

## **STEREOPHILE 11/2003**

### **The Fifth Element #12**

*John Marks, October 2002*

The subject was horses' fannies.

You certainly are to be forgiven if you have jumped to the conclusion that Jonah Goldberg (footnote 1) and I were discussing Ted Turner and Alan Dershowitz, after consoling ourselves with overgenerous allotments of nature's amber-hued liquids. Strangely enough, that was not the case. (I'm not claiming that that has never happened, but it is a different horses'-fannies discussion I presently have in mind.)

Perhaps someone has forwarded to you the lengthy e-mail item that starts out by claiming that the U.S.-standard railroad-track gauge of 4' 8?" derived from the track width of the British-standard railroad car. British railroad-car track width in turn (so the story goes) was based on existing coal-mine tramways. That width came about because the tramway cars were supposed to have been built using the same jigs as roadgoing wagons and carts. Cart- and wagon-track widths had previously become roughly standardized so the vehicles would not break apart on rutted roads (footnote 2), some of which were Roman roads then still in use in Britain. Those Roman road ruts were made by Roman carts, which were designed to be pulled by a side-by-side two-horse team.

The punchline being that behind every engineering standard are at least a couple of horses' fannies. Ha ha.

Some versions of this story have Julius Caesar himself mandating the odd standard of 4' 8?" for "Roman war chariots." That is an anachronism. By Caesar's time, chariots were used almost entirely for sport and entertainment (footnote 3). The tale is based on established facts, but selective emphasis overstates the case. Yes, Stephenson-gauge rolling stock from Britain was imported into the United States in the early 1800s. No, for many years the U.S. did not have one standard railroad gauge. Indeed, one advantage that the Union had over the Confederate States was that in the North, gauge conflicts were usually between different regions, with the oddball gauges confined to places like Maine, while in the South, incompatible gauges often competed to serve the same important centers. After the North won, the South's destroyed rail beds were rebuilt to the Northern gauge.

Yes, 4' 8?" is not an intuitive width to choose. No, Julius Caesar had nothing to do with it. The standard track width started out from the eminently reasonable traditional cart-and-wagon track of about 5', and for all we know coal trams may have been built on coach jigs. But for rail use, you have to deduct the width of the two 2"-wide rails, which leaves 4' 8". Railroad pioneer George Stephenson then cannily added half an inch to allow for up to ?" out-of-trueness on each flanged wheel. Voilà. Caesar's ghost can now go back to sleep.

Rather than claiming that behind every engineering standard there lurk a couple of horses' fannies, I'd prefer to think that behind every engineering standard there probably is a good story, some of which might actually be true.

What set me wandering in this direction was my pondering the defiantly anti-trendy size and shape of Harbeth's top-of-the-line Monitor 40 loudspeaker (\$6949/pair). The past several years have witnessed the development of many loudspeaker designs that seek to minimize their apparent bulk, while dispensing with the need for separate stands. The usual way this is done is to make a tall, narrow, but deep floorstanding column, with the tweeter and midrange at the top of the narrow front face, and the woofer or woofers on the deep side face. The first speaker with this configuration that I can recall seeing was the Audio Physic Virgo, a later version of which Michael Fremer reviewed in the September 1995 *Stereophile* (Vol.18 No.9).

I agree with Michael (and his water-heater repairman) that the Virgos excel at imaging, and that they really do not call attention to themselves as sound sources. Some of this, I am sure, is attributable to the narrowness of the Virgo's front baffle, which is only 6.3" wide. The woofers are positioned on either side of the cabinet's 16.3" depth, while the Virgo's height is almost 40". This is—to be sure—a nonintuitive shape. You can see why it took considerable time before someone puzzled it out.

In stark raving contrast, the shape and bulk of Harbeth's Monitor 40 are close to that of a standard two-drawer filing cabinet. Each speaker is 29.5" high by 17" wide by 15.75" deep, and weighs 86 lbs. Make that a standard two-drawer filing cabinet full of files. Separate and quite sturdy stands are most certainly required.

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Footnote 1: Jonah is the editor of *National Review Online*. I often wonder what William F. Buckley, Jr. thinks of Jonah's frequent allusions to *Star Trek*, Budweiser, and low-budget movies.

Footnote 2: Circa 1912, the Ford Motor Company offered the Model T in a wide-track (60") "Dixie" version for use on rutted, unpaved Southern roads.

Footnote 3: The best debunking of this urban legend is found at this website.

You will be shocked—*shocked*—to learn that the Monitor 40's dimensions are not likely to change soon—or ever, in fact. That is because Harbeth's Monitor 40 was engineered as a drop-in replacement for two horses' fannies.

Strike that.

The Monitor 40 was engineered as a drop-in replacement for the British Broadcasting Corporation-standard LS5/8 recording studio and broadcast monitor. "BBC-standard monitor" is a phrase that can make true believers stand up and begin singing "God Save the Queen." I understand why.

I still recall—almost as clearly as if it were yesterday—the first time I heard the BBC-designed LS3/5A, the shoebox-sized (12" by 7" by 7") smallest of the clan. It was at Nicholson's, in Nashville, Tennessee, in spring 1979. For the first time, I heard from a box loudspeaker the clarity and speed I had previously heard only from panels. The punchiness of the sound was a revelation as well. I even recall the first cut I heard:

an RCA LP of a Fasch trumpet concerto played by Maurice André. McIntosh electronics, if I recall correctly.

The LS3/5A was then priced at \$695/pair, at a time when the completely serviceable I.M. Fried Q was \$250/pair. To put those figures in a wider perspective, the Dow-Jones Industrial Average was then hovering around 825. Seriously. The LS3/5A's 1979 price of \$695/pair would be \$1699 in today's dollars. Harbeth's current LS3/5A drop-in substitute is the Monitor 20. Its consumer version, the HL P3ES, is \$1129/pair. Good show!

Back then, I had a bad case of acquisitive lust for a pair of LS3/5As, but could not afford them. In retrospect, perhaps if I'd bought them, I might have kept them instead of spending years on the "upgrade" merry-go-round. But probably not. Minimonitors that were developed to keep track of what news broadcasters were saying just can't do justice to Brahms' *Ein deutsches Requiem*, let alone Janáček's *Glagolitic Mass*.

The BBC minimonitor came about almost by accident. The BBC's research department had for many years carried on a program of basic research in acoustical phenomena. One of their research tools (it continues to be used today) is the three-dimensional scale modeling of architectural spaces. Constructing a 1"-to-1' or even one-eighth-scale model of a room or performance space allows you to make "real" acoustical measurements—as distinct from computational predictions—of the influence of varying room dimensions, shapes, and surface materials.

But, of course, accurate scale-model acoustical simulation of a real space requires that the wavelengths of the sounds being generated and measured be scaled proportionally to the model. Shorter wavelengths mean higher frequencies. For example, using an inch-scale model to predict room behavior in response to middle C (about 262Hz) would require a highly accurate sound source at 3144Hz. Concert A (440Hz) requires accurate reproduction of 5280Hz, and so on.

By the mid-1970s, the BBC had developed a test loudspeaker small enough to fit inside an architectural scale model, and with frequency response accurate and extended enough to model far lower frequencies. I have always wondered whether, in the interest of complete accuracy, they peopled the architectural scale models with Weeble-sized figures, the women wearing furs and the men looking bored. (There do exist data and formulae with which to predict the acoustical effects of an audience's being present.)

As fate would have it, a curious soul wondered how the speaker might sound outside of the scale model, playing music rather than test tones. The results were sufficiently memorable that when the Outside Broadcast engineering department asked the Research Department to design a small nearfield monitor speaker to be used in remote radio and television broadcast vans when headphones might be impractical, "Ah-ha," if not "Eureka!," was in the air. The prototypes were ready within a week, and the rest is history. It has been estimated that more than 79,000 pairs of LS3/5As were built under official BBC license (production ended in 1998). Who can guess how many knockoffs, clones, and wannabes have been sold?

However, it also must be firmly borne in mind that the BBC intended production LS3/5As for broadcast-content quality control on speech, not as a music balance monitor (footnote 4). For music monitoring, the BBC developed the medium-sized (18" by 11" by 11") BBC LS5/9 and the large LS5/8. The Monitor 40 is Harbeth's LS5/8 for today (footnote 5).

A fascinating book could be written—I hope someone gets going on it soon—about the contributions the BBC made to audio engineering in general and home playback in particular. I have tremendous respect for the dedication and integrity with which those people carried out their tasks.

One remarkable aspect of the BBC's research program was that the BBC licensed out all speaker manufacturing to private companies. One such company, Harbeth, was founded in 1977 by former BBC engineer H.D. (Dudley) Harwood and his wife. Harwood, M.E. Whatton, and R.W. Mills share the credit for the finished design of the LS3/5A (BBC Research Department report number RD 1976/29, October 1976, available for download as a pdf).

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Footnote 4: You can get the *BBC World Service News* on RealAudio through your Web browser.

Footnote 5: "LS" is the BBC's equipment designation for "loudspeaker." The number to the left of the slash designates intended use, "3" being Outside Broadcast and "5" being Studio. The number to the right of the slash designates the model (chronologically, and not by size), while the "A" designates a revision. [*To confound typesetters, the "A" is in upper case but subscript—Ed.*]

Harbeth still services original LS3/5As, but, under the management of designer Alan Shaw, refuses to be stuck in the past—a quick trip to their website, the best of any speaker manufacturer I have seen for completeness of information, shows this.

Harbeth's "unique selling proposition" is their claim of significant materials improvements for their best midrange driver over the usual polypropylene—slightly ironical, in view of the fact that Harwood himself patented the use of polypropylene in speaker cones many years ago. Harbeth not only makes their own midrange driver, they formulated and manufacture the patented "Radial" plastic from which it is molded.

Despite a small coterie of enthusiastic owners in the US, reestablishing Harbeth in the US market after several years of no official presence has been slow going, in part due to the BBC's having ordered large numbers of new speakers to upgrade *World Service News* facilities post-September 11. Indeed, inducing North American agent Garnet Lewis (footnote 6) to part with a review pair has been a three-year campaign, demand always having outstripped supply. He ended up shipping me his personal pair.

So, we have a defiantly anti-trendy, relatively inefficient (86dB), expensive (\$6949/pair), and unusually large box loudspeaker that needs robust stands.

Driver complement is a 1" silk-dome tweeter, an 8" midrange, and a 12" woofer. The sturdy, handsomely veneered (cherry) cabinet has two small front ports, and triwire terminals on the back. Does the Monitor 40 sound as if it's worth the money? Should you add it to your audition list? "Yes" and "It depends."

Without question, even the briefest auditions of favorite recordings tell me that, true to its heritage, Harbeth's Monitor 40 combines articulate detail with context and continuity to fashion a very engaging and musical presentation. The high frequencies are all there, but do not call attention to themselves as such. The bass is adequate when called upon, but does not make its presence known as an overall coloration (the 12" woofer rolls off above 200Hz).

Playing a CD of high-quality radio commercials demonstrated enviable midrange timbral trueness on speaking voices. Female vocals—from Ella Fitzgerald to Frederica von Stade to Mary Black to Anita Baker—had natural richness and warmth that soon became addictive. The (human) speaker's voice on that most English of works, Vaughan Williams' *An Oxford Elegy* (EMI 5 67221 2), was spellbinding. Harbeth claims that the perception of a very even power response through the midrange and treble is attributable in part to making the voice-coils of the tweeter and midrange the same diameter. Fascinating.

Well-recorded orchestral music was equally involving. Well-recorded piano was clear but not fatiguing. The Monitor 40 strikes what feels to me like the right balance between musical phenomena and epiphenomena—Gould's piano playing vs his singing.

Is it for you? I can't say. Pros: Class-leading midrange, wonderful overall musical presentation, quality of craftsmanship, and taking part in a great tradition. Cons: It's not cheap. Good stands required. The 40 requires at least 100W of clean power with adequate current and damping factor. (I used Plinius' splendid new SA-102 power amp and CD•LAD line stage, and was captivated.) The Monitor 40s also tend to visually dominate even a large room, especially when placed to obtain the most even bass response.

All that said, there's something organically satisfying about the Monitor 40, especially on classic female vocals such as Ella Fitzgerald "Easy to Love." The Monitor 40 has been the ticket off the equipment-upgrade merry-go-round for many experienced listeners. At the end of the day, whether or not it's the speaker for you may just depend on whether or not you're the kind of person who can take "Yes" for an answer.

Thumbs up? Thumbs down?

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Footnote 6: Winter Tree Audio, 6967 Bayers Road, Unit 1115, Halifax, Nova Scotia, Canada B3L 4P2. Tel: (902) 454-9253. Fax: (902) 454-0766. Web.

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