As We See It

Upward and (Hopefully) Onward

As we say on those little notes scrawled on Christmas cards, much has happened since last you heard from us. Among other things, we have changed printers, mainly because the previous one was not giving us as speedy service as we needed. And we have reached an earth-shaking decision: we're going to have to raise our subscription rates.

This is the last issue due subscribers whose address labels are coded 1-12 or are not coded at all. We mentioned this in issue 11, and while we sincerely thank those people who've already renewed, we're sorry to have to report that the renewal rate has not as yet been terribly good. We hope it will improve, now that issue 12 has arrived, but in view of our present renewal rate, and all the letters saying "If you take ads, I quit!" we have no choice but to raise the rate to $4 a year, which amounts to $1 per issue!

This may seem outrageously steep until we note that a magazine like High Fidelity collects something like $1000 for one page of advertising in one issue. At that rate, we could afford to sell Stereophiles for 10¢ a copy, but we would also have to adopt a commercial magazine's policy of catering to advertisers. And the fact that we don't, now, is the thing that makes The Stereophile unique, and of unique value to the equipment buyer.

We are not, however, going to spring this on you without warning; the price increase won't go into effect until June 1. Despite what it says on our coupon (page 18), anyone whose subscription or renewal reaches us before then will get the old 12-issue-$8 rate. Orders received after that time, even if accompanied by okl coupons that say $8, will be subject to the increased rate.

The change in printers and the upped rates are expected to do at least two things. First, the transition period (during which we transfer our original mailing list to new plates) is going to cause some confusion, mainly in the form of duplicate copies reaching some of you. We would appreciate your returning the duplicates to us, but we can't insist on it because we aren't going to comb our files just to find out who got what.

On the other side of the coin is the fact that, unless too many readers become discouraged by the higher rate, the additional income will allow us to hire adequate help, with the happy result that future issues will be out on time--thus doing away with the most common complaint about The Stereophile. We may even be able to get onto a bimonthly publishing schedule, which would allow us to cover much more ground in the equipment reports section.

Meanwhile, and at the obvious risk of gypping ourselves out of some much-needed income, we urge you to renew or subscribe now, before the price hike comes into effect, even though you may not be up for renewal in the near future.

We hope you'll forgive us for airing our dirty laundry in public, but a magazine whose readers are more like investors than statistics on an advertising rate card has an obligation to be open and aboveboard about its "sordid business" aspects. Better this, we feel, than having sordid business considerations influencing our editorial approach.

Coming Up
In Future Issues

Reports on the AR-4x, Utah Heritage III and Hamed loudspeakers, the Decca Mark IV, ADC 10 and Grado B pickups, the E-V 667 and PML microphones, Mattes SSP-200 amplifier, Acoustech X amplifier-speaker system, the AR Model XA turntable, the Shure Solo-Phone amplifier, and the Suprex ST-PRO headset.

Articles about how The Stereophile tests and evaluates components (Part 1 of the section on loudspeakers starts in the next issue), how to train your evaluative ear, how to deal with a dealer, antenna transmission line problems, loudspeaker selection, installation and testing, and, how to tell whether a component is defective or inherently lousy.

A new department entitled "Reader Reports," in which we will publish readers' observations about and experiences with specific components. We'll welcome contributions from anyone who is moved to contribute.
A Quickie View of

The New York Audio Show

by Lew Brown & John Koval

Note: Ye Editor was forced, thanks to a circulating bug, to forego his usual annual pilgrimage to the New York Hi-Fi Fiesta, so the following random observations were contributed by our contributing editors, who did get to the show.

The 1965 New York hi-fi show was, to these observers, most notable for the marked increase in the number of exhibits which featured good—i.e., classical—music for demonstration purposes. In the past, only about a half dozen of the exhibitors played anything of musical worth, the rest of them evidently figuring they could make more noise with wild brass-and-percussion "demo" records. This year, no less than 25 exhibits were playing classical music when we wandered into their rooms, and we were so impressed that we compiled a list of them, which we're going to cite here simply because we believe in giving credit where it's due, and it is in this case.

These were: Acoustech, Ampex, AR, Bozak, Circle-O-Phonic, CM Labs, Dynaco, E-V, ELPA Marketing, Empire Scientific, Fisher, Harman-Kardon, Hartley, IMF, Janssen (Neshaminy), Kenwood, KLH, Leak (Eremo), London records, McIntosh, Sharpe phones, Shure, Superex phones, and Tannoy. Several of these were alternating from classical to other kinds of material, but at least they gave us an opportunity to hear what strings and concert-hall acoustics sounded like through their equipment.

The best sound at the show this year was clearly (and that's one reason why) the Acoustech Model X, the full-range electrostatics with built-in solid-state amplifiers. Surprisingly, the worst sound we heard was probably that in the Stanton room, where a speaker system comprised of a large, curved electrostatic tweeter (originally the Pickering tweeter) and a cone woofer was producing the biggest middle-range hole we'd heard for ages. Although there were other exhibits that were screechier, boomier or thinner, none sounded quite as unnatural as this. Might have been a poor choice of crossover points, but we suspect it was nothing more than out-of-phase connection. Whatever it was, though, we were surprised to hear sound that poor in the room of one of the industry's most respected pickup manufacturers.

Most straightforward, pleasant, peaceful exhibit was, as usual, Acoustic Research's. No gimmicks (unless you could consider the much-welcomed inclusion of chairs to be a gimmick), just an occasional switching of the signal from AR2ax's to AR3's to AR4's and so on. As always, the AR2ax sounded better to us than the AR3—only a bit weaker at the low end, and noticeably smoother through the middle range. While limited at both ends of the spectrum, the AR4 struck us as being a very nicely balanced system, generally quite similar to the AR2ax.

We were pleased to note that at least one manufacturer—Empire Scientific—has at last taken up the cudgels for adequate tracking force. After all the hallyhoo in recent years about half-gram tracking, it was refreshing to hear Empire's sales manager, Leon Kuby, admonishing people to track as high as 2 to 3 grams with most pickups, for the sake of the sound and the discs, and demonstrating his point with oscilloscope displays of high-level recorded tones.

We were much impressed with the sound of the new Superex ST-PRO headphones. They seemed clearly superior to the Koss PRO-4's, but hard to rank relative to David Clark and Beyer phones. These Superexes merit a test report in the magazine.

Solid-state equipment was everywhere. We still think this is premature—the best units still aren't quite up to the best tube types—but like it or not, it is obvious that solid state is here to stay. Eventually, it will be as good as tube stuff, by which time the price may be comparable, too. We can't help but think that the word "solid" has something to do with the transistor's popularity. Like, solid, man!

¹ Don't try this with the average elliptical, though. A shade over 1½ grams is about the safe maximum for most of these, and higher forces will beat the daylight out of records. E D.

² They'll get one in the next issue. E D.
KLH Model Seventeen
Speaker System


As of only a year or so ago, $100 was considered the minimum price for a loudspeaker that really qualified as honest-to-goodness high fidelity. You bought an AR-2 or a variation thereof, or you suffered with a cheap crank in a flimsy box, replete with jagged high end, boomy mid-bass and absent low bass. This year, though, has seen the introduction of several under-$70 speakers that are claimed to be competitive in quality with the costlier systems, and the KLH Seventeen is one of these.

The Model Seventeen is an acoustic-suspension system using a 10-inch woofer and a 1¾-inch tweeter. A three-position toggle switch recessed in the rear of the enclosure adjusts tweeter level for Normal (Flat), Increase, or Decrease, in increments of 2½ db. A special crossover network design prevents "shelving" of the response when highs are raised or lowered.

An oscillator sweep on a single Model Seventeen revealed nothing alarming—no audible peaks, dips, rattles or harmonics—but did suggest that the low-end response was tapering off gradually from 100 cps on down. Useful response was maintained to around 60 cps, and the signal dropped out almost completely below about 55 cps. Pairing the systems for stereo helped to raise the entire low-end range, bringing the over-all balance up to normal and carrying the usable response down to around 55 cps and the useful limit to around 50.

High-end response was subjectively linear out to well beyond our 14,000-cps hearing limit, and a microphone verified that there was still significant output to above 18 kc. High-frequency dispersion was excellent. At 10 kc, we could detect no change in output throughout an angle of roughly 90 degrees, which undoubtedly accounts for the system's excellent stereo imaging.

Smoothest over-all response appeared to be with the tweeter switch set for Normal, so we used that setting for our listening tests.

On musical material, the paired KLH Seventeens proved to be an eminently natural-sounding stereo system, with an almost unbelievably smooth, silky high end, a slight mid-range forwardness and an audible (but not at all distressing) thinness at the low end. Bass details were well reproduced, and the system was able to handle, cleanly, enough bass boost (from a Baxendall-type tone control) to fill out the low end. This is not a brilliant Row-A system, but it does tend to move the sound slightly forward, as if you had changed from a Row M to a Row H seat in the concert hall.

Sonic details were well reproduced, as were most instrumental timbres. Trumpets, obers and some voices seemed very subtly colored by a slight short-timbre (as in "if") vowel quality, although to keep things in their proper perspective, it must be noted that the Seventeen has less coloration than some far more costly systems, and has less than we had ever heard from a $70 speaker until it and its closest competition—the Acoustic Research AR-4—came along.

Despite their low-end limitations, both the KLH Seventeen and the AR-4 are what we would describe as rich-sounding systems. To our ears, the KLH has a shade smoother and more natural sound throughout its upper range, and where the AR-4 gives us an impression of fairly neutral over-all sound, the KLH has a noticeably "fatter" sound to it. This quality is not a function of low-end response, but rather of lower-middle-range output, and the KLH has noticeably more of this than the AR. The effect is heard mainly in reproduction of cellos and trombones, both of which sound—well, just fatter on the KLH.

Neither the KLH Seventeen nor its closest competitor is an inexpensive way of achieving expensive sound; they're both weak at the bottom. But on the other hand, it is no longer necessary to accept mediocre over-all sound if you can't afford to go over $75 or so per speaker. And if we were asked to go out on a limb and name the best of these speakers, this is one case where we wouldn't do it. Both the KLH Seventeen and the AR-4 are contenders for top place in the under-$75 category, and although they sound quite dissimilar, both of them produce a semblance of realism that is within the normal range of variation that one might hear from two different seats in a concert hall.

Our own personal preference tends toward the somewhat closer sound of the KLH Seventeen, but we are also aware that our listening room tends to swallow up middles. In a brighter room, we would probably choose the AR-4. That's why we advise anyone considering these to pre-audition...
Dynaco Beocord 2000 Tape Recorder

MTF's Specs—Type: Three-speed fully transistorized tape recorder. Net capacity: 1 inch. Speeds: 71/2, 33, 1/4 ips. Frequency response: ± 2 db, 40 to 12 kHz at 71/2; ± 2 db, 40 to 6 kHz at 33; ± 2 db, 40 to 4 kHz at 1/4. S/N ratio: ± 30 db for 1/4-track model, ± 25 db for 3/4-track model. Bias frequency: 100 kc. Channel separation: ± 0.5 db at 1 kHz. Wow and flutter: ≤ 0.1% at 71/2, 0.2% at 33, 0.5% at 1/4. Timing accuracy: ± 0.05%. Inputs: 2-channel microphone: 50 k at 200 ohms balanced at 50 db, 10 k at 200 k balanced at 50 db; 2-channel radio (100 k at 0.5 volt or 10 k at 15 mV); 2-channel phone (10 k to 150 ohms); 2 pairs of speaker outputs (4 watts per channel at 4 ohms); stereo headphone jack. Weight: console 35 lb, portable 25 lb. Dimensions: console 18 inch W by 14 D by 12 H; portable 18 inch W by 14 D by 9 H. Price: console $498, portable $448. DISTRIBUTOR: Dynaco, Inc., 3912 Powelton Ave., Philadelphia, Pa. 19144.

This fully transistorized tape recorder from B&O marks Dynaco's entry into the tape field, and incorporates some features that are new to the home recorder market. It is the first portable tape recorder, professional or otherwise, to use the new professional-type slider potentiometers for gain controls, and is the first portable recorder offering input mixing facilities for up to six microphones simultaneously.

The Beocord 2000 is available in 2- or 4-track versions (the latter is normally supplied), as a console model with a teak and ebony base, or as a portable in a plastic carrying case. Mechanical controls include a combined on-off and speed selector switch, a "stickshift-type" control lever for run and fast shuttle modes, a pause switch with a locking provision, and a reset button for returning the nine-digit counter to zero.

Electrical controls include push-buttons to select left- or right-channel (or stereo) recording, synchro operation, artificial echo, monitoring from the tape or its input signal, any conceivable combination of playback configurations (stereo, left or right channel to both speakers, and both channels, combined, to both speakers), and an "Amplifier Only" mode that allows the amp to stay on with the motor shut off. Then there are the four in-line-type slider controls for the input and playback level controls, separate Balance controls for play and record, playback bass and treble controls (ganged), and a pushbutton to select loudness or straight volume-control operation in playback. There are external connections for two pairs of stereo speakers, and either one or both pairs can be selected via two pushbuttons. Internal adjustments are provided for bias current only; record and playback equalization are fixed.

There are two sets of input and output receptacles. One set, using standard U.S. phono receptacles and screw-type speaker terminals, is recessed into the bottom plate of the recorder. The other set, comprised of European-standard DIN connectors, is accessible from the sides of the deck. Mike inputs (at 200 ohms impedance) are via the DIN connectors only, and each of these is for a stereo pair of microphones. One connector is supplied, and it's a fairly simple matter to work it up into a Y-adapter to provide two separate mikes inputs.

As supplied, the Beocord is equipped to accept a stereo pair of microphones, line-level inputs, and magnetic phono inputs. Each input pair is represented by a plug-in printed-circuit module in the recorder, and since these are directly inter-changeable, it is possible to equip the recorder for any combination of them, to provide, for instance, six microphones and a phonograph input. Each stereo pair of inputs is controlled by a slider-type gain control lever, making it possible to control all six input channels with three fingers of one hand. A single balance control is provided, and this controls the balance of all stereo pairs at once. It is not possible to vary the balance of one input pair independently of the others—a shortcoming which will not appeal to serious recordists who are interested in doing a critical mixing job.

The Line outputs (to an external system) are taken off ahead of the Beocord's playback volume and tone controls; these controls affect the speaker and headphone outputs only. The speaker outputs (optimized for 4-ohm speakers) are rated at 8 watts max per channel, with less than 1% harmonic distortion at 5 watts. We didn't attempt to verify this, but can vouch for the fact that the sound was quite good, within the power limitations. The headphone outputs are padded down to match the sensitivity of the average dynamic headphone.

The Sound-On-Sound feature allows the playback from one track of the tape to be mixed with an incoming signal and recorded on the other track. The cross-recording can be done in either direction, any number of times (limited only by the progressive deterioration of the first recordings due to repeated copying), allowing one or two people to record 3, 4 or 6-part harmony. Or, with a Music-Minus-One disc dubbed onto one track, the user can add his own piano or flute or violin part and tape the composite on the other track. In order to feed the taped channel into the other channel (for mixing with the incoming signal), the playback buttons must be so arranged that the track being played feeds both playback channels, which makes it impossible to hear the taped signal and the input simultaneously. Thus, proper balance between the two must be established by trial and error, or by alternately depressing and releasing the monitor button, for an A-B volume comparison.

In sound-on-sound recording, the

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Frequency response of the Beocord 2000, as delivered (solid lines) and after adjustment of record bias for flattest high-end response (dotted lines). Note the extreme over-all smoothness and unusually extended low-end range.
second track is a composite of the first track plus the new material added to it. If the two tracks are to be kept separate but in perfect synchronism (for subsequent mixing or for hyperstereo effects), problems arise. On most recorders, this simply can’t be done, for in order to synchronize with the first track, you have to be able to hear it, via the playback head. And your “synchronous” recording will be going onto the other track via the record head—which is located a strictly nonsynchronous inch or so ahead of the playback head. The result, when both tracks are played, will be a slight delay in your carefully synchronized second track. The “Synchro” provision on the Beocord, hitherto found only on some professional recorders, licks the problem by using the first track’s record head for playback of that track, so that what sounds synchronized will actually go onto the second track that way.

The Beocord uses an essentially straight-line tape loading path, and reel rotation, unlike that of many European designs, is the same as that of U.S. professional recorders—supply on the left, and both reels running counterclockwise in the normal mode. With the tape stopped, or in either high-speed mode, the tape is lifted away from the head surfaces. The forward run mode moves a pressure pad against the erase head and wraps the tape around the record and play heads, thus assuring low, uniform wear of the most critical head surfaces.

Also in the tape’s running path is a small, felt-covered post that wipes dirt and dust off the passing tape. The pad is rotatable, to expose all surfaces, and is washable when it gets all fouled up.

The drive system is a conventional capstan-and-pinch-wheel arrangement, but the capstan itself has to be seen to be believed. Its entire surface, even the part that contacts the tape, is pock-marked with tiny dents that make the rotating capstan feel (to the finger) as if it just came out of a rather poorly-polished mold. Indeed, our first thought on seeing this was that we had gotten a production reject as our test sample, but when we contacted Dynaco about it, all they would say was “Don’t worry about it; just test it for flutter.” We did, and we were convinced. Our tests showed this to be one of the smoothest-running transports we’ve tested.

We did not make wow or flutter measurements, so we can’t quote figures. We can say, though, that the most critical listening tests—a 3,000-cps sine wave, sustained piano chords, and certain reedy organ stops that have proven to be even more revealing than piano—showed this to have the lowest speed variation of any tape machine we have ever encountered, and this includes some of the big studio Ampexes. In addition, scrape flutter or “violin” flutter, which causes a subtle roughness in the high-end range of virtually every other machine, was as low in the Beocord as we have ever heard. Some new professional machines—from Magnetec and Ampex, for instance—have achieved comparably low levels of scrape flutter, but the Beocord has every other home machine soundly licked in this department. The effect is a clarity and transparency that is rarely heard even from a good professional machine running dual-track at 15 ips.

The motion control is not all that positive, though. It is possible to spill tape on the Beocord by slowly moving the control stick from a fast mode to the Stop position, but as long as the control movement is reasonably rapid, tape handling is positive and smooth.

Playback response from an Ampex 31321-01 test tape revealed a very slight low-end rise and a somewhat greater rise at the high end. Overall record/play measurements using Ampex 600 tape (which B&O adjusts the bias for) showed the usual 4-track low-end bumps and a marked high-end rise at all speeds, as shown in the curves below.

Sonomically, the Beocord had the transparency that we would expect in view of its very low scrape flutter, and it reproduced commercial 4-track tapes with better over-all quality than we had ever heard from them. Its slightly hard “transistor sound” helped to offset the typical “velvet fog” characteristic of commercial tapes, but the high-end rise was audible as a mild zippiness on most tapes. Bass was deeper, and more solid, than we have ever heard from commercial tapes.

Its own tapes were noticeably more lucid, but the rising high end from these was felt to be annoyingly conspicuous, so we decided to work over its bias adjustment to see what could be done about it. B&O specifies that the bias be set by measurement of the bias current—a technique that we have found to be of dubious value. Bias current is critical at low recording speeds, and the requisite current will vary from one variety of tape to another. One advantage of a three-headed tape machine is that it allows you to measure the effect of adjusting while they’re being made, and we are surprised B&O didn’t avail themselves of this facility.

There are probably some tapes on the market whose bias requirements are such that they will give flat response from the Beocord, as delivered, but we didn’t experiment along these lines. Instead, we readjusted the bias for the Ampex 600 tape, to see how smooth a response we could get. The result was a set of high-end curves for each speed that looked almost as if they had been drawn with a straightedge. Response curves after adjustment are shown in Fig. 2, and the subjective effect was predictable. Except for a marked chilling of highs at 1% and a barely perceptible loss of subtle details at 3% ips, tapes made on the Beocord were virtually indistinguishable from the original program material. There was less of the subtly grainy quality at 3% ips than most 4-track machines produce at 7%. We also noticed something else that we did not believe possible in a 4-track recorder without pressure pads: There was not a trace of the so-called “left-track malaise” —the occasional left-channel dropouts that make many 4-track machines (including the Ampex F-44) less than ideal for mono or critical stereo taping.

Unfortunately, there are other problems with the Beocord. Because of the location of the heads, and the absence of a fixed reference point at the ends of the threading slot, there is no way of marking the tape with grease pencil for precise editing.
In addition, the normally-used Line inputs (the RCA receptacles) provide inadequate gain for full-level taping from a typical preamp's Tape Out connection. The DIN Line inputs, at the side of the recorder, have higher and, in most cases, adequate gain, but these provide 10k ohms of termination and this is low enough to cut the low-end response from some input sources.

A special printed-circuit booster module, for increasing the gain of the Line inputs, is available from Dynaco on special order, and at no extra cost if it is ordered soon after purchase of the recorder. The booster module is easily installed, and simply plugs in place of the passive conductor strip that is normally supplied in the Line Input position.

The recording level meters on our sample Beocord were rather badly out of calibration, giving consistently low indications. On most meter-equipped recorders, the "Zero-level" point represents an average peak level for essentially distortionless recording, and there is enough headroom above this point to accept an occasional 4 to 6 db of additional level without incurring severe overload. This is not the case with the Beocord. In this unit, the top of the "Normal" range is pretty close to the overload point; distortion becomes quite conspicuous when the indicator moves into the red "High" range, which might better have been designated the "Overload" range. We advise using the top of the "Normal" range as the absolute upper limit when taping. Some signal-to-noise ratio will be lost, but there's plenty to spare; we measured 47 db of s/n ratio relative to the Zero-level reference of a standard test tape, which is enough to cut the low-frequency characteristic.

Since the first Beocords were released, we have changed our procedure for bias adjustment, with results closely comparable to what we've done in the past. We now use a strip that is normally supplied in the machine to provide an alignment tape for the Zero-level point. The machine is virtually spill-proof if you do not impede the motion of the control lever when you return it to stop. You can move it slowly into the fast-winding mode, for high speed cueing, but the control must be disengaged cleanly.

The standard Radio or Line input sensitivity is 0.5 volt, to prevent possible overload of transistors. The plug-in module 682L313X should be specified if 1 volt sensitivity is desired; we doubt that the low-Z DIN Line input on the side will be used, but these connectors were retained primarily for the convenience of multi-mike users.

The suggestion to add an index to the booklet this size, for a product as expensive as the Beocord, has been designated the "Overload" point. This is not the case with the Beocord 2000 looks as if it may have the field to itself in the $500 price class. The like-liest contender at present is the Uher 9000, which we have not as yet tested (but hope to in the near future).

**Hartley 220MS/Holton B Speaker System**


As the last issue went to press, we had just had the opportunity to listen briefly to Hartley's latest version of the 220MS speaker system, and we were unable at that time to determine definitely whether the very soft-sounding high end was due to extreme smoothness and freedom from distortion or to freedom from high-frequency output. Subsequent tests have shown that neither is exactly the case.

The current-model 220MS has two unusual—perhaps unique—design features worthy of note. First is its so-called magnetic suspension, which is an arrangement whereby magnetic forces (rather than compressed air or a flexible material) are used to supply a major part of the restoring force that is needed to keep the cone vibrating symmetrically around its normal "at-rest" position. The manufacturer claims that the magnetic suspension provides more rapid restoration of the cone, resulting in reduced hangover. And although we can see no reason, theoretically, why a magnetic suspension should be superior to the acoustic suspension principle (air pressure), for instance, the fact is that this Hartley system does have a tighter, better-defined low end than any acoustic suspension system we've heard, and it goes very nearly as deep as the best of them.

The "true coaxial" designation is actually an accurate description of the driving system. Most coaxial speakers are coax only insofar as the tweeter is on the same axis as the woofer. The tweeter's output may pass through the center of the woofer voice coil (as in the Altec 604), but not since the RCA LC-1A and its offspring has there been a true coaxial driving system. The Hartley is just that. The woofer's voice coil is wrapped right around the tweeter coil, and is separated from it by a thin sleeve of compliant material, and both coils occupy the same magnet gap. At low frequencies, both voice coils move as a unit, but in the high range, where total mass becomes important, the tweeter coil (which drives a small area at the apex of the main cone) is able to vibrate on its own, decoupling much of the woofer section's high mass from the system. The crossover is thus purely mecha-
Sweeping an oscillator through its range, the 220MS/Holton B system was found to be moderately smooth from 1 kc down to around 50 cps, where there was a slight response hump followed by a gradual roll-off. Response remained subjectively linear down to around 45 cps, and output was still significant at 40, which was judged to be the useful lower limit. At 35 cps there was still detectable sound pressure in the listening area, and a larger room (ours is 25 feet long) might well produce more 35-cps output. But although the cone still vibrates healthily, and cleanly, at 16 cps, we seriously doubt that the system could put out a usable 16 cps under even the most ideal conditions.

There was no audible distortion at any test frequency, but we did find two minor response humps at around 300 and 500 cps. Above 1 kc, subjective response was quite smooth out to around 4500, but from 5 kc on out to 10 kc, there was a significant "hole" in the response amounting to an average of about 12 db below the 1-to-4-kc level. At 10 kc, the response rose back to the zero line, dropped back to about the —5-db level at 12 kc, and continued on out at about that level to well beyond 15 kc. Subsequent tests using a good condenser microphone verified the results of the subjective sweep tests and confirmed our impressions of the amplitudes of the deviations.

This, then, would seem to explain our initial impression of the system's lack of highs. It is not really a limited-range speaker; its output beyond 15 kc corresponded fairly closely with the known response of the test microphone. But in the range where many of the most important musical overtones occur—the 4-to-9-kc range—the speaker is significantly down. This, plus the contrast-ring rise at 10 kc gives the system a soft, yet very subtly wiry character.

Other observations: Bass performance, as in the previous model 220MS systems, was outstandingly good; full, deep, solid, and very nearly as detailed as anything we have ever heard. Middles seemed oddly colored—not conspicuously, but with a mild "awk" quality that gave many non-brass instruments a somewhat brassy timbre.

Our conclusion about the earlier model was that we would like to see the middle range smoothed out a bit, maybe even at the cost of some high and or low-end range. This one is at least as smooth as the Janszen 's low end, but it is only slightly smoother in the middles and, in our opinion, has traded-in too much in the way of useful high-end contribution for the subtle mid-range improvement.

**MFB's COMMENT:** The speaker that you tested was sent out to you last August, and was the result of our hurry to get the production in time for the New York hi-fi show. We caught the "hole" in the upper-range response in mid-September, and changed the stiffness of the high-frequency cone to raise the response in that region by about 5 db. We had been waiting for delivery of a new, calibrated condenser microphone for test purposes, and your sample speaker was shipped before the mike had arrived, in an effort to get the report into your September issue.

After mid-September, our production incorporated the improvement, as letters and later equipment reviews will attest. We are shipping you a current model so you may judge for yourself.

**Reviewers Addendum:** The later model proved to be almost totally free from the "hole" noted in the first sample, but was slightly more elevated in the 10-kc and above range. It was otherwise identical to the first sample. Over-all judgment: Superb low end, subtly forward middles, sweet and unusually smooth throughout most of the high end, but with a slight trace of "whiskers" at the extreme highs. An excellent system, slightly higher-priced than the Janszen 2000, not smooth (at the top) or as lucid as the Janszen, but a superior bass reproducer with a warm and over-all coherence that many listeners may prefer to the Janszen's more neutral quality.

**KLH Model Nine Speaker System**

**MFB'S SPECS:** A stereo pair of full-range electrostatic speakers. Amplifier power requirements: 30 watts minimum, 75 watts maximum, per channel. Impedance: 16 ohms nominal (30 ohms max.); primarily resistive. Polarizer supply: separate for each speaker, 150 volts, 5 watts, 550 volts AC, 2 watts. Dimensions: each panel, 27% W by 2% H; Finish: Choice of mahogany, walnut or oiled walnut. Price: $1148.90. MFB: KLH Research & Development Corp., 60 Cross Street, Cambridge, Mass. 02139.

Editor's Note: Although this product has been available for several years, it is being reviewed in considerable detail because it is a strong contender for the title of Best Available Loudspeaker System, Regardless of Cost, and because we plan to review some of the other contenders for the same title within the next few issues. We feel that since all of these systems represent a considerable outlay of money, prospective buyers should have a thorough understanding of the merits and demerits of each system, so they will know what to expect from them in the way of performance capabilities and operational requirements.

The following report is longer than usual, simply because the closer a reproducer comes to approaching theoretical perfection, the more interesting the effects is in detail in its installation and use.

Other top-rated loudspeakers are covered in "Once Over Lightly" capsule reports in this issue, on page 12.

In theory, most of the benefits accruing to the electrostatic principle are in the high-frequency range, where smoothness, extended range and good transient response are difficult to achieve in a dynamic speaker. This has prompted most designers to limit their electrostatics to the middle and upper-frequency ranges, while relegating the low end to a conventional cone-type woofer. The KLH Nine is one of the few existing designs which strives to span the entire audio range with electrostatic elements.

The complete KLH Nine system consists of two large, flat panels, closely resembling decorator-type room-divider screens both in shape and in appearance. Each panel is framed with finely finished wood, and the front surface is covered with boucle™ fabric. The rear surface is covered with a finely perforated metal screen, and a similar metal screen lies behind each grille cloth, to protect the radiating elements. Each panel contains a complete two-way full-range electrostatic system. A small square panel at the middle of one edge serves as a tweeter above about 2 kc, while the entire lower range is handled by eight large strips of diaphragm material that almost completely cover the remaining frame area. The two panels are mirror images of one another; one has the tweeter located at the left, the other at the right.

Each panel has its own polarizing supply (6,000 volts), and hermetically sealed into a heavy metal case that attaches to the rear bottom of the panel and serves as a basis to support the panel upright on the floor. Each power supply draws 5 watts at 115 volts AC, and 15-foot AC cords are supplied. The supplies are fully fused.
KLH suggests a choice of two basic setup arrangements: with the speakers side by side in a shallow V configuration, or separated by some distance, for wider stereo spread. Because of their two-sided radiation, however, they should not be located closer than about 4 feet from any parallel wall surface, as this will inhibit low-end radiation and may cause mid-range standing-wave problems.

For the initial tests on our KLH Nine, we placed the panels together, using the special metal straps that are provided to couple the frames, and located the system near one end of a 20-by-13-by-9-foot room, in an area that has proven to be satisfactory with other speakers. An oscillator sweep failed to reveal any audible peaks or dips or harmonics, but we did find one spot near the low end where there were loud metallic rattles from the edge of one of the perforated rear screens. For some reason, slight twisting of the panel frame eliminated the rattles, and they have never since recurred.

High-frequency distribution was judged to be quite poor. Each small, flat tweeter panel radiates an increasingly narrow beam with a rising response at frequencies above about 2 kc. At 5 kc, the beam was judged to be about 30° wide, while at 10 kc it was barely more than about 10°. The speakers can be aimed so that neither beam reaches a listening area, and this will offset most of the high-end rise, but unless some care is taken to do this, stereo imaging will be quite poor and the sound will be excessively topish.

The system's over-all response, off the tweeter axes, sounded almost perfectly smooth from well beyond audibility (14 kc in our case, and verified to beyond 20 kc with a condenser microphone) to around 40 cps. There was a slight high-end rise above about 3 kc, but for some reason, this did not add any spit or sizzle to the sound; it just seemed to impart an open, airy quality to it. There was no slow rolloff or hummed response at the low end; it hit 40 cps and then dropped off very rapidly. (We should point out that, of the other systems that extend significantly below 40, practically all of them have a peak at 40 or above, which acts to exaggerate lows and to mask the audibility of the extreme lows.)

With some experimentation, we were able to place the KLH Nine where its low-end radiation throughout the room extended down to a useful 35 cps, but were unable to elicit much of anything from it below that. There was no low-end fluttering; when it dropped out, it just went silent.

Note that the foregoing observations about the KLH 9's low-end performance apply when the two panels are placed side by side. Unfortunately, this arrangement tends to kill most of the stereo effect except when listening from a distance of eight feet or less, and when the panels are separated, to improve the stereo spread, the system's entire low end was noticeably impaired. Instead of linear response to 40 and a sharp drop-off below that, the whole bass range below about 70 cps exhibited a slow rolloff. There was still usable output at 40, but it was weak, and there was virtually nothing below it. The effect, of this, in most rooms, was an impression of slightly excessive brilliance and low-end deficiency. Placing the edge of each panel right against a wall of the room helped to bring up the bottom, but not to the degree of linearity that was obtained with the panels together. And the against-the-wall arrangement necessitated putting the speakers too far apart for adequate center fill-in.

On the basis of this, we placed the panels together for the rest of our listening tests.

To date, nothing we had found seemed to suggest that this system was worth anywhere near the $1,140 the manufacturer asks for it. We changed our mind, though, when we heard music through it. This was the first time, since we started dabbling in high fidelity in the early 1940's, that we have ever felt we were really listening through a loudspeaker instead of to it; the system has a degree of transparency and detail that we simply did not believe possible.

Our long exposure to the openness and lucidity of Janssen electrostatic tweeters had prepared us for the kind of upper-range transparency we heard from the KLH Nine, but to hear lower middles and deep bass reproduced with the same entirely effortless clarity was a hair-raising experience. No matter where we placed the speakers, we could not get boomy bass out of them. Bass transients—plucked basses and the impact transients of tympani—were solid and entirely free from hangover, and when organ pedals and bowed double-basses alternated, there was simply no question as to which we were hearing. We could, almost literally, "count the cycles" of a bowed double-bass. Only on very rare occasions—on some original, ungimmicked organ tapes, for instance—did we notice that some extremely deep notes were coming through less strongly than on some other systems we've heard (the Janssen Z-600, for instance), but the superior low-end detail of the KLH Nine made us more than happy to forego part of the energy from one or two musical notes on one recording out of every fifty or so.

In listening to the KLH Nine, we were more conscious than ever before of the gimmicking that goes on in most commercial recordings. The system's remarkable reproduction of depth perspective makes it clearly apparent which instruments were close-miked and which were coming through the general-pickup mikes, and when an accent mike was suddenly turned up, the over-accented instrument would protrude from the mass of sound like a luminous proboscis. On the other hand, inherently natural recordings came through with greater depth and naturalness than we had thought possible.

Careful placement of the KLH Nine has a great deal to do with its performance—more so in fact than with most speakers, because its two-sided sound radiation makes it responsive to acoustical conditions behind it as well as in front of it. It is possible to introduce audible response colorations by locating the panels where reflections from walls behind them tend to augment or cancel certain mid-range frequencies. A few degrees change of angle or a few inches change of distance with respect to the nearest wall will generally lick the problem.

When using the hardware supplied for fastening the panels together, the radiator panels are angled slightly outward. This directs the tweeter beams away from the listening area and, in some locations in some rooms, broadens the apparent stereo spread by bouncing the treble beams off the room walls. It does, however, also tend to reduce the system's upper-mid-range radiation to a slight degree, for these frequencies, too, are somewhat directional and tend to follow the paths of the treble beams. The losses are slight, but the system is so close to being perfectly linear that they may be quite noticeable in some rooms. If a bit more "presence" is desired, place the panels in a straight line, edge to edge. Incidentally, when the panels are used together, they should be arranged so that the tweeters are located at the outer edges of the
paired panels, for maximum stereo spread. When the panels are used spread apart, tweeter location doesn't matter (although their direction still does).

Efficiency of the KLH Nine is very low—in the vicinity of 1%, which puts it about on a par with the best of the acoustic suspension systems. The manufacturer recommends a minimum of 30 watts per channel, and to this we add a caution about the kind of amplifier that should be used. Like all good electrostats, the KLH Nine does not need the hardness of a typical transistor amplifier to give it adequate crispness, and it reproduces every nuance of distortion fed to it. We know of only two manufacturers whose amplifiers and preamps fully meet the necessary standards: Dynaco and Marantz. There may be others, but we haven’t found them yet. And if you’re wondering about some of the new transistor units, find out what their measured IM distortion is below the 5-watt power level. If it rises to above 0.20% at any point below 5 watts, with a 16-ohm load, forget it. If it doesn’t exceed this limit, it may be suitable, but we couldn’t guarantee it.

Finally, a word of caution. The crossover networks in these speakers can be damaged by attempting to drive them at high levels with continuous sine-wave test tones. Response tests should be conducted at levels of 10 watts or less, and tones at this level should not be allowed to continue uninterrupted for longer than about a minute. If either panel suddenly starts making loud fluttering noises at low frequencies, the crossover network is being, or may already have been, damaged. The KLH Nine will safely handle the full output of a 70-watt-per-channel amplifier on music and natural sound material, and will produce full concert-hall volume, as heard from a row-H to row-M seat, with a dual-50-watter in a room of moderate size. But be careful with continuous tones; much of the “horrible” sound people have reported from these speakers is due to a damaged crossover network. The power supplies and radiators, on the other hand, appear to be at least as rugged and dependable as conventional dynamic speakers. We have heard of only one case of electrical breakdown, and that system had been used where it was repeatedly exposed to conditions similar to those in a steam bath.

This is the most nearly perfect loudspeaker we have ever heard, and we’ve heard every likely contender that’s in commercial production. It does not favor some instruments over others, but seems to make everything sound almost perfectly natural.

It is not entirely without its own sonic character, though. Although there is nothing about its sound that we would describe as a coloration, it does tend to move things slightly back from the listener, “placing” them a bit farther behind the surface of the speaker than is the intent of the recording. The effect is much like that of moving back about ten rows in a concert hall, and since either spot can be a perfectly good seat from which to listen, it is fair to say that this characteristic of the Nine does not impair the realism of the sound.

This is not the kind of loudspeaker that everyone will like on first hearing. Its major points of superiority—it’s transparency and detail—are not readily appreciated until you’ve lived with them for a while, and it demands better associated equipment and more careful room placement than many users are willing to provide for it. Neither is it a very satisfactory wide-stereo reproducer in many listening rooms.

Because of its low efficiency and its tendency to move the sound slightly away from the listener, the KLH Nine is not recommended for the person who likes to re-create the extremely high level and intimacy of a very close-up seat in the concert hall, or who plans to be listening to it from a distance of 20 feet or more. But for the person with an average-to-large living room, whose preferred concert seat is between Row F and first balcony, the KLH Nine can come closer to re-creating the illusion of concert-hall realism than any other commercially available loudspeaker system, regardless of cost.

KLH Model Eighteen Tuner

<table>
<thead>
<tr>
<th>MF-P SPECs</th>
<th>Frequency response: ±1 db, 20 to 15k.</th>
<th>HF FM sensitivity: 4 uV</th>
<th>Harmonic distortion: mono 0.5%, stereo 0.8%.</th>
<th>Selectivity: 55 db.</th>
<th>Capture ratio: 4.5:1.</th>
</tr>
</thead>
</table>

This is a fully transistorized FM stereo tuner of functional design and highly attractive appearance. We rarely comment on a component’s styling, because this is something that any prospective buyer can see and judge for himself. But in the case of the KLH Eighteen, we are obliged to put in our two cents’ worth. This, to us, is how home high-fidelity equipment should look; simple, uncluttered and just downright handsome, without either the medical-laboratory look of professional equipment or the junky juke-box look of the typical home appliance.

In the case of the Model Eighteen, this functional simplicity is reflected in the electronic design, too. The controls are basic and simple, providing those functions that every stereo FM tuner needs (plus one that no tuner needs, which we’ll mention later). The tuning knob is a planetary-type vernier, with just the right amount of drive ratio to allow fairly quick scanning of the dial (a complete scan takes a bit more than three revolutions of the knob) or easy tuning of a station, and a zero-center meter is included to facilitate tuning. The meter is very accurate except in those relatively few instances when tuning to a weak station right next to a strong one. A small neon lamp below the tuning indicator lights up when a stereo subcarrier signal is being received, to indicate a stereocast.

Other controls include a combined AC switch and volume control, a stereo/mono switch, and an SCA (Station Identification Authorization) filter to eliminate the burbling background noises from stations that are transmitting a simultaneous subcarrier signal for “storecast” background music services.

There are two sets of outputs, one at a fixed 1.4-volt level and the other providing control of the output level (up to a maximum of 0.8 volts) via the tuner’s volume control. The fixed-level outputs are at 10,000 ohms impedance, while the volume-controlled outputs vary in impedance depending on the setting of the control, reaching a maximum of 20,000 ohms with the control all the way up. Neither output is at what would be called a low impedance, but even the 20k output is low enough to avoid audible treble losses as long as the output cables are kept to less than 10 feet in length.

The tuner handled well and performed better than anything we have ever encountered in a tuner of this price. Sensitivity was quite high, although noticeably less so than the Dyna or Sherwood tuners with which it was compared (both of which cost significantly more). Selectivity was judged to be very good, and capture
Drossage DR-100 Rock-Solid-State Stereo Amplifier

**MFR'S SPECS:** Power output: at least 12 watts per channel, with both channels driven. Frequency response: ±2 dB from 10 to 20,000 Hz. Distortion: 0.02% at full output, with recommended load. Output impedance: 1 to 4 ohms, RMS. Source impedance: 100k ohms. Inputs: R & L. Controls: Volume/AC power; separate bass and treble-control sections. Dimensions: 3 inch high by 11 wide by 9 deep, over-all. Price: $139.95. MFR: Drossage Co., Oak Dr., Drossage, N. Y.

This handsomely-styled control amplifier is designed for the buyer who wishes maximum performance for a minimum outlay of money. It is fully equipped with tubes and a full complement of two inputs (one per channel), plus separate controls for volume AC and for tone. Input selection is accomplished by plugging and unplugging inputs.

On instrument tests, our sample measured only 14.7% distortion at 0.6 watts output, which of course will be inaudible under musical listening conditions. Other measurements confirmed the manufacturer's claims. Hum was 70 db below full rated output, and hiss was only 3 db above 12 watts, with the volume control all the way down. The full-volume setting increased this by less than 8 db, which of course is insignificant.

At low frequencies, the DR-100 maintained a state of rock-solid stability, as claimed by the manufacturer, but we did find a slight tendency toward full-power high-frequency oscillation under some conditions, such as with a loudspeaker load. Stability was excellent with a resistive load.

The sound was fine. At normal listening levels, we found it quite easy to distinguish between the timbres of instruments such as piano and trombone, and were readily able to hear the violins too. We do not advise buyers to drive the Drossage DR-100 to very high levels, however, as this makes it a bit difficult to distinguish the fundamental pitch of instrumental notes, and may cause the output transformers to catch fire.

All in all, this is a fine, versatile piece of equipment, which is well worth serious consideration by the budget-conscious hi-fi enthusiast.

**MFR'S COMMENT:** Thank you for your fine review of our fine new rock-solid-state amplifier. We are glad you agree with our own evaluation of this precision instrument, and are gratified to see that our advertising campaign in your fine magazine has truly succeeded in demonstrating the manifest merits of the DR-100.

Euphonics Addendum

The Manufacturer's Comment for the Euphonics "Minionic" pickup report in the last issue raised some questions that we should have answered but were unable to because of lack of space. The points in question are answered below.

Italics indicate statements from the Manufacturer's Comment.

"We call attention to the fact that, for over 10 months now, the CBS STR-100 test record has had almost 2 db of channel imbalance."

This is not pertinent to our tests. Our channel balance measurements were made with band 7-A of the CBS STR-130 record. This is a lateral cut, which should provide equal 45-degree modulation for any vertically-oriented stereo pickup.

"Higher effective tone arm mass most certainly will affect high-frequency response. Arm mass determines the amount of compliance (especially vertical) that can be incorporated in the cartridge. When arm mass is great (and even our ultra-light Minionic arm could be lighter), mistracking and distortion result, especially at high frequencies."

Our highly favorable comments about the Minionic's tracking (at all frequencies) were based on its use in a relatively high-mass arm. We found no evidence of significant "mistracking and distortion" at any frequency.

Once Over lightly

Grado Model A Pickup

One of the best pickups we've heard to date, the Grado A was introduced with some fanfare in the fall of 1964 and then, for no apparent reason, was withdrawn just one year later. It is probably still available, though, either used or, discounted, as new stock at some dealers.

This is (was?) the cleanest-tracking pickup we have tested to date, by a small but perceptible margin, and unlike most ellipticals, its high end is extremely smooth, with no audible rise at all. A slight, broad response dip centered around 5 kc gives it a somewhat soft, reeded quality, while a pronounced low-end rise (apparently not just an arm-resonance peak) makes thin speakers sound fuller and full speakers sound bass-heavy. The rise hits its maximum at around 35 cps.

It is normally supplied with a dual
matching transformer, to step up its very low output, but unlike the Ortofon, the Grado's transformers are separate from the pickup. They plug in between the tone arm's output cables and the preamp inputs, thus holding the pickup's weight down to an acceptable figure for use in most tone arms. (Many arms will not counterbalance the Ortofon without an extra counterweight.) The Grado's output, without the transformers, is adequate for feeding a few high-gain low-noise preamps (like the Dynavox PAS-3), and the sound is somewhat more transparent when it is so used. Under these conditions, transparency is about midway between that of the Ortofon and the Decca Mk IV. With the transformers, it's about on a par with the Shure V-15.

The original new price was $50. Don't pay it.

Incidentally, we phoned Grado Labs more than two months ago to ask if we could borrow a Model A and one of the new Model B units for comparative testing. They agreed to send them, but have not done so as of this time, despite an unanswered reminder (via the mails). This sort of thing makes us wonder.

We'll endeavor to borrow a Model B locally. Or, would some reader care to loan us one for testing? We promise to return it intact. Check with us first, though; we may already have obtained one.

Decca (IMF) 78-rpm Pickup

A forerunner of the top-rated Mark II stereo pickup, this is a mono model equipped with a 2.5-mil diamond stylus for playing 78-rpm discs. The 2.5-mil radius is considered standard for European 78's, but does in fact work better on used U.S. pressings than the American standard 3-mil stylus. (Perhaps this is because it plays a part of the groove that remained relatively unscathed by repeated playings on 3-mil stylus.)

This is about the smoothest, cleanest-tracking 78 pickup we've ever come across, rivaling the smoothest of the old Weathers FM systems and surpassing the majority of them (which were not always terribly smooth). Unfortunately, the Decca 78 head, like the Mark II, will fit only its own tone arm or an SME arm with the appropriate adapter, and the SME has too much inertial mass to track the wobble warps and eccentricities of many 78-rpm discs.

With its own arm, and a suitable filter for erasing surface noise above 7 kc, the Decca head will give about the best sound that it is possible to extract from 78's, including thoroughly beat-up ones. It is thus highly recommended for those people who've been hanging onto their 78-rpm collection until they found a pickup good enough to allow them to dub them to tape with a minimum loss of quality.

Like the Mark II, this one has a fierce magnetic pull, so use a non-ferrous turntable platter or a ¼"-thick spacer mat.

The price for the head is $40, and it can be ordered directly from IMF Products, 7616 City Line Ave., Philadelphia, Pa.
often be better when a stereo pair are out of their corners; two of them in corners tend to produce excessively hoomy bass in most listening rooms.

**Bozak B-310**

A moderately efficient direct-radiator system for use in large listening rooms (at least 20 feet from the listening area) at levels up to "Row C" volume.

Middle very smooth and natural, highs rather fiery, lows somewhat variable from one production-run to another, evidently depending on the amount of Fiberglas packing in the enclosure. Generally, lows are rather heavy, rich, and only moderately well defined, with a broad hump at around 45 cps and an audible response to about 35 cps in a suitable room. Driver blending is excellent and stereo imaging is very good.

A very dramatic-sounding system, better suited for reproducing large musical groups than, say, chamber ensembles. String tone tends to be hard and somewhat wiry, and surface noise is slightly exaggerated, with a predominantly spotty quality. The B-310 is at its best at low to moderately-loud levels; at very high levels, highs are likely to become rather shrill.

In pairs, for stereo, room location may have to be carefully chosen in order to avoid excessively heavy bass radiation through the listening area.

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**Recommended Components**

These are listings of high-fidelity components which we have found to be outstandingly good in each of four quality classes. Although not necessarily the only units which will meet the stated criteria of each class, they are simply ones that we know will provide the quality-conscious buyer with about the best sound he can get for his money.

The performance of systems using these components will depend to a great extent on care of installation, room acoustics, and the quality of available recordings, so we cannot assume any responsibility for the sound obtained from them. All we can do is assure buyers that the components listed are intrinsically excellent.

Components are selected for listing on the basis of our personal experience with them as well as reports from users and in other magazines. If a price-competitive component is not listed, it is either because we have no information about its performance, or because we have found it to be inferior to a listed unit of comparable or lower price.

Ratings of amps, preamps and tuners are based, first on distortion, response linearity and other performance considerations, and then on control versatility, construction, appearance, and the unit's record of dependability up to the time when each listing is compiled.

Phono Units

**Ampex 354; Scully 282-4; Ampex AG-350.**

**Bozen K-310.**

**B) Sherwood S-3000V; Dynaco FM-3; KLH-18.**

**B) Dynaco PAS-2, PAS-3.**

**C) EICO ST-97.**

**D) Heath AJ-12.**

Lioph recorders are listed primarily on cleanliness and smoothness of disc reproduction, and absence of flutter and rumble. Advantage of feedback and mechanical shock isolation play a lesser role in the ratings. These last importance of these characteristics will depend on the individual installation. The buyer must determine whether these latter considerations might dictate the choice of a unit that is slightly less outstanding in primary performance characteristics.

Loudspeakers are rated according to over-all naturalness. A certain amount of "weighting" has been applied to the evaluations, reflecting (as it must) our personal reactions to the systems. Thus, a system with excellent middle and high-end performance may be rated below one that is somewhat less smooth and extended if its low-end performance is felt to be markedly inferior to the other.

Components of approximately equal quality (listed together in a single class) will usually offer different "extra" features that may swing the buyer to one particular unit. It is however assumed that the buyer will select his loudspeakers on the basis of room size, acoustics, and personal preferences, and will make the necessary system adjustments correctly. Except where otherwise noted, a speaker should be driven by the amplifier in its same class whose power capability meets or exceeds the speaker's needs. Speakers are listed in each class in order of brilliance and smoothness.

Loudspeakers are rated according to visibility and sound quality, no-holds-barred. Class A—Sonic quality about equal to that of Class A, but lower in cost and generally better suited to smaller listening rooms. Class B—Lower-quality sound, but far better than average home high-fidelity; Class C—Good, musical sound, but significantly better than Class B; Class D—Lower-quality sound, but far better than the best attainable.

The following changes are being made in the listings, as of this issue:

1. Dynaco PAS-2, PAS-3.
2. Acoustic Research AR-4x; KLH Model 16.

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**Amplifiers**

**A) Marantz 9A or 8B.**

**B) Dynaco Stereo 70.**

**C) KLH Model 16.**

**D) Dynaco SCA-35.**

**Speaker Systems**

**A) KLH 9; Bozak B-310; Electro Voice Patrician 800; Alien A-7.**

**B) Acoustic Research AR-3; Janszen Z-600.**

**C) Acoustic Research AR-2xv; KLH 6; KLH 7; Quad Electrostatic Wharfedale W-40.**

**D) Acoustic Research AR-4s; KLH 17.**

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1. For 78 rpm, add extra plug-in head and General Electric 840-400 pickup (or Decca 78 head if using MI 11).
2. Use with electrostatic tweeters.
3. For 45 disc, designates a combination of the C-150 pickup and the C-66 pickup's wiring harness and preamp input adapters.
4. Integrated control amplifier.
Record Reviews


The Amadeus Quartet. Deutsche-Grammophon (Ampex) tape DGR-8531.

These are without doubt the most satisfying performances, and recordings, of these works that have been released in stereo to date, and this is one of the few occasions where there is little to choose between the tape and the disc version. Take your pick, according to your preference; both are superb.

Beethoven: Symphony No. 3 (Eroica)


There are as many tastes in “Eroicas” as there are reviewers, but this performance suits ours better than any we’ve heard, and the recording stands head and shoulders over all the others. Our review copy was a trifle dry at the low end and had some audible hiss, but neither of these problems was noted in the disc equivalent.

Janacek: Slavonic Mass

Bacarian Radio Chorus & Orch., Rafael Kubelik. DGG SLPM-138954 (Stereo), LPM-18954 (Mono), DGC-8954 (Tape).

This is a hair-raising performance and a superlative recording. The sound is spacious and rich, with wide dynamic range and a minimum of audible gimmickry, except for a bit too much spotlighting of soloists. The stereo disc and our review tape were virtually identical in sound although, as usual, the tape was hissier and not quite as transparent as the disc. Tape hiss was, nonetheless, lower than average for commercial tapes.

Music to Listen to KLH By


Don’t be misled by the title of this. It’s fine for listening to KLH by, and it is also fine for listening to any other top-notch reproducer by. It is in fact the best, and most musical, stereo demonstration disc that’s come along to date.

The KLH demo disc offers musically complete selections (instead of fragments) and a bare minimum of hokum in the discing, and the sound is excellent: very transparent, warmly natural, with an extremely smooth, unhyped high end. Lows are quite deep and solid, although not quite as deep as we’ve heard from some discs. It’s interesting, though, to note that these excerpts, which were presumably cut from the same master tapes as the original Everest and Concert-Disc releases, are much more smooth and lucid than the originals.

This is one demo disc that’s worth buying. If your local KLH dealer doesn’t stock it (it is not available through record stores), it can be ordered for $2.98 directly from KLH.


Peter Serkin, piano; Alexander Schneider, violins; Michael Tree, viola; David Soyer, cello; Julius Levine, double bass. Vanguard stereo disc VSD-71145.

A thoroughly delightful performance and one of the richest, most musically natural recordings we’ve heard for some time. This is quite simply, the best release of the “Trout” quintet to date, and may well be the definitive one for some time to come. The sound is more lucid than anything Vanguard has ever released, which is saying something.

A Two-Organ Recital


This varied program includes two-organ compositions by Soler, Langlais, Cherubini and Jongen, and the performances are excellent. But it’s the recording that makes this so unusual a release, because here is one of those rare discs that really conveys the tremendous range of pitches and dynamics that makes organ music so thrilling to listen to. The recording relays each organ to one channel, so the interplay is clearly audible. Yet there is enough blending and spaciousness to convey the size of the large hall and to avoid ping-pong hyperstereo effects. The electronic organ, by the way, sounds more like a superb pipe organ than it has any right to.

Surfaces on our review copy were extremely quiet, providing the full advantage of the tremendous dynamic range on the disc, and there’s some of the deepest bass on this that we’ve ever heard from records. Despite all this, it will track cleanly on the best equipment, although it does give lesser systems a rough time.

This is a must-buy, if only as a graphic demonstration of how much original musical sound can be recorded onto (and extracted from) a stereo disc. If the record isn’t available locally, it can be ordered ($4 postpaid, plus 5% tax for Penna. residents) from Rittenhouse Records, 1932 Lombard, Phila., Pa., 19146.

From the Top of the Pile

Listings, without comment, of some recent releases combining excellent recording with outstanding musical performances.

Tchaikovsky: Symphonies No. 1 and 2. Vienna Philharmonic Orch., Lorin Maazel, cond. Two London discs or one London tape.


Berg: Wozzeck. Berlin Opera Chorus and Orchestra, Karl Bohm, cond. Two Deutsche-Grammophon discs or 1 DGG tape.


My Name is Barbra. Barbra Streisand, Orchestra cond. by Peter Matz. Columbia stereo disc or tape.


Haydn: Symphony No. 75, Symphony No. 81. The Esterhazy Orchestra, David Blum, Cond. Vanguard stereo disc or tape.

WANTED
Amplifier P-1450 or 2850 recd. Altec 100A spkr. Eugene Yavan, 108 W. Tompkins St., Columbus, Ohio 43202.
Mirando manual record player XM-10; Audio-Technica AT-120 stereo peck; Heath FM-2A FM tuner; Dual 1066 recd. chgr; A.B.G. Ltd. 300 E. 55 St., Kansas City, Mo.

SOLD
Amplifier C-11 primd.; $159; two McIntosh MC-250 stereo pecks (no nobs). $50; Viking 88 RMQ-HSM stereo recd. $15; Lanzing LE-14C spkr w/3x15s, $115 each. Hadley W. Davis, 6040 Sheridan Rd., Apt. 411, Chicago, Ill. 60660.

A chgr w/base, $35; Viking 85 tape deck. Sell or trade: Fairchild 500 anti-skate pckp, 2-speed table, walnut base. Exc area. T'phone 778-6978. Reply only if in N. J.

Copy of Stereophile Number 3. Norm is in perfect condtn. Bertram I'. Goltz, 4330 21st Ave., Washington, D. C. 20008.


Business & circulation offices at Aschkenasy, Waffenplatzstr. 11, 8002, Syracuse, N. Y. 13210.

Copy of Ed Summerlin "Liturgical Jazz" (Ecclesia E-101) and "Franz Jackson's Original Jazz All Stars" (Riverside 406). Stereo or mono; a good tape dub of "Liturgical Jazz" will suffice. Robert Najdovsk, 3126 Julie St., St. Joseph, Mo. 64501.


Model 1B-3000 gold-foil phono pickup, oiled w/int base; new price $270, $90; heft Imperial 1000 80-watt transistorized stereo receiver. Lafayette KT-550 100-watt basic amp; Lafayette LA-250 transistorized 250-watt bass/inst. amp; Rockokan brand 6B6 tubes, 4 new, 2 used. All Ampex, Knight & Sony recorders. Dynasyst stereo control, several tape deck, receiver, tonearms, some test instruments, etc. All brand new condtn. selling together. Best offers for above, or write for list of other items. Lewis J. Thomas, 40 Rockwood Rd., Philadelphia, Pa. 19114; Phone 215-523-3151.


Dyna PAS-3 preamp, nearly new, perf condtn; $60; Dyna Mk II pwr amp, $25; disguised phonographs, Kinderhook Rd., Clittenden, N. Y.

Amplifier 1214-16 and 2 Prof stereo portable tape recd. $20 for both, $15 each. fresh 16, 2 and 3 used. I'm interested in buying old & rare stereo equipment. I have $250 to $500 to spend. Please write me at 137 S. 11th St., N. 15201; Tel 412-255-5256.


Two Wharfedale Super 3 twtrs, latest model, cloth surround. Used all or singly: make offer. Two Heath XL-1 electronic xovers, new, $15. Marantz Audio Corp fax condtn, $125. Let us know what we have. Lacon Hope, 121 T arm, Ortofon SPE/GT elliptical disc cutter, 16 ohms, & one outside-in feed screw (112-groove); consolc cinn/wheels & record storage space; $200 for the lot, or will trade for Sony C-37A, or Thorens T1-121 or Empire 288 warm & pickup, or? Must be picked up by purchaser. Please call. John J. Mclughin (g.), 1515 N. Lincoln, Chicago, Ill.

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Wanted
Cord, 6x1, 16-inch, $/bottle 1-10 disc cutter, 16 chips, & one outside-in & one inside-out feed screw (112-groove); consolc cinn/wheels & record storage space; $200 for the lot, or will trade for Sony C-37A, or Thorens T1-121 or Empire 288 warm & pickup, or? Must be picked up by purchaser. Please call. John J. Mclughin (g.), 1515 N. Lincoln, Chicago, Ill.

Bell Imperial 1000 80-watt transistorized revr. Lafayette KT-550 100-watt basic amp; Lafayette LA-250 transistorized 250-watt bass/inst. amp; Rockokan brand 6B6 tubes, 4 new, 2 used. All Ampex, Knight & Sony recorders. Dynasyst stereo control, several tape deck, receiver, tonearms, some test instruments, etc. All brand new condtn. selling together. Best offers for above, or write for list of other items. Lewis J. Thomas, 40 Rockwood Rd., Philadelphia, Pa. 19114; Phone 215-523-3151.

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Letters

Reference Recordings

If commercial recordings are as bad as you found them to be ("How Hi-Fi Are Stereo Discs?" in Stereophile No. 8), what signal source should one use in selecting a new speaker system?

Wm. H. Brown
La Habre, Calif.

They aren't all that bad. We suggest you use some of the recordings we listed in "Top of the Pile" roundups in recent issues, or a couple of ones that have gotten rave reports for their sound in our Record Reviews sections.

Solid-State Rebuttal

I must take very strong exception to your article condemning solid-state amplifiers in general and stating that the best of them sound like the best of the vacuum-tube amplifiers.

I built, along lines used by Acous-tech, a 3-channel solid-state amp that makes my Citation tube amp sound sick. There is more apparent bass (although there is no measurable difference), the damping is much better, and triangular waveforms show no sign of the crossover distortion you described. This transistor amp doesn't add any glitches to color the music, and it sounds better than a good tube amplifier.

W. Q. Cochran
Hatfield, Pa.

We did not condemn solid-state amplifiers in general; all we said was that very few of the ones we test in commercial production sound as good as good tube amps, and the best of them sound virtually indistinguishable from the best commercially available tube amps.

A commercial product must be built to a price; a home-built one need not be compromised, so yours may well be excellent. The fact that it sounds better than a Citation tube amp is hardly pertinent, though. Your Citation may not be meeting its own specs, and even if it were, we do not consider it to be one of the very best tube amps available. Some of Citation's tube amps were prone to high-frequency instability, which could account for the improved bass you noted from the transistor unit.

The point in question is not one of potential quality, but of quality that has been available to date in commercial designs.

Q.E.D.

I'm gratified to see that you finally knocked the Quad electrostatic out of Category A in your "Recommended Components" listing and into Category C, but I honestly don't know why you recommend the speaker at all.

Granted, it sounds excellent when new, but of the five people I know who bought them during the past four years, all five of them had to return the things to the manufacturer for repairs on the power supply within two to three years after they bought them. One unit has needed power supply repairs three times in three years.

You dropped all the top-rated transistor amplifiers from the "Recommended Components" list because of reported failures in the field. Why not be equally critical of the Quad electrostatic?

M. Lindsay
Haverford, Pa.

I think it is mistaken judgment on your part to drop the Quad electrostatic system from Category B to Category C simply on the basis of some "conflicting reports about their bass performance" from some readers.

How do you rate loudspeakers, any- way? Judging by the listings in issue Number 11, it would appear that your sole basis for evaluation is bass performance. Doesn't realism carry any weight? Certainly, the Quad can't begin to compete with the other systems in Category A on the basis of low-end performance, but it is a much more natural-sounding system than the Altec and E-V systems that you rate above it.

John Koval
Norristown, Pa.

There, in a nutshell, is our dilemma. Mr. Lindsay's complaint about the poor durability record of Quad power supplies is a valid one; these supplies fail much more often than those of any other commercially available self-powered electrostatics, and for this reason alone, the Quad should be omitted entirely from our list of Recommendations.

On the other hand, many of them don't fail, even after a number of years of continuous use, and the system is, as Mr. Koval points out, one of the most natural-sounding reproducers available. Whether or not it is more so than the Altec and E-V units in question is a moot point, though, because while "naturalness" is largely a function of smoothness and low distortion through the upper and middle ranges, it is also related to low-end performance. And as Mr. Koval admits, there is no comparison here.

The Quad, properly used (i.e., with a suitable amp, at moderate levels), does have lower distortion and smoother response through a major part of the audio range than do the Altec and E-V units, but it lacks their high-level reproducing characteristics, and its low end is no match for theirs. Averaging out the advantages and disadvantages, we feel it belongs in Category C, on the basis of sound alone. In view of its power supply difficulties, however, it barely warrants inclusion in the "Recommended" listing at all, and was retained only because it is our general policy to judge components on the basis of their normal or optimal performance. There has been a higher incidence of failures in Quad electrostatics than we like to see in any product, but not quite enough, yet, to prompt us to dismiss the unit as a lost cause.

As far as the transistor amplifiers were concerned, there was no doubt about the situation. In the case of some of the units in question, every single one sold within a certain period of time went bad within a few months.

Elusive Factor?

In your report on the KLH Model 16 amplifier, you said "it was very slightly bass-heavy (for reasons which escape us) . . . "

What happened to your powers of deduction? All you have to do is read the spec sheet to note that the KLH 16 has a rated damping factor of 4, which is lower than just about anything else on the market. Is there any wonder it sounded "very slightly bass heavy?"

Jim Stroup
Albany, N. Y.

Little wonder. We just wonder how we managed to miss the connection.

AD Quotes

"When Pickering Holds a Contest, the Dealer Always Wins!"—From an ad in the audio trade magazines.

Who loses?
Deutsche-Grammophon Tapes

According to the June issue of “American Record Guide,” DGG tapes are quite outstanding. If so, should Stereophile readers chuck their Decca pickups, SME arms and Thorens turntables and go to tape?

Carl A. Boldt
Colorado Spr., Colo.

Generally, the DGG tapes we’ve heard have been better than most other tapes we’ve heard, but on the other hand, DGG’s discs are better than most discs, too. And on top-grade playback equipment like the stuff you mentioned, they’re a shade quieter and more transparent than the DGG tapes.

Corona Speaker

Has any progress been made in the development of the corona wind loudspeaker? Since it had no moving parts, and was capable of reproducing down to DC, I had always felt this had great potential as a high-fidelity reproducer.

William Norris
New York, N. Y.

We have never heard anything about the corona wind loudspeaker since the brief flurry of articles about it back in the late 1950’s. If any reader can bring us up to date on this, we’d be appreciative.

Ampex Versus Audiocraft

How does the current model Ampex MX-10, 35 input mixer compare to the famous one that your editor designed for Audiocraft magazine, in terms of ability to produce clean, realistic tapes?

Karl C. Thomas
State College, Pa.

They aren’t really comparable. The Audiocraft mixer was monophonic, and had provision only for three low-impedance microphones.

The Ampex mixer provides stereo or mono outputs, and has four inputs, each of which can accept either a low-impedance mike or a high-level line.

Recorder Adjustments

I notice in some of your reports on tape recorders that you refer to “professional-type” adjustments inside the machine, intimating that these are necessary for really good recording. What would a full complement of these adjustments consist of?

Alex Hansen
Pittsburgh, Pa.

Bias current, record equalization (treble), playback equalization (low-frequency turnover), playback level (for precisely balancing the channels and providing standard “line” output level), record calibrarion (for setting to true Zero level when the meters say Zero), and noise balance (for minimizing distortion in the bias wave).

Bafflements

Send us your audio bafflements concerning specific components or general audio matters, and we’ll answer as many as space permits in this section.

We regret that we cannot reply on an individual basis, though, unless (1) you raise questions that can be answered Yes or No, and (2) you enclose an addressed return envelope.

If you subscribe to our views, why not subscribe to our magazine? You could probably continue to borrow it from a friend, but that wouldn’t help to sustain your only source of unbiased information about audio trends and products. Please bear in mind that your subscription is our sole source of support. We carry no advertising, to allow us complete freedom to report what you should know about equipment before paying $30 to $300 for it. This freedom from advertising pressure costs us more than $15,000 per issue in lost revenue, which is why we must ask so much for subscriptions, and is why we cannot continue without your support.

The coupon on page 18 can be clipped out without mutilating any of the magazine’s editorial material, and if you get your subscription or renewal to us in time (See “As We See It,” page 2), you can still subscribe at the old, cheap rate.
pickup is just too heavy for the Dual's arm counterweight to offset.  
Now what do I do?  
I had a lot of trouble fitting that long pickup into the arm shell, too, but at least I did manage to lick that problem.  
Dick Olin  
Brooklyn, N. Y.  
We neglected to mention the fact that an extra counterweight is needed for the arm. This is available for $5 from Dual or from most Dual dealers.

### Adamant Adapter

On your recommendation I bought a Decca Mark II head and the allegedly appropriate adapter for my SME arm, and now I can't fit the damned head onto the adapter. I'd be happy to take a file to something if I knew what to file, but I can't figure out whether the adapter's head-mounting plate is too thick, or too wide, or whether its connecting pins are too long. Any suggestions?  
W. T. Barr  
New York, N. Y.  
It's too wide. Take a fine file and rub a couple of thousandths of an inch off both sides of the mounting plate. This should do the trick.

### Popped Transistors

I'm having a puzzling and frustrating problem with my KLH Sixteen amplifier. In the four months I've owned this, I've had three failures of output transistors. The last time I got it back from being repaired, I loaned it to a friend who used it for over a month without trouble. The very day I got it back, one channel went dead again.

I never over-drive the amplifier. Most of the time, it is used to feed quiet background music to several speakers throughout my home.  
Why would this thing be all right at my friend's house and useless at mine? Am I cursed, or what?  
William Benton  
Bronx, New York  
Why don't you read instructions? KLH, and most other solid-state manufacturers, warns explicitly against making interconnections between the ground connections on the outputs. Evidently, this is just what you have done, in the wiring of your multi-speaker distribution system.

Rewire your distribution circuits so as to maintain strict isolation between both sides of both speaker lines, or get yourself a tube-type amplifier that will tolerate cross-connection of the output grounds.

### Speaker Switch

Could you diagram a speaker switch that would allow me to play stereo through either or both of two separate speaker systems? All speakers are 16 ohms impedance.  
David Keeneey  
Westfield, Mass.  
Here is the speaker switch diagram you requested. The switch is a three-position six-pole rotary type, with make-before-break contacts.  
Note that the output grounds are kept separated, allowing safe use with transistorized amplifiers.

### The Best Tape

Some time ago, you recommended Ampex tape as the best available for the critical user. Now there are several new kinds of tape, and I was wondering if any of these are better than Ampex's.  
R. William Parma  
Cleveland, Ohio  
The new low-noise tapes, first introduced by 3-M (as 201, 202 and 203 tapes), have slightly better high-end range and significantly lower (by about 5 db) hiss level than any of the old Ampex tapes, but whether or not the low-noise tapes are worth their extra cost to you will depend on how good your recorder is and how wide the dynamic range of the material you'll be recording.

The hiss level in many recorders is determined by preamp noise and imperfect bias waveform, rather than by limitations of the tape, so the use of low-noise tapes may not have much effect on their hiss. And if you happen to be recording material with relatively narrow dynamic range, hiss may not even be perceptible from "ordinary" tape, so no useful purpose would be served by any further reduction in hiss level.

Besides 3-M, other manufacturers of low-noise tape include Audiotape, Reeves, Kodak and RCA. All offer comparable performance, so choose your low-noise tape on the basis of price and base material.

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### Subscription Order

I enclose a check or money order in the amount of $4 (U. S.), for a one-year (4-issue) subscription to The Stereophile magazine. (Pan-American countries $4.25; other Foreign countries $4.75.)

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Miscellany

New NAB Tape Speed Standards

We noted with interest that the National Association of Broadcasters’ new list of standards for magnetic recording has acknowledged the advances in tape technology made in the last ten years, by adopting 7½ ips as the primary standard operating speed and 15 and 3½ ips as secondary speeds. This, mind you, is for critical recording. For speech, and other applications where fidelity is of little importance, the NAB has adopted 3½ ips as the standard speed, with 7½ and 13½ ips as secondary speeds.

We do not expect to see a similar trend in the commercial recording industry, though. Tape editing gets a bit trickier at speeds below 15 ips, and we suspect it has been a long, long time since a commercial release was mastered in a single take, sans razor blade and splicing tape.

Hz vs CPS

Those of you who read other audio-type publications (and who doesn’t?) will have noticed the increasing use of the abbreviation Hz in place of the old, tried-and-true cycles-per-second or cps. The new symbol, long used in Europe, has finally been adopted as the international standard.

Some U. S. publications have already switched, and we plan to do likewise. But we’re going to hold off for a while, until Hz has been around long enough to have come into fairly widespread common usage. Meanwhile, try to get into the habit of using the term. The Hz abbreviation is from the German word Hertz (named after the chap who discovered radio waves), and they pronounce it “Hairts.”

Incidentally, in case you’re interested, Heinrich Rudolph Hertz was the assistant of Hermann Ludwig Ferdinand von Helmholtz, and you should know of at least one thing he invented.

Ballyhoo of the Year

A data sheet for the new Van Eps tone arm (Van Eps is at 1618 El Rito, Glendale, Calif.) shows a photo of what appears to be a practical tangency - compensating arm. The operating principle—that of a roughly trapezoidal arrangement of rods—is theoretically sound, and although past versions of this approach have failed because of excessive pivot friction, this one may be all right. We don’t know; we haven’t tested one, but will endeavor to do so if reader interest warrants it. (Drop us a card and let us know.)

But what really galls us are the ridiculous claims made for the thing. Granted, it will (if properly designed) eliminate inward pull and tangency error and nonlinear forces on the stylus, but to claim that any tone arm can double the life of the stylus and record, eliminate all “needle talk,” halve the permissible tracking force, maintain 100% correct phasing, and enhance the “richness” of sound while diminishing “harshness” is stretching things too far.

All of these factors are dependent on the pickup itself as well as the arm, and while there are plenty of cheap and dirty arms that demand higher-than-normal tracking forces and tend to foul up the sound, there are plenty that do not. And when using these, the limitations on performance are almost entirely those of the pickup, just as they will be in the Van Eps arm (assuming it is properly designed). And as long as pickups are mechanical devices, they will have a certain amount of phasing error, a certain minimum value of clean tracking force (which will determine the rate of record and stylus wear), and a certain minimal amount of richness and harshness. A perfectly straight tone arm (without offset), playing a groove to which it is perfectly tangential, may enable a pickup to perform to the limit of its capability, but it cannot accomplish more than this, and neither can the Van Eps.

Most absurd of all, though, is Van Eps’s claim that their arm—or any arm for that matter—can make heavily modulated inner grooves sound “exactly the same in quality and clearness as they do at the beginning of the record.” Inner-groove distortion is a matter of groove curvature versus stylus radius, neither of which has anything to do with the tone arm. And while poor tangency does increase inner-groove breakup, most arms are set up for minimum error in inner grooves.

The Van Eps may be an excellent arm, but advertising like this can only succeed in undermining consumer confidence in the product. Let’s use a little restraint in future, hey?

(We have just noticed an ad for the new Marantz “Straight Line Tracking” arm and turntable in which some of the same outrageous claims are made.)

What happened to the quietly conservative dignity of Marantz’s advertising?

Decibels or Per Cent

In response to our complaint in the last issue about a VM spec sheet that listed turntable rumble as a percentage of a “standard” recording level, several readers sent us other data sheets from highly esteemed manufacturers like Hewlett-Packard and Hallicrafters in which they, too, were doing this sort of thing. In their case, though, it was (as we feared) distortion ratings expressed in terms of decibels.

This may well be the latest trend, but we don’t have to like it. It just looks too much to us like the kind of lackadaisical sloppiness that breeds doors that don’t latch and chassis covers that don’t quite fit. It’s hard to get a measurement technique established as a standard, so it seems to us there should be a better reason for changing it or ignoring it than mere indifference on the part of some manufacturers.

Back Issues

We’ve finally been cleaned out of all back issues of the magazine including the last issue, Volume 1 Number 11. All new subscriptions will be started with the current issue, but if anyone decides he’d like to order any back issues, we’ll just have to say sorry, we’ve run out, and we don’t plan to reprint any of them. (The demand for issue 3 did not warrant reprinting it.)

The Very Idea!

A reader, who shall remain nameless, has written to suggest that, in the interest of brevity, we abbreviate the name of this publication when referring to it in text copy.

He even suggested a logical abbreviation that would sum up the magazine’s feelings about manufacturers who complain when their products get panned in test reports. We will not take his suggestion.

Price Boost

We didn’t wanna do it, but we’re gonna hafta. If we are to continue without advertising (and most readers’ letters urge us not to take ads), we have no alternative but to increase our subscription rates. And while we’re at it, we’re going to an annual (4-issue) basis, to simplify matters. For details, see “As We See It.”