LONDON DECCA Cartridge

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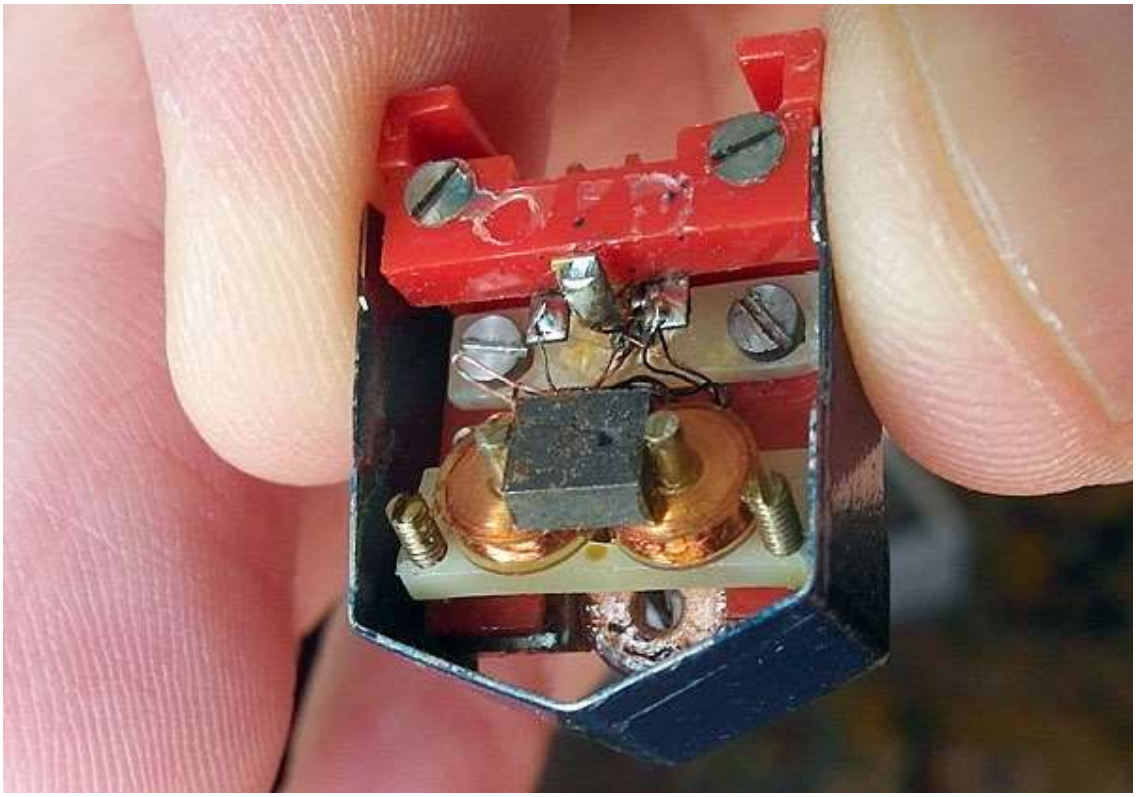
Listening #156

Art Dudley | Nov 24, 2015



Just as John Atkinson has a special telephone on his desk, by means of which the late J. Gordon Holt expresses his displeasure at this magazine's continuing decline into latitudinarianism, my own desk is littered with a dozen or so windup timers, each set to remind me how long it's been since I last wrote about this or that hi-fi eccentricity. Each timer has its own distinctive ring: The one labeled "LOWTHER" is a bit shrill, especially at certain humidity levels, while the one marked "QUAD ESL" can be heard to best advantage only when sitting in a particular spot—and even I have to admit that my "CARTRIDGE ALIGNMENT" timer seems to go off rather too often.

Last week, a moment of reverie was interrupted by the ringing of a bell I hadn't heard in a while: "DECCA CARTRIDGE." I stopped doing what I was doing—which, as suggested, was nothing—and got on the phone to Brian Tucker, of Pro Audio, Ltd., US distributor for London Cartridges, the trade name under which the present-day licensees of the original Decca cartridge design do business (footnote 1).

All right: I lied about the timers. (I did *not* lie about JA's red telephone.) What really happened was that I visited my friend George, to help him sort out his record player. George

had, for a while, lost the use of his right arm, and was unable to cue records without risking and occasionally causing severe damage to his cartridge. In the space of just over a month, two good cartridges had fallen victim, and now George was down to the last three working cartridges in his stable, all of them Deccas.

As it turned out, only one of the three was functional. I installed it on George's Rega Research RB300 tonearm, itself mated to a nice old Rega Planar 3 turntable. I couldn't recall if I'd ever before put a Decca cartridge in a Rega arm; for his part, George didn't recall which, if any, of his tonearms would best suit the semi-low–compliance Decca (see below). We didn't know what to expect. But I was knocked out: I knew well the sound of George's system, in which tube electronics drive a late-1980s pair of Quad ESL-63 electrostatic loudspeakers, and I'd never heard it produce anywhere near this level of touch and force and dynamism and sheer pep. Neither had George.

That was when I went home and called Brian Tucker.

Three goes into two

The seminal single-channel Decca phono pickup, which first appeared around 1958, is a moving-iron type: It traces the record groove with a stylus attached to an armature—L-shaped, in this case—made of magnetically permeable metal, the latter held within 1mm of a stationary coil, adjacent to which are two tiny, flat magnets, also stationary; the movement of the iron-like armature modulates the current induced by the magnet's flux lines, creating an electrical analog of the modulations in the groove.

The engineers in the Special Products division of Britain's greatest record company must have been pleased with their creation: That same design endures, virtually unchanged, to this day. But it endures as a *stereo* pickup—and that's a bit of an odd duck.

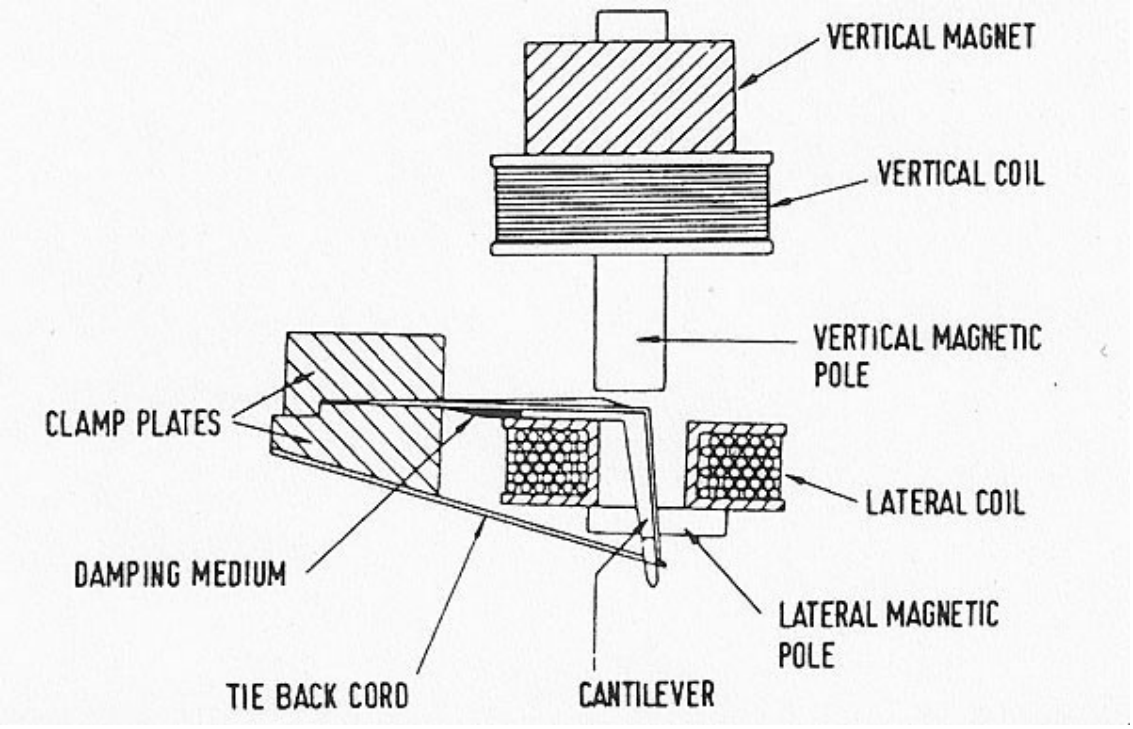
Throughout the phono-pickup industry of the late 1950s and beyond, almost all stereo cartridges have been designed with two separate, identical generators, of whatever technology, driven by a common stylus and compliantly mounted cantilever. Those elements were, and still are, constructed so that each generator responds to modulations on opposite walls of a V-shaped groove, each wall being at a 45° angle to the record's surface, and thus at a 90° angle to each other (*ie*, their relationship is orthogonal). That's stereo phonography in a nutshell.

But a Decca/London stereo cartridge is, in fact, a mono cartridge design modified to enable stereo playback. It has *three* coils: the coil that was part of the design all along, for turning purely lateral groove modulations into a signal, and two more coils added later, to produce a signal from only vertical motions of the stylus.

Getting stereo out of such a thing is tricky: On the one hand, the lateral coil produces a signal that is the sum of the electrical representations of both left and right channels: L plus R. On the other hand, reading a 45°+45° groove with a purely vertical generator produces a signal that represents the *difference between* the electrical representations of the left- and right-channel groove walls: L minus R.

The engineers at Decca Special Products took note of a simple mathematical relationship: By adding to the L+R signal the L–R signal, they wound up with 2L, which they directed to the cartridge's left-channel output pin. By subtracting, by means of antiphase, the L–R signal

from the L+R signal, they produced 2R, which went to the right-channel output pin. Thus, by means of sum-and-difference wiring, Decca produced a two-channel signal from a three-coil cartridge (footnote 2).



Clever though Decca's solution surely was, one can't help noting a couple of departures from perfection. For one thing, in the lateral generator of the Decca stereo cartridge, the coil is almost at the level of the groove—it nearly touches the record's surface—and the vertical leg of that L-shaped armature passes through its center: an ideal set of conditions. The vertical-plane generator of the Decca stereo cartridge doesn't match that ideal: It uses pole-pieces that straddle, rather than coils that surround, the lateral portion of the armature. (Thus, the Decca's vertical generator has slightly more in common with a variable-reluctance cartridge, which is a different animal altogether; in its lateral generator, the Decca is a purely moving-iron type.)

The other noteworthy idiosyncrasy of the Decca stereo cartridge derives from the mechanical rather than electrical differences between its two generators: Its stylus-armature assembly can move either laterally, which involves some degree of torsional bending, or straight up and down, but it is considerably less compliant in the vertical plane, thanks in part to Decca's use of a piece of very fine thread looped around the stylus shank and held taut, to restrain the armature's movement. (At first glance, that filament resembles a traditional cantilever, and is sometimes mistaken for same by newcomers to the breed.) One consequence is that the Decca cartridge exhibits different vertical and lateral resonant frequencies—meaning, among other things, that not every tonearm will mate perfectly with this distinctive little pickup.

The iron age

Never mind all that. The big thing about a Decca cartridge—probably the best, most revolutionary thing—is its lack of a traditional cantilever.

We've been taught that a magnetic cartridge generates electricity in proportion to the mechanical movement of its stylus, as it follows the modulations in a record groove. But the real story isn't quite so simple, owing to the length of its cantilever: a lever whose fulcrum is not at the midpoint of its length, but much nearer the generator than the stylus. The obvious consequence is that very large stylus excursions result in very small generator excursions, thus potentially compressing the recorded signal. Which ain't good.

Footnote 1: London Cartridges, c/o Presence Audio, Overdale, Haglands Lane, West Chiltington, Pulborough, West Sussex RH20 2QR, England, UK. Tel: (44) (0)1798-813133. Web: www.presenceaudio.com. US distributor: Pro Audio Ltd., 111 N. South Drive, Tower Lakes, IL 60010. Tel: (847) 526-1660. E-mail: proaudio@comcast.net.

Footnote 2: If I understand correctly, the great Alan D. Blumlein—who, in 1933, was awarded the first patent in the field of two-channel phonography—described a sum-and-difference disc-cutting system as the basis for his "binaural" format. A few years later, Arthur Keller, of Bell Labs, noted the qualitative differences between vertical and lateral cuts, and opted for a purely 45°+45° approach to both mastering and playback. In 1958, when Westrex came out with the first commercially practical stereo-LP technology, they based it on Keller's system.

Listening #156 Page 2

The Decca cartridge does indeed have a cantilever—if by *cantilever* one means *the thingie that goes between the stylus and the generator*—but it imposes no fulcrum between those two elements: A stylus excursion of, say, 1µm causes the moving armature in a Decca's generator to undergo a 1µm excursion. This aspect of their cartridge's performance was referred to by Decca Special Products as *positive scanning*, and they claimed that it resulted in a transducer that imposes far less dynamic compression than any other.

To test that claim, I asked Brian Tucker to loan me a current-production sample from London Cartridges—whose production chief, John Wright, was an engineer for Decca Special Products until 1989, when he bought the rights to manufacture the cartridges in his own facility in Shropshire. (Over a quarter-century later, the health-conscious Wright is still going strong: When he's not busy working as a hockey umpire, he does all of the manufacturing and repairing, while colleague Brian Smith, of Presence Audio in West Sussex, handles worldwide distribution and sales.) We settled on the London Maroon ($950), partly because it's the entry-level London, and partly because it's fitted with a spherical stylus tip, which I tend to prefer. (Most of the five other models in the London line, which range in price up to $5000, are fitted with elliptical or hyperelliptical styli.)

When my loaner London Maroon arrived, I set about comparing its design with that of an original Decca I have on hand—a nonfunctioning Decca Blue given me by the temporarily one-armed George. (I also accepted from George his similarly doornail-like Decca Gray and left it with The Soundsmith's Peter Ledermann, hoping it can be repaired.) The experience was like climbing a steep cliff and discovering, at the top, one of those plateaus where dinosaurs still live: Time had apparently stood still for these cartridges, which appeared identical. They had precisely the same dimensions, and appeared to be made of precisely the same materials—a light-gauge metal (tin?) for some parts, a distinctively old-style bright-red

plastic (polystyrene?) for others. The only differences were that the London's coil looked neater and better made, and that the unfathomable numbers at the output-pin end of its red plastic housing were written in ink. (On the original Deccas, the writing resembles dried mud.)

Installing a London cartridge requires a procedure unlike that for virtually any other cartridge, since its antecedent was designed for quick, easy mechanical and electrical attachment to the headshell of a proprietary Decca tonearm. Londons come with a plastic mounting bracket in the above-described red, made with a pair of threaded holes of the size and spacing needed for standard cartridge-mount screws. A recess at the rear of the cartridge snugs on to said bracket, which also translates the cartridge's three electrical contacts—the ground is common to both channels—into the usual four output pins. Though fans of making things "Linn-tight" are unlikely to be satisfied, I was perfectly pleased with this arrangement, which also adds much-needed distance between the tonearm's headshell and the decidedly non-tall (or short, or shallow, or however you want to say it) body of the London/Decca.

A final setup note: Neither its very low stance—itself a consequence of being cantileverless—nor its width make the London very easy to align, which makes the choice of a nonfussy spherical stylus seem all the wiser. Just sayin'.

With slight reluctance

The London Maroon had a point of view. It stressed detail, presence, touch, and texture. With any device so blessed, the temptation is to give it a steady stream of recordings that promise greater-than-average tactile delights—and up to a point, I did just that. I wanted to hear the tactile qualities of all the wonderfully weird renaissance instruments on Musica Antiqua Vienna's *Le Jardin Musical* (Supraphon 1 11 2126), and the rattle of loosely strung guitars on *Memphis Swamp Jam*, by Bukka White, Sleepy John Estes, *et al* (Blue Thumb BTS 6000),

and the multihued thwack of the tabla on Ravi Shankar's *Improvisations* (World Pacific 1416). With those and other LPs, the Maroon did not disappoint: Its sound was impactful, sometimes startlingly so, and often downright breathtaking.

But in the long run, the greater pleasures came from simply playing whatever I felt like playing, and hearing the sonic and musical surprises the London Maroon found in grooves I'd thought I knew. It was a treat to play the recording, by Paul Tortelier with Sir Adrian Boult and the London Philharmonic, of Elgar's Cello Concerto (EMI ASD 2906), and not only enjoy the tightly controlled force with which Tortelier approaches some note attacks, but also to hear more clearly than ever the distinction between the sustained F-sharp he plays at the end of a 10-note run, and the same note picked up, softly, by the massed cellos behind him. Even Elgar's subtler Introduction and Allegro for Strings, on the album's flip side, gave up new secrets: a pizzicato note here, bowing techniques there, and so forth.

And I had a pleasant reunion with *June 1, 1974* (Island ILPS 9291), which documents a Kevin Ayers concert in which the headliner's special guests came close to stealing the show, none more so than Brian Eno. Eno's "Driving Me Backwards," which opens the album, has Robert Wyatt on percussion, Archie Leggatt and Ayers both playing electric bass, John Cale on electric viola, and various keyboard instruments supporting Eno's synthesizer. Through the London Maroon, the two basses were distinct from one another, yet appropriately forceful when playing in unison on the downbeats—and the attack components of Cale's viola notes were particularly tactile, adding to this performance's very appropriate *drive*. Indeed, the whole album sounded wonderful: This cartridge found a whole new level of excitement, impact, and sheer fun in a record I'd thought I already knew.

I wondered: Would a stereo cartridge based this heavily on a single-channel design do a better-than-average job of playing mono records?

Yes and no, with an emphasis on yes. On the one hand, the London Maroon didn't ignore surface noise in the manner of a true mono cartridge: It didn't accentuate the ticks and pops of grooves that are contaminated with the baked-in badness of decades-old dirt or just plain worn, but it didn't shy from putting them across.

On the other hand, the Maroon was far better than most stereo cartridges I've heard at putting across the real dynamic juice of a good mono LP from the 1950s or '60s—such as Sonny Rollins's *Tenor Madness* (Prestige LP 7047). On that record's "Paul's Pal," Paul Chambers's double bass was brisk, agile, and tuneful, while "Philly" Joe Jones's brushed snare had the right snap and impact, and Sonny's tenor sax was richly textured and consistently engaging: a constant stream of nuance and melodic brilliance.

The London Maroon brought to every record I played, stereo or mono, a consistent sound—one in which the midrange was, for lack of a better word, *illuminated*. There was nothing bright about this cartridge's sound, yet midrange detail and midrange texture always grabbed my attention before anything else. And that was fine by me. The Maroon's treble seemed in good, natural balance with the rest of its range; I never felt I was missing anything in the way of air or sparkle, neither was I troubled by the sort of distracting zizziness I hear from some modern cartridges. The Maroon's bass range was dry and tight, and occasionally left me wanting just a little more. Then again, when compared with my EMT OFD-series mono pickups and their admittedly generous bottom ends, most other pickups can't help sounding a bit lean. To some extent, I suppose, my system is tuned with the EMTs in mind—speaking of

which, owing to the London's high DC resistance of 2k ohms per channel and its similarly high output of 5mV, I sent its output straight into the moving-magnet inputs of the Shindo Aurieges phono stage, without using a step-up transformer. (Remember, those mathematical formulae promise not just L and R, but 2L and 2R.)

And I think that I have yet to find the most compatible tonearm for the London (or maybe I have, and it was the medium-mass Rega RB300 back in George's apartment). I say that because, when measuring the Maroon with the *Hi-Fi News & Record Review Test Record* (Hi-Fi News HFN 001, which is precisely the catalog number I'd have chosen for it), neither my EMT 997 arm nor my review loaner of the Abis SA-1.2B seemed ideal. With the Abis-London combination, the lateral-resonance level peaked at 12–14Hz, the vertical resonance at 5–7Hz. The latter is too low for comfort—and, throughout the entirety of the lateral tests, the cartridge was a little wobbly. Still, that was better than the EMT-London combo: Lateral behavior was nearly identical to what I saw with the Abis, but a 9Hz vertical resonance was so severe that the stylus wouldn't stay in the groove; instead, it did a most disconcerting Woody Woodpecker kind of thing. I was done with testing for the day.

And remember . . .
A cartridge's ability to track records under everyday conditions, while vulnerable to the effects of arm-matching described above, is something else altogether. With the London back in the Abis SA-1.2B arm, which I suppose it preferred by a slight margin, I used good ol' HFN 001 to assess just that, beginning at the manufacturer-recommended vertical tracking force (VTF) of 1.8gm and eventually working up to 2gm. At the latter force, I discovered a level of tracking performance that was fair but acceptable—especially acceptable when optimized by adjusting the antiskating while listening. (Previous to this, I suppose I was insensitive to the appeal of adjusting bias on the fly.)

The prospective London Maroon owner should also note that a positive-scanning cartridge such as this *feels* different in use, noticeable in the lack of compliance with which it settles into the lead-in groove. Simply put, cueing records with a stiff-feeling Decca or London cartridge takes some getting used to. A positive-scanning cartridge can also be more easily tripped up by record warps great or small, for the same reason that cars without shock absorbers can, at speed, have trouble keeping all four tires on uneven pavement. And the Maroon's lack of compliance between stylus and generator accounts for yet another idiosyncrasy: Deccas and Londons are somewhat microphonic, and may transmit through your system the noises you didn't know your tonearm makes when it's being lifted away from and returned to its rest (footnote 3).

Idiosyncratic? Inarguably. And thus this tiny little cartridge embodies the greatest conundrum in perfectionist audio, one found at the heart of so many exceptional products: It sets out to excel in a truly vital aspect of playback, and in doing so pays a bit less attention to aspects of lesser importance. Technologically conservative audiophiles (a friendlier way of saying "nerdy twits") would have us believe that the Decca produces more distortion than do more conventional cartridges, but that's not true: The Decca offers a different balance of the many distortions with which we all must contend—*and it may well distort less overall.*

Compared to the London Maroon, most moving-coil cartridges—with the exceptions of very early Ortofons and the similarly early EMTs they inspired—sound compressed. Those distinctions will be important to some hobbyists, considerably less so to others, and that's all

well and good. We remain free to choose the distortions of least personal significance in order to revel in the strengths that matter most: a reasonable price to pay.

Footnote 3: And if your tonearm makes noises during normal record play, which it surely should not, I suppose you'll hear those, too.