

## An Enduring Passion...

### Cartridge and cable pioneer A.J. van den Hul

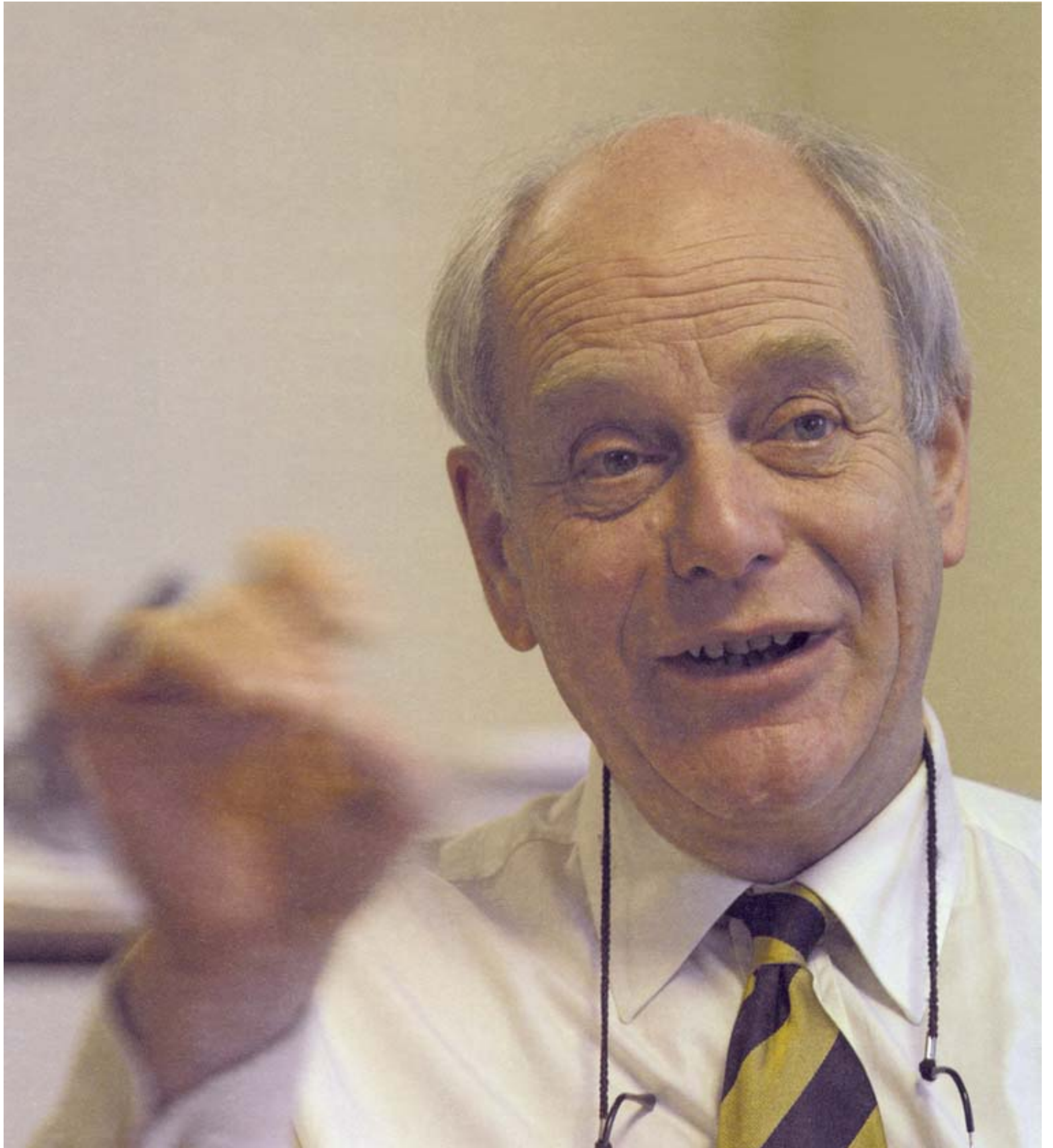
*interviewed by Roy Gregory*

**Roy Gregory.**

Where I'd like to start is where you started, with the design of your stylus profile. When and how did you arrive at it?

**A.J. van den Hul.**

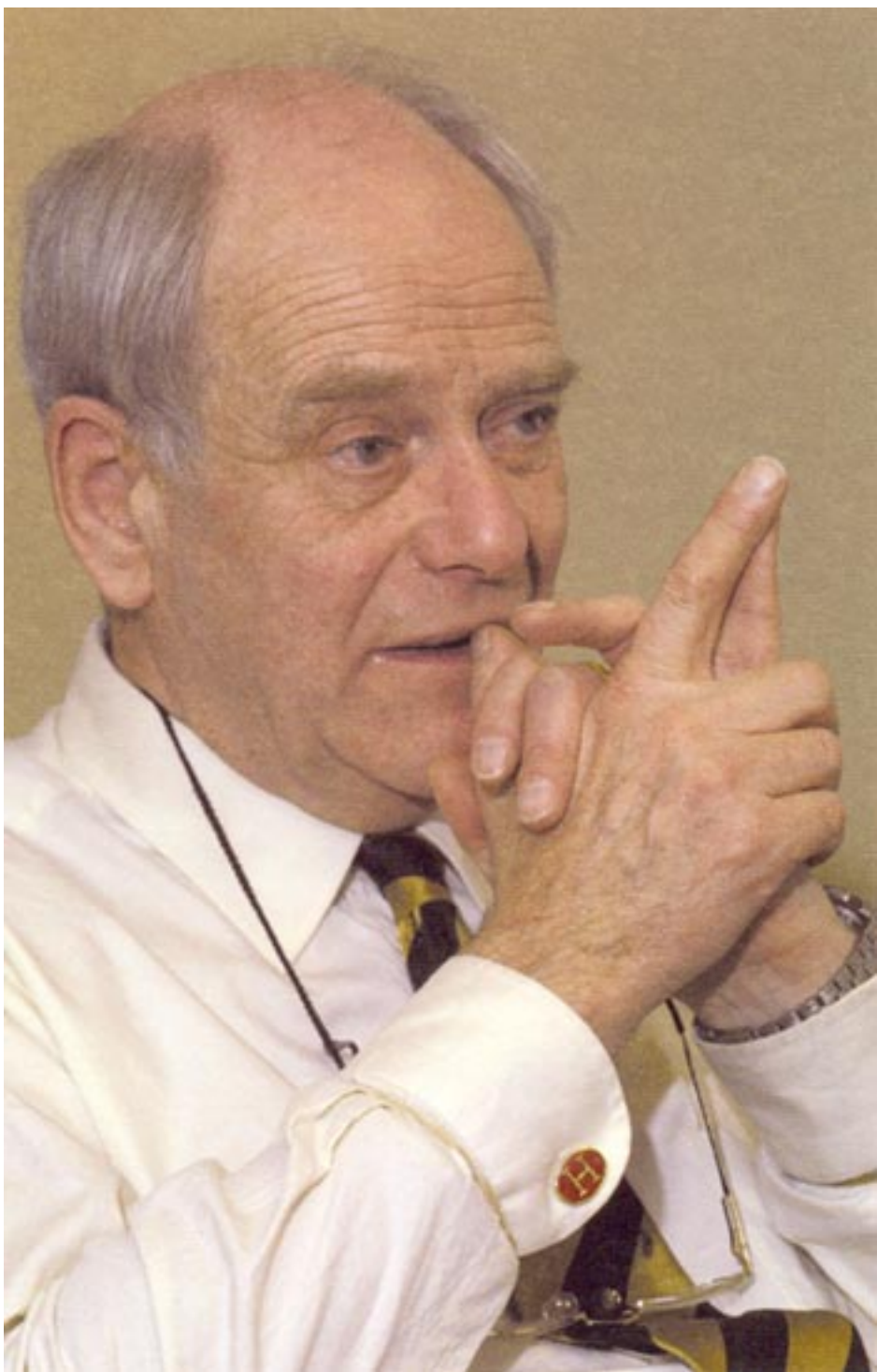
It started at a time when I was a reviewer, invited by a German diamond stylus manufacturer to visit his operation. He showed me a design of his own, almost like a sharpened screwdriver, which he thought should work - but he wasn't sure why. I explained to him that it wouldn't work because of the (cross-sectional) shape of the groove, and whilst describing this I realized that there must be an ideal shape to fit the groove, but one that's different to the cutter. Then, lying awake one night at about three o'clock in the



morning I visualised the problem by imagining myself lying at the bottom of a huge record groove, watching the stylus to see how it moved through that groove - what it did right and what it did wrong. That's when I got the idea to squeeze the stylus, making the contact line longer with a narrow edge. This I thought would be the perfect shape, so then I made some experiments at home. First I cut the stylus shape from wood, then I made a groove in butter and traced it with my wooden model. That way I could see exactly what was being traced.

Unfortunately the original manufacturer that I'd visited was unable to cut this profile because his machinery was not sufficiently precise. In the end I worked with a Swiss manufacturer and we built a machine together to produce the stylus. It took two years, but at that point I abandoned my job as a reviewer and set up on my own.

At first it was very difficult to convince cartridge manufacturers to consider my stylus. They said that it was too sharp and that it would scratch away the music. Some people even suggested that you'd see smoke or swarf coming from the stylus, but I knew that this wouldn't happen - that it would work. It still works and now 1.4 million styli have been sold world-wide and I think quite a bit of analogue enjoyment can be owed to this stylus.



**RG.** Which was the first company to start using your stylus?

**AJvdH.** That was Goldring. They were extremely successful with the GL900IGC. Once that cartridge was on the market nobody could say anymore that the stylus wouldn't work. That was in about 1980 and more and more people became interested in the stylus until 1982 when CD was launched and the whole analogue world collapsed. But even then it was obvious to me that my stylus sounded better than digital systems and I decided that there must be other people who would agree with me, so I carried on working on my cartridge designs. Once you have a stylus you think about what to do next and naturally, a cartridge is the obvious choice. It was winding coils for the cartridge, listening to different wires that led to the cable business. So, the stylus to the cartridge to the cables - that is the logical line in my life.

**RG.** When did you first produce a cartridge?

**AJvdH.** That was in 1980 with the EMT. That was the first cartridge that I took and modified. There were 23 modifications on each EMT and it was extremely successful, especially in the US where a great many were sold. I got more and more distributors around the world - it just spread by word of mouth - despite the brute force of Philips and Sony. They even offered me money to stop producing my stylus. When I pointed out that I could earn more in a year than they were offering me and asked them why they thought I'd accept their response was that "It's important to support CD"! I said "Thank you, but no. I'll be sticking with analogue" and you can see where that decision has led. I have my building, my

business, my farm and more cartridge work than ever!

**RG.** When did you produce the first cartridge to your own design, as opposed to modifying someone else's?

**AJvdH.** That was in 1982, a cartridge called the DDT.

**RG.** The model with the screwed together metal body which looks like, the Benz-Micro?

**AJvdH.** That's right, it was originally built by Benz-Micro and he was going to pay a royalty for each cartridge produced. However, he was injured in a car accident and forced as a result to sell his company. Mr Lucashek did not feel himself bound by the agreement so I never received my royalties, but I continued to order the various parts and bodies from him. However, we no longer shared technical information and I started to have internal elements made elsewhere, so from this point onwards, although the cartridges look externally similar their internal design started to diverge as we each followed our own development path. From the Frog upwards, there are no common parts inside. I'm happy to cook my soup in my kitchen while he bakes his pies in his kitchen.

The parts for the Frog are specified from another manufacturer and then assembled by me, here in my workshop.

**RG.** Are the Frog parts common to the other, more expensive cartridges like the Grass Hopper and Colibri?

**AJvdH.** No, although the Condor does use the same magnet and rear pole as the Frog. But whereas the Frog has a closed magnetic circuit, the Condor has an open one. The coil system is quite different, the suspension is quite different and the sonic results also, are very different.

**RG.** So the various elements used to construct the cartridges are sourced from Benz-Micro and another manufacturer, the latter supplying the parts in particular for the more expensive, open bodied cartridges?

**AJvdH.** Correct. Also the various bodies for the Grass Hopper, the Black and White



Beauties and the Colibri and Condor also have different suppliers depending on what material they are made from - metal, plastic, even wood.

**RG.** How has the stylus developed since it first appeared?

**AJvdH.** At first the stylus was an almost perfect fit in the groove. But following some complaints from cartridge manufacturers and customers Fritz Geiger who manufacture the styli actually rounded the extreme tip slightly, despite my objections. This is the Type 2 stylus, although I still use the original Type 1 and that is what is fitted in the cartridge I have built for you. Otherwise it would not have such resolution. The Type 1 is no longer manufactured, but I bought plenty before he stopped so I still have stock. It is also known as the FG1. Now that the patent has lapsed there are all different versions from different companies - fine line, micro-ridge and others - but they all share the common feature of a constant radius, extended right down the tracing surface. That was my original idea. The Japanese designed various profiles with tapered tracing edges, from maybe 30-microns at the base to 5-microns at the tip. In my design the tracing radius is 2-microns all the way from the tip to well above the groove; it avoids intermodulation, improves tracking and also resolution. It has extremely high resolution. When drums are touched you can hear the brushes, the skins, the rims - you can hear everything, just like when you listened last night and this morning. Not many styli can do that.

I also made a less extreme version for use in moving-magnet cartridges, 7-microns by 40 microns high as opposed to the 2 by 70-microns of the Type 1. Namiki in Japan also make a version of my stylus (without asking) and they make it with a 1-micron tracing radius. I have bought some from them and I have to say that they really are superb. I always use the Type 1 when I build a cartridge.

**RG.** One of the things that I found fascinating was your ability to make a cartridge to match my preferences. You were able to modify or adapt the construction to meet those performance parameters. What degree of variation can you achieve within your cartridge designs?

**AJvdH.** Extreme. When you study cartridges, which I have never done by training but only by experience, and with a lot of understanding of physics, then it's not too difficult. You can create any sound that you like. But I know (also from experience) that you are more critical of sound than a regular consumer, so you have to specify your requirements much more precisely. I have to listen to you very carefully, look at you, and of course I know a little of your character, so I can say "He is that type of person, he wants that type of sound".

**RG.** Having watched you build the cartridges, and then having taken them upstairs and listened to them side by side - the one you built for Jason and the one you built for me - I find it incredible that their performance tracks so precisely the requirements stated...

**AJvdH.** You can't expect this from Ortofon. You can't expect this from any other cartridge manufacturer, because they are not interested in doing that.

**RG.** It constitutes a bespoke cartridge, and if I understand this correctly, this is something that you can do for any customer, given the necessary information?



**AJvdH.** Oh yes. But our distributors are maybe not so interested to adapt the cartridge to fit it to the customer. To them, an MC10 is an MC10. I always like to know at least what the tonearm and equipment used with a cartridge will be, but usually this information is not available so you end up with an "average" MC10 cartridge. But if a customer tells them "I'm mainly playing Deccas" then I build an MC10 for Deccas. It is all about supplying information with the order. Of course, you can't buy such a cartridge from stock, but the advantages easily outweigh the short wait while it's built.

Of course, all this adds to the time taken by the importer and the complexity of each order, and time is money, so I completely

accept that some importers don't want to get involved. It's also difficult. You have to understand cartridges in order to understand the language of style and technology - how what someone wants relates to the final design decisions. There is also a problem of expectation, especially because the cartridge has to be used with the existing system. No cartridge can make up for a tiny pair of speakers if that is all your wife will allow! However, most distributors no longer hold actual stock, so each cartridge is built to order. Thus the opportunity exists to tailor each one to the individual end-user.

**RG.** So the customer ordering a cartridge should also supply details of tonearm, phono-stage, loading preference and gain, as well as the rest of the system?

**AJvdH.** Loading is very important. Also if possible some details of what they listen to - type of music or records - and what aspects they prefer - space or dynamics. Any importer can pass this on, it's just that many of them underestimate the value available from this service. Something else that is also unique is that after 200 hours you can return the cartridge so that I can tune it to exactly the specification you required. So if the tracking is a problem, or the frequency balance, I can tune it to correct this. This is also a standard service available to any customer at no cost except for shipping. I don't mind if it is 300 hours, even 500, but I make a little note on the cartridge just for me so that it can't keep having 200 hour services every five years! Each cartridge carries tiny inscriptions and these tell its history. Normally you only see these things if you have a good microscope - and trained eyes.

Philips didn't want to ask me for my stylus so through a dealer they sent me two 422s (their four-channel cartridge). But in very small writing on the back was an indication that these were selected samples so I knew that they had come from Philips and I wrote a little letter underneath saying that perhaps next time they should ask me openly rather than sending them through a dealer! They didn't want to ask because I'd just refused their money to stop the stylus. At this time even they weren't sure that CD would succeed so they were also looking at alternatives.

**RG.** Did you get a reply?

**AJvdH.** Never, but they must have read it because they needed to check the stylus type and what had been done.

**RG.** Could you give us a brief outline of your current range of cartridges and how they relate to each other?

**AJvdH.** First there are the regular cartridges which all look the same but vary in output and resolution. They start with the DDT, then the MC10 and finally the highest resolution that I can achieve in a regular cartridge is in the MC-One Super. There's also the higher output MC-Two. These cartridges mainly differ in resolution, differences that result from the different coils and suspension rubbers, and the way in which they are put together. The tension applied to the suspension is especially critical. I always squeeze the rubbers slightly because if they get soft then the sound becomes harsh, but it's a question of feel, and each rubber will relax slightly over time, so a new cartridge will settle into its correct performance after a little use. That's why sometimes it will need to come back for a little fine-tuning.

That is the end of the regular range. Then comes the Frog, Grass Hopper III, Grass Hopper IV, White Beauty, Black Beauty and finally the Colibri. The Condor fits just below the Colibri in my opinion, with some qualities that even the Colibri can't match. So, for example, the lower-midrange is especially powerful and convincing with the Condor, where with the Colibri it was always a little thin. The second special quality of the Condor is the lack of needle-talk, which is more important than just removing a possible distraction. If you listen to the equipment in your system, the turntable plinth for example, with a stethoscope then you'll be amazed at how much noise is present. This is a cheap and really easy tip for all hi-fi users. The Condor is the first cartridge I have made which does not lose energy mechanically from its generator. I think this is really important for its sound.

**RG.** With the Frog, you start to introduce the internal elements that originated in the larger, open cartridges. How does the range develop from the Frog onwards?

**AJvdH.** First I made the Frog with copper coils. Then I did a silver coil version, and now, at the moment, the gold wired version is extremely popular, especially in the Far East. I've even made a platinum version although I prefer to save my limited stocks of platinum wired generators for use in the highest quality cartridges, rather than lower down the range. But the Frog represents the



middle-way; it

always works in any arm, anyone is happy with it. It is very reliable and really not too expensive.

When you want something more exotic then you can look at the other models and these are the ones where I really like to know what the customer expects from the cartridge. I want him to be happy when he recognises the sound he was hoping for. What is most difficult is the question of listening style. The style in the Far East is quite different to the style in Europe. We are used to having the space that allows speakers to disappear. In Taiwan and China, customers want to hear their speakers, some sound from this one, some from that. It is not just the cartridge but the whole recording that contributes to that effect. A sort of multiple-mono mixed with stereo. It is a very different way of listening. English sound is the opposite, where if you shut your eyes then the speakers should disappear and just leave the performance. That's the style of listening that I like the most.



The Grass Hopper pre-dated the Frog, with Model II, III and IV, each in copper, silver and gold variations, each with AlNiCo magnets. You can use Samarium Cobalt but the stronger flux means a wider gap in this design to prevent collapse of the armature and that immediately reduces dynamics. So AlNiCo and resolution don't really go together, although it has excellent tonal qualities and it's very good for output.

With a two-pole design, precise centring of the coil is absolutely essential to improve resolution. So is the tension in the rubber. Using a long cantilever means using too much tension (in order to control the resonant frequency) for maximum resolution. So there's a balance to be struck between the mass of the cartridge, the mass of the coils and the rest of its moving mass to achieve good tracking, a correct frequency response and low cross-talk. Those three things are essential to the design of a good cartridge and you must know the combinations of suspension rubber, tension and cantilever length that work. This work led to the two Beauties.

The Colibri was the first single-pole design that I produced. I had a prototype in the second arm on my turntable for three or four years, and one customer, every time he came and heard it he said that it sounded so great that I should produce it, but the output was very low. At that time I didn't have the samarium Cobalt magnets that I have now, and it was these that made it possible. They are the strongest available on the market and they work here because it's a one-pole system. Too many manufacturers are concerned only with the mechanical aspects of the design and its electrical aspects. They don't really optimise the magnetic design. But theory suggested that the one-pole design might be more linear while avoiding the risk of a magnetic shunt inherent in using Samarium Cobalt in a two-pole design. I will continue now with one-pole designs. The Colibri is the first and the Condor the second. There is I think one other single-pole design, in Japan, but I've never heard it and it followed after the Colibri.

**RG.** Having seen you building the cartridges it becomes very apparent that this is a single-unit, hand-building process that's incredibly labour intensive and totally dependent on skill and experience to create consistent results. Not many people realise that you personally construct every single cartridge. How can you price a product like that?

**AJvdH.** It's a question I can hardly answer. It's not just the time that goes into each cartridge, it's all the years of experience too. It's also a question of lifespan and my

eyesight, which isn't getting any better, so that experience, concentrated into each cartridge is becoming a rarer and rarer commodity. I'm extremely careful with food and medicine to protect my eyes, but I cannot make them any better than they are. Sooner or later I'll have to stop.

**JK.** You haven't been able to train anybody else?

**AJvdH.** I've trained five different people and each time they run off and say, "Now I can do this myself". I never see them again, so now I have stopped this. The problem is that even if you have the desire to learn you need to have a huge

amount of technical knowledge of different rubbers, of micro dynamics before you can progress. You need to be able to handle the tools before you can learn, otherwise you are simply copying a process, rather than adding value to it. That's exactly why I like to build a cartridge for a specific individual - that way I add the maximum value available from my knowledge and experience.

**RG.** How many new cartridges do you produce in a year?

**AJvdH.** It's about 1200, as well as all the repairs - and only in the evenings and at weekends. That's it. I can't do more, because there simply isn't the time. My working hours are at the factory and only my spare time is here where I have the workshop. The cheaper models are far easier, so each week I might manage three, or maybe four, Colibris or Condors at most. I can make three or four of the regular designs for each of the expensive ones. Also, dedicated customers of many years standing can receive extra care and attention simply because I understand their requirements much more precisely - but that again takes extra time. Normally, as long as I'm not abroad it should take no longer than two weeks for me to meet an order, but there will be shipping and customs and other delays on top of that.

I recently stopped supplying one distributor because even when the cartridges were ready he made his customers wait for another two months - I think just to make the cartridges seem even more rare and exotic. That's not customer service. The customer will wait if they understand what they are waiting for, that they gain a performance advantage as a result, and that is reasonable. That is adding value. The cartridge sitting on a shelf for two months adds nothing, so that's why we stopped supplying that distributor.

**RG.** Are you still modifying other manufacturers cartridges?

**AJvdH.** Oh yes. Any cartridge can be upgraded and returned as long as I can work on it. Some you can't access, some have parts that are irreplaceable. Otherwise it's all handwork. Coils have to be hand-wound, other parts hand cut to fit. Of course, another manufacturer's cartridge is also something worthy of respect. Another man made it and loved it and the owner loved it too, so you must be respectful of the design also.

**RG.** How do you see the future for analogue record replay?

**AJvdH.** I see a big future for cartridges because there is a very big move back to analogue, partly because of very high-quality re-pressings. I'm very grateful for that because without those re-pressings it would be too difficult for today's audiophiles to enjoy the qualities of those recordings from the past. So I must thank all those manufacturers who put so much time into restoring all those old recordings. It's a huge help.

I'm also grateful to both the new and the traditional turntable manufacturers who continue to support analogue. They're essential because we all need each other. Each of us can make a part but it's difficult for one company to make all the parts because you need variation in expertise. What I think is a pity is that tape has lost its popularity. I still think that tapes are a real alternative to LPs. (As witnessed by the stacks of pre-recorded open-reel tapes in AJ's listening room. Ed.) But saving tape is too difficult. Too much of the hardware has disappeared and the system is too complex to reconstitute. Nowadays, the turntable is much easier. With today's computer controlled machines it is possible to make very good turntables at a medium price. However, I think that it is important for customers to concentrate on technical aspects of turntable design and performance and not just looks. Too many turntables these days are made for nothing but cosmetic reasons.

What is also forgotten is that even in quite expensive tonearms and turntables, really cheap signal cabling is used - often too stiff. A typical example was the Linn. Such stiff cables simply by-pass the suspension, coupling the arm directly to the outside world. For me this is a mismatch. It's also an example of confusing what to care for and what not to care for. The internal wiring in an arm also needs to be really good. I'll mention no name but a well-known manufacturer of tonearms approached us to produce an internal arm cable but he wanted to pay no more than ten-pence a meter. I can't produce good wire for ten-pence a meter so I won't produce it at all. Now he buys our internal cabling but at that time he wouldn't spend the money. I said, "Shame on you, you sell your arms for £1500 or £2000 but you won't more than ten-pence a meter on the internal cables?"

**RG.** With the burgeoning interest in true mono replay of mono records, will we see a mono version of one of your cartridges?

**AJvdH.** So far it's something that I've not considered. I'm too busy with stereo to consider mono. It's not too difficult to make a mono cartridge but for me, at the moment, it's a little bit of a side corner in the market. I think I can make more people happy with a stereo cartridge than a mono one. That's the only reason. Certainly, it is technically not a difficult problem.

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