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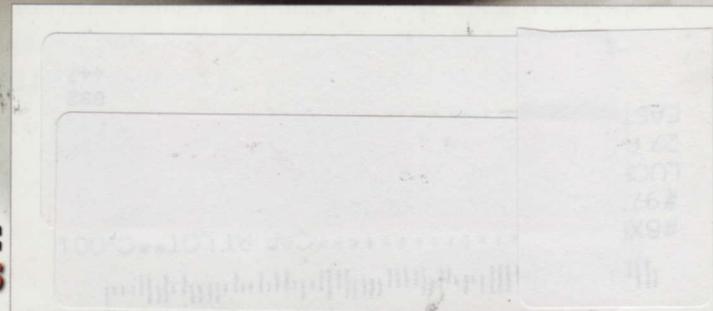
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ROBERT J. REINA

# Bowers & Wilkins CM5

LOUDSPEAKER



ALL PHOTOS: BOWERS &amp; WILKINS

**W**ith all the affordable loudspeakers I've written about in recent years, I couldn't remember the last time I reviewed one from the revered British firm Bowers & Wilkins. When I searched [www.stereophile.com](http://www.stereophile.com), I learned that the last time a B&W speaker had graced my listening room's carpet was more than seven years ago: the DM603 S3, reviewed in the August 2005 issue. I thought it was time to revisit the brand, and as the DM603 S3 was a floorstanding speaker, this time a bookshelf model seemed in order. But despite B&W's prowess in that most-affordable speaker size, I was in the mood to listen to a *serious* bookshelf speaker—not quite something in the league of their 805 Diamond (\$5000/pair), but something between the flagship 800 Diamond series and B&W's entry-level 600 series. The midline CM series, comprising four models ranging from \$1000 to \$3000/pair, seemed to fit the bill. The CM1 (\$1000/pair) looked interesting, but I was more intrigued by its newer, slightly larger sibling, the CM5 (\$1500/pair), which is designed to handle more power and go deeper in the bass.

## Designing

According to B&W's product manager, Mike Gough, the CM5 was designed as a step up from the CM1 in sound quality while still meeting the requirement of "generating excellent sound levels in confined spaces." The CM5's 1" aluminum-dome tweeter is tube-loaded, a technology pioneered in B&W's Nautilus series. The tube is intended to help absorb and damp any rearward-traveling vibrations that might color the sound. The CM5's 6.5" mid/woofer of woven Kevlar is impregnated with a stiffening resin, then coated with polymer to seal and damp the fibers. The surface of B&W's rear-firing Flowport

## SPECIFICATIONS

**Description** Two-way, stand-mounted, reflex-loaded loudspeaker. Drive-units: 1" (25mm) aluminum-dome tweeter, 6.5" (165mm) woven-Kevlar woofer. Frequency range: 45Hz-50kHz, -6dB. Frequency response on reference axis: 52Hz-22kHz, 43dB. Sensitivity: 88dB/2.83V/m. Harmonic distortion:

second and third harmonics (90dB/m): <1%, 100Hz-22kHz; <0.5%, 150Hz-20kHz. Impedance: 8 ohms nominal, 3.7 ohms minimum. Crossover frequency: 4kHz. **Dimensions** 13.4" (340mm) H by 7.8" (200mm) W by 11" (280mm) D; including grille and terminals, 11.9" (301mm) D. Weight: 19.6 lbs (8.9kg). **Finishes** Wenge, Rosenut,

Gloss Black.

**Serial numbers of units reviewed** 0033459, 0033460.

**Price** \$1500/pair. Stands, \$400/pair. Approximate number of dealers: 200. Warranty: 5 years, limited, nontransferable.

**Manufacturer** Bowers & Wilkins, Dale Road, Worthing, West Sussex BN11

2BH, England, UK.

Tel: (44) (0)800-232-1513.  
[www.bowers-wilkins.co.uk](http://www.bowers-wilkins.co.uk).

US distributor: B&W Group North America, 54 Concord Street, North Reading, MA 01864. Tel: (978) 664-2870. Fax: (978) 664-4109. [www.bowers-wilkins.com](http://www.bowers-wilkins.com).

is dimpled to reduce friction between the port and the air passing over it, and thus eliminate chuffing.

The CM5 is biwireable with two sets of binding posts. Magnetically attached grilles are included. I left these off; the drivers' nakedness slightly enhanced detail and transparency, and did nothing to detract from the speakers' beautiful real-wood veneer. My review samples were drop-dead gorgeous in rosenut, despite the CM5's conventional shape: a rectangular prism with sharp edges. (The speaker is also available in wenge or gloss black.) Although B&W offers the CM stand in black brushed aluminum (\$400/pair), I used my trusty Celestion Si stands, loaded with sand and lead shot.

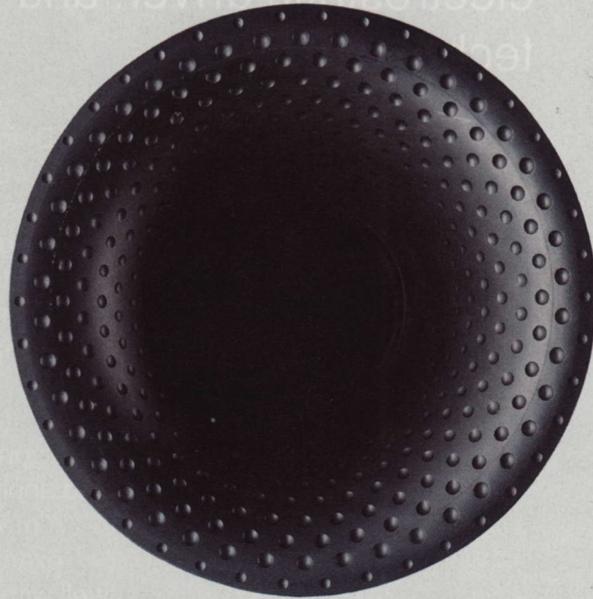
### Listening

Right out of the box, with all of the first dozen or so recordings I threw at them, the CM5s evinced four remarkable strengths:

*Detail Resolution, Transparency, and Noise Floor:* As the music emerged from a silent black space with copious, transparent room sound, familiar recordings revealed inner instrumental details that I hadn't noticed before. It was easy to get lost in the music; these speakers made it effortless for me to pick out every subtle nuance in the performance.

*Transient Delicacy and Speed:* The CM5 was able to reproduce lightning-fast transients with never a sense of sharpness or of a mechanical quality. Every transient seemed to float on its own bed of air, as in a live performance.

*Huge Dynamic Envelope:* Although the CM5's articulations of detail and transients went hand in hand with its ability to unravel low-level subtleties, it was its strengths at the opposite end of the dynamic range that knocked me for a loop. With all recordings I listened to, the speaker handled fortissimos as



The dimpled "Flowport" treatment results in non-turbulent airflow.

if it were a large floorstander: with nary a hair of compression or strain.

*Neutrality:* With one minor exception on certain recordings (see below), the speaker reproduced a dead-neutral balance throughout its frequency range, with coherent integration of high-frequency, midrange, and bass timbres.

Here's the greatest compliment I can pay the CM5: When

## MEASUREMENTS

I used DRA Labs' MLSSA system and a calibrated DPA 4006 microphone to measure the Bowers & Wilkins CM5's frequency response in the farfield, and an Earthworks QTC-40 for the nearfield and spatially averaged room responses.

My estimate of the CM5's voltage sensitivity was 87.5dB(B)/2.83V/m, which is within experimental error of the specified 88dB. The CM5 is specified as having a nominal impedance of 8 ohms with a minimum value of 3.7 ohms; fig.1 confirms the specification, and reveals

that the minimum impedance occurs at the top of the audioband, where there will be little musical energy. Though the electrical phase angle varies widely, the impedance magnitude tends to be high at the most extreme phase angles, ameliorating the negative effect of the phase angle. The saddle centered at 48Hz in the impedance magnitude (solid trace) suggests that this is the tuning frequency of the flared port on the rear of the enclosure. Plugging this with the supplied foam cylinder resulted in an impedance plot typical of a sealed

enclosure (not shown), with a tuning frequency of 76Hz. When the CM5 must be placed close to the wall behind it, it will work best with its port plugged.

There is a small wrinkle at 30kHz in both impedance traces; this will be due to the aluminum-dome tweeter's fundamental diaphragm resonance. Another discontinuity is visible between 900Hz and 1kHz, behavior I expected to correlate with an enclosure resonance of some kind. However, while investigating the cabinet's panels with a simple plastic-tape accelerometer did uncover a strong vibrational resonance at 414Hz that could be detected on all surfaces (fig.2), there was nothing significant higher in frequency.

Looking at the nearfield response of the port (fig.3, red trace), a peak can be seen just below 1kHz, but this is well down in level. Other than that, the port is well behaved, with a textbook bandpass response centered on 48Hz, the frequency of the corresponding minimum-motion notch in the woofer's output (green trace). The woofer's higher-frequency response is fairly flat before crossing

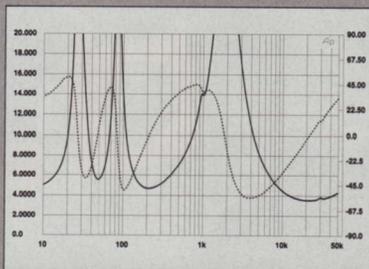


Fig.1 Bowers & Wilkins CM5, electrical impedance (solid) and phase (dashed) with port open (2 ohms/vertical div.).

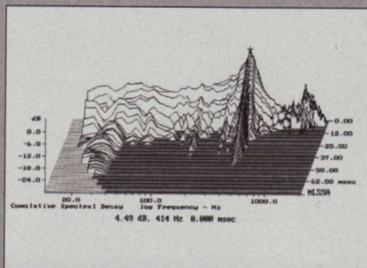


Fig.2 Bowers & Wilkins CM5, cumulative spectral-decay plot calculated from output of accelerometer fastened to center of side panel (MLS driving voltage to speaker, 7.55V; measurement bandwidth, 2kHz).



Like B&W speakers going back to the DM6 from 1976, the CM5's woofer uses a woven Kevlar cone.

I listened to each of three of my favorite recordings in its entirety, I experienced a level of pleasure and involvement that was beyond my experiences of these records with most other loudspeakers. George Crumb is my favorite classical composer, and for me, the recording of his *Makrokosmos III: Music for a Summer Evening*—by Gilbert Kalish and James Freeman on amplified pianos, and percussionists Raymond Des Roches and Richard Fitz—is definitive (LP, Nonesuch 71311<sup>1</sup>).

<sup>1</sup> The sound quality of this 1974 recording is impeccable, though the surfaces of my LP are noisy. I fantasize that someday it will be issued on vinyl once again, by Chad Kassem's new audiophile pressing plant, Quality Record Pressings, in Salina, Kansas. If you do, Chad, I'll order 20 copies.

In 1979, I was blessed to have attended a performance of the work by these musicians in New York City, followed by a question-and-answer session with the composer. According to Crumb, the pianos are amplified not to distort or to otherwise

**I experienced a level of pleasure and involvement that was beyond my experiences of these records with most other loudspeakers.**

alter their sound, but to give each instrument the dynamic range of a full orchestra. *Makrokosmos III* is replete with air and space—silences followed by delicate, barely audible textures or crushing fortissimos. Listening to this work through the CM5s, what floored me was the speakers' articulation of the densely modulated high-frequency flourishes that Crumb frequently scores for the percussion and the pianos' upper registers. As I noted while listening: "High-frequency transients. My God!!!" Although I thought I knew the sound of my Clearaudio Virtuoso Wood moving-magnet cartridge, for the first time, through the CM5s, it seemed to resolve transients like an expensive moving-coil.

like an expensive moving-coil.

The title track of King Crimson's *Larks' Tongues in Aspic* (UK LP, Island ILPS 9230) has textures similar to that of the Crumb work, in that subtle, delicate figures emerge from silence and culminate in sudden fortissimos. The piece opens with percussionist Jamie Muir's subtle noodlings, which get denser as the music swells to the climactic opening statement of the melody. This passage blasted through the CM5s with

#### measurements, continued

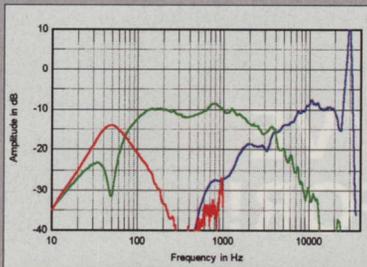
over to the tweeter (blue trace) at the specified 4kHz. However, it appears from fig.3 that the CM5 uses a slow-slope crossover, perhaps 6dB/octave. I have extended the horizontal scale of this graph to 40kHz so you can see the effect on the response of the tweeter's "oil-can" resonance. There is a 20dB-high peak at 30kHz. Fortunately, this resonance lies 5–7kHz higher in frequency than is usual for an aluminum-dome tweeter, and it won't be excited with CD playback. In playing back LPs with a moving-coil car-

tridge, however, the resonance will be set in motion by ticks. It will also be excited by high-resolution digital playback, with an unpredictable effect on sound quality within the audioband.

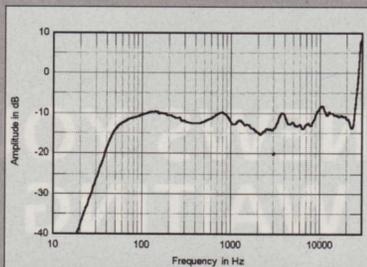
Fig.4 shows how these individual responses sum in the farfield on the tweeter axis, averaged across a 30° horizontal window. There is only a trace of the usual nearfield upper-bass response hump, suggesting that the CM5 has a somewhat overdamped low-frequency tuning. While BJR did comment on "a

slight thickening in the upper bass that called attention to that range," I suspect that he was actually responding to that strong cabinet resonance at 414Hz rather than to a problem with the woofer. Higher in frequency, there is a slight lack of energy just below the crossover point; all things being equal, this would lend the B&W a rather laid-back quality. However, it would also make the speaker kind to overcooked rock recordings.

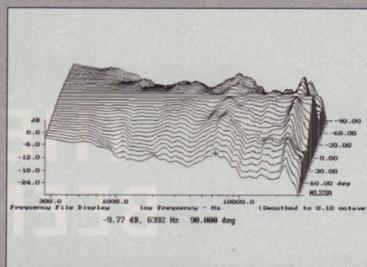
The CM5's horizontal dispersion on the tweeter axis (fig.5) reveals a well-



**Fig.3** Bowers & Wilkins CM5, acoustic crossover on HF axis at 50°, corrected for microphone response, with nearfield responses of woofer (green) and port (red) respectively plotted below 350Hz and 1kHz.



**Fig.4** Bowers & Wilkins CM5, anechoic response on HF axis at 50°, averaged across 30° horizontal window and corrected for microphone response, with complex sum of nearfield woofer and port responses plotted below 300Hz.



**Fig.5** Bowers & Wilkins CM5, lateral response family at 50°, normalized to response on HF axis, from back to front: differences in response 90–5° off axis, reference response, differences in response 5–90° off axis.

no trace of compression or strain. Moreover, as the louder passages grow more densely active, it was easy to pick out the subtle interaction of percussionists Muir and Bill Bruford, which, through lesser speakers, is buried under guitarist Robert Fripp's loud, distorted playing on his Les Paul.

Next year I'll be making a concert recording with my jazz quartet, Attention Screen, in which I'll trade in my piano for a recently refurbished pipe organ in a church with a wonderful acoustic. In preparation, I've been researching the 20th-century organ repertoire, with emphasis on works by György Ligeti, Olivier Messiaen, and Petr Eben. In *Volumina*, my favorite of Ligeti's works for organ, he stretches, harmonically and dynamically, what is possible to be produced by a pipe organ. Not only does the work test the frequency extremes of the instrument and create barely audible textures, as well as pull-out-the-stops fortissimos; Ligeti also creates unusual dissonances and unique timbres with partially opened stops. Listening to Gerd Zacher's recording of the work (LP, Candide CE 31009), I was in awe as the groaning, dissonant crescendos filled my smallish listening room. I was able to follow each note in the score, despite the density of the most difficult sections. The highest frequencies were reproduced by the B&W CM5s with crystalline clarity, extension, and air; the little speakers seemed not bothered at all at being asked to reproduce realistic pedal tones and volume levels.

But "simple" music, too, shone through the CM5. The speaker's detailed and dead-neutral midrange made it a natural match for pop vocal recordings. I was able to follow and enjoy Bob Dylan's every subtle vocal inflection in his "Desolation Row," from *Highway 61 Revisited* (LP, Columbia 9189). The three-part harmonies in "Mr. Spaceman," from



The aluminum-dome tweeter is loaded with a transmission line.

the Byrds' *Fifth Dimension* (LP, Columbia/Sundazed 5059), had a rich, silky, angelic, three-dimensional quality. And in "(You Make Me Feel Like A) Natural Woman," from her *Tapestry* (LP, Ode SP77009), I noticed inner details in Carole King's voice that I'd never heard before.

The CM5's high-frequency extension and purity enhanced my enjoyment of well-recorded jazz. In *Miles Davis and the Modern Jazz Giants* (LP, Prestige 7150), the master's trumpet had just the right amount of metallic bite—but I was more impressed by the B&W's reproduction of the shimmering ring and decay of every mallet stroke dealt by vibist Milt

#### measurements, continued

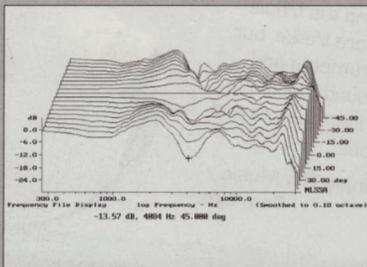
controlled radiation pattern; the apparent off-axis flare shown by the cursor position at 6.4kHz is actually due to the small suckout centered at this frequency in the on-axis response filling in to the speaker's sides. In the vertical plane (fig.6), the use of a low-order crossover with a lot of overlap between the drive-units leads to significant modifications as the listener moves above and below the tweeter axis. However, this graph suggests that the flattest treble balance will be heard when the listener's ears

are slightly above the tweeter, which in turn suggests that low stands will work better than high ones.

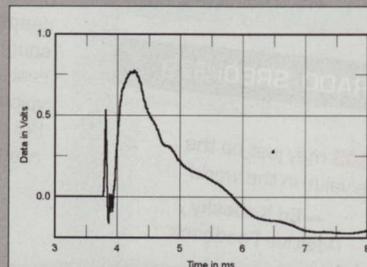
In the time domain, the step response (fig.7) indicates that both drive-units are connected with positive acoustic polarity and that, as is usual with a flat-baffle design, the tweeter output leads that of the woofer. The cumulative spectral-decay plot (fig.8) has its floor suppressed by the 20dB height of that ultrasonic tweeter resonance. However, it still reveals a superbly

clean decay at almost all frequencies, correlating with BJR's feeling that the CM5 had a commendable purity to its sonic character.

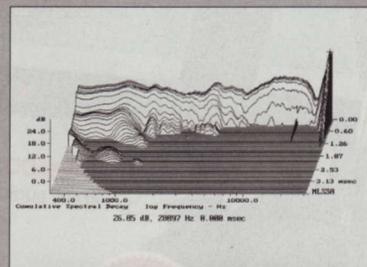
It is difficult for a conventional speaker with a flat baffle to use a low-order crossover without there being compromises in dispersion and response. However, the measured performance of Bowers & Wilkins' CM5 shows little sign of such compromises. I am not surprised BJR liked this speaker as much as he did.—John Atkinson



**Fig.6** Bowers & Wilkins CM5, vertical response family at 50°, normalized to response on HF axis, from back to front: differences in response 45-5° above axis, reference response, differences in response 5-45° below axis.



**Fig.7** Bowers & Wilkins CM5, step response on HF axis at 50° (5ms time window, 30kHz bandwidth).



**Fig.8** Bowers & Wilkins CM5, cumulative spectral-decay plot on HF axis at 50° (0.15ms risetime).

Jackson. It was very easy to discern Jackson's signature dynamic envelope, even in softer passages.

At the opposite end of the spectrum, the late Donald "Duck" Dunn's thumping bass-guitar line in "Hip Hug-Her," from *The Best of Booker T. & the MG's* (LP, Atlantic SD 8202), had a clarity and solidity that reminded me of when I heard Dunn perform with Crosby, Stills, Nash & Young in New York, earlier in this century. The bassist's unique phrasing was very apparent through the CM5s.

However, I occasionally noticed a slight thickening in the upper bass that called attention to that range. This raised its head rarely, but when it did, it was a noticeable deviation from the speaker's otherwise pure reproduction of timbres. A good example was "Ladies and Mercedes," from Carla Bley and Steve Swallow's *Duets* (LP, Watt 120). Swallow is unusual among jazz bassists in preferring to play electric bass, and with a pick, and while I'm quite taken with his composing and playing skills, I'm not a big fan of the sound he gets from his instrument; it tends to lack definition, both on record and in concert. Although it was clear through the B&Ws that the rich, woody timbres of Bley's piano in this recording are those of a good Steinway, the middle register of Swallow's playing had a slightly muddy, thumpy quality. Even some of the playing of hand-drum percussionist Nana Vasconcelos, on Egberto Gismonti's *Dança das Cabeças* (CD, ECM 1089), occasionally had a bit of "thuddy" quality through the CM5s. This recording also spotlighted how well the B&W's transient articulation could accommodate the broad range of Vasconcelos's virtuosic playing throughout the audioband. But this anomaly in the CM5s' upper bass was not noticeable with the great majority of records I listened to.

I also enjoyed the CM5's coherent completeness of sound with recordings of electric jazz and rock. "Vertical Invader," from Weather Report's *I Sing The Body Electric* (LP, Columbia KC 31352), is the tune that ignited my interest in jazz-rock fusion, which I followed intensely throughout the 1970s. With the CM5, the solid anchor of Miroslav Vitous's double bass and Eric Gravatt's drum kit provided a churning backdrop for the growls of Joe Zawinul's distorted Fender Rhodes piano and percussionist Dom Um Romao's wild, frenetic chatter.

Gerry and the Pacemakers were probably the most underrated band of the British Invasion. I'm glad to see the group is still gigging, with 40 dates in the UK this fall—for their tour with the Animals. The CM5 presented the rhythm section in "How Do You Do It" as a tuneful, rhythmically coherent unit, and the speaker's resolution of detail made it easy for me to focus on Les McGuire's piano solo.

It was that same resolution of detail that made it easy for me to study the engineering of studio recordings, though the results were not always pleasant—in a careful listening to "As Tears Go By," from the Rolling Stones' *December's Children* (LP, London 3451), Keith Richards's delicate acoustic-guitar playing, overlaid by syrupy strings, sounded completely disembodied. Moreover, the excessive and unnatural reverb added to Mick Jagger's voice entirely detached singer from instruments. The CM5s revealed the song's production and engineering to be an incoherent mess.



## ASSOCIATED EQUIPMENT

**Analog Sources** VPI TNT IV, Rega Research Planar 3 turntables; Immedia, Syrinx PU-3 tonearms; Koetsu Urushi, Clearaudio Virtuoso Wood cartridges.

**Digital Sources** Lector CDP-7T, Creek Destiny CD players.

**Preamplification** Vendetta Research SCP-2D, Creek Destiny phono stages; Audio Valve Eclipse line stage.

**Power Amplifier** Audio Research Reference 110.

**Integrated Amplifier** Creek Destiny.

**Loudspeakers** Dynaudio Excite X12, Epos M16i, Monitor Audio RS6 Silver.

**Cables** Interconnect (all MIT): Magnum M3, MI-350 CVTwin Terminator, MI-330SG Terminator. Speaker: Acarian Systems Black Orpheus.

**Accessories** Various by ASC, Bright Star, Celestion, Echo Busters, Salamander Designs, Simply Physics, Sound Anchor, VPI.—Robert J. Reina

## Comparing

I compared the B&W CM5 (\$1500/pair) with the Dynaudio Excite X12 (\$1200/pair), the Monitor Audio RX6 Silver (\$1250/pair), and the Epos M16i (\$1998/pair).

The Dynaudio Excite X12 had a midrange as clean and clear as the B&W's, but resolved much less detail. The Dynaudio's midbass was warmer, but its high-level dynamic capabilities were equally impressive.

The Monitor Audio RX6 Silver resolved significant detail and air, if not in the same league as the CM5, and its high frequencies seemed less delicate and sophisticated. However, the Monitor's bass was more extended, and it had superior high-level dynamics.

The Epos M16i was crisp, clean, and uncolored throughout its frequency range, but I felt the B&W CM5's bass was a bit more extended. Finally, although the Epos presented a coherent and integrated sound overall, it wasn't as detailed, refined, or involving as the CM5's.

## Concluding

Over my past decade of listening to many affordable speakers, both bookshelf and floorstanding, I've enjoyed an embarrassment of riches. Although I have some favorites, I can't recall the last time I reviewed a speaker that didn't impress me in at least some areas.

The B&W CM5 touched me in a unique way. With every recording I played, this neutral, dynamic speaker revealed layers of detail that let me hear into the recording process, but in a way that made it easy to forget about that process, kick back, and enjoy the music. Just as paradoxically, its high level of resolution let me differentiate among great, good, and not-so-good recordings, but in a way that didn't lessen my enjoyment of music that had been poorly recorded. If I had to, I could live with this affordable bookshelf model as my only loudspeaker.

I can't remember the last time I said that about another speaker in the \$1500/pair price region. A tremendous achievement by Bowers & Wilkins. ■