

Stereophile Listening #38

Art Dudley, February, 2006

The Hartleys I wrote about last month may be the loudspeaker drivers that time forgot, but the venerable Lowthers of Sidcup, England, reign supreme as the horseshoe crabs of the loudspeaker world: strange, ungainly things that have scarcely changed since the days when Franz Schmidt and Robert Johnson walked the earth. Literally.

That's not the only reason the Lowther holds my imagination. Arguably more than any other, the classic 7" full-range Lowther is a driver whose potential has yet to be fully exploited. Surely I'm not the only person who's been charmed by their uncanny presence, clarity, and sheer musical dynamism—not to mention their ability to do all that with just two or three watts of amplifier power—yet put off by their weak bass and peaky lower trebles.

Enter the Danish audio designer Tommy Hørning, whose domestic speakers are among the most recent attempts at making a more perfect Lowther-based product. For two years running, his entry-level Perikles (\$8500/pair) has provided some of the most convincing music at Primedia's Home Entertainment shows, as you've no doubt read in this column and elsewhere. Now I've finally had a chance to try a pair of them in my own listening room (footnote 1).



The Hørning Perikles isn't perfect. There's congestion here and lumpiness there, and a lack of *ultimate* scale overall. But for a very efficient full-range speaker—a feat that itself seems to exhaust the talents of most designers who try—the Hørning Perikles does everything else at least acceptably well, and in some cases very well indeed. This may be the best off-the-shelf, high-sensitivity loudspeaker you can buy that's also of a reasonable size and price: at least as good as the Beauhorn Virtuoso and the Lamhorn, and possibly even better.

This shouldn't work The most critical aspect of virtually any Lowther-based design is its bass-loading scheme, and the Hørning Perikles is no exception. In the Perikles, a 7" Lowther driver fires toward the listener, two 9" woofers fire in the opposite direction, and the rear waves of all three play into something the Hørning website, www.horninghybrid.com, calls an H.D.A.Q.C.S., for Hørning Double Asymmetric Quarter Wave Cabinet/Enclosure System. At first jot, meaning no offense and noting that English is not the Hørning company's first language, the phrase seems nonsensical. Then the words *Quarter Wave* jump out, and seldom-used wheels begin to turn: P.G. Voigt, the Lowther engineer whose genius found flower in the most basic elements of their timeless designs, once created an enclosure that some adherents dubbed the Voigt Pipe. Other people tagged it with a more descriptive term: the Tapered Quarter Wave Pipe, or TQWP.

A TQWP is sometimes described as a cross between a transmission line and a horn, and I suppose that's true, depending on one's definition of *transmission line*. But it's a better idea—and a safer one, in snippy waters—to begin with the even simpler concept of the science behind literally *any* loudspeaker enclosure wherein the rear wave of a woofer plays into a tunnel or tube of considerable length and reasonably consistent cross section (noting also that soundwaves are dumb things that always travel in a certain way, regardless of where a clever designer tells them where to go, or what name he gives to the path he's laid out for them). As a reproduced tone descends in frequency, the size of its wavelength goes up, of course, and when this progresses to where the wavelength is so long that *half* of it is equal to the length of the tube, then the tone coming out of that tube is perfectly out of phase with the tone that went in. *But* because that tone entered the tube from the rear of the driver, and because the rear wave is perfectly out of phase with the front wave, then the bass tone coming out of the tube is perfectly *in* phase with the tone coming out of the *front* of the driver. The effect is additive, and bass reinforcement occurs, which is nice.

However: As the reproduced tone continues to descend in frequency, its wavelength becomes so large that a *quarter* wave is the same size as the length of the tube. This is where something interesting and altogether different happens: The movement of the woofer's diaphragm is impeded. Normally, I'd say that's not at all nice, but this is a different case: If you design the tube so that its length is equal to one *quarter* the wavelength size *at the woofer's resonant frequency*, then the impedance peak associated with that resonant frequency is drastically damped, and power transfer and bass response flatten out nicely.

Let's have a closer look at the Hørning Perikles and see if it fits the theory.

Like so many other contemporary loudspeakers, the Perikles is a good deal deeper than it is wide, but in this instance the depth is chosen to accommodate an unusual three-sectioned labyrinth. The rear section is formed by an interior MDF wall that slants away from the inside top of the enclosure, and which is also open to the rest of the interior at the top. The

front section is formed by a similar wall, also open at the top but noticeably taller than its forward counterpart. The center chamber is the space between those two interior walls, which also happens to be *open* at the bottom—what we'd call the *mouth* of a horn, if it were such a thing (and it may well be).

Let's return to the rear of the enclosure, where a pair of Spanish Beyma BR60 woofers, each nicely made with paper cones and butyl rubber surrounds, fire their rear waves into the Perikles' rearmost chamber. If you consider the rear and center chambers as a single, continuous tube of gradually widening bore, then what you have is a gradually tapered pipe with an effective length of about 74". And the resonant frequency of the Beyma BR60 woofer, according to the company's website, is 45Hz—a frequency whose quarter-wave is approximately 73.3" long. *Ka-ching*.

Because the very-low-frequency waves will follow the path of least acoustical impedance, it seems they'll tend *not* to load the front chamber, thanks to its taller interior wall and consequently smaller opening (although on that point I'm open to correction by more knowledgeable souls). And that raises the question: What, then, is the nature of the loading for that front-mounted Lowther, whose rear wave fires into the front chamber of the labyrinth?

Well, the area of the chamber below that driver isn't very large, and I suppose that, and the constricted opening at the top of the chamber, might allow it to function as the (high-pressure, high-acoustical-impedance) throat of a horn, again opening at the mouth at the bottom of the enclosure. The whole of the enclosure may also be seen by the Lowther as a tapered quarter-wave pipe of an effective length different from that of the pipe driven by the woofers—an effect mitigated by the fact that the more tightly suspended Lowther has a very different resonant frequency from the loosely suspended Beyma woofers. Maybe not quite *ka-ching*, but at least *Thank you, sir, and please come again*.

In other words, what we have here is your basic Double Asymmetric Quarter Wave Cabinet. I think.

You'll have to sew them back on first Tommy Hørning's Lowther driver of choice is the DX2, which uses a compact rare-earth magnet instead of the more generously sized alnico or ceramic magnets of the company's other, older versions. Before fitting a DX2 to a Perikles, Hørning treats the parchment-like cone with a damping compound, then performs an even more drastic modification: He removes the high-frequency whizzer cone altogether. And before you go complaining that a Lowther without the whizzer makes no more sense than bacon without the nitrites, let me remind you that some enthusiasts believe that the infamous Lowther shout—that lower-treble peak that keeps some music lovers away from the breed altogether—

has its origins in the way that the main cone and whizzer react with one another; *ie*, unpleasantly.

The Lowther whizzer was never all that great a propagator of high frequencies to begin with, and its contribution to the single-pointedness of the driver's dispersion may well be more than compensated for by its lack of stiffness and its relatively high mass—and consequent premature rolloff. So Hørning replaces it with a separate tweeter: a 1.75" plastic cone mounted in a three-part wooden subenclosure, the hardwood front of which is machined into a Tractrix horn curve (also appropriate, given that Mr. P.G. Voigt was also Mr. Tractrix). Thus the Lowther driver is relieved of all its chores except the one it does best.

There's a lot more going on in the Hørning Perikles than I could possibly cover in 3000 words, but one other technical detail deserves mention: The acoustical impedance of its quarter-wave tube—or at least the portion of it addressed by the woofers—is user-adjustable by means of a "variator," a fleshy-looking plug that screws in and out of an opening on the back. I hesitate to call that opening a *port* because that implies sufficient radiation resistance at the opening to actually contribute to the speaker's acoustic output, which didn't seem to be the case.

At least it wasn't the case in my 12' by 18' listening room—where, incidentally, the Hørnings preferred standing closer to the corners behind them than did my reference Quads. After their initial delivery and setup by distributor Jeff Catalano of High Water Sound, I spent a good deal of time using my AudioControl Industrial SA3050 spectrum analyzer to make sure I had the speakers working at their best—and in the process discovered that, regardless of their location in my room, the Hørnings exhibited a moderate response peak at 100Hz and a somewhat less severe dip at 2kHz. It also seemed that their bass response was more or less flat down to 63Hz—and was *usable*, in my opinion, down to 50Hz. Beyond that, changes in room position did little more than trade one pattern of mildly uneven midbass response for another (footnote 2), and to roll off the highs somewhat above 12.5 and 16kHz, depending on toe-in. My advice to the new Hørning Perikles owner is to position the speakers with more of an ear toward imaging and stage depth than for smoothness of response or ultimate bass extension; the latter seems beyond them, anyway.

I'd heard the Hørnings at Home Entertainment 2004 and 2005, and both times I came away from the experience thinking they were among the most musically communicative and emotionally expressive—if just a bit colored—loudspeakers I'd ever heard that were still capable of being driven by just a few watts of amplifier power. So imagine my surprise at hearing them sound, within minutes of their initial installation and with only the most casual attention paid to setup, both communicative *and* sufficiently uncolored in my home to at least merit some comparison to my Quads. *Whoa*, as they say.

Listening to a familiar old friend, such as Tony Rice and Norman Blake's recording of "Last Train from Poor Valley," from *Blake & Rice* (LP, Rounder 0233), was downright revelatory. Tony's voice wasn't timbrally perfect, and I think there was a very slight lack of energy in the highs—higher than where the Lowther shout, now banished, used to be—that made the singing just a little less *there* than with my Quads and other very-good-sounding speakers. But I could hear through the Hørnings, as much as through any speakers and more than through most, that Tony and Norman were performing *together*, as in *live*. And their instruments had bodies, even if they didn't have quite the sense of scale as with the Quads: They were tangible—Tony's old Martin, in particular, seemed closer to the listening seat than usual. And the picking had real human *force*, which distinguished Tony's signature cross-picking sound from what might otherwise have seemed just an arpeggiated chord. The playing leaned forward, in the best and realest way.

Moving to something a bit larger in scale, the violins in Carl Schuricht and the Vienna Philharmonic's recording of Bruckner's Symphony 9 (LP, EMI ASD 493) sounded sweet and well-textured and similarly present; more important, the playing was dramatically nuanced, with a hard-to-describe sense of touch and humanness. And the pitches and pitch relationships were dead-on. Again: *Whoa*.

Darned if I know why Some enthusiasts think that good stereo imaging is what happens when a musical sound comes from a place in the room that doesn't seem to correlate with the position of a tweeter. I suppose there's some truth in that. Heard in that light, the Hørnings imaged quite well—again, especially in the context of products that are very efficient, that exist to make *music*, and that don't seem to give a damn about anything else. With the Hørnings toed straight in toward the listening seat—the only way to do it with these guys, I think—I heard the first-row strings in Dutoit's unexpectedly lovely recording of Mendelssohn's *A Midsummer Night's Dream* (CD, London 417 541-2) form an almost perfect **V** that was nowhere near the speakers themselves in terms of either their lateral positions or their distance from my seat. Still, the texture and richness (if not accuracy) of tone of those strings was as good as I usually hear from my Quads. And still, the system made music.

The Hørnings also had a nice way with musical scale, at least within the constraints implied by their less-than-enormous size. (The Perikles is the smallest loudspeaker in Hørning's H.D.A.Q.C.S. line.) My Quads pretty much always sound big, but the Hørnings were good at sounding small *or* big, as needed. For the first time in a while I revisited Paul McCartney's pleasant if inconsequential 1996 album, *Flaming Pie* (LP, Capitol CI 7243), which happens to be very well recorded and mastered. The lighter numbers in particular, such as "Great Day," showed off the Hørnings' nice way of presenting smaller-scale music, and even on larger numbers—the upbeat jam "Really Love You," for example—the after-the-fact instrumental and vocal overdubs stood up between the speakers with a sense of both scale *and* clarity that any reasonable listener would consider first-rate.

Piano music was a mixed bag. The Hørning was capable of reproducing that good sense of humanness—and, of course, its musical flow was superb, and untroubled by any hint of mechanical sound. But dependably neutral piano recordings exposed the Hørning's mid- and upper-bass registers as a bit uneven in their frequency response, as on Murray Perahia's 2001 disc of Chopin's *Études*, Op.10 and 25 (CD, Sony Classical SK 61885).

In my room, the Hørning Perikleses sounded righter in every way with their "variators" closed all the way or open just a tiny bit: That's certainly how the Hørnings did pitches the best—and rhythms, and timbres, and the lot of it, notwithstanding a beguiling increase in scale with the plugs removed altogether. If you hear them at a store or a show and you're not impressed, don't write off the Hørnings without checking those adjustments first; the differences are not at all subtle.

Final observations All in all, I was very impressed with the Hørning Perikles, which succeeded at so many of the things I consider crucial to music playback. You can find any number of loudspeakers in the general area of their \$8500/pair price that have more extended and more transparent trebles; heaven knows you can find speakers with better bass extension and *much* better bass clarity and neutrality. But I have yet to hear one with quite this combination of musical *and* sonic strengths, alloyed with the kind of efficiency that allows the use of virtually any low-power amplifier.

I've been teaching my wife how to play the mandolin, and at the end of a recent session I delayed her return to the scullery with a typically male dumb stunt: I asked her to close her eyes and listen for the differences between an acoustic guitar with a mahogany body (1962 Martin D-18) and one of identical size and shape but with a body made of Brazilian rosewood (1999 Santa Cruz Tony Rice dreadnought). I asked her to describe the differences, and she did so perfectly, observing that, as different as they are, she liked them equally well. Then she said, "They're like Quads and Lowthers: I think you really need to have both."

I've said it before and I'll say it again: I married the right girl.

Footnote 2: Actually, that's not quite true: I found that, given the choice between being close to the sidewalls and far from the rear wall, or vice versa, the Hørnings were consistently slightly smoother when they were getting their bass reinforcement from the sidewalls. But in that case, center fill suffered so much that I didn't really consider it, or consider recommending it, with any degree of seriousness.