the absolute sound

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Lamm ML2 Single-Ended Monoblock Amplifiers

The LAMM ML2 single-ended monoblocks are the best power amplifiers I've heard. That's the good news. The bad is that the Lamms deliver a mere 18 watts per channel and cost about 30,000 dollars the pair.

Let's see - 18 watts, 30 grand...that's about, oh, 1,700 dollars a watt. Unless you're looking through the flaps of your tent at a dune full of oil derricks, that's one sticker that's gotta shock like an eel.

But before you reach for your keyboard and start typing an angry letter to the editor about how today's highest end manufacturers are simply pricing this hobby out of reach (and today's reviewers are "blithering idiots"1 for touting such obscenely overpriced fare), hold up a second.

Remember your first taste of High End audio?

I was 13 years old, and a pal who liked Buddy Holly as much as I did offered me the chance to listen to "Peggy Sue" on his Dad's stereo system. At that point in my life "stereo system" meant a Voice of Music record player with a GE cartridge (osmium needle, natch), a castaluminum pickup arm the size of Pantagruel's soup spoon, and a built-in coaxial speaker with a thatched "grillecloth" that could

have been trimmed from the roof of a cottage in Dorset.

That was what I thought was in store for me when I went to my pal's house. Boy, was I wrong. There, nestled in a large stucco alcove in the basement, were a pair of home-made speakers as big as Kelvinators, a quartet of black-and-silver boxes (McIntosh 275s) with glowing tubes standing in ranks, a Rek-O-Kut turntable massive housed like a sewing machine on its own wooden stand, and a black and gold preamplifier (a McIntosh C-22, I think) sitting inside a custom-built cabinet. I'd never seen anything like it before.

Nobody but Dad was allowed to turn the contraption on, which he did, slipping a slice not of Buddy but of some guy named Wagner onto the Rek-O-Kut. I can remember to this day the waves of sound that washed over me and the sheer wonder I felt that such a thing was possible - that a person could have this experience in his own home, at his own command, and have it again and again.

I've never completely lost that sense of wonder - am still amazed that by throwing electricity into a couple of boxes I can conjure Heifetz or Rubinstein in my living room at will. But not since that basement

epiphany have I felt quite the shock of surprise that the Lamm



ML2s produced. Honest to God, listening to these amps (through the equally remarkable and incredibly simpatico Nearfield Acoustics PipeDreams) was like that very first taste of High End audio all over again.

The Lamm ML2s aren't just better than most other amps; they are so much better that you will find it hard (and a little depressing) to go back to the way things were (and back I'll have to go when Vladimir Shushurin, the ML2s' remarkable designer, pulls the plug because, sigh, these aren't components I can come close to affording).

Before you leap to the conclusion that I am swooning over the usual single-ended salsa -- the microdynamic nuance, the voluptuous midrange, the triode "directness" -- let me clear the air about

something. then make distinction. First. rumors notwithstanding. I am not a single-ended freak. I've liked a number of s-e's, beginning with remarkable Wavelength Cardinals I reviewed in these very pages many years ago. However, the vast majority of single-ended amplifiers I've heard - and I've heard quite a few, including several very pricey numbers - haven't impressed me at all. Sure, they sound sweet as cane sugar in the midband, but they are as soft, dark, and lumpy as brown sugar everywhere else and most of them couldn't drive an 80-year-old to church on Sunday mornings going downhill. While a luscious midrange can disguise a multitude of sins, it is disquise. after all, and eventually disguises wear out.

Now for the distinction. Save utter their clarity and directness, the Lamm ML2s don't sound like single-ended amplifiers. And they don't sound like single-ended amplifiers by design. Vladimir Shushurin came to audio gear from designing tube-powered equipment for the Soviet military (which never made the switch to semiconductors. as our military establishment did). It's a safe bet that in the Red Army, things like midrange warmth and treble sweetness didn't carry much weight when the object was targeting an ICBM with pinpoint accuracy. It was solid engineering and precise results that mattered to the Soviet generals, and Shushurin, like many other technologists who fled the USSR when the Evil Empire collapsed, emigrated to the US with that philosophy firmly in mind. He is, in fact, a great believer in his own set of engineering principles and in testing procedures based on

them. Indeed, Shushurin insists that specific test results correlate directly with sound quality!

In part to prove this point, Shushurin actually paid Bascom King's lab big bucks to run independent tests of the ML2s' distortion vs. output, bandwidth, harmonic distortion, and clipping characteristics. The results are worth mentioning because they are so unusual. Here is a singleamplifier ended (usina indirectly heated 6C33C-B for its out-put) that measures very nearly as flat, noise-free, and as а solid-state extended amplifier!

Just for fun take a look at the charts below. Most of you know what a typical s-e's test results look like: frequency response that is a bell-shaped curve, rising in the midband and falling off drastically in the bass and treble: distortion products that rise to 10-20 percent after a milliwatt or two. King's lab confirmed that the ML2s measure within three decibels from about 3Hz to almost 80kHz (and virtually flat from 7Hz to over 40kHz), while their distortion at clipping reaches a maximum of around 2-3 percent (and is typically well below 1 percent through most of its power range)! Test results like these are exceptional in a singleended. Whether they - or, more precisely, what they reflect about Shushurin's circuit are translating into superior sound, something is making spectacular difference here.

I'd like to say that the ML2s look like 30,000 bucks, but there really isn't much to them. Whatever secrets they hold are housed inside small, hefty, rather elegant black chassis, with four miniature tubes flush-mounted on their left sides - a dual-triode 12AX7 (connected in parallel) for the input stage; a very linear,

very low impedance, very high voltage dual-triode 6N6P for the driver stage; and a 5651 and 6AK5 for voltage regulation - and two 6C33C-B triodes flushmounted on their right sides one for voltage regulation and one for the output stage. Recessed between the banks of tubes are a couple of funky little trim pots, which are used along with a voltmeter to bias plate voltage and current. At the rear each chassis sit transformers: a custom-made, ultra-low-noise toroidal power transformer sealed in encapsulant that protects it from shocks and prevents it from making mechanical contact with the chassis (and thus from setting up ground loops); and a very expensive, custom-made, ultra-wideband output former that Shushurin says is one of the main reasons his ML2s measure so well and sound so special.

Across the back panel of each chassis are three sets of gold-plated stout. five-way binding posts - one set each for 4, 8, and 16 ohm speakers - a grounding post, an on/off switch, and an EIC power outlet that is fused, filtered, and adjustable for mains voltage. Along the left side of each chassis are two inputs: one for RCA and one for XLR connectors. A small LED on the front panel of the chassis tells you whether the amp is still warming up (the amp takes about two minutes to stabilize, during which time the LED will blink red), or ready to go (the LED stops blinking).

Where to begin describing the ML2s' sound? Well, since HP started the ball rolling so very interestingly in Issue 117, let's talk about dynamics.

First, an important distinction. An amplifier's ability to drive a

given loudspeaker to very loud levels doesn't necessarily mean that it will reproduce dynamic range accurately. The phrase "dynamic range" doesn't mean "very loud." It means the difference in amplitude between the loudest ff and the softest pp that a given instrument is capable of playing.

I'm making this elementary point for a couple of reasons. First, many audiophiles believe (and many products are still marketed as if) power - i.e., high wattage or high current - is the sole key to dynamic response. The more watts, the better your dynamics will be.

If this were true, the ML2s, at 18 watts per side, would have to be wimpy performers. And yet I can tell you that dynamics are the most startling of their many virtues - that they are among the best I've heard at reproducing dynamic contrasts (given the right loudspeaker). How can this be possible?

Well, that brings us to the second reason more watts don't equal better dynamics. Take a look at the following chart:

Here we have a graphic illustration of the dynamic-range of a French horn. Note first that the horn's maximum sound pressure levels (the loudest it can play an ff) and minimum sound pressure levels softest it can play a pp) vary with register. You'll also see that the ratio between the loudest and softest notes varies with register. And although the chart doesn't illustrate this, these things also vary significantly with duration and distance.

What this means is that the dynamic range of any instrument is relative to pitch, time, and space (and, of course, the

acoustical power of the instrument itself). While having oodles of watts may allow you to replay any note or group of notes extremely loudly (more loudly, in fact, than an instrument is itself capable of), playing back that same note with accurate dynamic scaling - with the correct intensity relative to pitch, duration, and the instrument's location on stage or vis-à-vis microphones - is a much tougher trick. For that, the number of watts is less important that the quality of those watts.2

Correct dynamic scaling gets even tougher when more than one instrument is playing. What's your mega-watt amp going to do, for example, when that French horn sounds a long legato line in its low, plaintive bottom octave, doubled by a melancholy oboe playing just a bit more loudly a couple of octaves above it, while a bass drum is tapped softly way in the distance and strings played *col legno* are rustling like tree branches at either side of the stage?

I don't know what your amp will do, but the ML2s will do just fine. The music described, by the way, is a small piece of Harrison Birtwistle's *Triumph of Time* [Argo ZRG 790]. And what the Lamm amps taught me about this piece was that I hadn't really heard it before.

Listening through other fine amps and speakers I had thought the piece was mostly played *mezzo forte*, a medium level of loudness, from which it built gradually to its three towering *fortissimo* passages. What the ML2s showed me was that most of the time the thing unfolds at *mp* to *pp* levels, in other words at medium low to extremely low levels of loudness from which the three great climaxes rise to astounding

fortissimos! Far from being a mostly loud and intensely grueling piece with a few quiet passages, it is in fact a mostly soft and intensely lyrical piece with three terrifying climaxes. This is not a little difference.

Other fine amps were simply compressing dynamic range, particularly in the p to pp range (although, also, surprisingly, in the f to ff one). None came close to reaching down into the quietest passages of music (and look again at the illustration above to see how quietly an instrument like the French horn is capable of playing!) with the ML2s' dynamic scaling.

Oh, some very fine amps reproduce this same dynamic information, but they reproduce it elevated in level. In other words. they reach a point below which dynamic scale is flattened out, and everything is reproduced at the same relative loudness. While this flattening effect can be exciting (because it exaggerates transient detail by presenting it louder than life), it is not nearly as exciting - or as realistic - as actually hearing those and *pianissimos* pianissimos reproduced at true p to pp levels. When an amp does scaling right, as the ML2s do, dynamic range expands, and the loudest notes explode into the room as if they, too, have been expanded in level.

For example, through the ML2s, when you hear one of Clifford Jordan's saxophone blasts (on Mapleshade's *Mellow Side Of* [05032]) coming after a *pianissimo* passage or a moment of dead silence, that big bubble of air explodes right off the bell of the sax and rips into you as if the room has been struck with a hammer - and then the sweet whiskey tone, the tail end of breath through the reed, the

skeletal clatter of valves and keys. I've never heard anything quite like it, save in the real world.

Let's talk for a moment about soundstaging. Through the PipeDreams, the Lamm amps throw the largest, most transparent, most continuous soundfield I've heard, and, as with dynamics, the differences between the ML2s and other superb performers aren't minor. Consider a disc I've discussed many times in Fi, the great Mapleshade recording of the Addicts Rehabilitation Choir: Walk With Me [04132]. I thought I knew this thing by heart. Wrong. Over and above the sheer number of individual voices I could hear with greater clarity (and this on every cut), the disposition of those singers front-to-back, side-to-side just well, it metamorphosed.

The PipeDreams sit about six to seven feet from my back wall and four-to-five from the sides. The walls themselves are lined with RPG Abflectors - seven feet high, L-Shaped panels that form a sort of room within my room. Typically with the Pipes powered by other amps, the soundfield is vast: the speakers disappear into it and you sit there absorbed in this different space as if you were lost in the sound of a concert.

As huge as the soundfield is, it does have its limits - typically marked by the "walls" diffusers. But with the ML2s driving them, it was as if the PipeDreams had swallowed a couple of Alice's mushrooms that soundfield expanded in every dimension. Where soprano choir had previously appeared as a large block outside the right-hand Pipe, midway between it and the back wall, that same choir suddenly spread in layers back "through" the rear wall, forming an arc that terminated just beyond the righthand wall of diffusers! (And there was a layer of air behind that arc!) At the same time, the soloist, who typically stood in front of the choir, roughly in the plane of the loudspeaker, not only stepped forward but moved way to the right, as if she were standing about five feet away from where I sat, in front of the right-hand speaker and three feet beyond the right wall of diffusers! Wrap-around imaging is one thing, but this was psychedelic.

With great recordings, the ML2s and the Pipes consistently blow out the back wall and "wrap-around" room boundaries, producing the most amazing sense of envelopment I've experienced outside an I-MAX theater. And the way the Lamms layer images in space is nonpareil. On recording after recording, they make perfect geometric sense of instruments and voices that, through other may appear vaguely imaged, maybe a little behind, a little in front, a little to this side or that of each other. The ML2s rearrange the sonic furniture. more putting space, more definitively, between and around instruments, even within dense of instruments. anything I've heard before.

It should be obvious now, from their dynamic resolution, the amount of inner detail I'm reporting on, and the phenomenal soundfield thev throw, that the ML2s are without question the most transparent amps I've yet heard. They just don't have any grain. None. And their depth of quiet combined with their stunning clarity makes them sound almost as direct, as unmediated, as the real thing.

The sheer living presence (and sheer gorgeous timbre) of, say, Leontyne Price's voice on the RCA recording of Barber's Knoxville: 1915 [LSC 3062], or Guarnerius Heifetz' in Catherine Wheel third movement of the Rósza Violin Concerto [RCA LSC 2767], or Rubinstein's Steinway in Mozart's incomparably wistful Rondo in A [RCA LSC 2461] is as close to the concert hall experience as I've experienced from a stereo system.

How about the Lamms' bass and treble response - those bâtes noires of single-ended amplifiers (and pet peeves of single-ended-amplifier

detractors)? Well, I hate to disappoint the cynics, but the ML2s have excellent bass and treble response. Indeed. although I'm getting tired of putting it this way, the ML2s' bass is some of the best I've heard - along with the CAT JL-1 Series II Limited Editions and Atma-Sphere MA-2 Mk IIs, the best for a tube amp in one regard. Every other tube amplifier I can think of descends from its upper registers to its bottom ones as if it were going down a schoolvard slide. There is a slight tip upward as you near the last octaves that adds warmth and plumminess to the bottom end (at some cost in clarity). The ML2s, on the other hand, go from top to bottom like laundry dropping down a chute. No tip-up, no plumminess, just speed and transparency and incredible impact. This is the way the Clearaudio turntable handles the bottom octaves. Without that touch of ersatz tube warmth, you won't believe how clear bass lines become - and how much transient detail and natural power these amps produce. Really well-recorded kick drum

and tom-tom, like Louis Bellson's on Duke's *Big Four* [JVC XR-0022-2], simply slam through the floor and shiver the walls like the real items - huge, full-blooded, lightning-fast, with not a trace of overhang.

As for the ML2s' treble, something like the top range of Milt Jackson's vibraphone on The Miles Davis Quintet [DCC/Riverside GZS-1113] is so finely described that the instrument actually sounds like a vibraphone rather than xylophone - like sonorous metal bars being struck by hard mallets. When they ring, you not only hear their bell-like tone and organ pipe resonance; you hear the bars rattle in their races. The very air above them vibrates. (And given the ML2s superb dynamic scaling, you can judge precisely how Jackson varies each stroke, even on quickly repeated notes.)

OK. Let's catch our breaths. No grain, super-transparency, tremendous dynamic range and scaling, superior tonal balance. So, I guess, the ML2s have no character, right? Sort of. It depends on what you mean by character. If you mean a predominant coloration, then no. The ML2s are close to colorless neutral - maybe just a trace of deep brown warmth but nothing

like the euphony of 300-B or 2A3-based amps or the major color shifts of pentode, tetrode, and most solid-state amplifiers. As a result, timbres sound exceptionally true-to-life. Voices, strings. percussion. brasses (just marvelous on brasses) are fool-you natural. Only in the very, very top octave do the ML2s sound the slightest bit less open than the very best amp I've heard in this respect (the Atma-Sphere MA-2s).

If, however, by "no character" you mean the ML2s are more or less adaptable to all systems, then they've got character like Carter's got pills.

The ML2s *have* to be mated loudspeaker with sensitivity of at least 90-94dB, if you don't want to hear them clipping before they reach realistic fortissimo levels. (As power requirements double for every 3dB increase in volume level, you'll reach about 104dB peak SPLs with the Lamm's 18 watts, assuming you start with a speaker that is 92dB sensitive and has a relatively simple crossover. For higher ultimate SPLs, you'll need a more sensitive loudspeaker still.) Not only that, but if you want to hear what these amps are capable of in the way of dynamic range, the loudspeaker had better be

capable of reproducing dynamics with world-class speed and impact. Which means that the ML2s aren't going to fill the bill for most of you.

But let's just say you own the right speaker - a Nearfield PipeDream, a Wilson Slamm or Maxx, a JMLabs Grand Utopia, Avalon Osiris, or Avantgarde Trio or Duo (high in sensitivity, extraordinarily transparent, full-range, neutral in balance, capable of throwing a huge soundstage, sensationally quick on its feet). Then - then you've got the stuff that dreams are made of, and you will live happily ever after.

For the rest of us, there are some promising items coming down the pike from a number of companies, among them Lamm itself, that may well give this paradigm of speed, contrast, and transparency a run for the roses. At the moment, however, the laurels belong to the ML2 alone.

Jonathan Valin

Jonathan Valin first wrote on audio for TAS some years ago. He left to become editor of Fi magazine. Now he's back with us once more, this time as co-editor with HP of Upstairs and TAS' website.

^{1 &}lt;sup>™</sup> Steve Zipser

² In quality, single-ended-triode amps have a leg up on most of the competition. Because their triode output tubes are run Class A single-ended (where a single tube handles both the positive and negative halves of the signal), they have no crossover notch distortion – that little lag in time, phase, and power delivery that occurs with push-pull amps when one bank of tubes stops pushing and the other starts pulling. Additionally, a directly heated triode output tube's very low plate impedance means that it transfers its energy far more efficiently to the transformer (and on to loudspeakers) than any pentode, tetrode, or solid-state device, particularly as those other devices approach clipping. The results: each triode watt is stronger-sounding and more of a piece sonically than pentode or tetrode watts. On the other hand, there is no doubt that you need enough watts, regardless of their quality, to drive a given loudspeaker to realistic fortissimo levels. With an s-e, that means you need a sensitive loudspeaker with a simple crossover that doesn't drain away energy.

Vladimir Shushurin: A Man of Principles

When Vladimir Shushurin emigrated to the United States, he had a hundred dollars in his pocket and didn't understand a word of English. He has suffered the indignities of crazy partners (something I can relate to), unscrupulous retailers, unfairly biased reviewers, and, most recently, the bad luck of the Asian economic collapse and the subsequent loss of his overseas business. And, yet he sticks with Lamm. Why? Because, he says simply, "I have found my calling."

Vladimir actually began his audio adventure in the Soviet Union. His Ph.D. thesis was an abstruse mathematical model of human hearing. And when he went to work for a Russian audio manufacturing firm (after working for the Russian military), he used that model, in turn, to model the parameters of audio equipment.

For Shushurin, there is little mystery in what goes into the engineering of great sound. There is little room for listening and voicing tests, blind or eyes wide open, either. He truly believes that engineering audio gear is solely a matter of principle – his principles, to which he's given the collective name "Absolute Linearity of a System" (ALS). Using ALS, he says he can look at specific test graphs and tell how close to – or how far away from – the sound of music that component will get, without auditioning it. In particular, Shushurin feels that THD vs. Frequency, THD vs. Power, and Harmonic Distortion Residue are key indicators of ALS.

There is an important distinction to be made about the way Vladimir "reads" test results. The numerical values aren't what he pays attention to. It is the graphic result – that is, the shape of the curves indicating how, for instance, distortion changes with power and frequency – which tells the story. And once again it tells the story because of the way the curve correlates with the mathematical model of human hearing that Shushurin spent so many years working on in Russia.

Of course, Shushurin still listens to his amplifiers – to see how they are handling noise and grounding. But most of his efforts are aimed at engineering just the right "linearity" into each product. And engineering linearity requires the highest quality parts (the cost of the two custom-made output transformers in the ML2 actually make up one-sixth of their retail price) and circuit design. When you buy a Shushurin product you are not just buying some of the finest engineering in the business; you are also buying the finest thinking about audio engineering – and that combination, my friends, is worth the money.

Associated Equipment

Analog Front End: Clearaudio turntable/pickup arm; Well-Tempered Reference turntable/pickup arm; Clearaudio Accurate cartridge; Grado "Statement" cartridge; Grado Platinum Reference cartridge

Digital Front End: Goldmund Mimesis 20 transport; Goldmund Mimesis 36 DAC; Audio Note DAC-4 Signature

Preamplifiers: Convergent Audio Technology "Ultimate" fullfunction; Audio Research Reference One line-stage; Conrad-Johnson ART line-stage; Conrad-Johnson Premier 15 phono stage; FM Acoustics 122 phono stage; Audio Research PH3-SE phono stage

Loudspeakers: Nearfield Acoustics PipeDreams; Avantgarde Trio

Cable and Interconnects: Purist Audio Dominus; Transparent Reference XL; Nordost Quattro Fil; Wireworld Eclipse III

Accessories: RPG Diffusers; ASC Tube Traps; Bright Star sandboxes, Townshend Seismic Sinks; Arcici "Air Head"