

the GRAMOPHONE interview

PETER J. WALKER

talks to John Borwick

J.B. Let's begin at the beginning: how did it all start?

P.J.W. Oh, I think an interest in what were in those days known as 'wireless sets'. That would be in about 1936, when I was 19. I worked for a firm that made amplifiers for dance bands and theatres. We were selling amplifiers for about £30 and I thought to myself, "Well, there are about £10 worth of parts in this, about one day's job to put it all together. That's about £20 profit." As I was then getting about 35 shillings a week, or £1.75 in today's money, that was a considerable step-up. So I handed in my notice—and that's how it started.

But before that: what about training?

I left school at 16 and worked in my father's hardware business, selling screws and so on. But I wanted to actually build something, or be on the creative side of things. So I spent a short time at EMI, then GEC and Trix Electrical before starting Acoustical Manufacturing Company on May 26th, 1936.

Were you successful right away?

No, no. However, playing the alto saxophone in a dance band earned me 7/6d. a night, and so I didn't need to make a profit—and of course I didn't count my own time, as I enjoyed the work.

What did the first amplifiers look like?

Well, every one was different. The first successful design was a 30-watt amplifier, though nobody measured them in those days, and Frank Devereux of *Wireless World* gave us a nice review. This meant I could begin to sell about two amplifiers a week—and this was enough to keep me and my wife, who was now running the office, and my staff of one chap who did most of the assembly work.

Then the war came along.

Yes, so we originally closed the place down. Then orders came along for sound installations in factories so that they could have "Music While You Work". If they were on war work, you could get the parts; and this applied to sound reinforcement for army training units and so on. We got bombed out of London, and moved out to Huntingdon where we have been ever since. After the war, we had a contract to fit up sound systems in about 300 cinemas. As well as these public address amplifiers, we made a 12-watt design called the QA12P ("Quality Amplifier with Pre-amplifier, 12 watts"). This sounded quite nice in people's homes if they put a decent loudspeaker on the end. At that time the Williamson amplifier came out, and that encouraged the high fidelity business to really start going. Before the war it had been very difficult—even Voigt could hardly sell two loudspeakers a week.

Did you start on loudspeakers at this time?

I had always been interested in speakers, and I introduced my ribbon design at Radio Olympia in 1949. The top end reproduction was excellent, and we could let people hear breaking glass and

all that sort of thing. The middle was perhaps a little bit lacking. We had a 12-inch unit for the bass which went up to about 1,000Hz, and the tweeter would go down to around 2,500Hz. So they didn't quite meet in the middle—but that's typical of loudspeakers.

Was the ribbon just something you could buy in sheets and cut it up and corrugate it yourself?

You did it the hard way. You bought books on acoustics and taught yourself: loudspeakers were a bit of a mystery. It was beginning to dawn on us then that amplifiers were fairly predictable, and that loudspeakers were the dodgy thing. A ribbon seemed to be a nice straightforward thing. Send a current through this very light ribbon, put a horn on the end and there you are. But of course all that does is make you a virtually perfect tweeter. A good loudspeaker is not just a tweeter, squawker and woofer put together: it will sound like that if it is. A loudspeaker should be a complete sound. The ribbon design did us a lot of good. It was the first thing that made people sit up and notice us, because it could perform pretty well.

The Electrostatic

Then came the electrostatic?

Yes, by 1955 we had them working in the lab. An electrostatic speaker is a fascinating thing. You can go and buy a bit of aluminium-coated melonox or foil, give it a rough stretch on some sort of frame, put two metal plates each side of it, put the signal on the plates, some HT on the thing and out comes sound. And the sound is nice and clear and pure. It might rattle now and again, and it won't go very loud—and it won't work the next day because it's all collapsed on to the plates. But what you hear is refreshing, because it is such a simple system. Having decided that this was the way to do it, I found that every single moving-coil loudspeaker manufacturer began experimenting with the same idea. But they all came to the conclusion very soon that this was not the way to make money out of making loudspeakers. So they continued with the business they knew, and which they have continued to do very well, namely make moving-coil units and put them in boxes. We could afford to press on with the electrostatics because we were an amplifier company—and that paid the wages while I played in the laboratory.

Well, your original Quad Electrostatic was launched in 1957. We published a "21 Years On" article in our March 1978 issue and actually played a recent sample alongside ESL No. 1, which you put up for a raffle at the 1957 British Sound Recording Association Exhibition. That raffle was won by Philip Tandy, an associate of our own Geoffrey Horn, and we even reproduced two photographs of him in our 1978 article—one taken with ESL No. 1 in 1957, and the other with a 1978 sample. Over 20 years of success for a hi-fi product must be something of a record.

The ESL got off to a very good start. Some people said it was too big for the amount of sound it produced. Others said it looked like a room heater. But if they liked the sound quality, they soon put up with the inconvenience. After all, if you like the sound of a grand piano in your room you'll put one there if you can.

Still, perhaps we should get back to the amplifier story?

Yes, well most post-war amplifiers were based on the Williamson circuit. I had tried to patent an ultra-linear arrangement just after the war, but found that it had previously been patented by Blumlein, in quite another context. However at least this prevented other people from re-inventing the thing and my version was quite a bit more

efficient. In fact I think the Quad II power amplifier used 10 resistors, 3 condensers, 2 transformers, a little choke and that's it. It still is a useful amplifier, provided 15 watts is enough for what you want.

Where did the name "QUAD" come from?

After our QA12P we decided to make a word that people could remember: and "Quality Amplifier for Domestic Use" was somehow rejigged to spell Quad. We had full stops after each letter to begin with, but these soon got dropped. Those were happy days, because we seemed to be dealing with enthusiasts who were keen on the music. Now it's big business, and too many people are buying hi-fi because it's the thing to have.

Transistors

I suppose it would be fair to say that you were not the first in the field when it came to changing over from valves (tubes) to transistors?

Oh no, and it's a good job we weren't. When transistors came in, they were slow devices, mostly germanium, and you could still do a better job with valves. Of course, like anything new, transistors caught the public interest, and visitors would come up to me at the Audio Fair and say, "Have you transistorized that yet?" And I would look inside the top of the Quad II and say, "No, I don't think we have yet: we must do that next week!"

"Have you thought about transistorizing?" they would say. "Oh yes", I would reply, "We've been thinking about it for the last three years". It is purely a matter of economics. How do you make a 40 or 50 watts amplifier most efficiently? When transistors got fast enough, and the price was right, then you could do it more economically—for the same performance. And now, certainly, transistors are the way to do it—even though some people now say the valves sound better.

Some of the same people who wanted you to change earlier?

Exactly the same people. You see a lot of the early transistor amplifiers weren't very good: they had crossover distortion and that kind of thing. Nearly all the valve amplifiers sounded pretty good, using Class A. Also, with pop music played very loud, a lot of people overload their amplifiers nowadays—at least when they're demonstrating to their friends—and a valve amplifier will over-



Peter Walker looking justifiably pleased with his Japanese "State of Art" Award.

COMPANY PROFILE

The Acoustical Manufacturing Company Limited, St Peter's Road, Huntingdon, Cambridgeshire PE18 7DB was formed in 1936. The company now has 185 employees in a 30,000 sq. ft. factory. Awards include the Queen's Award for Technological Achievement in 1978, Design and Engineering Award at CES, Chicago and 'State of Art' and 'Best Buy' Awards in Japan. About two-thirds of production is exported to 65 overseas markets including Holland, France, West Germany, USA, Canada and Japan.

Managing Director: Peter J. Walker
Marketing Director: Ross J. Walker

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load quite gracefully, just clip off the top a bit. Transistor amplifiers will then show up badly against valves—or at least some of them will.

All the same, when you changed from the valve Quad 22 and Quad II to the transistor Quad 33/303, you made the transition fairly painless for your loyal customers. The same panel cut-out would fit the new control unit, and you continued with the philosophy of a separate power amplifier that could be hidden away at the bottom of the cabinet, ventilation permitting.

Oh yes. That was in 1968. The price went up a little bit, but we continued to service the valve units. In fact we still do. We put a little more gain on the pickup input to allow for the less sensitive cartridges coming in around that time.

The ESL-63

What led to the next amplifier series?

We had developed this feed-forward device—as a separate exercise—and went for 100 watts per channel instead of the previous 45 watts. The circuit was very elegant: no adjustments during its working life and no temperature problems. This was the Quad 405 amplifier and it appeared in 1975. People then wanted a new control unit. There was nothing really wrong with the old one, though perhaps the mechanical switching seemed a little old-fashioned. So we produced the Quad 44, with electronic switching, provision for moving-coil cartridges and a more useful form of tone-control.

Now, we've just been enjoying listening to your new Quad ESL-63 loudspeaker. I gather that didn't take just five minutes to design.

Its type number is 63, and 1963 is the year we started on it. If you look at the notebooks, you'll see that they're all dated. We built various prototypes, then looked for snags—which we would leave alone while we got on with other things. Then we might get a bright idea how to solve one of the snags, and so on. It's a thing that gets done, not in your spare time—I suppose 50 per cent of my time has been on it in the 17

years—50 per cent of the thinking time anyway. The new design has no phase problems, no frequency response problems, no directivity problems, no distortion problems, no transient hangover problems.

That sounds like the specification for the perfect loudspeaker.

Well, if you said to me, "How could you make it a better loudspeaker?", I certainly wouldn't know. Perhaps one would like to make it louder, then it would do for discos as well, for I don't think that the pop people will particularly like it. I am not against pop music but, if this speaker is fed a multi-microphone mix-down, that is what it reproduces, and it stands out like a sore thumb—cardboard images between the two loudspeakers.

Anyway, if you redesigned the ESL-63 so that it would go loud enough to satisfy the disco market, you would be making every customer pay for that extra property whether he wanted it or not.

You have to design a product for what you might call 'the intelligent listener'. This is the best sound we can produce. If you wanted to make it 6dB louder, you would have to make it twice the area—and getting on for twice the price—which would be difficult in most rooms. In the same way, if we made it smaller to suit more housewives, in our opinion it would then not go loud enough to reproduce the sound of a live orchestra.

Did the design start off at roughly the final size and shape?

Yes, though it was nicknamed the 'dartboard' at first because it was originally round. Then we found that this was very difficult to manufacture: still I could have demonstrated to you 12 or 13 years ago the same sounds that you've heard today. All the subsequent development has been attending to details and producing a unit that we can assemble in a reasonable period of time.

Thank you, Peter: I won't ask you what's in these newer notebooks on the shelf but perhaps we can continue this conversation when you are ready to launch your next revolutionary product on an astonished hi-fi world.

proofed listening rooms where equipment selected by a special committee will be demonstrated. Information from the organizers, SIM-Hi-Fi, Via Domenichino 11, 20149 Milano, Italy.

For the second year running, Cleartone Hi-Fi of Bolton, Lancashire are sponsoring "Sounds '81" to be held at the Last Drop Village, near Bolton from 2nd-4th October, 1981. Over 30 hi-fi and video manufacturers will be attending, and there will be a free-to-enter competition.

"Solent Audio 81" is being organized for the fifth year running by Hamilton Electronics Ltd., Southampton. About 30 firms will be exhibiting, occupying three complete floors at the Post House Hotel, Southampton on October 24th and 25th. Admission and ample car parking facilities are free of charge.

The "Grand Bristol Hi-Fi and Video Show" is to be held at the Grand Hotel, Bristol on November 6th to 8th. The organizers are Rediffusion South West, 2-3 Broad Plain, Bristol.

Laskys have decided that the limitations on space at the Excelsior Hotel, Manchester would make it very difficult for them to expand their successful series of annual "Sound and Video" exhibitions. They have therefore felt obliged to suspend their sponsorship of this event "until such time as a suitable alternative national site is found".

BBC/VHF plans

A recent BBC Radio Working Party has identified three main reasons why VHF/FM is still not the preferred medium for many radio listeners. They are: 1. Reception is sometimes poor on portables and car radios. 2. There are local gaps in VHF transmitter coverage. 3. There are too few VHF channels. Steps are being taken to deal with each of these problems, in recognition of the superior sound quality inherent in the VHF/FM medium and the certainty that AM reception on the long and medium wavebands will become even more interference-prone in the coming years.

The remedial steps proposed are: 1. Introduction of mixed vertical and horizontal polarization to suit the vertical aerials on car and portable radios. This will be achieved by the end of 1981 on the Wrotham, Kent transmitter which serves nearly 13 million people in London and the South-East. 2. Opening of additional relay stations to reduce the number of people out of range of VHF from the present 3% (1.5 million) to 0.3%. 3. Widening of the bandwidth allocated to each UK network from the present 2.2MHz, to 2.8MHz, and 3.0MHz for BBC local radio and regional services. To implement these plans, the BBC will be negotiating for allocation of the full 88-108MHz band instead of the part-band which they have access to at present.

Lowther to expand

A well-known name in the British loudspeaker industry seems poised for a come-back. Lowther loudspeakers, always popular for their high efficiency drive units and sometimes elaborate cabinet designs, are to continue to operate from their headquarters in Bromley, Kent but have now taken over two new purpose-built factories in Norfolk to speed up production. There are several new speaker systems in the pipeline, including the Classic 400 (approximately £600 per pair) measuring 32 x 14 x 10 inches.

Amcron distributor

HHB Hire and Sales, Unit F, New Crescent Works, Nicoll Road, London NW10 9AX have taken over the UK distributorship of Amcron (Crown) equipment manufactured in the USA. The Amcron range includes several preamplifiers and power amplifiers well known to professional recording studios and keen amateurs. Of these, price reductions have been announced on the following: PL-1 (Power Line) amplifier (£304.75), SL-1 (Straight Line) preamplifier (£322.00) and IC-150A preamplifier (£339.25). Also to be imported are the Crown PZM (Pressure Zone) microphones designed to be placed on the floor in front of singers or musicians.

Audio News

Compact Disc news

Realizing that the playback conditions were far from ideal on the recent large-scale press presentation in Salzburg jointly organized by Philips, PolyGram and Sony (see our report in the June issue, page 30) Sony (UK) Limited have been giving British journalists and other interested



Sony prototype Compact Digital Disc player, with disc and a matchbox to show the small dimensions.

parties a chance to hear sample Compact Digital Discs under more favourable circumstances. The venue was pretty well ideal, being the sound studio at Shepperton recently taken over and refurbished by Sony expressly to demonstrate their exotic "Esprit" range of hi-fi units and loudspeakers. Visitors were limited to about a dozen at a time, and excerpts could be chosen at will and reproduced on a neat Sony prototype player (see photograph). As in Salzburg, the digital-to-analogue conversion was still being carried out on

an external black box, but development of the necessary small and inexpensive D/A converter chip is said to be well on target for the proposed launch of the Compact Disc system in late 1982.

Players are expected to cost about the same as a top hi-fi record deck and CBS/Sony and the PolyGram Group plan to have at least 100 titles on disc in time for the launch. Discs used at the Shepperton demonstration were mainly of CBS/Sony origin, but a transcription made from one of EMI's successful digital masters—the André Previn/LSO performance of Debussy's *Images* (HMV ASD3804, 12/79)—had also been made available. This perhaps provided the most critical test material—certainly for the members of our own "Sounds in Retrospect" team, who knew this recording very well (and selected it for our 1979 "Best Engineered" Gramophone Award). The sound quality from the Compact Disc was found to be very acceptable, with admirable detail and stereo imaging, and no complaints of over-brightness. We are therefore looking forward to the regular production Compact Disc players and discs with eager anticipation.

Show news

As notified last month, the Berlin "International Audio and Video Fair" will take place in the Exhibition Grounds adjoining the Berlin Radio Tower on September 4th to 13th.

At around the same time, September 3rd to 7th, "SIM-Hi-Fi" will be held in the Via Spinola, Milan, Italy. Some 900 exhibitors have booked space in the 30,000 square metres exhibition complex. High-fidelity equipment is being specially featured: a section called the 'Italian Esoteric Club' will contain 14 air-conditioned and sound-