.C. Varispeed from 15-80 cms/sec, which can also be externally controlled, a unique tape tension system which uses a digital comparator which keeps tape tension constant in all modes and speeds, dual D.C. Servo-controlled capstans, NAB/DIN switching and variable speed spooling.



Four new Graphic Equalisers, the DN27, DN22, DN11 and the DN15 will be shown. The first three supersede previous models, but the DN15 is entirely new. They all have exceptional noise and distortion figures. The DN15 is a Dual 11 way Equaliser with the addition of a Pre amp instead of the Low and High Pass Filters which are featured on the DN22. Performance of all models includes distortion which is less than 0.01% sliders in any position

and hum and noise which is less than -90 dBm unweighted 20-20KHz bandwidth.

TANNOY

Tannoy Products will be displaying their complete range of professional integrated loudspeaker systems and driver units at the APRS Exhibition. In addition to the three HPD Driver Units featuring the dual concentric principle, the company will be displaying the five

enclosure systems from the range.

The largest of these is the Arden featuring the HPD 385A integrated loudspeaker system in a triple ported cabinet. It offers the widest frequency response in the Tannoy range, with a power handling capacity of 85 watts rms and a sensitivity of 91db at 1 metre for 1 watt input, demonstrates a high efficiency suitable for most

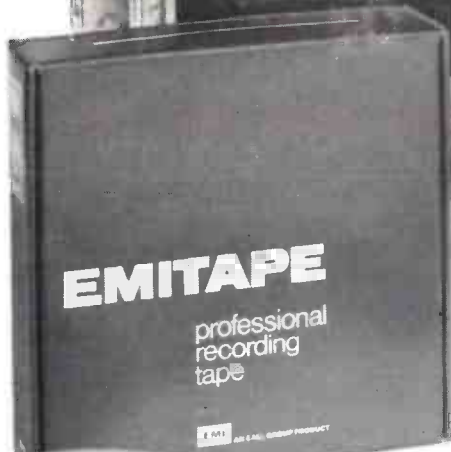
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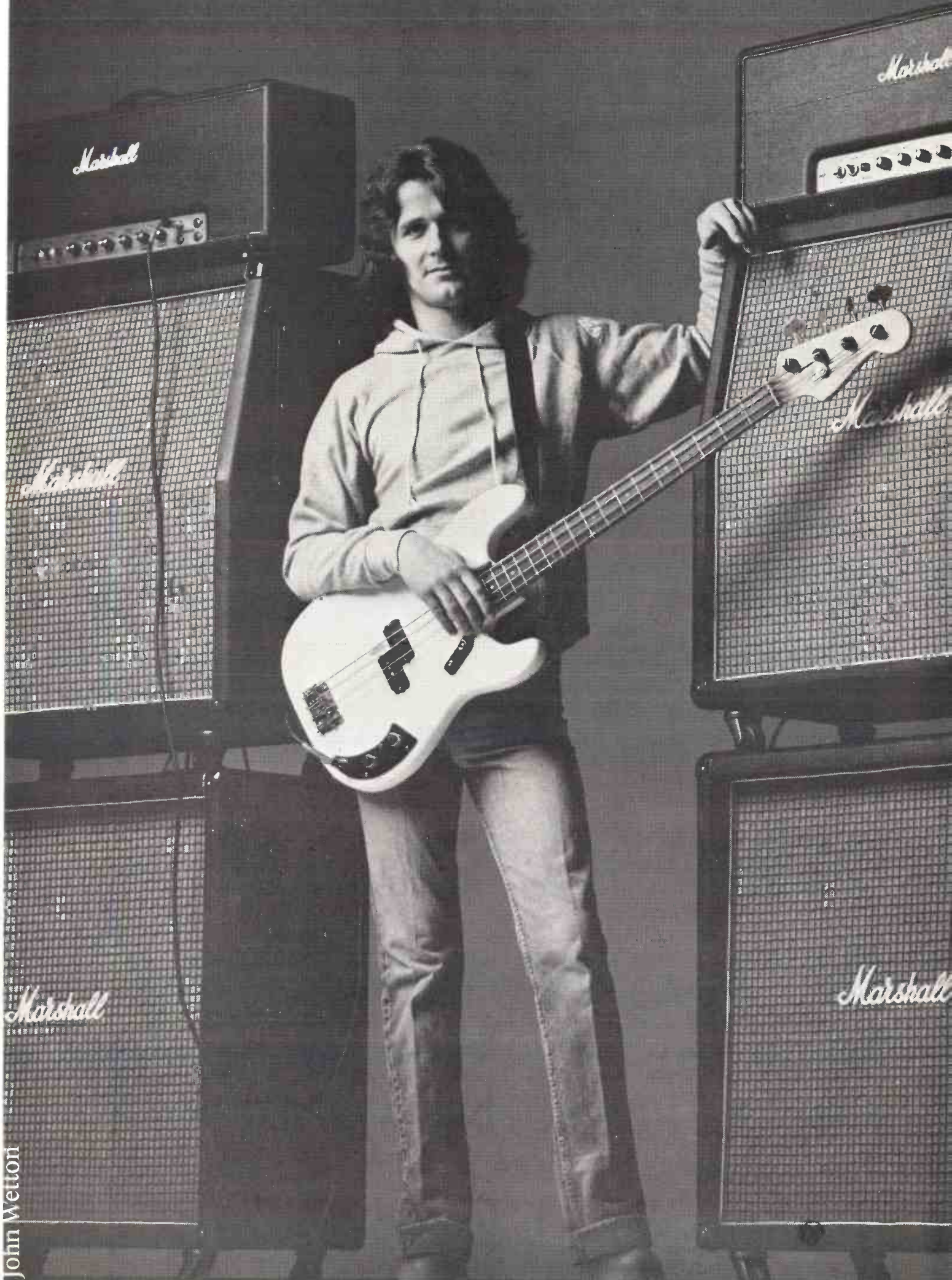
Ask master sound recordists why they use EMITAPE and they'll single out the high level of magnetic remanence, good dynamic range and excellent signal-to-print ratio combined with low head wear. This probably explains why more than half of all U.K. record releases are mastered on EMITAPE. And why new EMITAPE 152 cassette duplicating tape has raised the sound quality of production musicassettes to rival the record.

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So while some speakers are great for getting your music out to the back of the hall, they often leave the people in front wondering what all the fuss is about.

And the problem doesn't stop there. What the people in front don't hear, I don't hear too well either.

This was the dilemma. Where could I get a speaker that combines good clear sound on stage, and gets a good audible bass across to the audience everywhere in the hall.

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I was introduced to the Marshall 4 x 12 cabinet. And sure enough, it belts my bass out all over the place combining everything I've always wanted — good stage sound with good low bass audibility for the audience.

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So, the next time you land yourself a front row seat in a Heep concert, you won't spend the evening admiring my miming.

You'll hear me. My god, will you hear me?"

Over the past ten years John Wetton and his 1961 Precision bass have been the driving force behind such groups as Family, Roxy Music, King Crimson, and lately Uriah Heep.

He can be heard at his best on Family's Bandstand, King Crimson's USA and Larks Tongues in Aspic, Uriah Heep's High and Mighty and his forthcoming solo album.

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MR. MUSIC

APRS '76 PREVIEW

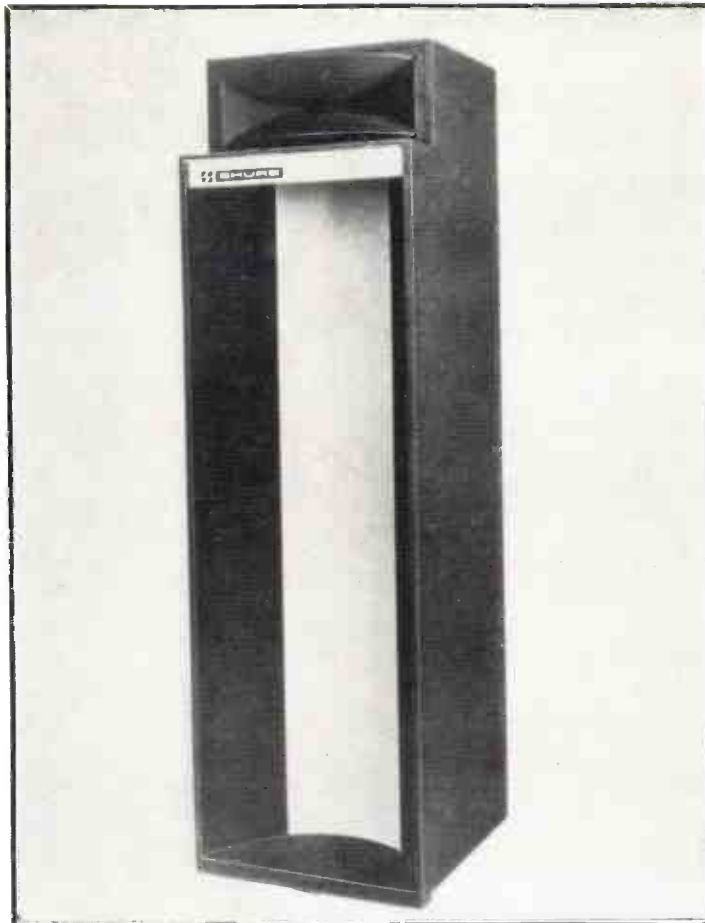
Continued from page 50

commercial recording applications.

The Berkeley enclosure offers a more compact system, again featuring the Tannoy HPD 385A. This enclosure is double ported and offers a frequency response down to 35Hz.

The Cheviot is the smallest free standing cabinet and uses the HPD 315A. A remarkably strong bass is achieved with a ported system and the enclosure has a power rating of 60 watts rms. The Devon enclosure is a large bookshelf speaker with dimensions of 23in x 15 $\frac{3}{4}$ in x 10 $\frac{1}{2}$ in, with a power handling capacity of 60 watts rms, the HPD driver offers a higher sensitivity and this enclosure has proved to be extremely popular as a mobile studio monitor by major recording and broadcasting authorities throughout the world.

The Eaton enclosure offers a new standard for bookshelf systems. Rated at 50 watts rms, the high sensitivity of the HPD 295A offers the user a



Not only mics but speaker systems from Shure

high degree of performance when compared to similar size enclosures.

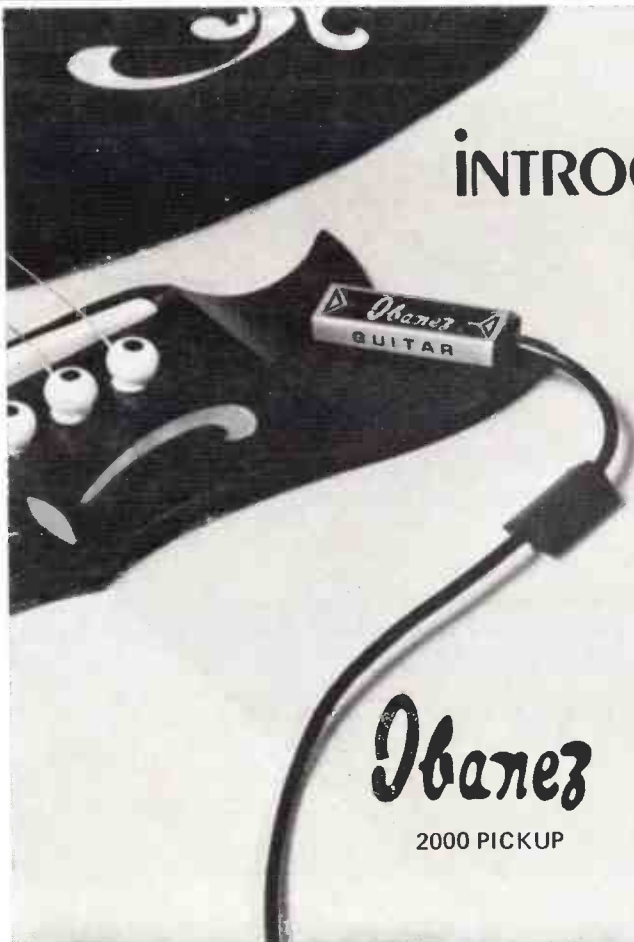
All these Tannoy systems employ the dual concentric principle in their concept. This embraces, on a common chassis, a precision built high frequency compression horn together with a direct radiator bass unit which employs the unique girdacoustic reinforced cone on both the HPD 315A and 385A versions.

SHURE

The focal point of the Shure display will be the recently introduced SR line of Sound Reinforcement equipment. The SR101 mixing console when used with the SR106 Electronic Crossover, SR105 Power Amplifier, and SR108 two way horn loaded speaker units forms a compact, full range, sound system of the highest quality.

Also on display will be the full range of Shure studio microphones and of particular interest to engineers will be models SM7, SM58, SM57 and SM54 all of which are widely used in recording and broadcasting studios throughout the world.

Continued on page 57



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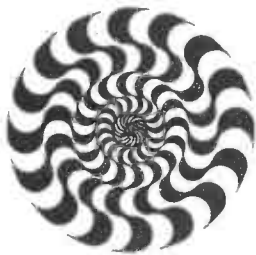
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NEW DEALERS WELCOME

Don't miss Beat's review of the SRV-100 combo on page 84

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APRS '76 PREVIEW

Continued from page 55

Circuitry items designed specifically for recording and high quality sound reinforcement will be displayed and units such as the SE30-2E gated compressor mixer, SE22 broadcast quality equalizer preamplifier, M67-2E mixer and M625AM voice gate will be of special interest to engineers.

HH ELECTRONIC

H.H. Electronic have a number of new models which have already attracted a good deal of attention and which will be shown at the APRS. Studios should find the new range VS instrument amplifiers of great interest as they have the ability to produce a large range of sounds at low volume levels. The rich overload sound often produced by valve amps, but only at high volume, can now be reproduced at a level convenient for the sound engineer.

Also on show this year will be the S.500 an entirely new stereo power amplifier with a maximum power output of 500

watts per channel into 2.5 ohms. Forced Cooled Dissipators (FCD) with a dissipation capability of no less than 3,000 watts, are an integral part of the construction. The TPA Series D range of studio amplifiers includes the TPA 50D at 100 watts into 4 ohms and the TPA 100D with a maximum power output of 250 watts in 4 ohms.

The AM8/12 amplifier designed for the BBC local radio stations will also be shown, as will the DM12 Audio Distribution Amplifier as supplied to leading companies in the broadcasting and recording industry. Twelve balanced outputs for a total of 36 outputs for a complete sub-frame can be provided.

The Multi-Echo and Echo Unit made to studio and capable of single or multiple echo repeats. This unit has already proved popular with studios because of its portability and low noise levels. Also appearing will be a new Voice Alarm system as designed and supplied to the Department of the Environment.

SOUNDCRAFT

Soundcraft Electronics Ltd. will be revealing the new

specification Series Two range of recording mixers at APRS '76. This revised specification embodies all the features of the original, plus many new facilities and a new modular form of construction. All connections to the circuit boards are by a series of motherboards, allowing ease of servicing comparable with a fully modular construction. In order to enable Soundcraft to build a variety of console sizes and formats, with reasonable delivery times, they have divided the mixer into a number of panel sections which can be put together in various combinations with any number of input channels, in multiples of four, and either 4 or 8 groups out, routable to 8 and 16 tracks respectively. Standard frame sizes accommodate 12, 16 and 24 input channels. The power supply is fully regulated and provided in an external unit.

The input facilities have been extended to include two equalisation options, four cue sends, direct line out pre and post fade, and 45v phantom powering. The monitoring and remi facilities have been considerably improved and have independent controls. All mixer functions can be read on PPM

or VU meters.

Custom built configurations of the new range will be available and, to demonstrate the considerable flexibility of the system, it is hoped to exhibit a 28 into 24 console with continuously variable multi-band equalisation and switchable VU/PPM L.E.D. metres on every channel, and an extensive patch bay.

3M

Making its debut on the 3M United Kingdom Limited stand (Cornwall Room) is the Sonaplan XT-14 Autolocator, designed for rapid location and selection of material recorded with 3M M79 series professional studio recorders. The Autolocator, which features a calculator-style control box and is designed to operate without overshoot, will be handled exclusively in the UK and Europe by 3M United Kingdom Limited — as will the Sonaplan Tape Timer, a device compatible with all 3M professional audio recorders.

3M's 24ft long stand also features two M79 series recorders (a 24-track and a 4-track), API Maglink and Mini-

Continued on page 58

The International Microphone



For over 40 years Beyer Dynamic microphones and headphones have served the needs of professional 'Sound Men' throughout the world.

The M500 (Illustrated) is only one of a range of microphones now serving thousands of users who still demand high quality performance and reliability. Brochure showing the full range of microphones, headphones and accessories available on request.

BEYER DYNAMIC

BEYER DYNAMIC (GB) LTD

1 Clair Road, Haywards Heath, Sussex. Tel: 51003

APRS '76 PREVIEW

Continued from page 57

mag synchronisers — the latter shown coupled with an IVC helical scan video machine and a Nagra audio recorder — and several examples of Mincom test equipment, including the versatile Model 6110 recorder test set and wow and flutter meters.

Working models of Wollensak bi-peripheral cassette tape transports will be shown, together with the range of Scotch professional audio tapes — types 250, 262, 206 and 207.

BAUCH

F.W.O. Bauch will be showing a wide selection of their equipment at the exhibition. The Studer A80/VU-24 track tape recorder with an automatic tape position locator system, the A80/R- $\frac{1}{4}$ inch master recorder, B62 and A67 compact $\frac{1}{4}$ inch recorders. The 169 Portable mixing unit, Stereo power amplifier A68 and the Unisette tape deck are all new items on show in the U.K. for the first time.

In the Neumann range con-

denser microphones and disc cutting equipment will be on show. From EMT will be shown the new Electronic reverberator EMT 250, the Electronic crystal time display QZD60, the small wow and flutter meter EMT422, wow and flutter analyser EMT424, the new Micro-impedance meter EMT328, professional turntables limiter, de-esser and noise filter modules, electronic timing standard and audio frequency cables.

From the United Recordings Electronics Industries comes the new Response plotting system 2000, the Sonipulse acoustic analyser, the Teletronix leveller LA-5 and the Mono and Stereo variable band pass filters 555 and 556.

Also on display will be Transco disc recording blanks, Sontec parametric equalisation, MRL test tapes, the Lexicon digital Delay-T 102 and Vari-speech 2 second generation speech time compressor/expander, and Allison Research Kexex and Gain Brain modules.

SONAPLAN

Sonaplan are manufacturers of studio equipment and are based at 36 The Four Tubs, Bushey Heath, Hertfordshire WD2 3SJ. Perhaps their most

interesting products are their range of acoustic screens. These are strong and rigid, and multiple stiffeners, in addition to a special membrane at the core of the acoustic module damp out any mechanical resonances detrimental to the attenuation characteristic.

In order to minimise unwanted reflections from the faces of the screen the acoustic module is treated both sides with a layer of sound absorbing rockwool. The overall result is an attenuating absorptive screen which comprehensively deals with the problem of studio separation combining durability with practicality.

The welded metal frames are sprayed in an attractive cream textured finish which blends with any colour of acoustic covering selected. The supporting feet have been designed to facilitate unimpeded use of screens at right angles to each other to form cubicles. The acoustic modules are covered in an attractive and extremely durable sisal fabric which is unaffected even if a cigarette is inadvertently stubbed out on the material.

EDWARD J. VEALE & ASSOCIATES

Edward J. Veale & Associ-

ates is best known for its work in studio design and construction and Eddie Veale, David Dreaden and Jeff Forbes will be at the stand to discuss any aspects of this work. It is also hoped to have copies of 'Sound System Engineering' a book by well-known American acoustics experts Don and Carolyn Davis, available at the stand. This is a first-class primer for all aspects of public address systems design, acoustics and sound engineering generally.

TURNER

Turner are showing their specialised range of studio monitoring power amplifiers ranging from 100 watts to 500 watts. The amplifiers are designed for precision monitoring applications in the studio and high powered multi-channel sound systems.

The very latest Turner stereo power amplifier is being shown for the first time, the amplifier utilises new design and production techniques which combine economy with ultimate performance.

Turner are also showing their transportable mixing consoles and associated mobile sound equipment.

Continued on page 62

pop ~ mixer

16 CHANNEL STEREO P. A. MIXER

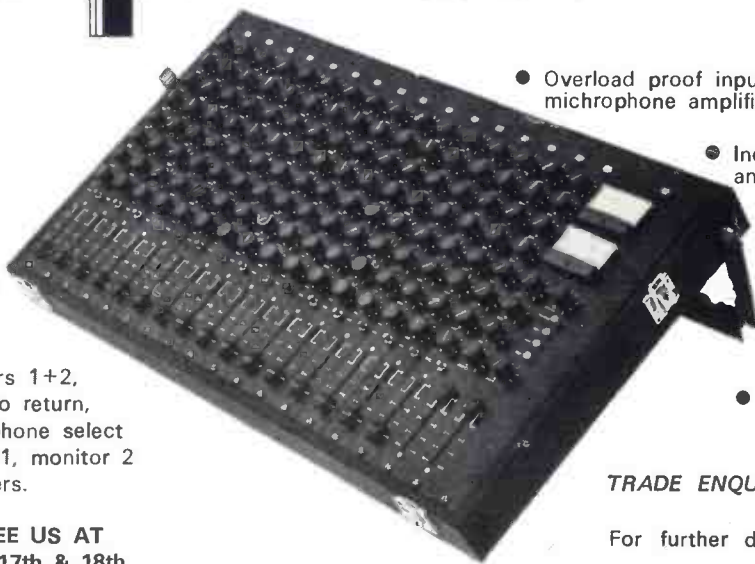
INPUT CHANNEL:

Gain control, treble middle bass, monitor 1 and 2, echo, pan, solo, slider fader.

OUTPUT CHANNEL:

Stage monitors, masters 1+2, echo master send, echo return, headphone gain, headphone select to talk back, monitor 1, monitor 2 solo, stereo, VU meters.

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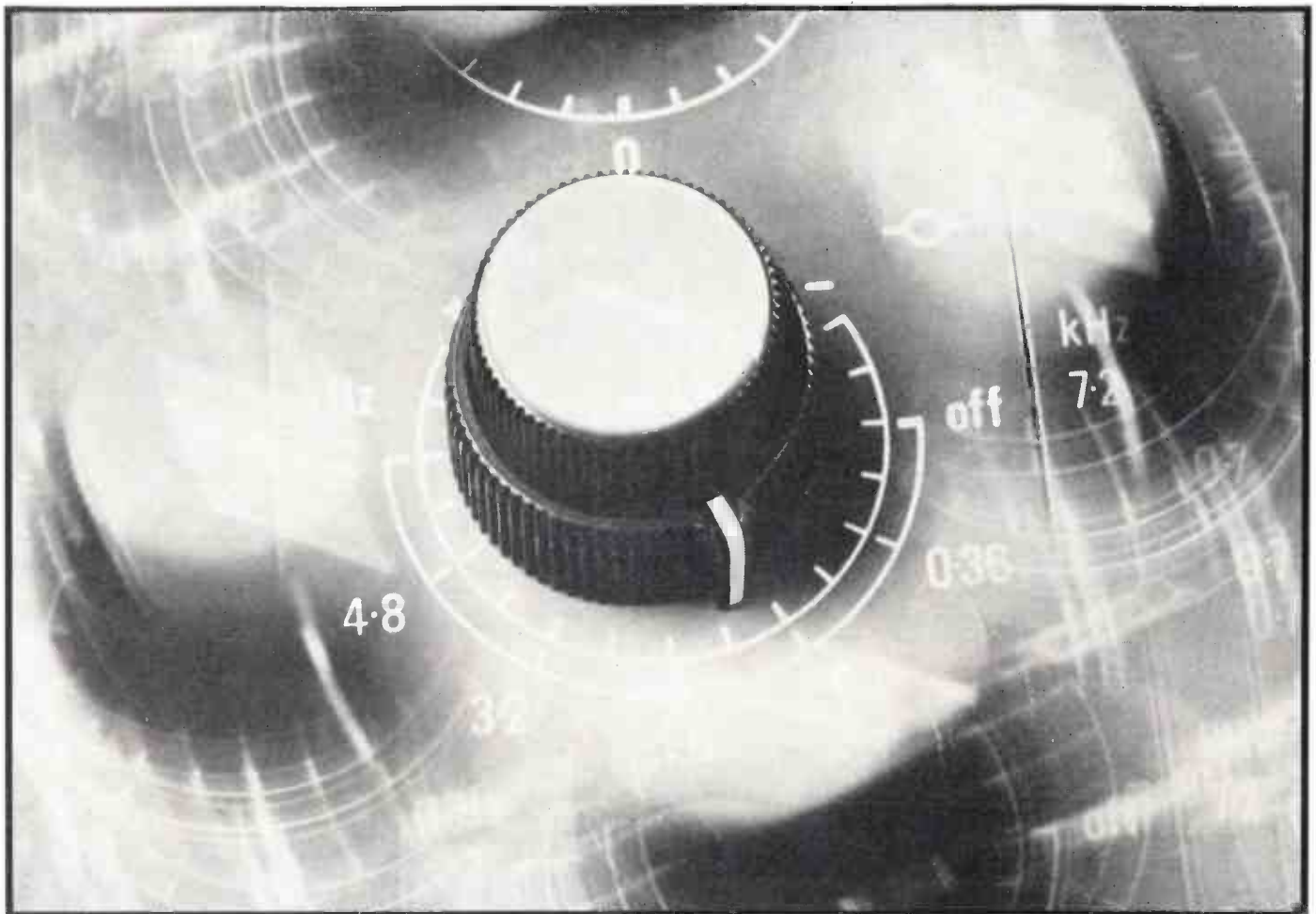


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Yes, the news is Neve has produced a new range of standard consoles. We think you'll be excited about the significant changes we've made. But you'll also be glad to hear that we've kept the things that really matter – the high standards of performance and reliability you've always associated with the Neve name.

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The only thing we haven't altered is the quality. We think you'll agree when you switch on to the new range.

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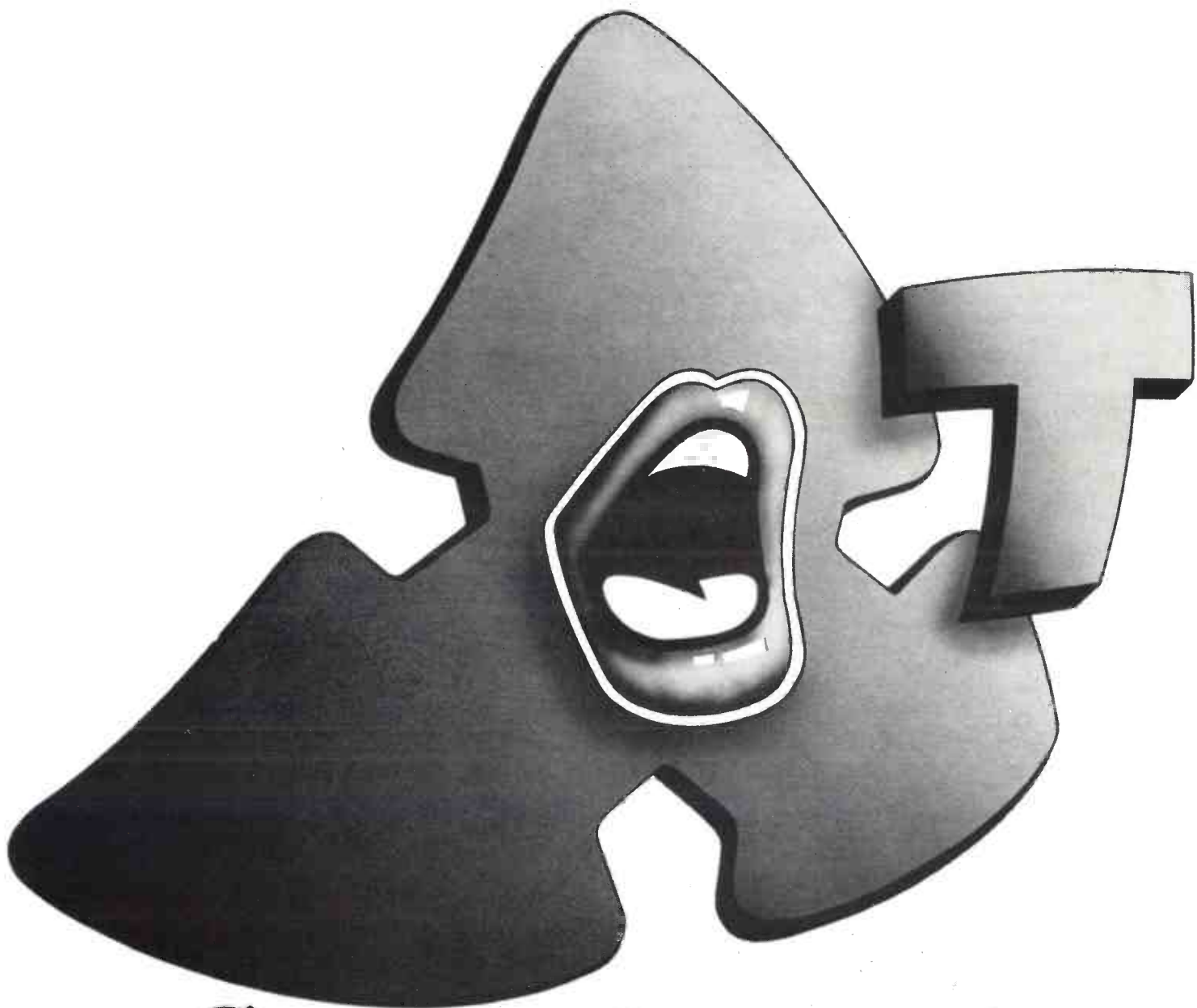
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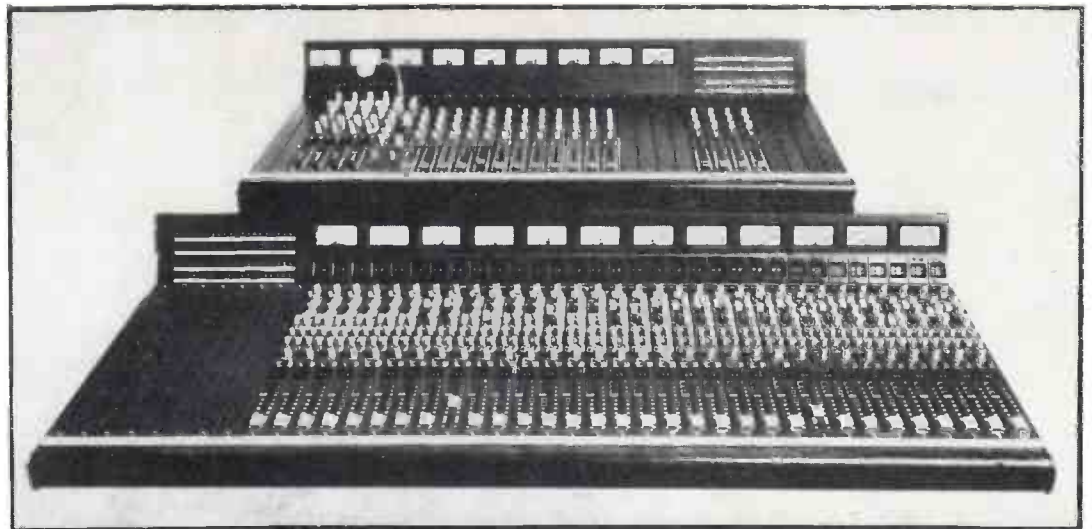
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MIDAS AMPLIFICATION

Midas produce three systems of modular sound mixing consoles to cater for recording and high quality P.A. requirements and examples of these will be shown at the APRS.

The portable range modular system includes six standard input modules with equalisers of varying complexity and four auxiliary send controls. Four track routing is standard with optional eight track and sub-group routing. Penny and Giles type 1820 faders are standard. Maximum input is 0dbm on mic and +24dbm on line inputs. Each equaliser function has ± 16 db range, the channel headroom is 30db and input noise level is -128dbm. Illuminated VU or PPM metering and LED level indicators are available together with A/B tape monitoring and jack field facilities.

Specialised modules are available including precision X-over with limiters, control room monitor and oscillator and input modules for stage monitor mix-



The Midas console supplied to Cat Stevens

ing. The main frames are rugged and modular offering total screening from radio breakthrough. All mic inputs and group outputs (max. level +22 dbm) are balanced 600ohm. Phantom powering is optional.

Multi-way Belden cable links with cannon stage boxes are purpose designed to suit particular requirements. Midas works in close association with Martin Audio Limited to provide complete high quality P.A. and monitoring systems.

LOCKWOOD

For a long time, Lockwood monitors have been one of the most popular on the market — their excellence has even reached as far afield as Russia!

All the existing models of Lockwood High Quality Monitoring Loudspeakers will be exhibited at the Exhibition. New to the Lockwood range will be three models of Professional Disc Reproducing Equipment. Besides this the well-known Lockwood Speaker Protection

Device will also be shown. The following Lockwood monitoring speakers are available:— the Major monitoring loudspeaker, universal major monitoring loudspeaker, miniature monitor and academy loudspeaker.

Also on show will be the Lockwood Loudspeaker Protection device. All monitoring loudspeakers are available with or without Power amplifiers.

Continued on page 64



Nolan & Shergold – A great combination

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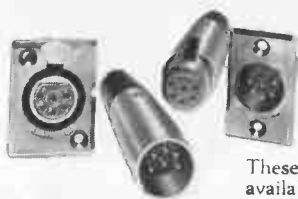
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F.W.O. Bauch specialise in supplying the highest quality equipment for professional recording and broadcasting studios. Products include condenser microphones, booms, stands, audio cables, connectors, limiters, compressors, equalisers, faders, reverberators, mixing, consoles, tape recorders, synthesisers, disc cutting lathes, turntables, test tapes, loudspeakers, film recorders, record blanks and record plating equipment.

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The range includes 3, 4, 5, or 6 pole contacts with a variety of matching plugs, receptacles, adaptors, interchangeable with other leading makes.

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APRS '76 PREVIEW

Continued from page 62

WEBLAND ELECTRONICS

Webland Electronics will be showing the BGW range of equipment at the APRS. The BGW state of the art professional line of audio amplifiers is the fundamental rethinking of the traditional design parameters.

BGW's safely drive continuously into loads as low as 2 ohms. Highly reactive loads such as electrostatic loudspeakers are no longer a factor. To protect the amplifier and loudspeakers a "fail-safe" SCR crowbar circuit is incorporated, which discharges all energy stored in the massive power

supplies and turns the unit off via magnetic circuit breakers, without relying on fuses or relays. Exceptional thermal stability is ensured by mounting all signal carrying transistors on to massive totally enclosed heat sinks.

There should be no service problem — each channel's circuitry is on a separate "plug-in" module enabling quick replacement. Besides this only industrial grade precision components are used in the BGW range. All resistors are low noise types, all harness wiring is Teflon insulated, all circuit boards are flame retardant epoxy glass and all signal transistors are in hermetically sealed metal cases.

All BGW units feature welded steel chassis for maximum strength and rigidity. Other features include 19" rack-notched heavy gauge front panels. A rear panel switch converts the two channel amplifier to a higher power bridge connected single channel amplifier.

BEYER DYNAMIC

The full range of Beyer Dynamic microphones, headphones and accessories will again be shown at the exhibition.

Although many of the microphones and headphones are already well known both to professional and to domestic users throughout the world, a number of recently released items will be featured. Among these latest additions to the Beyer Dynamic range is an infra-red sound system which is a new method of sound distribution using infra-red light as a sound carrier. Its many applications include a growing domestic requirement for lead-less headphone listening. Sound output from television and radio receivers, tape recorders and other sound systems can be distributed by this method.

The Beyer Dynamic Infra-red System comprises a transmitter (IS76) and a self-contained open high velocity headphone/receiver unit (DT444). A miniature receiver (IE76) is also available for use with existing headphones of impedances within a range of 50 to 5000 ohms.

A new directional dynamic microphone (M640) will be on show which has been designed to give a maximum speech intelligibility. With cardioid characteristics and small dimensions, the M640 is practically suitable for all types of P.A. application.

The new DT440 is a dynamic open high velocity headphone giving superb sound reproduction. Another feature of the DT440 is its light weight and large acoustic foam ear cushions giving a high degree

of wearing comfort. Many accessories will be on show.

TRAD SALES AND SERVICE

Based at the quaintly named Dog House, Bedford Road, Cople, Beds., Trad Sales and Service are specialists in second-hand and new sound studio equipment. Trad can supply anything from a single plug to all the equipment needed to create a 24 track studio. In recent months Trad Sales have exported Neve desks to Sydney, Australia and to Barbados and have sold a 24 track Studer to Pye.

Among other bits and pieces on show at the APRS will be a couple of very old BBC microphones and there are sure to be plenty more surprises in store on the Trad Sales stand!

AMPEX Great Britain

Unfortunately a full press release was unobtainable at time of press from Ampex, but they were able to tell us that the company are presenting their very latest audio recording equipment for recording industry and broadcasting applications. The exhibit includes a quarter-inch/half-inch recorder, as well as the MM-1200 multi-channel recorder/reproducer, being shown for the first time in the U.K.

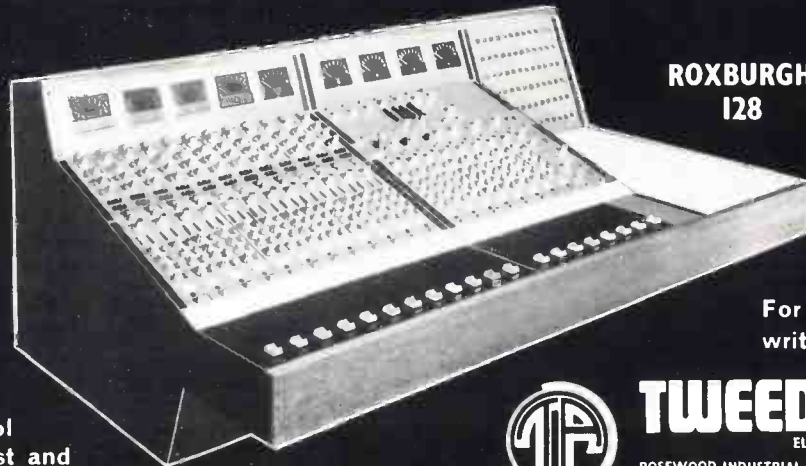
Ampex recording tape for professional users will also be on display — with special emphasis on the recently introduced "Grand Master" studio mastering tape, the established 406/407 Series mastering tape and 20/20+ studio quality cassettes.

Continued on page 66

HIWATT HIRE P.A. — DISCO

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NEW FROM 3M THE SONAPLAN XT14 TAPE AUTO LOCATOR

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If you are already using one of the 3M M79 range of professional recorders, you'll really appreciate this refined accessory. Specially designed for use with the M79 range, the Sonaplan XT14 Tape Auto Locator gives positive location, every time. No shuttling, no overshoot. And it'll read-out the elapsed real time in minutes and seconds.

If you are not yet among the top studios using M79 professional recorders, you can see them demonstrated at the APRS Exhibition, (Stand 68/69).

And while you're there, you can check out the Sonaplan XT14 Tape Auto Locator along with the Sonaplan Tape Timer for accurate real time read-out in minutes and seconds.

3M

**Recording Materials
Division**

3M United Kingdom Limited,
3M House, Wigmore Street,
London W1A 1ET.
Tel: 486 5522.

Continued from page 64

FELDON AUDIO

Feldon Audio Ltd. will be exhibiting and demonstrating items from their range of imported equipment at the APRS. Among their exciting range is the Eventide Clockworks, featuring the Omnipressor, which is an expander, compressor, limiter, noise gate and a dynamic reverser combined, the Instant Flanger, complete with true time delay circuitry, internal oscillator, envelope follower and special effects modifier. Another new product is the 1745M Delay line, which uses Random Access Memories permitting flanging and, with the addition of an optional plug-in card, true pitch changing (plus and minus one octave) without changing musical relationships.

Also under the Feldon Audio wing, F. M. Acoustics have introduced two new power amplifiers incorporating delayed turn on and L.E.D. peak reading displays. The 800A model is rated under the new strict F.T.C. regulations at 400W into 4 ohms and 300W into 8 ohms, the lower powered 600A produces 300W into 4 ohms and 150W into 8 ohms.

Ortofon exhibits include the DSS 732 Stereo Cutting Head and its specially designed amplifier giving a full 500 watts of power. The STL 732 Two Channel High Frequency Limiter, which is primarily intended for disc cutting systems, can also be of considerable use in mixdowns to eliminate troublesome areas before mastering. Another item that will be on show is the Pandora Time line, which is a modular construction digital delay unit. In basic form the unit has 89 ms of delay and one output, but can be expanded to 5 outputs and 449 ms of delay.

TWEED AUDIO

The following equipment will be exhibited by Tweed Audio at the Exhibition this year. The 24 channel input, 8 output track console adopted for 16 track monitoring and metering uses narrow width modules which have been recently designed for television industry and mobile music recording. The 24 channel console can now fit a small control room.

The Roxburgh range of consoles economically designed without sacrifice of performance, quality or reliability will be exhibited for the first time. The console can be ordered as 4 output group and expanded later to an 8 output group by simply buying more plug-in modules. This would be convenient for smallish studios who are unable to order a big console due to shortage of cash.

The new Standard 12/2 Portable mixing desk has been designed to meet portable requirements as well as studio requirements with balanced insertion points. The mixer uses a new filter unit type C514. This console is also available as 12 input channel and 4 output group configuration.

Two new filter units have been designed over the last year. The C512 contains the most comprehensive equalisation whereas C514 has been designed economically to provide all essential filter controls with mid frequencies continuously variable from .8Hz to 5KHz.

The Compressor / Limiter type CL601, Tweed Twin 100 watt power Amplifier and a new telephone hook-up system for broadcast will also be exhibited.

TRIDENT AUDIO DEVELOPMENTS

One of the newest and most exciting developments in audio design during the last year has been Trident's Fleximix desk. Subject of an article in Beat recently and creator of a great deal of interest in the world of audio equipment, the Fleximix board is a really new concept in mixer design, suitable both for studio and for road use.

Two sizes of main frames are used on the Fleximix, holding either 15 or 8 modules each, and their small size makes the system ideal for outside broadcasting or mobile P.A. applications. The Fleximix system can be built up from, say, a modest 6 into 2 format to 40 inputs 10 mixed outputs with 24 track monitoring, by simply adding mainframes and additional modules.

Four types of module are available at present, all based on robust alloy extrusions, and each capable of being positioned anywhere in the mainframe. The power supply for each frame is self-contained, located beneath the wooden arm rest at the front of the

Continued on page 69



When Hamish Stuart And Steve Ferrone Make Waves, They Make Them With Gretsch.

The great Gretsch sound is at the heart of the Average White Band. At the hand of writer/artists Hamish Stuart and Steve Ferrone.

Gretsch gives the timbre to Hamish's distinctive and gutsy bass riffs. And Gretsch stands up to Steve's devastating rhythms.

Hamish's playing calls for the most from his guitar. He plays the Gretsch White Falcon — the complete guitar. It gives him all the sound he wants — from the highest treble to the deepest bass. Rich, full sounds. Without distortion. It's the guitar for all professional music.

Steve's drums combine great sound, beauty and dependability. They feature 6-ply, laminated, all-wood shells. And a lightning throwoff that can be released with just a flick. They contain the very finest workmanship (Gretsch quality control is relentless). Plus that unique Gretsch sound.

Gretsch offers a complete line of professional drums and drum accessories. And, in guitars, look for Gretsch Chet Atkins models, Country Club, Broadkaster, Roc Jet, flat top folk guitars and Sho Bro, in addition to the White Falcon models.

Gretsch drums and guitars. You'll find them wherever great musicians are making waves. And you'll find more and more of them as time goes by. Because when The Sound Waves of the Future are made, they'll be made with Gretsch.

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GRETSCH

The Sound Wave of the Future

Fleximix System

AN EXCITING NEW MIXER CONCEPT

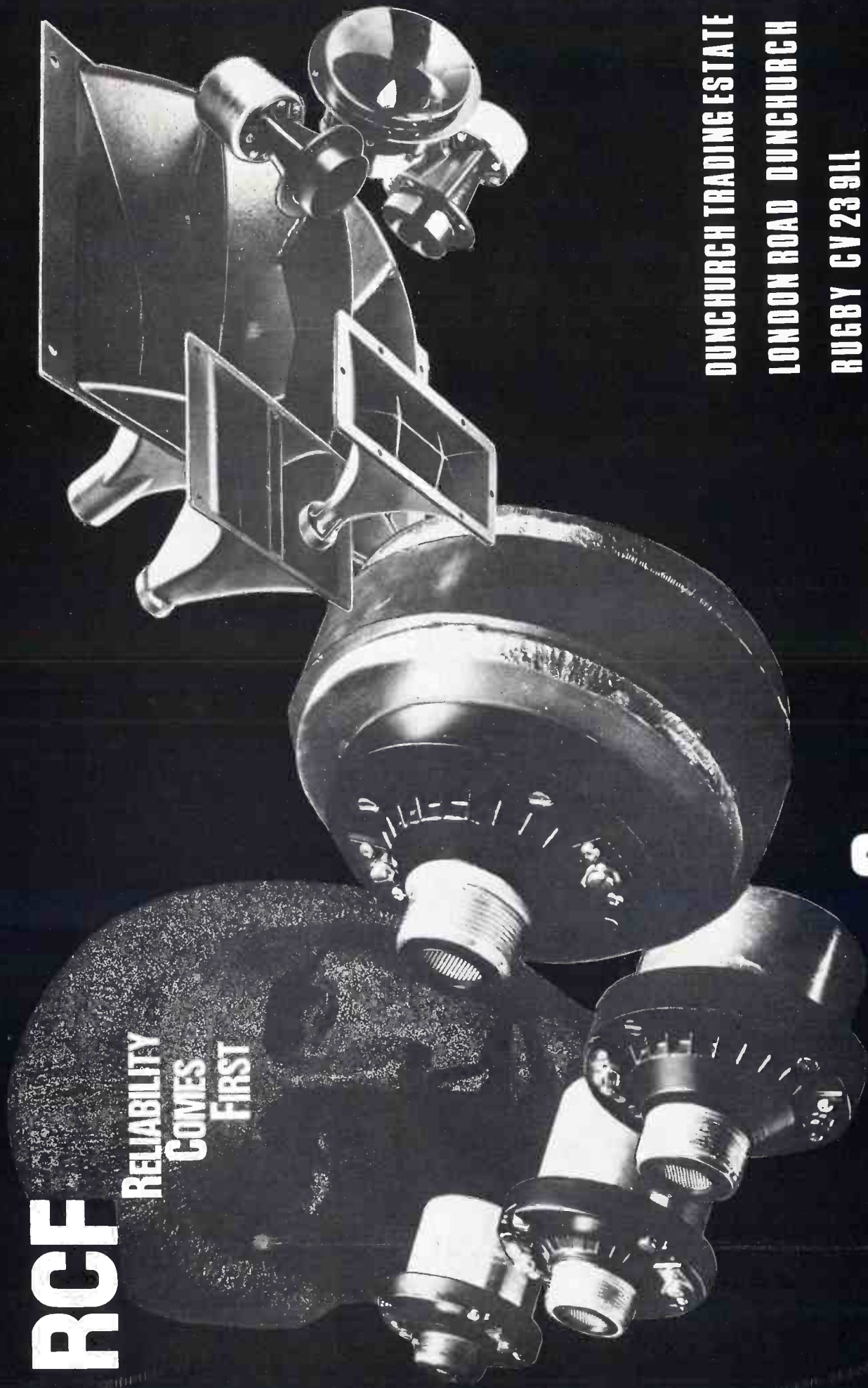
- Fully Modular
- Total system flexibility - any module can be placed anywhere in the mainframe.
- Expandable at any time from mono to 24 track with no pre-wiring necessary.
- Maximum of 10 mixed output groups (8 sub-masters and 2 main left-right masters), plus monitoring facilities up to 24 tracks.
- Individual illuminated channel metering and L.E.D. column indicators to P.P.M. specification on sub-master groups.
- Complete patchfield facilities including direct channel outputs and pre-fade limiter insertion on input channels and output groups.
- Self-contained power supply system. Each mainframe contains a fully regulated and protected dual power supply which can be used to "slave" another mainframe in the event of failure.
- Mainframes easily mounted in flight-cases.



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APRS '76 PREVIEW

Continued from page 66

mixer, and screened by an extrusion running the length of the frame. These units are fully regulated and protected, and are of the dual supply type allowing one frame to slave another in the event of a failure. As an added facility, 4 mm socket/screw terminals are provided at the top of the board for battery powering.

Modules currently available for the Fleximix are as follows— Input module, Sub-master output, Auxiliary module and Dual master output. Patching facilities are integral to each unit, being located on a black coloured section at the head of each module. This not only adds to the system's flexibility, but also makes for a patch bay with excellent visual location.

The Fleximix will be Trident Audio's main exhibit at the Fair.

RUPERT NEVE and Co. Ltd.

Rupert Neve have just announced the launching of a new series of standard consoles, known as the Compact range, which will be shown for the first time at the APRS. The result of considerable research and development, the Compact range consists of three types of models that offer innovative concepts of styling and design, greater operational convenience and traditional Neve performance at competitive prices.

The new range consists of the following models:— Model 8068 is a 28 channel 16 main bus 30 track sound recording and quad mixdown console, which has 28 microphone and line inputs with type 1102 channel amplifier, routing selectors direct to track or through stereo panning to 16 groups, indepen-

dent levels to auxiliary groups 1-4, solo and cut facilities.

Model 8058 is a 24 channel 16 main bus 24 track recording and quad mixdown console. The model has 24 microphone and line inputs with type 1099 or 1102 channel amplifiers, routing selectors direct to track or through stereo panning to 16 groups, independent levels to auxiliary groups 5-6, and to the 4 track output with quad positioning.

The 8056 is an 18 channel 8 main bus 16 track recording and quad mixdown console. The desk has 18 microphone and line inputs with type 1099 and 1102 channel amplifiers, routing selectors direct through stereo panning to 8 groups, independent levels to auxiliary groups 1-4, solo and cut facilities. There are 2 rev return channels with routing selectors through stereo panning to 8 groups, independent levels to auxiliary groups 1-2 and to the 4 track output with quad positioning.

CALREC

This year Calrec are showing an example of their larger type of sound Mixing desk. At forty-four channels into eight main plus eight sub groups, it represents one of the largest desks produced by the company to date. Constructed for the British Broadcasting Corporation for their Glasgow Studios, it uses the L Series of Modules developed for Radio & T.V. Broadcasting applications.

This is the third desk to be installed by B.B.C.-T.V. and compliments a large range of Radio desks which, together with the T.V. desks total more than one third of a million pounds in value.

The last 12 months have seen a tremendous increase in Calrec Condenser Microphone Sales, especially in export markets, 15 countries now being served. The entertainment series re-

mains as popular as ever, while the professional range are in ever increasing demand by recording engineers and broadcasters alike.

MCI

As well as the JH-428/440 series desk, MCI will be showing their new JH-528 audio mixing desk at the Exhibition. It is styled in a durable solid oak finish with control panels in a natural sugar maple colour and the large padded arm rest is covered with genuine English leather.

The console was designed for maximum flexibility and for easy conversion to Automated Control. Each channel has a voltage controlled amplifier for the level control function. The fader uses a 4-inch conductive plastic element. This circuit is automation-ready. In addition, the quad pan controls and the level controls for two send busses are automation-capable.

A separate input/output module is provided for each mike input or tape return input. Each mike input is provided with 24 output buss select switches. Any mike can be assigned to any combination of output channels and a pan control for the odd-even busses is provided. A channel direct button provides the shortest path between the input and the identically numbered output. A channel indicator light shows that the input has been assigned. Four basic adjustment areas are provided which together provide over 140 million combinations. Discrete switching is used so that you can always return to any exact combination.

24 VU meters are provided and numbered to correspond to the same numbered output busses. All meters are driven by a buffer amplifier to eliminate the distortion caused by meter loading on audio amplifiers.

Besides this, MCI will be showing the rest of their range of equipment.

LEEVERS-RICH

(Incorporating Bias Electronics)

The main feature on Leever-Bias stand will be the Proline 1000 professional recorder, a new model incorporating a host of features which ensure excellent tape handling, negligible routine maintenance and consistently high performance. Standard features of the Proline 1000 are:— Precision cast and machined deck casting, electrical and mechanical sections separated for ease of maintenance, precision plug-in head-block assembly with scrape flutter roller and fine thread adjustment screws, choice of servo or direct drive capstan assembly, specially designed air-damping on servo, take-up and pinch assemblies for loops free-starting, and many other features.

An improved version of the E200 professional recorder will also be shown. The E200 is now equipped with electronic servo tape tension, improved bias oscillator circuitry, and more efficient erase head.

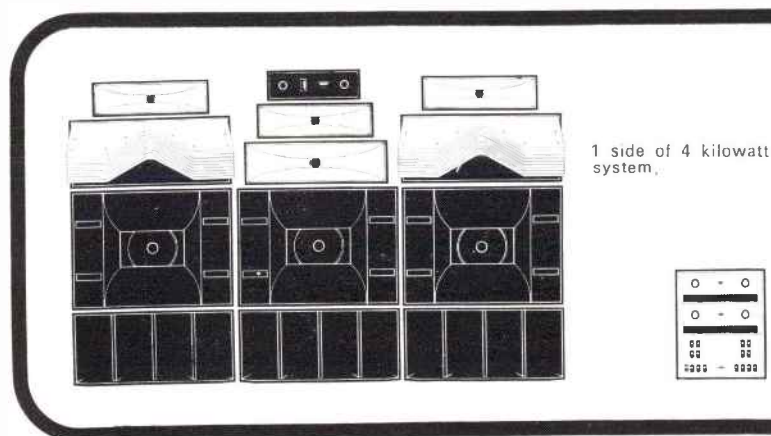
The new Ampro NAB Broadcast cartridge recorder will be given its first European premiere appearance at the APRS.

JACQUES LEVY

Jacques Levy Professional Recording Services will be showing a comprehensive selection of equipment at this year's APRS. Among other things, recording blanks for master and playback will be shown, as well as Capps mastering styli for Neumann and Westrex and Ortofon cutter-heads.

Audio tapes and cassettes will be shown as well, as will Pultec equalisers and Smith timers and watches.

Continued on page 70



1 side of 4 kilowatt system.

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APRS '76 PREVIEW

Continued from page 69

VITAVOX

Vitavox will be showing the mighty Thunderbolt P.A. set-up at the APRS. This piece of equipment should be very familiar to all Beat readers as we have covered its progress quite extensively in the magazine.

The Thunderbolt is an all-horn integrated reproducer based on their already proven 380 mm low frequency cone driver and the equally well-known S3 high power pressure unit.

Vitavox have tried, in the Thunderbolt, to build a portable assembly of reasonably manageable dimensions and weight, with high power handling and relatively high conversion efficiently coupled with wide angle sound propagation. While the firm wanted to stay with the all horn concept, they were aware of the disadvantages which can exist with low frequency horns, not least the unfortunate combination of bulk and potential distortion due to throat restriction.

The new mid range and tweeter horn called for much more straightforward design work, and the result proved to be a fairly short dispersive horn with cellular construction with the throat giving balanced acoustic distribution over the passband. So that these horns would work well together, the new Vitavox power integration network was evolved with full regard to the acoustic characteristics of the loudspeakers, and to attain the necessary high level of resonance.

A special feature of the normal location within the Thunderbolt is that the upper horn can be removed from its bass horn to mount on top of the enclosure, so that it can be separately orientated if required.

AUDIO DEVELOPMENTS

Audio Developments are among the leaders in the field of professional portable sound mixing equipment. Outside broadcast engineers, film men, roadies and so on, all know that their gear is reliable, portable and is made to a high standard.

Their range of equipment includes the AD 075 Super Mini which has up to 28 inputs and outputs, AD 007 Mini which has

Continued on page 73



BRITISH AIR FERRIES—

have been used by:

The Who, B.T.M. with Wishbone Ash, Mahavishnu Orchestra, Soft Machine, Caravan, Renaissance and Climax Blues Band, and whether it's freight or people, B.A.F. are one of the most experienced airlines when it comes to dealing with tours. We specialise in providing a service which is second to none and operate 48-seater Dart Heralds, 23-seater VIP Heralds, 65-passenger or 8,000 Kilos capacity ATL 98 Carvairs.

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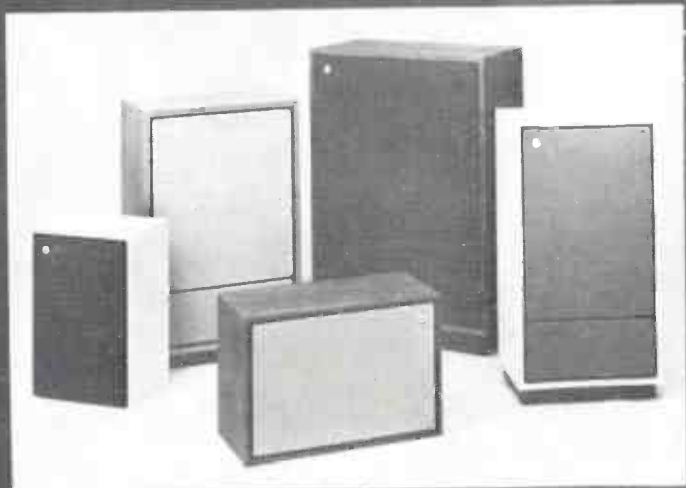
By the late 1920s Tannoy had designed their first loudspeaker system. It was ahead of its time like all the others that followed it. So much so that in a few years Tannoy had become a virtual synonym for natural sound reproduction.

Today many professional broadcasting and recording studios use Tannoy as a quality reference. Musicians hear their playbacks through Tannoy Loudspeakers and some of the finest recordings you buy are monitored for quality through Tannoy Systems. But this exceptional performance is not reserved for professionals alone. You can own a Tannoy Loudspeaker System yourself.

You have five new enclosures to choose from, handsomely styled by one of Britain's leading industrial designers in ash, teak or oiled walnut finish and brown, blue or sand panel grilles. The speakers are based on the dual concentric principle and feature the unique Tannoy integrated loudspeaker system and cross-over network.

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TANNOY

The name
says it all

Phonogram Studio London

APRS '76 PREVIEW

Continued from page 70

up to 12 inputs and four outputs, and the AD 031 Micro with 12 inputs and three outputs. Also to be shown at the Fair will be the AD 045 Pico with six in and two out.

NORTH EAST AUDIO LTD.

North East Audio will be showing some exciting new products at the APRS. These include the 110, the 102AV, 103AV audio visual recorders, and the Series 140 four channel machines. This range has been developed to meet the growing specialised needs of professional users and follows the tradition established by the 102 and 103.

Model 110 is a high quality audio visual recorder fitted with the Dolby Noise Reduction System. The equipment is compatible with the existing standard A/V format and is designed to meet the most stringent record/replay requirements. The machine is fitted with such features as peak reading meters on the sync and audio track, chrome/ferric tape



NEAL'S stereo cassette recorder.

selection, and separate input and output level controls for each track.

The 102 AV now enables stereo A/V programmes to be produced with all the inherent advantages of the cassette format. Its compact size, ease of operation, portability, economy of capital outlay and low operating costs make the 102 a very popular piece of audio-visual equipment.

Similar to the 102A/V incorporates the facility for three input mixing. This enables genuine production to be carried out on the machine with-

out tying up valuable studio equipment.

General features of the whole range include the Vari-speed facility (which is incorporated on the 103), the heavy duty mechanism, the cassette guardian (which protects the tapes by a system that constantly monitors the tape motion.)

C. E. HAMMOND & CO. LTD.

As sole distributors for the world-famous range of Revox tape recorders, C. E. Hammond will be showing not only the basic A77 series but a variety

of special machines for a wide range of industrial applications. Also being demonstrated is the A700 3 speed tape recorder which has already been adopted by professional users because of its incredibly high specifications.

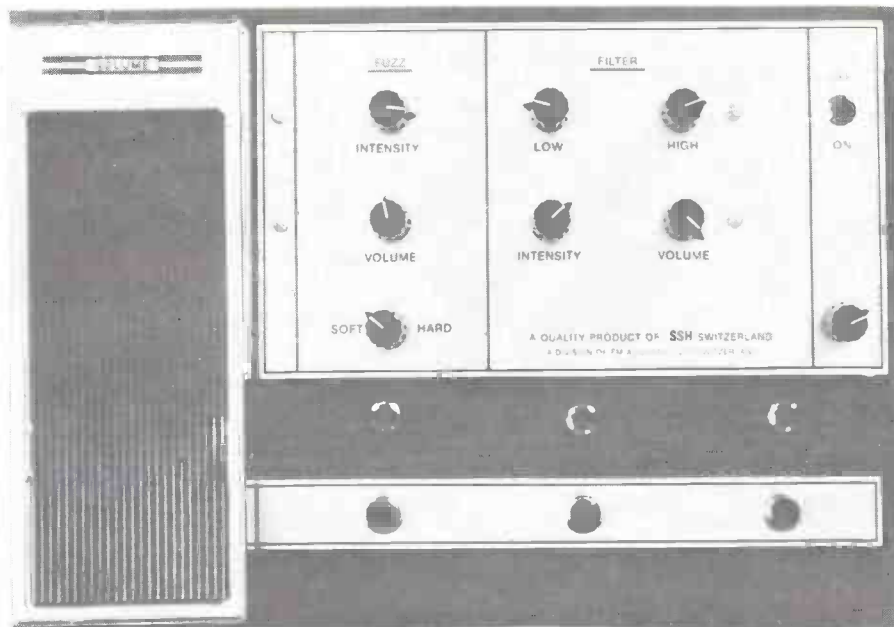
Several new accessories are shown for the first time, including Remote Function Control and Variable Speed Control units for the A700 and Revox headphones which have been developed using an entirely new approach to the study of ear acoustics.

Also on display will be the world famous JBL studio monitor range and the range of separate components which provide the performance, durability and versatility required for professional installations and whose wide use in studios throughout the world has established the name of JBL as one of the most reliable and highest quality names in speaker manufacture.

Lamb mixers (high grade models with facilities including echo send and return, four pan faders per channel, treble and bass cut and lift, continuous range of 100 dB input sensitivity control etc. will be on show.

Continued on page 74

The SSH VDF - Super Pedal Synthesiser



- Volume
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- Phasing
- and a lot more combination effects.

The pedal is mains powered with electronic voltage adjustment made with fibreglass printed circuits and high quality components and has very low noise.

Is now available directly from: FM Acoustics Ltd., SSH Division,
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For £80.00 including P. & P.

APRS '76 PREVIEW

Continued from page 73

From Sonus comes a superb range of quality pickup cartridges from the USA which Hammonds are now distributing in Britain. Sound Technology will be showing a distortion measurement system which is already used by manufacturers of studio equipment and test laboratories etc. Leader will be demonstrating instruments for every type of user and C. E. Hammond will be demonstrating examples for the first time in this country at the Fair.

BOSE

It was their success on the domestic side that prompted Bose to enter into P.A. manufacture and 1972 saw the launching of their Professional Product lines, initially with the 800 loudspeaker system and a year later with the 1800 Professional power amplifier.

At this year's APRS, the 800 and 1800 systems will take pride of place on the Bose stand. The Bose 800 departs from traditional loudspeaker design with its eight identical

drive units, which result in a much smoother, better spread. With the drive units closely coupled acoustically this clarity extends to both the bass and high treble frequencies. Despite the lightness and portability of the 800 (one cabinet weighs in at only 43lbs) it scores well on ruggedness, the carrying case is made of 7-ply birch covered with cloth backed vinyl plus metal corners and angle caps.

To turn to the 1800 Power Amplifier the design goal was to produce an amplifier with absolutely no audible distortion, sound discoloration, noise or hum. The 1800 has an output of 250 watts rms per channel into 8 ohms and 400 per channel into 4 ohms and is equipped with twin light emitting diodes which monitor instantaneous power level being supplied. Highly resistant to wear and stress, the 1800 has no moving parts and can therefore withstand the rigours of life on the road. An optional extra for the 1800 is the TC18 Transit case with built-in cooling fans.

AMEK

Amek of Cheshire will be showing their 16/8 M series modular mixing console showing two types of input module at the Exhibition. The mixer incorporates full remixing facilities and

has individual channel line-outs. The model shown sells for about £4,500 and various options and formats are available in the series.

Besides this, Amek will be showing a 12/4 X series mixing console built in a semi-modular format (four channels to a module). The mixer has a wide range of facilities and is usable for both recording and live performance work. The unit being shown sells for about £790 and, again, various options are available.

Stereo electronic crossover in rack mounting case, with internally switchable frequencies at the crossover points will also be shown. Balanced and unbalanced in/outputs are available, and other options include a full 4 way stereo unit. The standard 3 way retails for about £145.

EMITAPE

EMITAPE will be launching a new series of professional tape, the 830 series, at the APRS. Available in $\frac{1}{4}$ in, $\frac{1}{2}$ in, 1 in and 2 in, the 830 series is the new companion of the already celebrated 831 and 832 versions.

EMI say that the 830 has an excellent signal to print ratio and in fact state that it should not suffer from print-through at all.

ROLA CELESTON

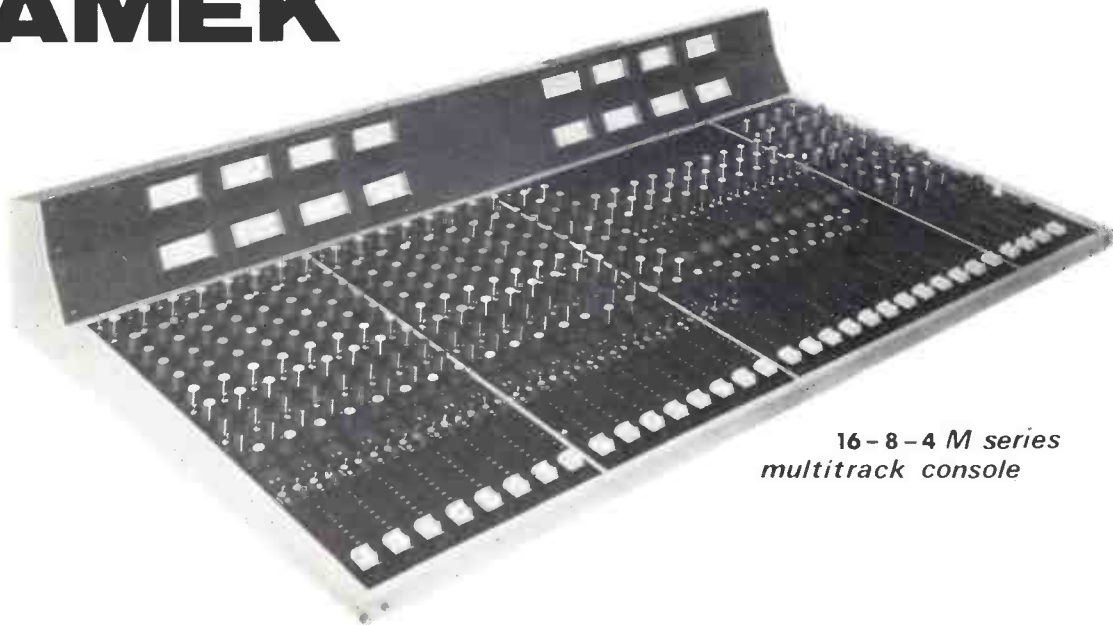
ROLA CELESTON Items on show this year include the Powercel and 'G' series of cone loudspeakers, and the MH series of compression drivers and horn flares.

There are three items in the Powercel range — two 15's and one 12. All have three inch diameter voicecoils, the P12 and P15M both have 14 lb magnetic structures and handling capacities of 100 watts RMS, the other 15 inch unit having a 26 lb magnet assembly and a power rating of 125 watts RMS. 'G' series loudspeakers available include 12, 15 and 18 inch chassis units. Power handling capacity of the 12 inch speaker varies between 25 and 75 watts, depending on the model variant: distinguishing features include varying magnet weights, and the provision of 'parasitic' tweeters and different dustcaps. Power ratings of the G15C and G18C are respectively 50 and 100 watts R.M.S.

High-frequency horns are available in two basic types — the MH 500, with a frequency response of 500-10KHz, and the MH 1000, which operates over the range 800-10KHz. Power ratings are 50 and 25 watts RMS, and both types can be fitted with twin driver units.

Mixing consoles for all applications; p.a. systems; electronic crossovers

AMEK



16-8-4 M series
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THE ELKA X55 IS AVAILABLE NOW AT ELKA-ORLA



ELKA X55

CHARACTERISTICS:

Dimensions: cm 103x38x18. Weight: kg. 26. Colour: Green
SPECIFICATION:

Upper Keyboard: 49 keys from C to C
9 Draw-bar voice registers: Flute 16' — 5½' — 8' — 4' — 2½' — 1½' — 1¾' — 1' — 2'
5 Percussions: 8' — 5½' — 4' — 2½' — 2'
Presents: Clarinet — Trumpet — Full Organ — Theatre and Draw bars.

Lower Keyboard: 37 Keys from C to C
5 Draw-bar voice registers: Flute 8' — 4' — 2½' — 1' — 2'
Effects: Vibrato: slow/fast. Sustain on the upper and lower keyboards. Brilliance, Noise Attack.

NOW AVAILABLE ALSO WITH BUILT-IN PIANO. RRP £790.30 (standard version) £855.39 (piano version) inc. VAT, both complete with pedalboard.

ADDITIONAL CHARACTERISTICS: This portable organ is extremely compact for easy transportation having lockable carrying lid and carrying case for legs and pedalboard.

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STUDIO PLAYBACK

INDIGO CLAIM 50p.c. SAVINGS

Savings of up to 50 per cent on the cost of making music tracks and voice-overs for radio and television commercials and for the record industry, has led to a big upsurge in studio bookings for the Manchester-based Indigo Sound Studios. The 50 per cent figure is arrived at, according to director David Kent-Watson, by making a direct comparison between Indigo figures and those of London studios.

To cater for the demand, Indigo has just completed a revamp of its music studio recording facilities to include a new Technik fully variable speed stereo recorder, new noise expanders, phasing units and a sweep and graphic

equaliser.

Chief attraction to clients is the low £12 per hour hire charged for the production studio, which includes the voice-over booth and the usual editing and carting facilities. The production studio has been completed in the last couple of weeks at a cost of over £10,000. Already the studios—they were only set up three years ago—have provided backing tracks for top artists like T. Rex, the Bay City Rollers, Lynsey de Paul, Barclay James Harvest, The New Seekers and Guys & Dolls. In addition, Indigo's own production team is producing jingles for some of Britain's top advertising spenders.



SCORPIO RISING

THE new Streetwalkers album is already out in the States after several 18-hour sessions at Scorpio Studios, during which a great deal of fun was had by all. The album is self-produced and Ray Hendriksen

was the engineer. The last few weeks have also seen visits by Barbara Dickson and Bill Lyall, who just left Pilot. P.F.M. have been using Scorpio for the first time to mix their follow-up album to Chocolate Kings.

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16 Track Ampex, 8 Track Ampex, 24 Channel Mixing Stereo Ampex, Audio & Design Compressors, Limiters, & Noise Gates, Tape Delay, ADT, Eventide Phasing, Master-Room Reverb, Full Range AKG & Neuman Microphones, Grand Piano, Musicians Available.

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KINGSWAY ROCKS ON

A positive galaxy of stars has been turning up at Kingsway Studios recently to help Eddie Hardin on his new album: David Coverdale, Glenn Hughes and Jon Lord of Deep Purple, as well as Mike D'Abo, Tony Ashton and Jimmy Helms. Eddie did the producing, and engineering was by John Acock. Recent visitors to the studio also include Strapps (produced by Roger Glover), a new band called Cruella da Ville, and the Sweet, just back from an exhausting tour, to cut a new single.

Another new band by the name of Fusion have been arousing the keenest interest, however. Based around singer-songwriter-pianist James Webley, the band have as yet played only a few small gigs, but Martin Birch, who produced and engineered the album, has high hopes for them.



Glenn Hughes

MAJESTIC HUMOUR

Majestic Studios in Clapham have certainly been having more than their fair share of laughs recently, with visits to the studio by the Two Ronnies and three Icelandic comedians. The Ronnies, recording for Transatlantic, completed their album produced by John Worth and engineered by Roger Wilkinson. For the visitors from Iceland, Richard Austen took the engineering seat.

In between the humour, Majestic have also been entertaining various bands. Ben Findon has been producing Shabby Tiger, with Derek

Chandler engineering, and a new LP by Jigsaw has been started with Chas Peate producing and Roger Wilkinson engineering. The album is to come out on Splash Records, their own label. Female relief has come in the shape of Babyface, an all girl group who have been laying down several tracks with Steve Elson producing. Finally, to round up what seems to have been a very varied period of activity, Keith Rossiter has been recording modern versions of old songs for Pye with Derek Chandler engineering.

WIZZARD TIMES AT WEMBLEY

IT has been a hectic month for The Music Centre (see Studio Spotlight in last November's Beat). The list of well-known names recording there recently includes regulars Roy Wood putting the finishing touches to the new Wizzard album and Keith Emerson with Carl Palmer. Producer Mike Hurst has been working with rock'n'rollers Showaddywaddy and Fumble. The engineers have been John Acock and Dave Hunt respectively. Randy Edelman's latest single *Far South of Love* is soon to be promoted with the help of a short film, backing by Dream Express, a United Artists band. The extensive facilities at The Music Centre for film music production made this possible.



INSTRUMENT REVIEW 1

ELKA-ORLA
ELKA X-55 ORGAN AND ELKA-
TONE 610 PR TONE CABINET
PLUS ELKARHAPSODY 610

PERHAPS there have been more improvements to the general standard of keyboards in the rock world than in any other sphere of instrumentation. When one thinks that a few years ago a synthesizer consisted more of wires and patchcords than anything else, and seemed at the same time an unwieldy, refugee from a Doctor Who programme, then the progress that has been achieved in keyboard technology over the last few years has been quite extraordinary. Almost every company that manufactures keyboard instruments in any shape or size has incorporated into its selection

a synthesizer or string machine of some description to keep up in the race and some, needless to say, are better than others.

Increase

The Elkarhapsody comes into the first category. It is much more than a straightforward string simulator having four different sounds available — strings, piano, clavichord and 'cello. These can be used singly or in combinations of two or more, and there are volume controls available for all voices at either ends of the keyboard, i.e. for treble and bass. In other words, if one wants to increase the treble

half of the clavichord sound, independently of the bass section, one can do so with ease. The voice volume controls are in the form of sliders, and these are easy to adjust. Also this system makes it easy to see at a glance the exact mixture of sounds that's coming out of the speakers. Besides this, there are decay controls for each sound, and these too are in the form of sliders.

Variety

The string and 'cello sounds on the Elkarhapsody are excellent — thick and strong sounds, made even more effective by the decay facility. The

piano and clavichord voices are good too, though as is usual on this type of keyboard, I'd imagine that these will not be in use as much as the string sounds; any band worth its salt would surely have an electric piano in its lineup.

The Elkarhapsody fits with ease on top of the X-55 organ, which is a two manual instrument with a 13 note pedal board. The upper manual has 40 keys with 5 pre-sets, including clarinet, full organ and draw bars. There are 9 draw-bars and percussion, brilliance and vibrato tabs, and with these it is possible to obtain a wide variety of different sounds, any-

The impressive Elka-Orla set-up, subject of this month's review



thing from a harsh Hammond type percussive sound (which is quite authentic) to a softer tone, which would be more suitable for accompaniment. The lower manual has 37 notes and effects include sustain brilliance and noise attack.

Models

There are two models of the X-55 available at the moment, the Standard and the Deluxe, the latter having piano and clavichord effects available as well as accent and sustain tabs, besides those effects that have already been described. The X-55 also has an optional 13 note pedal board, which incorporates bourdon, attack and flute voices, plus volume and sustain controls. These latter controls are in a rotary form and are very easy to manipulate with a good degree of ease and control. The pedal board should be of interest not only to virtuosos who would be able to take advantage of the added range the pedals offer, but also to those keyboard players, who like to try and obtain science fiction-type sounds from the instrument—leave the attack effect only on and see what you get!

To complete the set up, we played both the Elkarhapsody

and X-55 through the Elkatone 610 tone cabinet. This is a rotating cabinet with a power of 100 watts and reverb facilities, with two positions, long and short. Elka say that their instruments ought to be played through this set-up for best results, and it certainly sounded good when we tried it.

To finish—a slight criticism. On this Elka-Orla set-up the legs are slightly unsteady, as can be seen simply on the trial basis, so what would happen on a gig, when everything is rocking and things are likely to get broken is anybody's guess. Still, that's only a minor point because this is a good set-up, especially for anyone wishing to obtain a wide variety of sounds—most of which would be suitable for any type of rock music, from Genesis type material to the more straightforward Ian McLagan type sound. A good buy, indeed.

Tested at Elka-Orla by P.F.D.
Elkarhapsody (without legs)
R.R.P. £476.59.

Support for Elkarhapsody
£23.06.

X-55 (Standard) £790.00.
(Deluxe) £855.39.

Elkatone 610PR £438.99.
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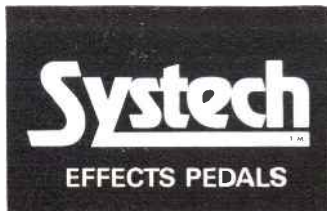
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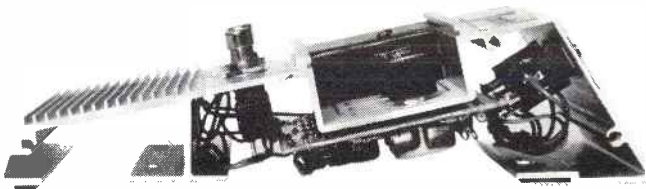
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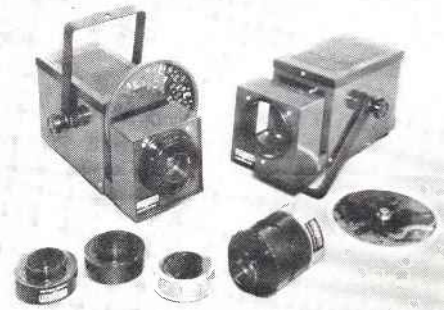


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INSTRUMENT REVIEW 2

JOHN BIRCH 6 STRING CUSTOM GUITAR

FOR months now we've been raving and drooling about John Birch guitars, and perhaps (if we're not being arrogant) a little of that enthusiasm is paying off because all of a sudden we seem to be hearing more and more about the great man's instruments. It seemed, therefore, like pretty much the right time to score an axe off John for review. The day the instrument arrived was just about what you'd expect from Beat's office when something interesting comes in. We fought over who'd review it!

Anyway, I won, so now down to basics. The model we tried is the standard John Birch double cutaway guitar but with the addition of Multi-Flux pickups and complex wiring to give an even wider array of sounds than normal. The basic instrument is priced at £280 + VAT but with the extra work comes out at £350 + VAT.

The instrument is made of Canadian Rock Maple with a Rock Maple neck and our model came with a Sunburst finish, well protected in a thick varnish which is a considerable improvement over anything else we've seen.

The machine heads were by Schaller and there's little more we have to add to our already effusive praise of that firm's equipment — they are, quite

probably, the best machines you can buy.

Action on the guitar was the lowest we've seen on a new instrument and enabled it to be fully playable right to the top of the 24 fret fingerboard. That, by the way, is no exaggeration. Providing you've got small enough fingers to manage it, it's quite possible to play a chord at the extreme top and find it perfectly in tune. There wasn't a trace of fret buzz and the neck was probably the best made and certainly the most comfortable we've yet tried. Fretting was, as one might have expected, of the highest order.

John's bridge design is quite unusual in that there is virtually no possibility of it slipping or rocking and yet it offers the most precise adjustment imaginable via tiny grub screws set either side of the string on the saddle and individual adjustment via sprung screws for front and back movement on each saddle.

Having said that the mechanical construction of Birch's guitars is of the highest order you will find, it still remains to be said that it is on the electronic side where he really demonstrates his flair.

Our example came with eight rotary switches and one three position toggle switch which made for a long session while we sussed-out just what did

what. Quite probably you'd find it difficult to really get to understand the instrument and you might even find that the extra flexibility offered by the up-rated model is too complex for stage use — there being just too many variable factors to instantly switch in a sound you need — for stage use the basic model might be a better buy.

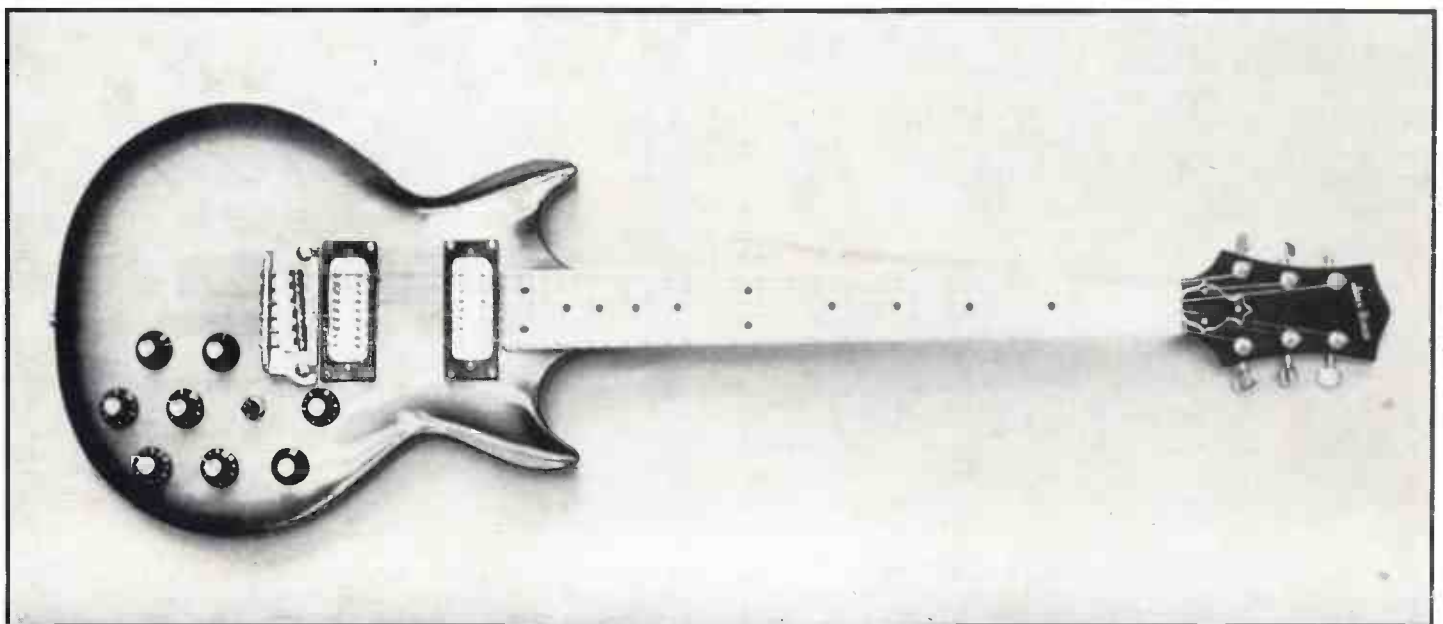
The controls offer one rotary volume pot and one tone pot per pickup plus a master volume pot which is cleverly placed right beneath the bridge pickup enabling it to be operated by the little finger of the right hand while you are picking (great for Steve Howe impersonations that). The toggle switch offers pickup selection of neck, bridge or both which leaves us with three more rotary pots which click through three settings each. The top two control the selection of parts of pickups which means that you can *really* alter your sound by splitting which section of the pickup is working at any one time. Fully anti-clockwise offers the Bi-Flux halves of the pickups (one pot per pickup), halfway offers the Hyper-Flux halves and fully clockwise offers the complete pickups in parallel. Let's just say that this offers quite remarkable tonal flexibility. The remaining three position pot offers a choice of stereo, mono or antiphase.

Stereo is via a lead device which comes with the instrument enabling one stereo jack to be used which splits down later on after a junction device.

From our experience of various guitars which have come our way over the years we'd be inclined to go for the John Birch in a very big way indeed. It is certainly the most instantly playable guitar we've handled with a superb feel about the neck, the balance of the body and accessibility of the controls. The sound it produces is neither Gibson nor Fender but has elements of both should that be desired. Sustain is the best of any instrument we have yet tried and the possibilities of getting a really good controlled overload are really exciting.

The fact that John's instruments are not generally stocked in the shops is a pity. Were they to be more widely available then they would quite probably sweep the board for sheer quality. When you consider the low price for a handmade instrument, then they must represent exceptional value. It plays like a dream and sounds as good as any dream would have you sound — one of the finest instruments we have ever handled.

Tested GRC with Yamaha YTA 15 A and Vox AC 30.



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INSTRUMENT REVIEW 3

WELSON SYMPHONY



THERE seems to be some argument among rock keyboard players at the moment as to whether the vast amount of keyboards used by such greats as Wakeman and Moraz, which, it must be admitted, add to the excitement on stage and to the idea of the keyboard player as superhero, moving from instrument to instrument, hammering away at a clavichord one minute and appearing behind a mellotron the next, are really necessary.

Some players, such as Eddie Jobson prefer the idea of having a lot of keyboards, while some like Tony Banks of Genesis would prefer to have one keyboard only to have to cope with. For those who would prefer the latter state of affairs, Welson have brought out an excellent single manual instrument, the Symphony, which handles many of the sounds required by rock keyboard men,

from strings to piano.

Facilities on the Welson are as follows—it has a four octave keyboard and five push button tones. These are violin, cellos, horns and trumpet, harpsichord and piano and these each have volume sliders, all of which can be used independently or in any combination. The Symphony is fitted with two stereo output sockets which can be used for headphones (a distinct advantage for anyone wishing to play in complete privacy, of course).

Each voice on this instrument has two sliders for volume, one for the bass end of the scale and the other for the treble. Hence the sound quality obtainable is very variable and the player can create an extremely wide range of tones, especially in the 'orchestration' department, the strings and horns etc. The keyboard is split in this way (volume-wise), as

this makes it easier to play the melody at one level and the rhythmic accompaniment on another.

While, as has been indicated the strings and horns section can produce a wide range of voices, the piano and harpsichord voices enable the musician to play more percussively. Besides the volume controls already mentioned, the Symphony also has two slide controls for sustain and decay and these greatly affect the sound, the orchestral voices sounding much more strong with the sustain on — King Crimson and Moody Blues imitators take note.

Another interesting control is the stereo pan control, which helps the player to get a real stereo sound at the touch of a knob.

Having given the specifications and talked a little about what the Symphony is capable

of, perhaps the most important question is how does it stand up beside the various other keyboard instruments of the same ilk that seem to be springing up throughout the country at the moment? The answer to that is that it easily holds its own, for two reasons. Firstly, because it is a compact instrument, which does what a keyboard set-up about three sizes as big often has to do. And secondly that for the price, it would be quite difficult to get another instrument capable of quite so much.

The Welson Symphony is supplied with a compact rugged zip-up P.V.C. carrying bag and should be very popular with both rock and cabaret keyboard players, not only because it is easy to operate and relatively inexpensive, but because it is capable of getting such a variety of sounds with such ease. RRP £514.94 (without legs).



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INSTRUMENT REVIEW 4

DARBURN SRV-100

AS a preface to this review, I feel it is important to state that, up until now, I have always had a very strong personal preference for valve amplifiers, believing them to be the best way to amplify the electric guitar. The first operation I perform when testing amplifiers — especially transistorised ones — is to switch on and turn every control full up; the usual sequel to this is to sit back smiling a sceptical grin whilst listening to the amp 'cooking away' (a rushing sound of distortion, caused by amplifier instability). In this case, however, the amp was so quiet that I wasn't sure whether or not it was working until I actually plugged a guitar in!

As the test continued, I discovered that the Darburn has many other remarkable qualities, made all the more surprising because of its rather unremarkable appearance. The

rectangular enclosure is robustly made, the high-density chipboard panels having sufficient bracing to ensure freedom from resonance, and special attention has been given to securing the struts with enough screws, so there are no unsupported areas which might flex and splinter under hard use. The complete unit is unusually light and well balanced, the heavy mains transformer being centrally located at the bottom of the open-backed cabinet, and the front panel controls kept well out of the way of knocks by the recessed amp section, which can be slid out of the enclosure for ease of servicing.

Not that the amp will need much of the latter, however, as all the internal wiring is to a very high standard, the output is short-circuit protected, and the output transistors are mounted on a massive alloy heat sink which runs the length

of the amp within the open cabinet.

And the sound . . . truly amazing as far as I'm concerned, and a knock-out coming from such an unassuming little amp. The Treble, Middle and Bass controls are wired in series, à la Fender, so there's very little sound with them all in the off position, and you can just wind on the bits you like. Results vary from a very even and mellow bass, with the Middle and Treble taken out, a 'thin', Telecasterish sound with the Mid off, 'scratchy reggae rhythm' with lots of Treble, and a very full and gutsy sound with the Middle control brought into use.

The sustain effect on the Darburn is definitely a cut above the general standard of in-built units: selection is via a footswitch, with a separate Sustain Volume control provided so that normal and effect levels can be balanced. A sen-

sitivity control, located at the rear of the amp, adjusts the strength of sustain, and a screwdriver actuated preset controls the threshold of operation of a *noise gate*, which mutes the amp when an input signal is not present, thus reducing background noise. Sustain sound is very good, certainly the best and most natural sounding of the compressor types that I have tried.

I was really impressed by the Darburn: it has a practical 'first principles' design, and a lot of care and thought has been put into its construction. If the combo-amp market was not so overcrowded, then the Darburn SRV-100 would have the potential to become the 'AC.30' of the 70's, especially at its price of £239.75 inc. VAT.

Tested with Antoria 2343 Les Paul Junior Copy and John Birch Custom.

N.K.J.



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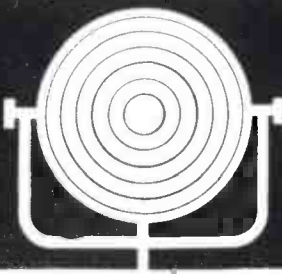
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SPOTLIGHT

DENMARK Street, traditionally known as Tin Pan Alley, is probably one of the shortest streets in London. Yet, as far as the music business is concerned it occupies a position of prominence, housing many music publishers with retail shops Macaris, Top Gear, plus KPM Sound Studios among others. It is no surprise, then, to find a deep commitment to music in the basement of number 21, home of the latter establishment.

Two roadies are coming down the stairs with an electric keyboard, and Neve are in the control room overhauling the desk; Administrative Manager Simon Davies is taking advantage of the situation and is munching his way through an oversize hamburger. Simon is an extremely friendly and polite host, and if he's the

KPM SOUND STUDIOS

same to KPM's clients the studio must be a nice place to work in. His own past has never involved anything besides music, and should be of particular interest to those with a similar singleminded ambition.

Importance

"At college I know it had to be music" he says, "and when I left I wrote to all the record companies and studios." After a brief period as a mobile DJ, he got taken up by KPM, moving through tape copying and disc cutting to his present position. The other engineer is the recently recruited Richard Elen, who brings a great deal of experience to the studio. The studio is lucky, then, to have engineers whose devotion to music is backed up by an



Simon Davies at work in the control room.



A different angle brings in the Altec monitors.

intimate awareness of the changes KPM has undergone during the last few years.

The importance of these changes is not to be underestimated, as they have not only covered equipment expansion but also the rather more subtle changes in policy and direction. Many people will be aware of the fact that the KPM building also houses the publishing side of the firm, and, while the two interests have always been separate entities, it was important that the expansion of one should not be detrimental to the situation of the other. The seeds were sown with a demo studio on the ground floor but it was an in-house affair and by their own admission a non-starter in terms of professional output. Studio Executive Robin Phillips recalls the period:

Basement

"We used to wheel our one mic and mono tape recorder into the promotion department where the piano was, turn on the tape and rush over to the piano to hold the mic up, while somebody else struggled with Heath Robinson knobs for the level. But it blew up too often, and we realised we had to do it properly or not at all." So began the quest for more advanced gear, and with it came the realisation that the studio would have to move into the basement. And this in turn was coupled with a large intake of outside work.

The basement has a very cosy feel to it — it looks like the sort of place where jams could start happening around midnight. When this atmos-

phere is added to a fastidious choice of equipment, we end up with a picture of a very worthwhile studio. An audio expert was called in for the acoustic design, and he was able to turn the low ceiling into an advantage. Contrary to what one might expect, it is able to enhance even the most fragile of sounds like strings.

The Neve desk is 20 into 16 at the moment, but was chosen with the possibility of adding the modules to 24 track when the time is right. (This will probably be accompanied by an increase in the present floor area.) Tape machines are Studer A80 16 and 8 track, with a B62 for mastering and delay. Monitors are Altec, driven by HH TPA 50 amps. Back up gear includes Urei graphic equalisers, Eventide flanger, Eventide delay, EMT stereo plates, with four Neve limiter/compressors built into the desk. This choice reinforces their policy of buying from firms with good reputa-

tions, and who are readily available for any repairs or modifications needed (viz. the Neve man working during the interview!) A full Dolby system completes the line-up.

Removable

In the studio the playback monitors are Tannoy Gold, and the hardware side features the inevitable AKG, Neumann and Beyer mics and Beyer DT 100 cans. Whether for space reasons or through choice they have come to a satisfactory arrangement as far as booths go. One corner houses a removable drum platform, acoustically changeable according to the height at which it is set. On the ground, with the screen around it, we have an acoustically dead drum booth, or, with the platform removed but the screen intact, we have an ideal booth for acoustic guitar or any of the more fragile instruments. The accommodation figure is 10, but the studio



Johnny van Derek getting it on!

are anxious to point out that dubbing strings, brass or woodwind over the basic band is a speciality of theirs.

A Steinway grand is the only permanent instrument in the studio, but a 24 hour service is at hand so no delay need be caused by lack of instruments. A fireproof tape library, a within-the-hour disc cutting facility and mastering suite round off the KPM facilities.

Commercials

Simon and Robin have the potential of the studio well in view. "A fallacy in recording studios is that people think that if your popularity increases, so must the size of the studio. That's wrong, because a lot of people like it small. Since we have gone 16 track we have new horizons before us, and it is a case of the clientele acclimatising to the change. With what it all costs now, who needs it so big?" The answer comes with a steady and very diverse clientele, either recording there or recording elsewhere and then coming back for the mixdown in a cosier atmosphere. The activities include film music, plenty of commercials, and of course pop and rock. The latter group has seen ex-Fleetwood Mac Danny Kirwan making an album, plus Design and Shadow Brian Bennett.

Another point worth mentioning is the relationship between the various musical enterprises along Denmark Street. Everyone in the street knows each other, and in between lunchtime pints they are happy to discuss engineering problems and ways of tackling them.

Where the studio used to open and shut along with the rest of the building before, its increased status means that it can stay open 24 hours a day, 7 days a week. New rates have as yet not been officially published, and are available on application. They must be reasonable, or the place wouldn't be so busy, and if there is any profit it will find its way back into the control room, where it really earns its keep.

London is the city of the rat race, more so in the music business than in many other areas, and it is therefore all the more encouraging to find a place that sets itself up more as a haven from the bigger fish than as a flashy competitor. What might happen in this particular instance is that KPM could become both, and that will be refreshing indeed.

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Basing Street Studios (Island), 8-10 Basing Street, London, W11 01-229 1229

R. G. Jones Recording Studios, Beulah Road, Wimbledon, SW19 01-540 4441

Kingsway Recorders Limited, 129 Kingsway, London WC2B 6NH 01-242 7245

Majestic Recording Studios Ltd., 146 Clapham High Street, London, SW4 01-622 1228/9

Manor Studio, Shipton Manor, Shipton-on-Cherwell, Kidlington, Oxford. 08675 2128

Strawberry Recording Studios, 3 Waterloo Road, Stockport, Cheshire (061) 480 9711/2

16 TRACK

Acorn Records Limited, Church Road, Stonesfield, Oxford OX7 2PS (099) 389 324 & 444

Chalk Farm Studios Ltd., 1a Belmont Street, London NW1 8HJ 01-267 1542 & 01-267 4873

Decibel Studios, 19 Stamford Hill, London N16 01-802 7868, 01-807 2146

Indigo Sound Studios Ltd., Gartside Street, Manchester, M3 3EL (061) 834 7001

R. G. Jones (of Morden) Ltd, Beulah Rd, Wimbledon, London SW19 01-540 4441 & 01-542 4368

Magritte Studios, 15 Holloway Lane, Harmondsworth, West Drayton, Middx. 01-897 9670

Pye Recording Studios, ATV House, Great Cumberland Place, London, W1 01-402 8114/7

Riverside Recording Studios, 78 Church Path, (Fletcher Road), Chiswick, London, W4 01-994 3142

T.M.C. Recording Studio, 118 Mitcham Road, London, SW17 01-672 4108

T. W. Music, 211 Fulham Palace Road, London W6. 01-385 4630

8 TRACK

Bird Sound Studios, Kings Lane, Nr. Stratford-upon-Avon, Warwicks (0789) 85705 & (0789) 3081

Countdown Sound Studio, 104 High Street, Manchester, M4 1HQ (061) 832 3339

Free Range Sound Studios, 22 Tavistock Street, London, WC2 01-836 7608

K. P. M. Studios Ltd., 21 Denmark Street, London WC2H 8NE 01-836 6699

Leader Sound, 209 Rochdale Road, Greetland, Halifax, West Yorkshire (04227) 6161

Milner Sound Limited, Studio 117c, Fulham Road, London, SW3 01-589 6477

Pluto Studios, 3 Waterloo Road, Stockport, Cheshire SK1 3BD (061) 477 0434

Sun Recording Services Ltd., 34-36 Crown Street, Reading, Berkshire 0734-595647

4 TRACK

D. T. S. Recording, 16 The Broadway, Maidstone, Kent (Maidstone) 670 326 & (Medway) 401 467

Gateway Studios, 162a Balham High Road, London SW12 01-673 7316

P. S. L. Studios, 1a Salcott Road, London, SW11

01-223 2544 & 01-998 6088
Samma Studios, 90 Lots Road, London, SW10 01-352 4136

September Sound Studios, 38 Knowl Road, Golcar, Huddersfield.
Tel: 0484 58895/6

MOBILE

Island Mobile, 8-10 Basing Street, London, W11 01-229 1229

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Look Records Ltd., 209 Denvydale Road, Wakefield, Yorks. 0924 79589
Sun Recording Services Ltd., 34-36 Crown Street, Reading, Berkshire 0734-595647

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Farmyard Rehearsal Studios, White Line Road, Little Chalfont, Bucks. 02404 2912

Tracks Rehearsal Studio, 110 Churchfield Road, Acton, London, W3 01-993 0751 & 01-992 9061

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Fender Sound House, 57/87 Hampstead Road, London N.W.1 01-388 7971/2
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MORIDAIRA section listing instruments like 841 Classic, 842 Classic, 845 Classic, etc. with prices.

MUSIMA section listing instruments like 1612N Acoustic, 1612S Acoustic, etc. with prices.

MORIDAIRA BANJOS section listing instruments like FB 1R 4-String, FB 2R 5-String, etc. with prices.

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CONCERTER section listing instruments like SK 614N Concert, GK 200 Concert, etc. with prices.

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KASUGA ACOUSTICS section listing instruments like G100L, G200, F140, etc. with prices.

TERADA ACOUSTICS section listing instruments like G306, G307, G310, etc. with prices.

KASUGA ELECTRICS section listing instruments like SG360, LG380B, SE480S, etc. with prices.

ZENTA ELECTRICS section listing instruments like EG501, EG502, EB511, etc. with prices.

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MARTIN section listing instruments like D.18, D.28, D.35, etc. with prices.

MITSUMA section listing instruments like JG.101, JW.304/12, JW.305/12, etc. with prices.

SAKURA section listing instruments like C.1325, C.114B, C.113A, etc. with prices.

ORFEO section listing instruments like DC.101, DD.103, DC.107, etc. with prices.

TAKAMINE section listing instruments like DC.115, DC.124, DC.125, etc. with prices.

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Table listing instruments like SCSL Elec, SCWL Elec, TWIN-neck, etc. with prices.

KEMBLE

YAMAHA Classics section listing instruments like G55, G65, G90, G120, G150, G180, G220, G280, GC3 Handmade, etc. with prices.

To avoid unnecessary repetitions, certain abbreviations are frequently used in our listings: electric - elec; custom - ctm; semi-acoustic - s/ac; organ - org; professional - pro; standard - std; acoustic - ac; folk - fk; bass - bs; string - str; de luxe - d/l; jumbo - jbo; piano - pno; left hand - l/h; scale - sc; case - cs; banjo - bjo; monitor - mt.

Table listing instruments like FGI200 Handmade, FG1500 Handmade, FG2000 Handmade, etc. with prices.

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SHAFESBURY WESTERNS section listing instruments like 3190 Jbo w/cs, 3191 Jbo w/cs, 3192 Jbo w/cs, etc. with prices.

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B. L. PAGE ★

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Table listing instruments like 3404A, 3404B, 3405A, 3405B, 3407A, 3407B, etc. with prices.

ACOUSTICS OVATION section listing instruments like Balladeer 6-str, Classic Balladeer, Custom Balladeer, etc. with prices.

SHAFESBURY WESTERNS section listing instruments like 3190 Jbo w/cs, 3191 Jbo w/cs, 3192 Jbo w/cs, etc. with prices.

SIGMA ACOUSTICS section listing instruments like 3170 Jumbo 6, 3171 GC Folk, 3172 GC Folk, etc. with prices.

EKO ACOUSTICS section listing instruments like 3131 Rio Bravo 6, 3132 Rio Bravo 12, 1780 Ranger 6, etc. with prices.

CLASSICAL section listing instruments like 3076, 3077, 3078, 3079, 3080, etc. with prices.

SUZUKI CLASSICAL GUITARS section listing instruments like 3065, 3066, 3067 Matt Finish, etc. with prices.

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EPIPHONE section listing instruments like FT145 Folk, FT165 12/s Folk, EC20 Classic, etc. with prices.

EROS section listing instruments like 9578 Elec, 9579 Elec, 9585 Bass, etc. with prices.

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SELMER

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Jumbo Range section listing instruments like J-200 Artist, S/b, J-200 Artist, etc. with prices.

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Folk Range section listing instruments like ES-335 TD, ES-335 TD, etc. with prices.

Solid Range section listing instruments like Saxon 830 Sld, Saxon 831 Sld, etc. with prices.

Citation outfit, ES 335 TD walnut, Les Paul Signature, tobacco brown s/b, Les Paul d/l tobacco brown s/b, Les Paul d/l wine red, Les Paul ctm tobacco brown s/b, SG Custom, White, SG Custom, Walnut, SG Std., Cherry, SG Custom, wine red SG Custom w Bigsby, white, SG Custom w Bigsby, wine red, SG Standard, s/b, SG Standard, white, S-I nat. satin, S-I ebony, S-I s/b, SG Std., Walnut, SG Std. Bigsby, Cherry, SG Std. Bigsby, Walnut, SG Std. Bigsby, Sunburst, SG Spec., Cherry, SG Spec., Walnut, LS-5, Cherry, L6-S Custom, Black, L6-S Custom, Nat., L6-S De Luxe, Wine, L6-S De Luxe, Nat. Satin, Marauder, Nat. Satin, Marauder, Wine.

Left-hand: SG Std. Bigsby, Cherry, Les Paul De Luxe, Gold, SG Std., Cherry, SG Spec., Cherry, Les Paul Cust., Cherry, Les Paul De Luxe, Cherry, Bass Range, Ripper (L9-S), Nat., Ripper (L9-S), Ebony Ripper, Fretless, Ebony, Ripper Fretless, s/b, Grabber 3 (G-3), Nat Satin, Grabber 3 (G-3), Ebony, Grabber 3 (G-3), s/b, Grabber, Nat Satin, Grabber, Ebony, Grabber, Wine Red, EB-3, Cherry, EB-3, Walnut, EB-3, White.

Jumbo Range section listing instruments like J-200 Artist, S/b, J-200 Artist, Dove Custom, Cherry, Dove Custom, Nat., Gospel, Nat Top, Heritage Custom, Nat Top/Rose Back, Hummingbird Custom, Cherry, Hummingbird Custom, Nat., J-50, Nat Top, J-45, S/b, J-55, Nat Top, J160E Custom s/b, B-45-12N d/l 12 str.

Saxophone section listing instruments like Citation outfit, ES 335 TD walnut, Les Paul Signature, tobacco brown s/b, Les Paul d/l tobacco brown s/b, Les Paul d/l wine red, Les Paul ctm tobacco brown s/b, SG Custom, White, SG Custom, Walnut, SG Std., Cherry, SG Custom, wine red SG Custom w Bigsby, white, SG Custom w Bigsby, wine red, SG Standard, s/b, SG Standard, white, S-I nat. satin, S-I ebony, S-I s/b, SG Std., Walnut, SG Std. Bigsby, Cherry, SG Std. Bigsby, Walnut, SG Std. Bigsby, Sunburst, SG Spec., Cherry, SG Spec., Walnut, LS-5, Cherry, L6-S Custom, Black, L6-S Custom, Nat., L6-S De Luxe, Wine, L6-S De Luxe, Nat. Satin, Marauder, Nat. Satin, Marauder, Wine.

Table listing instruments like Ripper (L9-S), Nat., Ripper (L9-S), Ebony Ripper, Fretless, Ebony, Ripper Fretless, s/b, Grabber 3 (G-3), Nat Satin, Grabber 3 (G-3), Ebony, Grabber 3 (G-3), s/b, Grabber, Nat Satin, Grabber, Ebony, Grabber, Wine Red, EB-3, Cherry, EB-3, Walnut, EB-3, White.

Table listing instruments like J-200 Artist, S/b, J-200 Artist, Dove Custom, Cherry, Dove Custom, Nat., Gospel, Nat Top, Heritage Custom, Nat Top/Rose Back, Hummingbird Custom, Cherry, Hummingbird Custom, Nat., J-50, Nat Top, J-45, S/b, J-55, Nat Top, J160E Custom s/b, B-45-12N d/l 12 str.

Table listing instruments like Saxon 830 Sld, Saxon 831 Sld, etc.

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PM400.....	412-00
PM1000.....	P.O.A.
Cabinets:	
E560A pr.....	20-00
E590A pr.....	30-00
P575B pr.....	380-00
PS100B pr.....	515-00
PS400 pr.....	980-00
TS100 pr.....	424-30
TS200 pr.....	667-62
BS100 pr.....	564-00
YHS100 pr.....	378-00

Complete Systems:	
YPA150B.....	612-00
YPA200B.....	747-00
YPA206.....	524-30
YPA206H.....	902-30
YPA208.....	656-30
YPA208H.....	1034-30
YPA406.....	767-62
YPA406H.....	1145-62
YPA408.....	899-62
YPA408H.....	1277-62
YPA606.....	1191-92
YPA606H.....	1569-92
YPA608.....	1323-92
YPA608H.....	1701-92
YPA800.....	1392-00
YES600A.....	120-00
YES700A.....	150-00
YES900A.....	200-00
Rotary Speaker Cabs.:	
RA50 w/cover.....	302-40
RA100 w/cover.....	468-72
RA200R w/cover.....	719-28

LEM

Venus G20 combo.....	66-50
Mars B30 combo.....	90-75
Mars GR30 combo.....	107-25
Starn B50 top.....	82-50
Starn GR50 top.....	99-00
Pro. Lem mixer.....	206-25
Baby Lem mixer/amp	247-50
Studio Lem mixer.....	412-50
Rock.....	57-75
100W amp.....	111-37
180W amp.....	156-75
Voltage regulator.....	61-05
Flight case.....	29-70
LG100 PA cab.....	113-37
LG100 PA cab.....	193-87
LG300 PA cab.....	305-25
Telescopic stands.....	24-20
911 Bass amp, 2 x 15 cabs.....	359-70
912 amp, 4 x 12 cab.....	363-00
Lem Audio road po.....	464-05

L.S.E.

Sound Units	
Jinglemaster.....	TBA
STAK S.L.....	"
STAK I.....	"
STAK S.....	"
RAK S.L.....	"
RAK S.....	"
RAK Cab.....	"
Slave Pwr Amp 100.....	"
Disco Mixer Type 145.....	"
Disco Mixed Type 145/S.....	"
Disco Unit.....	"
Disco Unit w 100W Amp.....	"
Disco Unit Deluxe (Double T).....	"
Mixer 800/M.....	"
Mixer 800/MP.....	"
Lighting Units	
Discotron MKII 1-1000.....	"
Discotron MII 2-2000.....	"
Strobe Super (self-contained).....	"
Strobe Super 6.....	"

MACINNES

exc VAT	
CROWN INT/AMCROn Amp.....	285-00
D60 Power Amp.....	197-00
D150A.....	310-00
DC300A.....	520-00
M600.....	1300-00

M2000.....	2600-00
VFX-2 Var Elec Crossover Unit.....	245-00
OCI150 Output Cent.....	280-00
Walnut End for D60 Amp.....	24-00
Walnut Enc for DI150A or IC150 Amp.....	35-00
Walnut Enc for DC300A Amp.....	44-00
IC150 Acc Packs.....	4-00
ES212 75W two Unit Sys.....	598-00
IMA Intermod Dist Analyser.....	555-00

MARMAC

PL Super 60W amp.....	150-00
XL 120W amp.....	180-00
XJ inst amp 60W.....	130-00
XJ inst amp 120W.....	155-00
Giant box 130W.....	185-00
Crazy box 75W.....	132-00
Guitar box 200W.....	163-00
Monitor box 50W.....	39-00
PA box 1100W.....	87-00
PA box 11 300W.....	49-00
Church col I 20W.....	36-00
Church col II 12W.....	20-00
Church col III 6W.....	17-00

MAINE

AMPLIFIERS	
Artist 100A.....	162-37
Standard 100S.....	133-92
Booster 100B.....	97-09
Musician 100W c-mbo.....	229-34
Musician Super 100W combo.....	445-28

LOUDSPEAKER CABINETS	
212 x 12 spkrs.....	189-00
412 x 12 spkrs.....	189-00
115A bass bin.....	257-79

MAURICE PLACQUET ★

AMPEG LP60 V4 stack.....	565-00
Ampeg V4 B System.....	575-00
Ampeg B 15N portabass.....	315-00
Ampeg V2 system.....	395-00
ACOUSTIC	
371 system.....	630-00
271 system.....	675-00

MME

Sound Blender 150W	187-50
Slave Amp 150W.....	87-00

NOLAN

Excluding VAT	
Nolan 100 amp.....	112-50
Nolan 50 amp.....	75-00
Nolan MP 50 amp.....	75-00
Nolan 50 combo.....	115-25
Nolan Session Master straight 50.....	132-75
As above + tremolo.....	135-00
As above + reverb.....	164-25
Nolan 4 x 12 Celestion cab.....	123-75
Nolan 2 x 12 dual cone cols, pair.....	117-00
Nolan 2 x 12 plus horn cols pair.....	162-00

NOVANEX

Combos (25% VAT)	
Aut 3.....	37-50
Aut 6.....	44-00
Aut 10.....	63-00
P15.....	87-00
P25.....	99-00
(8% VAT)	
U30.....	135-00
U40.....	153-00
RG30.....	135-00

RG56.....	175-00
U50.....	175-00
U60.....	189-00
U70.....	199-90
B70.....	199-90
RG80.....	240-00
U80N.....	240-00
U100.....	315-00
G70 Wildcat.....	199-00
U80.....	225-00
B100.....	315-00

Echo/reverbs	
E500.....	145-00
E300.....	89-00
Power generators, mixers	
L/LM30.....	99-00
LM40.....	119-00
L50.....	145-00
L60.....	160-00
L70.....	179-00
L75N.....	195-00
L100.....	265-00
L125.....	299-00
X41.....	149-00
X61.....	195-00
X81.....	241-00
X82.....	379-00
X102.....	435-00
X122.....	489-00
X162.....	599-00
X124S.....	890-00
X164S.....	1090-00
Snake m/core.....	160-00

ORANGE ★

CABS	
115 Bass 60W, 1 x 15" inv. horn.....	152-25
114/110 Bass, 100W, 1 x 15" inv. horn.....	214-20
113 Reflex Bass, 2 x 15", 12W.....	214-20
113/200 Reflex Bass, 2 x 15" 200W.....	285-45
109, 4 x 12" 120W.....	144-99

107, 2 x 12" Monitor, 60W.....	89-25
114/4H, 1 x 15" inc. horn, 4 horns and cross.....	249-75
106, 4 x 12" anti-feedback col.....	144-96

HORNS

106/HO Horn units for col. (pr).....	169-40
108 Horn unit, 100W	163-35
108/V Horn unit de luxe, 100W, inc. Vitavox S3.....	217-80

ANOS

104B, 6 chann

ROCHFORD

Studio Combo.....	321-84
100 AP Top.....	175-77
150 AP Top.....	225-99
V 100 Bass Top.....	159-03
V 150 Bass Top.....	211-68
Std. Lead Cab.....	237-70
D/L Lead Cab (w. horn).....	286-25
Bass Cab.....	254-45

ROOST

AMPLIFICATION

Inclusive of V.A.T. (Valve)	
50W 2 Chann + overdrive fac.....	91-23
50W 2 chann + integral reverb.....	118-02
100W 2 ch.....	110-48
100W 2 ch w. r.v.b.....	137-27
150W 2 chann + overdrive fac.....	120-53
150W 2 chann + integral reverb.....	147-31
150W PA 6 chann + indiv echo controls.....	162-38
150W Slave.....	100-44
Session Master 50W comb 2 x 12".....	160-29
Session Master as above w reverb.....	185-40
Session Master 50W comb amp 4 x 12".....	220-97
Session Master as above with reverb.....	246-08
Session Master 50W Bass comp amp.....	173-95
SM100 100W combo.....	188-17
SM100R w. r.v.b.....	213-28
SM104 100W combo.....	248-59
SM104R w. r.v.b.....	273-70
8 chan mixer.....	150-66

CABINETS

Styled as support cabinets for Master combinations	
2 x 12" 100W.....	85-79
2 x 12" 120W.....	88-57
Standard range:	
2 x 12" 100W.....	85-79
2 x 12" 120W.....	88-57
4 x 12" 200W.....	136-43
4 x 12" 240W.....	145-34
1 x 12" 30/60/90 stage monitors pr. 1 x 15" 100 Folded hn bass bin.....	168-10
2 x 12 120 W + hn.....	228-08
1 x 15 100W + hn.....	228-43
1 x 15 100W fld hn cab.....	119-62
1 x 15 as above w. 50W hn driver.....	173-19
JBL, Gauss, Crescendo etc. speakers can be supplied in above units. Prices ex covers	

ROSE-MORRIS

MARSHALL

Instrument Amp Tops	
1959 100W Lead.....	184-73
2203 100W M/Vol.....	184-73
2068 100W Artist.....	195-34
2098 100W Trans Lead.....	157-26
1992 100W Bass.....	184-73
2099 100W Trans Bass.....	157-26
1986 50W Bass.....	144-13
1987 50W Lead.....	144-13
1989 50W Keyboard.....	144-13
2204 50W M/Vol.....	144-13
2048 50W Artist.....	150-27
Instrument Cabinets	
1982-82B 120W 4 x 12.....	159-00
1960-60B 100W 4 x 12.....	145-60
1935-35B 100W 4 x 12.....	145-60
1979-79B 200W 4 x 15.....	205-89
2095-95B 100W 2 x 12.....	145-60
2065-65B 125W Powercel.....	166-40
2064-64B 100W Powercel.....	142-63
2045 60W 2 x 12.....	86-85
1995 50W 1 x 12.....	67-96
1990 100W 8 x 10.....	145-60
2049 60W Artist.....	123-06
2069 120W Artist.....	149-82
2052 125W Powercel.....	199-09
2056 250W Powercel.....	341-71

2120 100W Bin w/ Horns.....	149-99
Combo Amplifiers	
2200 100W Super Trans.....	234-36
2077 100W 4 x 12 Bass.....	255-29
2078 100W 4 x 12 Ld.....	255-29
2059 100W Artist Stack.....	345-20
2040 50W Artist Combo.....	223-14
2201 30W Trans Ld.....	117-18
2202 30W Trans Bs.....	117-18
2041 50W Artist Stack.....	273-33

PA Amps & Mixers	
2003 100W 6 Ch Amp	203-89
1985 50W 4 Ch Amp	144-13
2071 6 Ch Mixer.....	71-71
1994 100W 4 Ohm Slave.....	107-79
2205 100W O/P T/X Slave.....	122-91
2050 9 Ch Mixes Mono.....	348-34
Extra Channels.	
2070 12 Ch Mixer Stereo.....	1123-20
Extra Channels.....	
2051 250W Slave.....	202-00
Pa Cabs & Bins	
1995 pr 1 x 12 100W.....	135-92
2097 pr 8 x 8 125W.....	180-45
2043 pr 2 x 10 x 12 200W.....	254-28
2047 pr 1 x 10 x 12 100W.....	167-45
2056 250W Powercel Bin.....	341-71
2057 HF Vitavox Hn.....	213-30
2120 pr Reflex c/w Horns 200W.....	299-98
2121 100W Slave Monitor.....	187-49
2122 30W Slave Monitor.....	128-91
212 350W Monitor.....	70-30

S.A.I.

exc 8% VAT	
Disco Units	
Maverick disco.....	144-00
Disco IVS.....	189-00
Disco IVSP.....	210-00
Disco IVSP dual dcks.....	237-00
Stereo disco.....	270-00
Amps	
50W twin ch.....	85-00
50W slave.....	81-00
FC 150 slave.....	96-00
Cabinets	
Eliminator w. horn.....	264-00
Eliminator w. horn.....	168-00
Mini Elim. w. horn.....	164-00
Mini Elim. w. horns.....	144-00
15".....	188-00
2 x 12 + 2H.....	237-00
2 x 12 std.....	144-00
1 x 12 + 1H.....	144-00
Tweeter box.....	39-00
18" hn.....	252-00
Mini bass cab.....	102-00
Super lead cab.....	96-00

SELMER

SOLID STATE	
7980 15 SS Combo.....	42-50
7981 Super Reverb 30 Combo.....	125-00
7982 Lead 100.....	129-00
7983 Bass 100.....	103-00
7984 Slave 100.....	85-00
7610 Futurama 3 Combo.....	22-75
7930 L + B 100.....	183-00
7925 SL 100 Slave.....	132-00
7920 PA 100.....	188-00
VALVE	
7404 Treble "N" Bass 100 SV.....	128-00
7402 Treble "N" Bass 50 SV.....	113-00
7403 Treble "N" Bass 50 SV Rev.....	135-00
7408 PA100/6 SV Rev.....	175-00
7407 PA100/4 SV.....	148-00
SPEAKERS	
7990 S412 4 x 12".....	145-00
7991 S212H 2 x 12" hn.....	118-00
7992 S115 1 x 15".....	114-00
7993 S2H Add on dbl hn.....	74-00
7994 S115A 1 x 15".....	185-00
7451 TV-35 PA Col.....	55-00
7450 TV-20 PA Col (pair).....	75-00

To avoid unnecessary repetitions, certain abbreviations are frequently used in our listings: electric-elec; custom-ctm; semi-acoustic-s/ac; organ-org; professional - pro; standard - std; acoustic - ac; folk - fk; bass - bs; string-str; de luxe-d/l; jumbo-jbo; piano-pno; left hand-l/h; scale-sc; case - cs; banjo - bjo; monitor - mt.

SHURE

VA302 E6 Vcl aster 0M 643-7	
Separate Units:	
VA302 E6-C Control Console.....	393-84
VA300-S Speaker Col.....	136-48
VA301-S Monitor Speaker.....	98-50
VA305-HF Speaker.....	61-35
PM300E6 Booster Amp.....	163-30

SHARMA

ORGAN SPEAKER CABINETS	
3000.....	521-00
500.....	135-23
500 Professional.....	170-68
500 de luxe.....	188-08
650.....	251-58
650 Combo.....	282-06
Sharmette.....	250-80
900.....	318-00
900 Combo.....	347-87
2200.....	279-74
2000 Professional.....	324-15
2000 Combo.....	352-83
2000 de luxe.....	329-92
2100.....	437-07
2300.....	454-56
5000.....	423-68
5000 Combo.....	454-30
500 GT.....	435-78
5200.....	609-66
5300.....	734-00
PA.....	332-15
Combo IV.....	37-36
Combo de luxe.....	41-28
Reverb.....	51-99

DAVE SIMMS MUSIC PRODUCTS

August Amplification	
PA 100 4 ch.....	109-65
2 x 12 PA Cols. prs.....	138-10
2 x 12 PA Hn Cols prs.....	175-00
1 x 12 PA Cols prs.....	89-00
1 x 12 PA Cols pr.....	120-50
2 x 12 Inst. Cab.....	75-33
4 x 12 Inst. Cab.....	125-20
"V" 4 x 12 Inst. Cab.....	132-50
1 x 15 Folded Hn Bin.....	133-00
Add on Hn per pr.....	93-75
August Disco Consoles	
MD3 Garrard dks.....	183-21
MD1.....	133-00
MD3 BSR dks.....	173-00
MD2.....	97-95
MD3/100W.....	241-00

SIMON KING MUSIC

2 x 12 Inst. cab. 75W.....	66-00
2 x 12 PA cols pr. 100W.....	130-00
4 x 12 PA cols split prs 200W.....	245-00
4 x 12 inst. cab. 150W.....	130-00

SISGO

120 100W PA.....	429-0
126 200W P A.....	599-00

182 100W speaker.....	137-00
Column speakers:	
183 100W.....	133-00
187 100W mon.....	129-00
227 200W.....	199-00
426 400W stack.....	233-00
Amplified column speakers:	
183/A 100W.....	296-00
187/A 100W mon.....	289-00
227/A 200W.....	370-00
526/A 400W stack.....	819-00
Revolving organ cabinets:	
SM/30 70W Leslie.....	364-00
SM/300 120W Leslie.....	797-00
SM/3000 200W.....	1066-00

SOUNDCRAFT

16/2 mixer.....	1000-00
12/4 mixer.....	1175-00
16/4 mixer.....	1450-00
Soundcraft/Court Acoustic PA's prices on application.	

SOLA SOUND

Reverb mixer.....	42-00
Doppeltone.....	42-00
6-ch mixer.....	35-00
Graphic equaliser.....	42-00
Mighty Atom amp.....	25-00
Compact 10.....	33-00
Power Pak 15.....	48-00
Power Pak 30.....	85-00
Bass 30.....	75-00

SOUNDOUT

Series IIIa, mono.....	283-50
Series II, mono 170W.....	349-92
Series IIIa, stereo.....	346-12
Series II, stereo 170W.....	486-00
Series IVa, mono.....	226-80
Series IV, mono 170W.....	291-60
Loudspeakers:	
HE1c, 1 x 12, 50W.....	58-32
HE2c, 2 x 12, 100W.....	90-72
DL3, 100W F/rng.....	191-16
DL6, 100W F/rng.....	110-1

SPERRIN ELECTRONICS

Disco MK VI.....	204-12
Light Unit, 4000L.....	59-00
Amplifiers:	
100W 4V.....	79-00
100W 2-chn.....	89-00
100W 2-chn/w r.v.r.b.....	114-00
Lighting screen.....	79-92
Disco MK VI mixer.....	81-00
Cabs:	
PA 200 2 x 12" cols.....	77-76
PA 100 1 x 12" cols.....	42-12
PA 2 x 12" empty.....	38-88

STRAMP★

2100-A, 100W amp.....	
2100-A, 100W amp top.....	213-60
2120-A, 120W amp top.....	199-30
3120-A, 120W, 4-chn amp, top.....	192-30

SL100, 120W slave amp.....	127-90
SL200, 240W slave amp.....	177-90
MP10, 10-chan mixer.....	577-15
MP-16, 16-chan mix.....	1427-90
EX-2 Cross-over.....	113-60
K-85 Power Baby combo.....	265-45
K-95 Bass Baby combo.....	285-00
2050-BB, 100W cab.....	163-60
2100-GB, 200W cab.....	206-60
2100-BB, 100W bs cab.....	213-60
370-B 70W horn p.a. cab.....	142-15
3140-BH, 140W hn p.a. cab.....	186-45
3140-B 140W p.a. cab.....	156-45
3200-B, 120W bass horn cab.....	427-90
H-50, 70W tweeter horn.....	156-45
H-100 120W tweeter horn.....	227-15

SUMMIT

1 x 18" Gauss Driven 200W Bs Bins.....	181-40
Twin Driver 100W Large Flair Hns.....	109-32
1 x 15" plus hn Gr cabs (Gauss/Altec).....	TBA
4 x 12" Celestion G12H cabinets.....	125-57
4 x 12" Custom 60 cabs.....	128-33
4 x 12" Custom 60 bass cabs.....	129-85
2 x 15" Ported cabs.....	TBA
2 x 15" Ported Bass cabs.....	TBA
4 x 12" Celestion G12H PA cols pr.....	237-21
4 x 12" Custom 60 PA cols pr.....	242-74
2 x 12" Celestion cols.....	73-13
2 x 12" Custom 60 cols.....	74-32
2 x 12" Celestion cols with hns.....	102-20
2 x 12" Custom 60 cols with hns.....	103-58
Boxes of 4 hns—as add ons to the 4 x 12" cols pr.....	162-38
Boxes of 2 hns—as add ons to the 2 x 12" cols pr.....	104-60
Inc 8% VAT	

S-W

12067 50W amp.....	115-50
12070 PA 100W w. r.v.r.b.....	152-90
12071 AP 100W amp.....	133-50
12072 PA 100W amp.....	133-50
12052 100W slave.....	116-50
20001 100W vcl blndr.....	199-95
15001 30W combo.....	104-50
15002 50W combo.....	135-90
12028 add on horn.....	57-75
12032 H100 horn cab.....	193-00
12054 2 x 12 hn cab (pr).....	229-00
12055 2 x 12 cab.....	97-00
12057 4 x 12 bass cab.....	177-00
12063 1 x 12 hn cab (pr).....	155-75
20012 Disco Dex 100A.....	233-00
15004 Disco 30.....	168-50
15009 Disco Compact 30.....	145-50
20021 4 x 12 lead cab.....	152-90
12085 1 x 8 ported cab (pr).....	72-90
20012 Disco 100A.....	233-00
15009 Disco.....	145-50
15004 Disco 30.....	168-50

THEATRE PROJECTS

ALTEC VOICE OF THE THEATRE COLUMNS AND CABS	
1204B 50W.....	399-60
1208B 50W.....	394-20
1215A, folded L/F hn, 150W.....	226-80
1225A, portable H/F hn, 100W.....	432-00

1207C col spkr 75W.....	199-80
1211A col spkr 50W.....	172-80
1217A col spkr 75W.....	270-00
828D spkr cab.....	97-00
815A L/F hn cab.....	135-00
816A L/F hn 1 x 15.....	64-80
STUDIO MONITORS	
9844A 30W.....	388-80
9845A 50W.....	507-60
9846-8A 100W.....	496-80
9849A 60W.....	291-60
AMPLIFIERS:	
9477B 130W Mono.....	275-40
9440A 2 x 225W.....	669-60
MUSIC SPEAKERS AND COMPONENTS	
417-8H 12" 100W.....	71-28
418-8H 15" 150W.....	75-60
421-8H 15" 150W.....	9-864
601-8D 12" duplex 20W.....	10-00
504-8G 15" duplex 65W.....	194-40
511B Sectoral hn.....	55-08
811B Sectoral hn.....	39-96
808-8A 30W H/F driver.....	75-60
N809-8A crossover /attenuator.....	46-98

412M Gtr/K/board 200W Large, 4 x 12	207-57	Vocal Projector Enclosures: 115HT 1 x 15 + Hn Encl 75W.....	192-51
412F Gtr/K/board 200W Large, 4 x 12	207-57	Microphones: Exc. VAT, PML Low Imp.....	52-31
412S Gtr/K/board 200W Stackable, 4 x 12.....	207-57	PMH High Imp.....	52-31
215H Gtr/K/board 150W Cab, 2 x 15 (+Hn).....	234-36		
1185 Bs/Org 100W Stackable, 1 x 18 ..	259-47		
612H 300W 6 x 12 (+Hn).....	277-88		
1210TS 1 x 10, 1 x 12 3 tweeters.....	125-55		
1210T 2 x 10, 2 x 12 3 tweeters.....	156-51		
112TS 1 x 12 + 2 tweeters.....	87-04		
1510T 2 x 10, 2 x 15 + 3 tweeters.....	259-47		
HFH Radial horn.....	175-77		
Festival Projector.....	435-24		
215HT Dbl 15 vocal projector.....	294-62		
T12 12 tweeter bank SPI 1 x 15 radial horn bin.....	159-03 311-36		
SPA Standard 130W Rev mixer Rev.....	209-25		
PA120 100W 4-Chn P.A.....	192-51		
PA400 200W Rev 12 Inp P.A.....	277-88		
PA600 210W Rev 18 Inp P.A.....	520-61		
PA900 400W Rev 27 Inp P.A.....	657-88		
800M S Chn Hi-Lo Rev mixer.....	283-50		
260B Booster 130W Slave.....	159-03		
800B Booster 400W Slave.....	313-03		
800M 8ch Hi-Lo mxr 1200M 12 Chn Hi-Lo Rev Mixer.....	294-62 657-88		
MO Monitor 130W, PA Cabs.....	177-44		
210 2 x 10 30W col.....	50-22		
410 4 x 10 30W.....	92-07		
412 4 x 12 150W Col.....	125-55		
215H 2 x 15 + Hn 150W Col.....	234-36		

VOX ★	
AC30.....	201-50
AC50.....	120-90
Speaker Enclosures: FB118.....	110-05
FB215.....	116-25
FB212.....	93-00

W.E.M.	
Copicat Echo.....	76-00
Clubman.....	52-50
Westminster.....	58-00
Westminster key- board.....	58-00
Dominator 30.....	125-00
Dominator 30 bass.....	135-00
Dominator 50 lead.....	160-00
50 Keyboard.....	165-00
50 Amp Top.....	100-00
100 Reverb.....	215-00
100 Standard.....	195-00
GX 40.....	84-00
GX 100.....	110-00
AX 40.....	84-00
AX 100.....	110-00
Dominator Mk III.....	85-00
Dominator Bass.....	95-00
Power Musette.....	85-00
Halle Cat Echo.....	250-00
Slave Power Stage.....	95-00
Bandmixer 100 Mk II Reverbmaster.....	140-00 210-00
Audiomaster Mixer.....	80-00
Pre-mixer IV.....	61-00
Super Dual 12.....	80-00
Super 40.....	25-00
Starfinder 100 Bass.....	80-00
Starfinder Twin 15.....	115-00
Starfinder Super 80.....	125-00
Super Starfinder 200.....	160-00
Aggressor.....	130-00
1 x 12".....	50-50
1 x 12" w/vol control.....	62-00
2 x 12".....	52-00
2 x 10" Horn.....	62-00
Club System.....	80-00
4 x 10".....	65-00
6 x 10".....	100-00
Club 2 x 12".....	65-00
Band System.....	95-00

Band 2 x 12".....	82-00
Foot Monitor.....	105-00
Vendetta Mk II.....	155-00
4 x 12" A Super.....	98-00
Intruder.....	145-00
X39.....	285-00

WHITE ★	
INST AMPLIFIERS	
LW50 w sustain 70W.....	139-50
LW100 w sustain 120W.....	158-55
CM30 Combo w CM30 Combo w reverb.....	213-00

P.A. AMPLIFIERS	
PA100 6 ch PA amp 100W.....	149-22
PA150 6 ch PA amp 150W.....	168-99
PA200 6 ch PA amp 200W.....	189-00

POWER SLAVE AMPLIFIERS	
PS100 100W.....	106-92
PS150 150W.....	119-43
PS250 250W.....	148-50
PS300 300W (st).....	184-22

INSTRUMENT ENCLOSURES	
A2004 x 12" 200W ..	157-68
A150 1 x 15" fidd hn bs enc 150W.....	216-63
A150H as A150 w mid range hn.....	269-73
A250 1 x 18" fidd hn bs enc 200W.....	277-50

P.A. ENCLOSURES	
S50 1 x 12" 60W.....	59-85
S100 2 x 12" 120W ..	84-82
S150 1 x 15" w H.F. hrs 100W.....	174-21
S200 4 x 12" 240W ..	157-65
M50 1 x 12" monitor 60W.....	61-74
H50 H.F. two horn CONCERT RANGE P.A. ENCLOSURES	
B12 1 x 12" Mid rnge hn 200W.....	196-20

B15 1 x 15" Bs hn 200W.....	240-12
B30 2 x 15" bs hn 400W.....	398-58
H100E Radial horn 30W.....	136-23
H100V Radial horn 70W.....	187-23
T70 H.F. horn 70W ..	171-48
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MONITOR ENCLOSURES	
100/12 1 x 12".....	
MWedge 100W.....	0-7137
M100/15 1 x 15".....	
Multi wedge 100W ..	127-86
M200/15 1 x 15".....	
Multi wedge 200W ..	184-98
Mon Horn "A" Mid/ H.F.....	21-78
Mon Horn "B" Ext ..	58-68

MIXING DESKS	
DB Mono 8 ch.....	185-79
DB D-L Mono 8 ch.....	229-80
D16 St 16 ch.....	870-00
D24 St 24 ch.....	1275-00

WING	
TRAYNOR	
Combs:	
YGM-3 30W rvb.....	97-20
YGM-4 40W rvb.....	119-88
YGL-3 Twin rvb 90W.....	213-84
YBA-2B Bs mate 30W.....	97-20
YBA-450W, 15" spkr Amplifiers:	
YBA-1 50W bs.....	96-12
YBA-1A 100W bs.....	119-88
YBA-IA 100W bs.....	129-60
YGL-3A 100W head- rvb/trem.....	152-28
Monoblock 325W bs/ Id.....	243-00

Speaker Systems:	
YS-15P 15" ported bs	87-48
YT-15 2 x 15" Id/bs.....	110-16
YF-10 4 x 10" Id/bs.....	110-16
YC-810 8 x 10" bs.....	TBA
YC-610 6 x 10" Id.....	139-32
Y-2122 x 12" Id.....	103-68

YF-12 4 x 12" Id.....	149-00
YCV-188 1 x 18" ..	
Vega cab 300W.....	272-16
YCV-215 2 x 15" ..	
Vega cab 400W.....	272-16
YCV-212 2 x 12" ..	
Vega cab 200W.....	171-72
P.A. Amps:	
YVM-2 P.A. amp 30W.....	74-52
YVM-3 P.A. rvb 30W.....	97-20
YVM-4 4-ch w/rvb.....	136-08
YVM-6 6-ch w/rvb.....	213-84
YPM-1 100W slave.....	97-20
MX8 8-ch mixer.....	TBA
MX16 16-ch mixer.....	"
P.A. Speaker Systems:	
YSC-2 4 x 12" cols (pr).....	139-32
YSC-3 4 x 8" cols (pr).....	100-44
YSC-8 6 x 8" cols (pr).....	171-72
YSC-9 15 x 12" x hn cabs (pr).....	388-80
YM-1 Mtr cabs (ea).....	58-32
YSC-7A Cols (pr).....	204-12
YSP-1 Sibilance Pro- jector (ea).....	51-84
EQ-1 Graphic e/q.....	51-84

ZOOT-HORN	
exc VAT	
BB.1, 1 x 15", 150W bass bin.....	218-75
BB.2, 2 x 15", 300W bass bin.....	356-25
FB.5, 2-way wedge.....	193-75
FB6 floor mon.....	368-75
MB1 1 x 12 enc.....	150-00
MB2 2 x 12 enc.....	227-00
HUB driver + hn.....	285-05
ST202 pr HF drivers ..	187-50
FF1 4-way enc.....	450-00
CB15 1 x 15 bass enc ..	206-25
SD18 1 x 18 bass enc ..	275-00
A4 4-way 700W PA.....	1682-50
B4 4-way 1400W PA.....	3057-50
Mixer prices on application	

PERCUSSION INSTRUMENTS

D. H. BALDWIN

GRETSCH	
Outfits:	
4027 Rock 'n Roll.....	TBA
4029 Avant Garde.....	"
4028 Black Hawk.....	"
4015 Name Band.....	"
4025 Progressive Jazz Plus.....	"
4007 One Nighter Plus.....	"
Snares:	
4160G, 14 x 5.....	"
4160, 14 x 5.....	"
4157, 14 x 5.....	"
4153, 14 x 6.....	"
4109, 14 x 5.....	"
4102, 14 x 5.....	"
4105, 14 x 5.....	"
4190, 14 x 6.....	"
4191, 14 x 6.....	"
4192, 15 x 8.....	"
4193, 15 x 8.....	"
4105, 14 x 5.....	"
Bass Drums:	
4259, 26 x 14.....	"
4260, 28 x 14.....	"
4262, 20 x 16.....	"
4263, 32 x 16.....	"
4264, 34 x 16.....	"
4265, 36 x 16.....	"
4271, 26 x 14.....	"
4272, 28 x 14.....	"
4273, 30 x 16.....	"
4274, 32 x 16.....	"
4275, 34 x 16.....	"
4276, 36 x 16.....	"
4110, 22 x 14.....	"
4111, 24 x 14.....	"
4115, 26 x 14.....	"
4117, 28 x 14.....	"
4244, 18 x 14.....	"
4249, 20 x 14.....	"
4247, 22 x 14.....	"
4269, 24 x 14.....	"
4271, 26 x 14.....	"
4272, 28 x 14.....	"
Tom Toms:	
4415, 12 x 8.....	"

4416, 13 x 9.....	"
4420, 14 x 10.....	"
4421, 15 x 12.....	"
4417, 11 x 14.....	"
4418, 16 x 16.....	"
4422, 16 x 18.....	"
4419, 18 x 16.....	"
4423, 18 x 18.....	"
also in walnut	"
Cymbals	"
K. Zildjian and Agha price being revised	"

BOOSEY & HAWKES

BEVERLY COMPLETE OUTFITS	
Panorama 21.....	292-95
Panorama 22.....	398-41
Panorama 24.....	343-16
Galaxy 18.....	242-72
Galaxy 21.....	256-11
Galaxy 24.....	259-46

AVEDIS ZILDJIAN CYMBALS	
(Prices for all types except Swish and Pang as stated)	
(Available in Types and Weights as Catalogue)	
7386 8".....	17-17
7387 10".....	20-09
7389 12".....	25-44
7390 13".....	28-38
7391 14".....	34-32
7392 15".....	37-25
7393 16".....	39-59
7394 17".....	42-61
7395 18".....	48-55
7395S 18" Swish.....	56-16
7399 19".....	51-47
7396 20".....	56-16
7396P 20" Pang.....	65-03
7396S 20" Swish.....	60-94
7400 21".....	62-61
7397 22".....	70-92
7397S 22" Swish.....	79-43
AVEDIS ZILDJIAN 'BRILLIANT' CYMBALS	

(Prices for all types except Swish and Pang as stated)	
7387B 10".....	24-86
7390B 13".....	33-15
7391B 14".....	39-01
7392B 15".....	41-35
7393B 16".....	44-37
7394B 17".....	47-29
7395B 18".....	52-56
7395B 18" Swish.....	61-52
7396B 20".....	61-52
7396BS 20" Swish.....	69-48
7396BP 20" Pang.....	69-48
7397B 22".....	71-15
7397BS 22" Swish.....	83-70
AVEDIS ZILDJIAN HI-HAT CYMBALS	
7390HH 13".....	56-75
7391HH 14".....	68-63
7392HH 15".....	74-50
7393HH 16".....	79-19

C.B.S. ARBITER

ROGERS	
Outfits:	
Studio X.....	947-00
Compact X.....	789-00
Studio VII.....	591-00
Londoner V.....	545-00
London VI.....	600-00
Ultrapower VII.....	875-00
Ultrapower IX.....	980-00
Starlighter IV.....	490-00
Londoner Super 10.....	433-00
Starlighter Super 10 Drums.....	385-00
Dynasonic snare 5 x 14".....	110-00
Dynasonic snare 6½ x 14".....	115-00
Superten snare 6½ x 14".....	56-00
Powertone, 14 x 20 bs.....	128-00
Powertone, 14 x 22 bs.....	134-00
Powertone, 14 x 20 bs.....	142-00
Powertone, 8 x 22 t.t.	64-00
Powertone, 9 x 13 t.t.	67-00

Powertone, 10 x 14 t.t.....	80-00
Powertone, 12 x 15 t.t.....	88-00
Powertone, 16 x 16 t.t.....	97-00
Powertone, 16 x 18 t.t.....	115-00
Powertone, 18 x 20 t.t.....	142-00
Powertone bongoes.....	55-00
Powertone tumbales brass.....	108-00
Powertone timbales copper.....	118-00
Accusonic timpani 20 inch.....	261-00
Accusonic timpani 23 inch.....	282-00

CLEARTONE ★

SLINGERLAND

Outfits:

4N Lacquer 20"	375-82
4N Pearl 20"	405-89
4N Chrome 20"	417-48
4N Lacquer 22"	381-60
4N Pearl 22"	411-70
4N Chrome 22"	423-26
50N Lacquer	460-86
50N Pearl	492-69
50N Chrome	507-15
60N Lacquer	541-54
60N Pearl	587-81
60N Chrome	604-01
58M Lacquer	429-04
58N Pearl	434-84
58N Chrome	449-29
80N Lacquer	506-84
80M Pearl	544-13
IN 20" Lacquer	426-16
IN 20" Pearl	455-09
IN 20" Chrome	469-54
IN Lacquer 22"	431-94
IN Pearl 22"	460-87
IN Chrome 22"	475-32
57N Lacquer	731-79
57N Pearl	783-87
57N Chrome	811-64
2R Lacquer	425-05
2R Pearl	469-54
2R Chrome	484-01
14N Lacquer	564-36
14N Pearl	627-98
14N Chrome	649-40
9N Lacquer	359-62
9N Pearl	394-33
9N Chrome	407-07
65N Lacquer	456-23
65N Pearl	484-01
65N Chrome	496-73
11N 2 x 24 Lacquer	928-17
11N 2 x 24 Pearl	986-03
11N 2 x 24 Chrome	1014-94

J. T. COPPOCK

Mitchell S5 5 drum kit (w/out cymbals) 265-00

DAVOLI

UFIP CYMBALS

RITMO

10"	9-50
11"	10-26
12"	11-12
12"	13-82
14"	17-56
15"	18-90
16"	21-00
18"	31-10
20"	37-26
22"	45-90
24"	54-00

RED SOUND

12"	5-40
13"	8-10
14"	8-64
15"	8-80
16"	12-88
18"	16-74
20"	19-48

HÖHNER ★

SONOR

Outfits:

K120	201-70
K130	279-05
K132	341-00
K162	516-85
K189	605-30
K189 P.A.	645-85

Snares Drums:

D426 (chrome)	130-00
D441 (acrylic)	56-15
D454 (chrome)	56-15
D441 (acrylic)	56-15
D454 (chrome)	56-15
D555 (chrome)	114-15
D556 (chrome)	120-80

Tom Toms:

T620	45-90
T628	49-70
T629	49-70
T630	58-50
T632	86-80
T638	79-10
T659	74-90
T660	74-90
T662	103-20
T663	127-75
T652 (air tuned)	114-15

Bass Drums:

G230 K130, 20"	112-00
G231 K130, 22"	112-60
G260 K162, 20"	158-30
G261 K162, 22"	158-30
G262 K162, 24"	178-20

Snares drum stands:

Z 5552	16-05
Z 5553	35-15

Hi Hacs:

Z 5451	20-25
Z 5452	46-60
Z 5459	10-70

Cymbal stands etc:

Z 5220	12-20
Z 5222	26-05
Z 5221 Tilter	5-50

Remo Practice Outfit:

RPS 10 60-00

Sonor Cymbals

Zymbor:

Z 1002 12"	5-25
Z 1003 13"	6-20
Z 1005 14"	9-05
Z 1007 16"	11-45
Z 1009 18"	16-50
Z 1011 20"	18-65

Turko:

Z 2002 12"	10-15
Z 2003 13"	11-65
Z 2005 14"	14-55
Z 2006 15"	16-75
Z 2007 16"	19-35
Z 2009 18"	25-30
Z 2011 20"	33-00
Z 2013 22"	42-10

HORNBY-SKEWES

HOSHINO

HSD500	260-00
HSD500T	340-00
HM1000	160-00
HC78	230-00
HM300	110-00
HK600M	36-00

KEMBLE ★

YAMAHA-Outfits

YD680	314-00
YD665	334-52
YD660	299-23
YD260	153-65

Metal snare: SD6500M 47-70

ORANGE ★

Single drum kit 528-00
Double drum kit 748-00

PREMIER

Ex. VAT

Snares:

31, 14 x 5 1/2"	44-84
33, 14 x 5 1/2"	53-19
35, 14 x 5 1/2"	55-93
36, 14 x 6 1/2"	58-14
37, 14 x 5 1/2"	47-06
1002, 14 x 5 1/2"	31-20
1005, 14 x 5 1/2"	31-71
1180, 14 x 4"	27-62
1182, 14 x 5 1/2"	28-81
2000, 14 x 5 1/2"	60-36
2001, 14 x 5 1/2"	57-63
2003, 14 x 5 1/2"	62-57
2004, 14 x 6 1/2"	71-78
2006, 14 x 12"	70-25
101	56-94
2020	63-59
2011, 14 x 14 1/2"	58-65

Outfits (w/out cymbals)

202 w 20" BD	294-13
B202 w 22" BD	295-15
D202 w 24" BD	304-02
201	282-36
B201	283-39
C201	275-71
B203	361-47
D203	368-64
B204	422-59
D204	429-75
304	360-36
B304	361-38
D304	370-25
390-88	390-88
B305	391-90
D305	400-77
308	418-84
B308	419-86
D308	428-73
604	346-55
B604	347-57

To avoid unnecessary repetitions, certain abbreviations are frequently used in our listings: electric - elec; custom ctm; semi-acoustic - s/ac; organ - org; professional - pro; standard - std; acoustic - ac; folk - fk; bass - bs; string - str; de luxe - d/l; jumbo - jbo; piano - pno; left hand - l/h; scale - sc; case - cs; banjo - bjo; monitor - mt.

D604	356-44	354P 14" pair	40-61
605	411-85	355 15"	22-17
B605	412-87	355P 15" pair	44-33
D605	421-74	356 16"	24-33
606	522-18	358 18"	28-21
B606	524-22	358S 18" sizzle	28-98
D606	541-95	360 20"	32-40
717 w 20" BD	471-35	360S 20" sizzle	33-17
B717 w 22" BD	472-38	362 22"	40-45
D717 w 24" BD	481-24	374 14"	44-64
808 w 20" BD	646-80	375 15"	48-82
B808 w 22" BD	648-84	376 16"	53-47
D808 w 24" BD	666-57		
1031 w 20" BD	199-06		
B1031 w 22" BD	202-63		
1033 w 20" BD	237-49		
B1033 w 22" BD	241-70		

Bass Drums:

124, 28 x 17"	73-48
126, 26 x 17"	72-97
127, 18 x 15"	53-70
130, 20 x 17"	60-36
125, 24 x 17"	70-25
132, 22 x 17"	61-38
1170, 20 x 15"	45-01
1161, 20 x 17"	50-47
1171, 20 x 17"	45-35
1172, 22 x 15"	48-43
1163, 22 x 17"	52-52
1173, 22 x 17"	48-94
1175, 24 x 15"	52-85
142	69-56
144	76-72
166	92-24

ROSE-MORRIS

LUDWIG

Outfits:

2001 Octaplus	1053-04
2005 Quadruplus	697-00
993 Pro Beat	687-93
990 Deluxe Classic	488-79
989 Big Beat	567-25
980 Super Classic	475-21
983 Hollywood	544-60
985 Rock-Duo	722-56
1005 Mach 5	657-76
1000 Mach 4	579-30
995 Jazzette	434-48

Snares Drums:

410 Supersensitive 5"	119-17
411 Supersensitive 6 1/2"	122-17
400 Supraphonic 5"	78-44
402 Supraphonic 6 1/2"	81-48
404 Acrolite	58-84
405 Piccolo 13"	72-44

Stands and Fittings:

201 Speed King Pedal	27-37
1042 Atlas Cymbal Stand	20-85
1124 Atlas Hi-Hat Stand	31-37
116 13645 Atlas S/Drum Stand	22-82
10262 Drum and Timp Stool	24-11
1400 Std. Cymbal Stand	22-82
11231 Std. Hi-Hat Stand	22-82
1363 Std. S/Drum Stand	16-29
10251 PortoSeat	24-11
1372 Cymbal Arm	7-48

Orchestral Drums:

942 12 x 8 Tom Tom Super Classic	66-39
944 13 x 9 Tom Tom Super Classic	69-39
946 14 x 10 Tom Tom Super Classic	70-91
947 15 x 14 Tom Tom Super Classic	75-45
948 14 x 14 Floor Tom Tom Super Classic	90-53
950 16 x 16 Floor Tom Tom Super Classic	99-55
952 18 x 16 Floor Tom Tom Super Classic	114-67
954 20 x 18 Floor Tom Tom Super Classic	134-29
497 6 x 5 1/2 Melodic Tom Tom	30-16
488 8 x 5 1/2 Melodic Tom Tom	30-16
489 10 x 6 1/2 Melodic Tom Tom	40-75
461 12 x 8 Melodic Tom Tom	45-28
462 13 x 9 Melodic Tom Tom	49-79

463 14 x 10 Melodic Tom Tom	52-78
464 15 x 12 Melodic Tom Tom	61-85
465 16 x 14 Melodic Tom Tom	69-39
920 20 x 14 Bass Drum Super Classic	128-23
922 22 x 14 Bass Drum Super Classic	137-30
924 24 x 14 Bass Drum Super Classic	146-33
926 26 x 14 Bass Drum Super Classic	156-90

Accessories:

7821 Single Tom Tom Holder	13-69
7812 Double Tom Tom Holder	19-57
13452 Double Tom Tom Floor Stand	24-11
7791 SturdiLok Tom Tom Holder	20-19
13401 SturdiLok Tom Tom Floor Stand	25-41
13041 Bass Drum Anchor	4-57
1306 Curved Retracting Spurs	6-53
1324 Hoop Mount Stick Holder	3-90

LATIN-AMERICAN

2357 Tunable Bongoes on Stand	69-39
2351 Timbales, Copper, on Stand	11-64
2353 Timbales, Brass, on Stand	111-64
2359 Timbales, Chrome, on Stand	120-70
1261 Single Cowbell Holder	1-64
1271 Double Cowbell Holder	2-61
128 4" Cowbell	5-11
129 5" Cowbell	6-26
2388 Black Beauty Cowbell	10-43
2389 Timbale, Cowbell	14-48
2390 Bongo Cowbell	17-19
2391 Mambo Cowbell	14-03
2387 Agogo Bells	17-65
133 Cowbell Holder	2-61
1323 Bell Block Holder	3-26
2383 Vibraslap Small	11-32
2384 Vibraslap Large	14-48
2380 Afuche Small	14-91
2381 Afuche Medium	16-76
2382 Afuche Large	20-82
2392 Metal Tubo Small	1-95
2393 Metal Tubo Large	2-74
2361 Claves Small	3-16
2368 Claves Medium	3-16
2364 Maracas Small	4-07
2 3 6 5 Maracas Medium	4-99
2366 Guiro Small	5-90
2367 Guiro Medium	6-78
100/1 Concert Temple Blocks w/stand	68-70

Sticks, Brushes, Miscellaneous

190Wire Brushes	1-95
190A Wire Brushes	1-95
191 Wire Brushes	1-95
191A Wire Brushes	2-26
195 Wire Brushes	1-95
Hickory Sticks all grades	1-95
Hickory Nylon Tip Sticks, all grades	2-26
351 Gladstone Practice Pad	6-42
941 4" Headless Tambourine	8-49
951 10" Headless Tambourine	8-49
952 10" Headless Tambourine	53-59
5338 17" Double Jingles	11-08
5340 20" Hi-Hat Sock Jingle	6-87
73 Ching Ring	15-40
75 Ratchet	5-90
97 Steigh Bells	11-75
74 Slapstick	4-89
774 Large Wood Block	3-59
775 Small Wood Block	3-59
72 8" Tunable Tambourine	12-39
99 10" Tunable Tambourine	13-02

99A 10" Tunable Tambourine Double Jingles 16-29
1094 8" Calif Tambourine 16-84
1090 10" Calif Tambourine Double Jingles 22-72

MUSSER

M51 Kelon Portable Xylophone	504-07
M42 Kelon Elite Xylophone	364-68
M41 Kelon Piccolo Xylophone (2 1/2 Oct.)	219-65
M39 Kelon Jiccolo Xylophone (2 Oct.)	263-30
M31 Kelon Windsor Marimba	566-03
M61 Kelon Triette Marimba	383-01
M30 Brentwood Marimba	861-74
M250 Concert Grand Marimba	1240-5
M150 Century Marimba	1095-47
M75 Century Vib.	1295-41
M55 Pro Vibe	1058-85
M40 One Nites Vibe (Sgle Spd)	839-19
M45 One Nites Vibe (Variable Speed)	912-45
M2044 Deluxe Bell Lyra	183-07
M2041 Standard Bell Lyra	146-44
M2040 Lightweight Bell Lyre	109-81
M655 Chromatic Steel Bells	52-10
M656 Chromatic Aluminum Bells	147-85
M635 Classic Chimes 1/2 Brass	802-58
M665 Classic Chimes 1/2 Brass	1167-26
M660 Classic Chimes 1/2 Chrome	1167-26
M645 Concert Band Bells	204-17
M646 Concert Band Bells with damper	254-85

CYMBALS

Avedis Zildjian Products

5241 8"	17-16
5242 10"	20-09
5243 13"	28-37
5244 14"	34-32
5245 15"	37-25
5246 16"	39-59
5247 17"	42-60
5248 18"	48-55
5248WC 18" Wide Cup	48-55
5248SW 18" Swish	56-16
5248 S 18" Sizzle	48-48
5248T 18" Trio	48-48
5248MC 18" Mini Cup	48-48
5249 19"	51-48
5220 20"	56-16
5220SW 20" Swish	65-03
5220P 20" Pang	65-03
5220S 20" Sizzle	56-18
5220MC 20" Mini Cup	56-18
5261 21"	62-61
5221 22"	70-98
5221SW 22" Swish	79-43

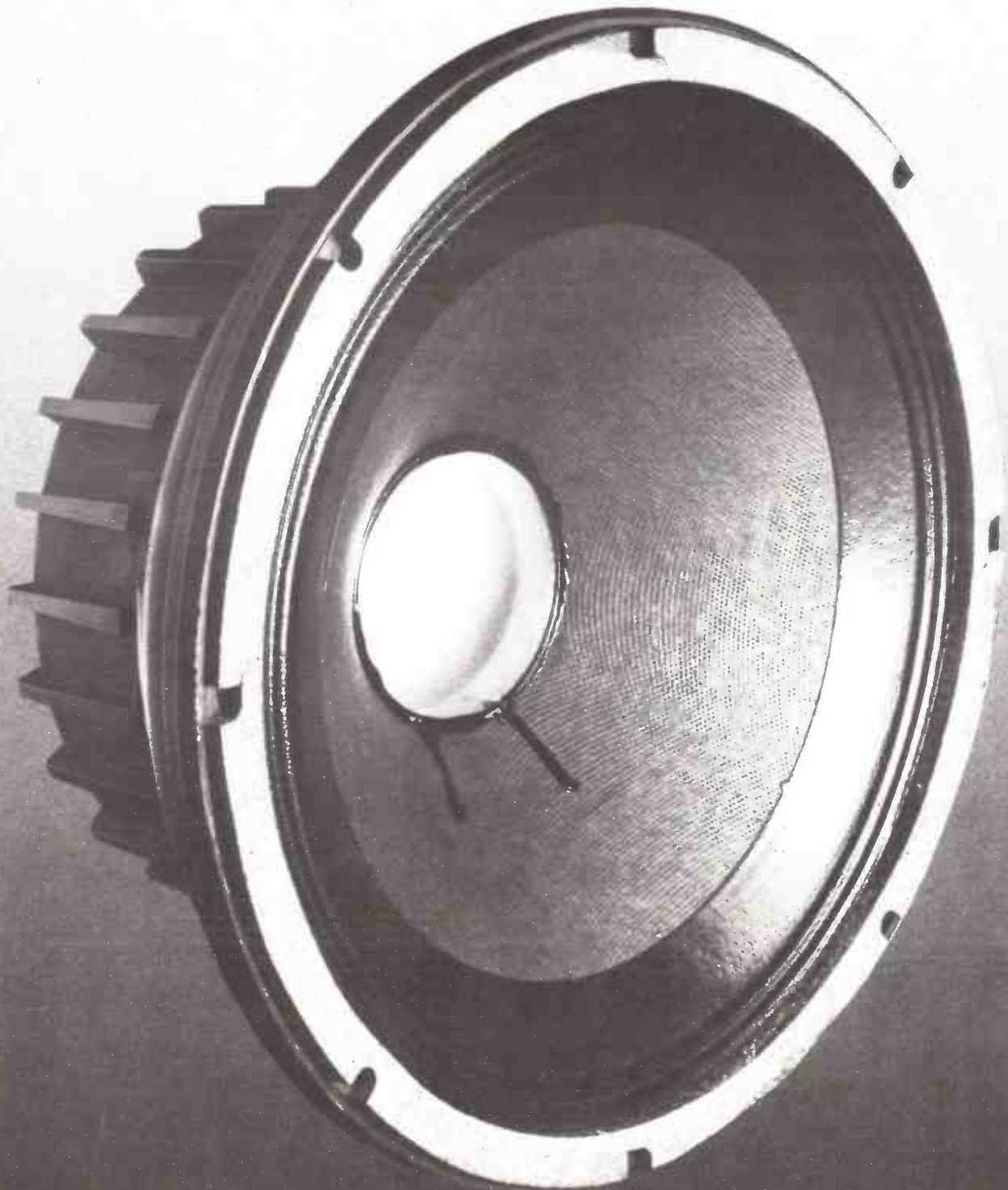
Kenny Clarke Pairs Hi-Hats

5215 13" 14" pr	62-69

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