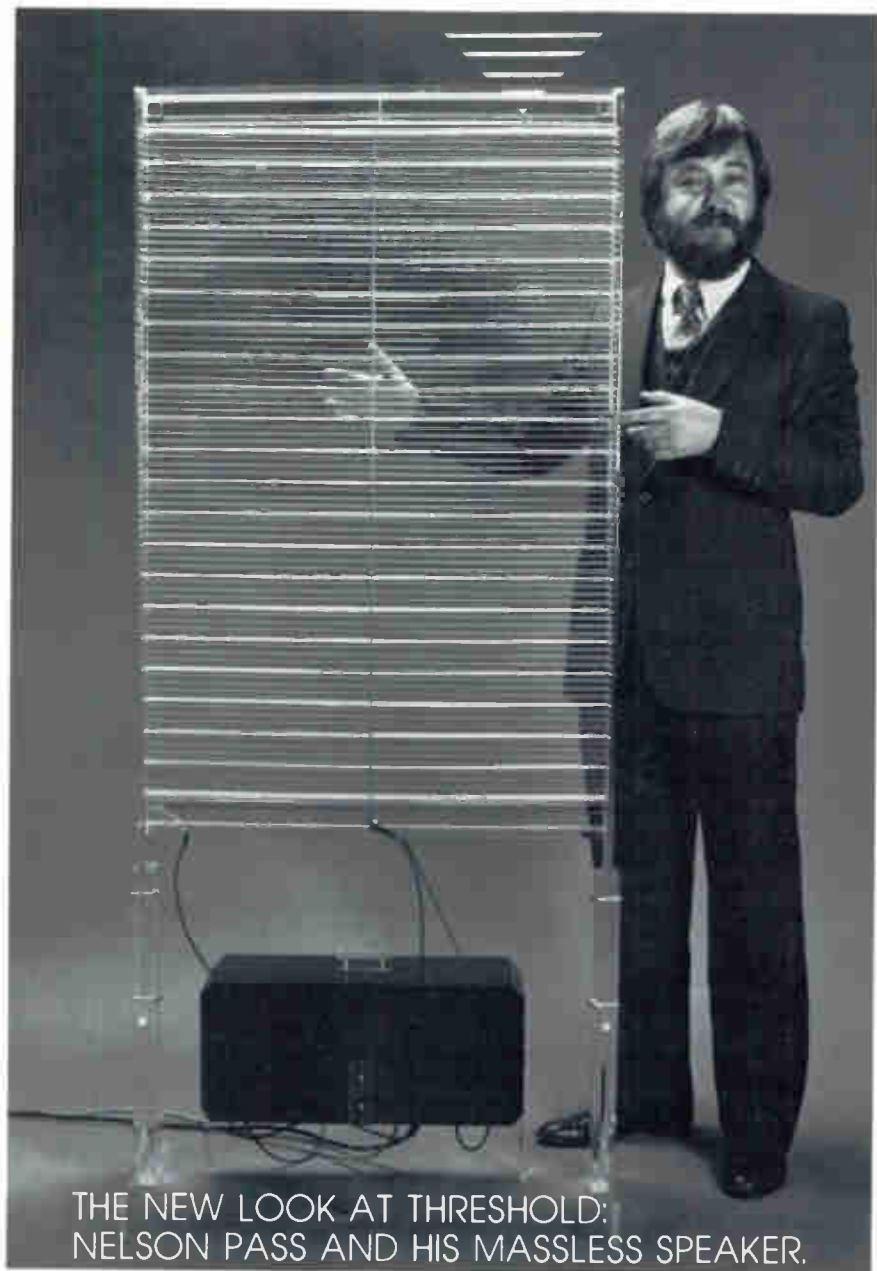


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VOL. 6 NO. 1



THE NEW LOOK AT THRESHOLD:
NELSON PASS AND HIS MASSLESS SPEAKER.

VOLUME VI • NUMBER 1

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Our Cover: Nelson Pass demonstrates his latest invention: a virtually massless driver relying on ionized air to serve as a "diaphragm" acted upon by electrostatic fields just as a mylar diaphragm is moved in a standard electrostatic speaker. It Works! Unfortunately the model shown here as demonstrated at Winter CES creates massive amounts of ozone along with its quite natural sound (at modest listening levels). Nelson is working at re-oxygenating himself and at a more practical model which may sometime be for sale.

The Forgotten Factor

Question: What is it that almost every audiophile takes for granted, yet has more effect on the sound of his system than does any single component in that system? Answer: His listening room.

It is probably safe to say that 95% of the systems in audiophile homes are being degraded by a bad listening environment. Sound waves reflect from walls, floors, and ceilings, reaching our ears milliseconds after the direct sounds from the speakers and smearing those sounds. Echoes reverberate back and forth between parallel reflective surfaces, adding more smear and coloring the sound with spurious brightness or resonating bass hangovers. And reflections from side walls are heard as false stereo direction cues, impairing the accuracy with which a system reproduces instrumental locations.

Typically, the audio system is a victim of the home decor. If the decor is Danish Modern Sparse, with

a couple of orientals or throw rugs on the floor, the room is likely to be a veritable echo chamber, with complex reflection and standing-wave patterns obscuring half of what comes out of the loudspeakers. If the decor is Overstuffed Homey, one speaker or the other may be half hidden behind an obesely upholstered chair, producing a distinctly lopsided stereo image — if the system will image at all.

Then there's the lopsided room, one side of which is bare wall with perhaps a large picture window to make matters worse, the other side lined with furniture, bookshelves, warm bods and other assorted sound absorbers. If, as is usually the case, the speakers are placed at one end of that room, the reflective side will make that loudspeaker sound bright and hard, the dead side will make the other sound soft and muted. Apart from the fact that this makes it necessary to keep the balance control 'way over to one side, it also fouls up the stereo imaging.

Even the size and shape of the room can have a profound effect on

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Ruth Tatter Layouts and Mechanicals.

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the sound, particularly at low frequencies. L-shaped rooms are notoriously bad for sound reproduction. The bass always seems to end up in a part of the room where you can't hear proper imaging, forcing you to make an unhappy choice about where to sit while listening. And since bass is difficult to absorb, low-frequency standing waves — which cause peaks at some frequencies and dips at others — tend to behave as they damn well please. They are purely a function of the room dimensions, and if the dimensions are wrong, these response irregularities can be quite severe and will occur at the wrong frequencies. But, like decor, the size and shape of the listening room are usually seen as givens, to be worked around rather than utilized to benefit the sound.

Few of us are in a position to do much about either the decor or the physical attributes of the room, just as few of us are in a position to buy a \$35,000 loudspeaker system. Since the system is usually in the living room of the home, and decor makes the room livable for its inhabitants, decor comes first. And since the room is already there, properly dimensioned or not, that too is not easily changed. But that isn't to say there's nothing you can do.

To begin with, you can consider adding a proper listening room to your house. One of our readers did just that, and described his project in a two-part article in Stereophile some years ago ("The Ultimate Component," by Roger Sanders, issues IV-2 and IV-3). Construction work isn't cheap, but a suitable room will cost you less than you can pay for some loudspeaker systems. And it will make any system sound better.

Then again, you can buy a new house. I'm not really suggesting that you move just because you want a better listening room, but if you have to move for some other reason, there's no rule that says you can't keep the ideal listening room in mind when looking at new homes. And if

you're building your own home, you have it made. You can specify exactly what the listening room is to be like, and get it custom built to your requirements.

But what is this "perfect listening room"? To answer that, let us start with the ideal and move from there to practicality.

- o The ideal room would have brick or cinderblock walls, a concrete floor, and a concrete ceiling. Any flexibility in the room boundaries will cost you some deep bass, because some of the sound-wave pressure is lost through the flexing of boundary surfaces.

- o The room would be symmetrical in shape, relative to an imaginary line running from the middle of the listening area to midway between the speakers.

- o All room-boundary surfaces would be non-parallel. Why? Standing-wave frequencies are distance-dependent. With non-parallel boundaries, distances vary across each boundary. This broadens and smooths out the resulting peaks and dips. The ceiling, for example, would slope downwards towards one end of the room; the side walls would converge towards the listening area, and the end walls would slant away from one another as they approached the floor or ceiling. Obviously, wall tilting is easier to do with concrete or frame than with cinderblock or brick.

- o The ceiling and floor would be heavily absorptive, with thick carpeting and underliner underfoot, and efficient acoustical panels above. The walls too would be heavily absorptive, with deadening material covering 100% of the wall surface in the listening half, and 50% of the wall surface at the loudspeaker end.

(This is the most common recommendation; other authorities recommend having the 100% at the speaker end and the 50% at the listening end. I prefer the room to be completely deadened, with the addition of an electronic reverb device like the Benchmark ARU to add acoustical

space to the listening area. Play the absorption game by ear. An excess of deadening is generally better than a deficiency, but any error is easily reversible if you don't glue things in place.)

What about size? Well, non-parallel room boundaries will yield many different dimensions, but the average dimensions — that is, the distance from the center of each surface to the center of the opposite one — should be in ratios of 1 to 1.25 to 1.6. With these ratios, no frequency can generate a standing wave between more than one pair of surfaces. Thus, the bumps and dips will be evenly distributed across the lower part of the audio range.

The longest dimension should be great enough to support the lowest frequency you wish to reproduce. This can be calculated by dividing the bottom-most frequency of interest into 525. Thus, if you want to go for a 20-Hz bottom, the average longest dimension should be a little over 26 feet. For 16 Hz, make it 33 feet. Of course, this will mean that the room's shortest dimension — that is, its floor-to-ceiling height — will have to be 20-1/2 feet, but then we are not discussing practicality.

So, let's be practical. About size, first. Making a room "too small" will not kill deep bass, it will merely reduce it in amplitude. With most good bass speakers, you'll have no trouble supporting a floor-shaking 22-Hz tone in a 20-foot-long room. Secondly, standing waves are not limited to the distance-dependent fundamental; they also occur at multiples of the fundamental. If a room dimension produces a standing wave at 30 Hz, it will also produce standing waves of diminishing intensity at 60, 90, 120 and so on. This, you may notice, is the classic harmonic progression.

The reason we choose 1 to 1.25 to 1.6 as the ideal dimension ratios is that no two standing-wave frequencies will coincide. Dips and peaks will occur at regular intervals

and so closely spaced that they average out to a fairly flat response. This also means that we can safely play some games with these ratios, without sacrificing smoothness. Doubling any one of them will move its fundamental standing wave upwards by one octave without changing its progression frequencies. Thus, our almost-ideal room can have dimension ratios of 1 to 1.6 to 2.5, or 1 to 2.5 to 3.2. These variations make it possible to design for a "reasonable" ceiling height.

For example, let's start with a maximum room dimension of 20 feet. The smallest dimension — the height — should be 20 times the reciprocal of 2.5, or 20×0.4 , which works out to 8 feet. How's that for a practical room height? The width will then be 8 times 1.6, or 12.8 feet. A room this size could easily be added to any home, and is even likely to be found in a ready-built house.

As for the shape, if you're not building from scratch, you can scratch the non-parallel surfaces. Their absence will not have all that much effect on the sound of the room.

Construction materials? Masonry of some kind is still the ideal, but wood framing can be made less flexible by the use of thick sheetrock panels on inside walls rather than fiberboard or wood. And diagonal bracing strips between the wall framing will add additional rigidity if nailed to the wall panels. If you want to go after overkill, you can even contrive to fill the wall spaces with pea-sized chunks of that foamy-looking volcanic rock that's used extensively out West for driveway and flat-roof surfacing. (Its rough surface prevents it from packing down, as would sand or smooth pebbles.)

Acoustical treatment can be expensive, effective and ugly, or inexpensive, moderately effective and attractive, depending on whether you decide to use those moulded pyramidal foam panels or go with

something like cork, perforated acoustical "tiles", or fiberglass instead. The most effective treatments, such as Sonex and the Robac tiles we reported on in issue IV-8, are likely to cost around \$5 a square foot, but because they are so efficient, you need less complete wall coverage to get the same amount of deadening as less effective panels. No one would say they are the best-looking treatments you can use.

Cork is one alternative, although it is so inefficient that most of the wall surface must be covered with it. Use the 3/8-inch thickness; thicker panels inflate the total cost tremendously while bestowing no improvement in absorption.

Owens Corning makes a very reasonably priced "Glass Cloth" rigid fiberglass panel which is ideal for acoustical treatment of walls and ceilings. It is visually attractive*, and is also an effective thermal insulator which will help to keep your room cooler in summer and warmer in winter. And, unlike most porous absorptive surfaces, it may be painted (using a special "non-bridging" paint — that is, one which forms beads instead of filling gaps). It is available in 1- or 1-1/2-inch thicknesses; the 1-1/2 is preferable.

Large window areas are a problem which must be coped with in some way. Closed, they provide almost 100% reflectance of sound; open, they give almost 100% absorption. The best solution here is to use heavy lined drapes, and keep them

shut when listening.

Finally, if you're actually building your dream room from scratch, there are a couple of other non-acoustical details you might look into. One terribly clever innovation, if there is to be no crawl space or basement under the room, is to install underfloor pipes from the equipment area to the loudspeakers, for running speaker cables without putting mole-trails across the carpet. The pipes should be nonmetallic — black polyethylene plastic pipe is cheap and ideal. And just so you can easily feed wires through the pipes (and replace them with better cables later on), it's a good idea to run heavy-duty nylon cord (fishing line is perfect) through each pipe before it is (literally) set in concrete. Each cord should be a little more than twice the length of the pipe, so you can pull the wire ends through from one end to the other without unthreading the cord from the pipe. (Once removed, it will be difficult to get the cord through the pipe again.)

You might also take this opportunity to have a really adequate high-current AC supply laid in directly from your fuse box, for powering your system. This should terminate in a row of at least four 3-way (grounded) AC outlets. And it's not a bad idea to install a surge protector at the outlet box, just in case of nearby lightning strikes. (These devices, which look like oversized ceramic-disc capacitors, can be obtained for a few dollars from any electronics supply house.)

All details, details, details. But it's details that help to extract the best possible sound from your system that it's capable of. If you don't, you're wasting some of the money you paid for all that equipment. And that's not only uneconomical, it's dumb. JGH

** I think some audiophiles (not to mention their spouses, of whichever sex) will disagree with JGH concerning the attractiveness of this fiberglass material: it is covered with white vinyl, and has a definite industrial flavor. Any of the sound-absorbing materials can be attractively covered with burlap, normally available in a variety of colors at a fabric store.* LA

Amber Series 70 Power Amplifier

Rated power: 70 watts/ch into 8 ohms; 120 watts/channel into 4 ohms, both driven. Mono strapping: 200 watts into 8 ohms, 300 into 4 ohms. THD: less than 0.09% at 1/4 watt out; less than 0.01% at 70 watts out, into 8 ohms. Frequency response: +0/-3 dB at 0.7 Hz and 60 kHz. Sensitivity: 1.15 V in for 70 watts into 8 ohms. Power consumption: 450 watts max, 30 watts at idle. Dimensions: 17" W by 5 H by 11-1/2 D. Weight: 32 lbs. Price: \$450. Manufacturer: Amber Electronics, Inc., 500 Henry Ave., Charlottesville, VA 22901.

From within a stone's throw of Walton's Mountain comes this modestly priced little powerhouse of an amplifier.

The strong point of the Series 70 (Are there other 70's besides this one?) is its hefty power supply, which has over 60,000 microfarad of storage capacitance and no voltage regulators to introduce a delay in response when a sudden demand is made on the supply. The result is a (nominal) 70-watt solid-state amplifier that can deliver almost as much clean signal as a 70-watt tubed amp.

The unit is bandwidth-limited below 1 Hz and above 60 kHz — which will doubtless offend some purists but in fact cannot help but improve the sound, as there is nothing in those regions except garbage. (This is called GILGO — garbage in, less garbage out.)

The Amber uses no current limiting, so there is no possibility of false overload cues fouling the sound of the amplifier. However, there are loudspeaker fuses in the output circuits and, Amber's assurances notwithstanding, these could be im-

pairing the reproduced signal quality. Amber cautions against the obvious alternative, adding that the warranty will be voided if the speaker fuses are "shorted or bypassed." (There is nothing said about using 10-amp fuses, though, except to warn that it may result in loudspeaker destruction). The amplifier itself is separately fused, to cut off the power supply if the output devices are in danger of destructive overload.

This is, in fact, one of the most sensibly fused amplifiers I've seen. There are seven of them (one is for the AC line), and all are accessible from the rear panel.

The amp is usable in a strapped mono mode without any required modification, in which mode its power output is increased by almost the theoretical four times.* In strapped mode it delivers about the same power as the Acoustat amp and costs about the same. I tried the Amber both ways: straight stereo (one amp) and strapped (two amps). Except where noted, all comments which

**In theory, delivering 1 input volt out-of-phase to both input stages delivers 1 volt above ground (+1) to one input and 1 volt below ground (-1) to the other — a total of 2 volts input signal relative to ground. This would double the voltage delivered across the "Hot" speaker terminals. And since (according to Ohm's Law) doubling the output voltage squares the power output, the Mono mode should deliver 4 times as much output as the stereo mode. This assumes, however, that the power supply and the output devices are theoretically perfect. They never are, but coming close to the theoretical factor of 4, as this Amber amp does, is impressive.* JGH

follow pertain to a single, unstrapped Amber.

The amp is a snap to install. All connections are easily accessible, and if you use banana plugs (or dual bananas) you can easily make the connections from in front of the unit.

The power supply's liberal storage capacity is observable when you first turn it on, from a momentary dimming of the room lights as the capacitors draw full current from the supply until charged. It is also readily apparent on first listen. The amplifier has a solidity and heft which belies its rather modest power rating. Bass is deep and taut, and only slightly deficient in that gut-shaking impact that only an available 200 watts or more can elicit.

In other respects I wasn't terribly impressed with the sound. The high end seemed slightly wiry and dry, and across-the-board definition was — well, just mediocre. Within half an hour I was beginning to wonder if my tolerance for distortion was increasing, because everything about the sound seemed to be improving. Then, just to pass the time while listening, I looked at the instructions (a last resort under any circumstance). And there it was: "Most solid-state electronic components sound better and last longer if they are continuously powered rather than turned on and off for each listening session."

I knew this intellectually, that

solid-state components should warm up before they approach their optimum performance. But I had never before observed such a substantial difference between an amplifier's sound on first chargeup and after being on for a while.

Amber is, however, one of relatively few manufacturers which recommend leaving a power amplifier on 24 hours a day, day in and day out. This is impractical with tubes, whose lives are measured in hours whether or not they are passing signal, and is uneconomical with large Class-A amplifiers, which may draw as much as 360 kilowatt-hours of power per month (to the tune of around \$34 per month, or \$388 a year). But solid-state devices do not wear out with use, and non-Class A solid-state amplifiers which go into an idle condition when not passing signal. The Series 70, for example, draws only 30 watts per hour at idle, which works out to around 20 kW-hours per month. At 9 cents per kW-hour, this would add a staggering \$1.80 a month to your electric bill — certainly an acceptable price for keeping the amplifier working and sounding its best.

There is a potential problem involved with keeping the amp on all the time. If your preamp produces large noise surges when first turned on, you'll have to leave that on all the time too, or risk blowing the



The Amber Series 70 Power Amplifier

speaker fuses, the speakers, or the amplifier. (Amber admits that the amplifier fusing cannot always protect it.) And if it's a tubed preamp, you'll wear the tubes out in a matter of months. It's okay to leave a solid-state preamp on, but if you insist on using a tubed preamp, you will just have to get into the habit of shutting off the power amplifier and waiting the requisite minute (for its power reserve to drain off) before turning on the preamp.

Before doing any further listening I let the Amber cook for 24 hours. It was worth the time. In fact, this then proved to be the best-sounding amplifier in its price class that I've heard.

It is almost characterless, but not quite. The high end is a tad on the crisp side, seeming to accentuate very slightly the extreme upper harmonics of massed strings, cymbals and vocal sibilants, but without adding any edginess. In this, it resembles the sound of the Acoustat TNT-200, which is one of the few amplifiers of any kind that seem equally comfortable with electrostatics and dynamic tweeters. (The Acoustat is a little sweeter at the

top, though.)

Inner detailing from the Amber is very good, although not as good as I've heard. (The Acoustat is better, the Sony Esprit TA-900 is **MUCH** better. But then, one costs twice as much, the other seven times as much.) Its greatest weakness — and it is not a severe one — is its reproduction of front-to-back perspectives. It tends to back sounds off to a small extent, and to diminish slightly the apparent distance between musicians in the front row and those in the rear.

I have not observed this slight flattening from any other amplifier, but I hesitate to make any comparisons between the others and the Amber on this basis because our new listening room (with substantially more sound absorption) is revealing differences I was previously not picking up.

All in all, though, this is a very good amplifier at any price, and a superb one for \$500. It is being added to our "Recommended Components" list in both the B and C categories, because it belongs at the bottom of B and the top of C. A winner!

JGH

Creek CAS-4040 Integrated Amplifier

Integrated preamplifier-amplifier. 35 watts/channel, both driven into 8 ohms. Damping factor: 100 at 100 Hz. Power bandwidth (-3 dB) 10 to 100k Hz. RIAA within 0.25 dB, 15 to 40k Hz. Phono overload 260 mV. Phono sensitivity 2 mV, high-level sensitivity 0.38 volt for full output. Price \$299. Importer: Music & Sound Imports, 30 Snowflake Rd., Huntingdon Valley, PA 19006. Western States: Reference Audio Imports, 1215 Audrey Ave., Campbell, CA 95008.

This is one of the lowest-priced

integrated amplifiers having any pretensions to audiophile quality. Its appearance, best described as Basic Spartan, is as unimpressive as its price, but within its very limited power rating this is a respectable-sounding little amplifier, obviously designed by someone who knows perfectionist audio.

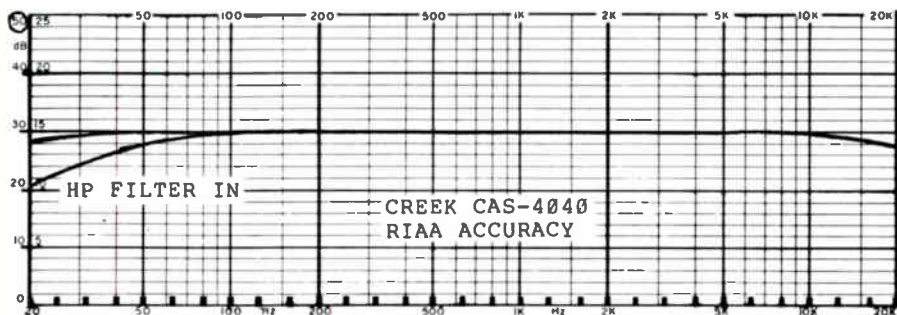
For example, the unit has two sets of outputs, one marked Switched, the other Unswitched. The choice is offered because (to quote the instruction booklet) "The disadvantage of using the switched output is one of increased resistance in the speaker path, which has the effect of reducing the amplifier's ability to damp the speaker cone at low frequency (sic), and in extreme cases it will modify the frequency

response." Right on! (The Unswitched option has a 2-amp fuse in the speaker circuit, which will also affect low-end damping, but what the hell!)

Spartan or not, the CAS-4040 features a full lineup of controls, including a Tape Monitor switch, a High-Pass filter (to attenuate subsonic garbage), and a mono A+B switch — something a lot of high-priced preamps don't have. Besides phono, it can accommodate and select three high-level sources (including Tape), and it has a front-panel jack for a low-impedance (below

called variable-inflection type, whose effect moves farther away from the ends of the spectrum as they are turned up. (Slight bass boost occurs only below 60 Hz, and occurs below about 120 Hz with the control all the way up.)

The rear panel layout is a little odd. Five of the output terminals are grouped together at one end and the sixth is at the other end. And although the connectors will accommodate banana plugs, their spacing is such that the popular dual bananas can't be used. These are minor things, though, and easily coped



RIAA equalization accuracy (top) measured within 0.5 dB from 20 to 20k Hz. The bottom curve shows the effect of the "HP Filter". (This is something high-end audio has needed for years.)

16 ohms) headphone. Inserting the phone plug into the jack automatically turns off the Switched speaker outputs. The front-panel pushbuttons are gratifyingly easy to push (unlike some we have encountered on lightweight devices, which slide the device backwards when you try to operate them). All Source switches except Tape are interactive; pushing any of the three releases any other that is depressed. The remaining three, which may need to be used regardless of what Source is selected, are toggled for Push-On/Push-Off operation. Switching is noiseless except for the Tape and Mono switches, which cause a slight click through the speakers when the volume is turned up.

The tone controls are of the so-

with.

All Source connections are via the European standard DIN plugs. DIN-to-RCA adaptors are provided with the amplifier, but you'd just better not mislay them. If you tend to be disorganized at times (and who doesn't?), I'd suggest epoxying these in place.

On turnon, the CAS-4040 produces several mild thumps, none strong enough to damage any loudspeaker but possibly strong enough to pop fuses on an overprotected speaker. And one's first impression on listening is that the unit has marginal gain. With a moderately efficient speaker system in a fairly small room and a cartridge rated at 4 mV. output, the volume control had to be operated at 3 o'clock to produce any kind of



The Creek CAS-4040 Integrated Amplifier

satisfying level (about 80 dB). Since, however, the amplifier was beginning to show some evidence of overload at that volume, and there was still about 5 dB of gain left, I had to conclude that the gain was adequate.

Since the CAS-4040 has very limited power, and is thus likely to be overloaded even by a casual listener seeking a little extra belt from his music, its overload characteristics are of interest. In this respect it is unusual among amplifiers of any genre, in that overload from most program material is first noticed, not from middle-range or high-end energy but from bass. Bass drum, pipe organ pedal and, most frequently, kettle drums all induce bursts of muddiness before upper-range stress is heard. This would suggest that the limiting factor on its output power is not its output devices but its power supply.

Oddly however, it does not choke down when overloaded. It turns muddy for a moment and that's all. High-frequency overload does not set in until a level substantially higher than gross muddy, which means this amplifier — unlike most solid state amps — is not likely to wipe out tweeters unless as the result of an almost conscious effort.

I have dwelt on the overload subject longer than usual here because that is the CAS-4040's point of highest vulnerability. (The Sonic Developments D-235, reported here several months ago, had the same power rating and put out far more

clean signal.) In fairness then, it should also be mentioned that the Creek has an exquisitely sweet, musical high end that is very atypical of low-cost transistor gear, its tone controls can make any reasonably good small speaker system sound quite a bit better, and its low end is surprisingly deep and full, if notably lacking in Gut-Shaking Impact (GSI is almost exclusively a function of available low-end power anyway.) Middle-range detail is adequate, depth rendition is adequate, and across-the-board definition is barely adequate. In addition, it shares with most other low-powered wide-range amplifiers a pronounced tendency to exaggerate low-frequency acoustic feedback under conditions which provoke feedback (i.e., with a poorly isolated turntable and loudspeakers with good deep-bass response).

In short, this ain't no winner. But considering the preponderance of outright losers in the Creek's price class, the CAS-4040 — with all its shortcomings — stands out as one of the best buys in low-end audio today. It has none of the Godawful high-end irritations of the typical "budget" solid-state components, it is not likely to fry your tweeters if you try to reproduce a fortissimo, and it is listenable on the vast majority of speaker systems it is likely to be mated with.

So, it is with little hesitation that I add this to our Recommended Components list, albeit in the lowest (tight-budget) Class D. JGH

Helius Aurum Tone Arm

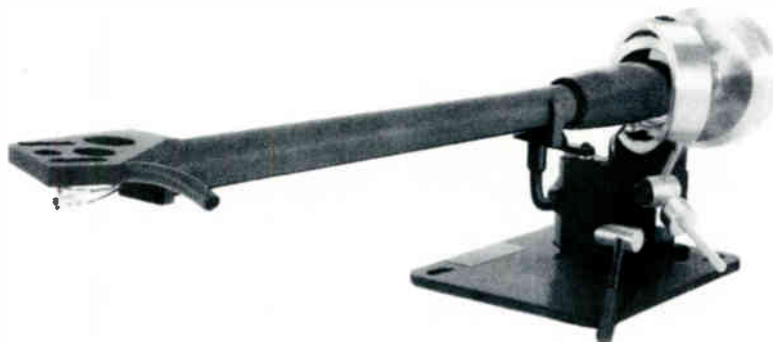
A medium-mass gimbal-bearing arm. Price \$495. Importer: International Audio Importers, 723 Bound Brook Rd., Dunellen, NJ 08812.

For years, Britannia ruled the waves of the high-end tone-arm seas, primarily through the prominence of the various SME designs. The Japanese have been making inroads into this British market but have been unable to date to dislodge them. But over the years, the shape of the market changed. The low-mass loose-bearing design typified by the SME, which was ideal for high-compliance

ishes demand the kind of tooling that a product made in small quantities cannot justify.

The arm is black-anodized except for the counterweights and bearing rings, which are gold-plated brass. The counterweight screws onto the back of the arm, and comes in three modular pieces. Normally, two of the three are used, the choice depending on the cartridge weight and compliance. For a very heavy one like the Koetsu Onyx you would need all three weights, making the Aurum very flexible in terms of cartridge accommodation.

The thick headshell is nondetachable for maximum rigidity, and cartridge overhang adjustments are handled by elongated screw holes in



The Helius Aurum Tone Arm

moving-magnet cartridges, has been overshadowed of late by the medium-mass, rigid-bearing tone arm required by the heavier, lower-compliance moving-coil cartridges. Many new English firms have started making these arms, one of which is Helius.

The Aurum is Helius's middle model of a trio of their designs which sell for \$495 in the US. It is a nicely finished arm, although esthetically not quite up to the standards set by the more expensive Japanese arms. However, the manufacturer need make no apologies for the actual physical construction; this is a limited-production product, and fancy fin-

ishes demand the kind of tooling that a product made in small quantities cannot justify.

the headshell. The headshell leads are also nondetachable and are very fine, so care must be taken when mounting the cartridge to avoid detaching a clip. Cueing is damped, and the arm rest is integrated into the main pillar structure, avoiding the need for drilling an extra hole for the rest post. The bearing assembly is a gimbal with ball bearings, designed for minimum play. There is a very small amount of controlled friction designed into the bearings, supposedly to act as damping for the tone arm, but this would not seem to be the ideal way to damp any arm.

The Aurum's base is roughly rectangular, like the SME, requiring the drilling of one large round hole for the pillar and four small ones at the corners of the base for the mounting bolts. Unlike the SME, the base does not have an overhang adjustment.

I have one major complaint about the arm, and it has nothing to do with its performance. Normally when I set up an arm I adjust overhang first, as this is usually something that doesn't need readjustment (unless I change cartridges). I then do the preliminary adjustment of the vertical tracking angle, with the assumption that this will need some further readjustment later on, until zeroed in. But in the Aurum, the axis of the pillar and the axes of the vertical pivots are offset from one another — the pivots are to the rear of the pillar axis — so whenever I loosen the pillar for a VTA adjust it tends to rotate in its base, changing the overhang, which must then be readjusted each time I change VTA. This is not a serious flaw, but it is an annoyance. I assume there was a reason for that design oddity, but I hope not to encounter it on other tone arms, thank you.

The Aurum is a medium-mass arm and as long as you avoid very light, high-compliance pickups or the heaviest, lowest-compliance ones, you should end up with a LF resonance of between 8 and 12 Hz. With a good

cartridge of suitable characteristics, the performance of the Aurum is excellent. It is open, transparent, detailed, and for all intents and purposes uncolored. Its single most important attribute is sonic consistency throughout the audio range. No aspect of its performance is of another magnitude better or worse than any other. This consistency is something frequently overlooked in arm design, but "sounding as one" is more important than having all of the individual performance factors come out perfectly, but one; the one factor that doesn't fit stands out like a purple hickey, calling constant attention to itself. An example of this is the loudspeaker which is utterly fantastic in every respect except that it has this little mid-bass resonance that goes BOOOM every time the right note comes along.

This is not to say the Aurum is the best arm I have heard (or not heard, to be accurate). I have heard better ones, but they are only slightly better and they are substantially more expensive. There may even be other arms that cost as much as the Aurum and sound as good, but there are none I have heard which are less expensive and perform as well. I recommend it highly, for those who buy the assumptions which go with it: namely that the cartridges of choice today are medium-mass medium-compliance ones. AE

Precision Fidelity M 7A Dual Mono Power Amp

Dual-mono all-tube power amplifier. Rated output 50 watts/channel. Frequency response +0 to -1 dB from 7 to 45k Hz. Rise time 6 microseconds. Sensitivity 1.5 V in for 50 watts out. Power consumption 275 watts. Weight 44 lbs. Dimensions 19"W by 16-1/4"D by 6"H. Price \$995. Manufacturer: Precision Fidelity, 1532 S W Morrison, Portland, OR 97205.

To those who are not seduced by the liquid middle range and velvety-sweet high end of good tubed amplifiers, their relatively high price per watt of power may seem absurd. As a breed, perfectionist audiophiles in particular are often scornful of tubes because they seem lacking in the kind of razor-sharp attacks which in recent years have become the first criterion for excellence among people who rarely hear live music. It is true that with most dynamic tweeters, most

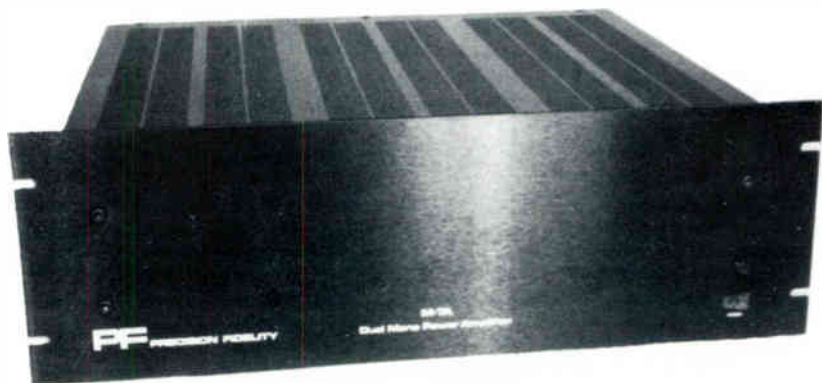
tubed amplifiers sound soft to the point of dullness and heavy to the point of turgidity. It is also true that with full-range electrostatics, tubes often produce a far more convincing illusion of live-music sound than do solid-state amplifiers. It is additionally true that, watt for watt of available power, tubes seem able to produce almost twice as much clean output as equivalently powered transistor amps. Thus it is that, in this solid state age, tubed components continue to sell to a small but fiercely loyal segment of the high-end component market.

Apart from its "dual-mono" design — with completely separate power supplies for each channel — the Precision Fidelity M-7A is a more or less typical tubed-amp design with typical tube sound. In terms of

surprised to find that the "hots" from the input receptacles were connected to the system ground and the grounds were going to the input tube grids.

The problem was easy to correct: the wires were long enough to merely interchange at one end. But whatever "explanation" is offered for the miswiring, it was obvious that our sample M-7A was not tested before leaving the factory — a rather dumb oversight, it seems, when it involves a unit being shipped out for review. (On the other hand, it was reassuring to know that we didn't get a hand-picked sample for test!) It also raises an inevitable question about what sort of quality control P-F is going to offer their customers.

I also encountered another small problem which promises to cause



The Precision Fidelity M7A Dual Mono Power Amp

physical construction, however, our sample left a few things to be desired.

To begin with, the inputs were wired backwards. My first clue to this was a moderately loud hum when the unit was fired up. All interconnections seemed okay, so I used a clip lead (a length of wire with alligator clips at each end) to ground the preamplifier chassis to the M-7A's top cover. This killed the hum entirely, along with the audio signal. I opened up the unit and was not

buyers some headaches if not corrected by P-F. The designers thoughtfully made it very easy to select different output impedances from the M-7A, by placing the Ground receptacle at the axis of a group of Hot receptacles, all spaced just the right distance from the Ground to accommodate a dual banana plug. Changing output impedance involves merely removing the plug, rotating it to select the right Hot, and reinserting it. Clever. But . . . the Hot output terminals are just a hair too close

together, with the result that a couple of the screw-on caps on our unit rubbed against each other, making attachment of speaker cables more of a chore than it should be. The normal range of manufacturing tolerances could provide the necessary clearance on some samples of the unit or, on others, could equally well make it very difficult to turn some of the caps. P-F might take some lessons in human engineering from the Japanese. As for now, they should be using smaller end caps or spacing the Hot terminals farther apart.

Another potential source of trouble is the lack of lock washers under the output terminals or at their rear where the amplifier output wires attach to them. Without these, normal speaker cable connection and reconnection procedures will inevitably cause some of the terminals to rotate loose from the chassis and from their internal connecting wires. (It happened to me the first time I connected up the amplifier.) This too should be corrected at the earliest possible opportunity. Meanwhile, if your M-7A produces gross, spiky distortion which seems related to the signal (i.e., occurring in bursts coinciding with the program), check the internal wire connections at the back of the output connectors.

Aside from these cavils, I found the construction of the M-7A to be unusually good. It even looks capable of surviving the rigors of shipment without self-destructing because of the weight of its transformers (a common problem with tubed amps). But the bottom line, of course, is "How does it sound?" Good. Very good in fact. But not superb.

The topmost end, if perhaps a shade softer than that of some tubed amps, is exquisitely sweet and musical — a perfect match to a good electrostatic top. With a typically slow dynamic tweeter, however, this translates into a markedly dull and closed-in extreme top. Middle highs — comprising the brightness region —

have virtually none of the glary brilliance which characterizes most tubed amps, and neither do they have the slightly recessed quality of your average good-to-better solid state amp. In other words, this part of the range is reproduced with almost perfect neutrality.

The low end is less whoomp/loose than is typical of tubed amps, but is nonetheless somewhat on the warm, over-rich side — sumptuous to listen to but nonetheless a deviation from absolute, purist-style accuracy. (All perfectionists salaam at the altar of accuracy, but when it comes to assembling a system one plans to live with, the bottom line is still how much one likes the way it sounds).

Deep bass reproduction is a little on the weak side and rather shy of gut-shaking impact. This is an area where high-powered solid state amps remain unchallenged.

Reproduction of inner details was very good but by no means superb. This is in fact the biggest single performance disparity between the M-7A and the very best available amplifiers. It is also here where price becomes an important factor, because while there are better-performing solid state amplifiers in this price range (the Acoustat TNT-200, for example), significantly better tubed power amplifiers are priced around \$2,000 or higher.

P-F offers very good performance for the money with this unit, but on that basis, the Acoustat — with its 200 watt-per-channel output capability and its superb performance in every respect — just blows it away. This is not to say that the Acoustat is going to sound better in every system; it too has some sonic idiosyncrasies of its own which will affect the choice of ancillary equipment. What I am saying is that, fitting these into a system which complements each one's idiosyncrasies, the Acoustat will provide a higher level of quality (as well as dynamic range) than will the P-F at about the same price. JGH

Recordings

EARL WILD, piano. Franck: Prelude, Chorale and Fugue. Gabriel Faure: Barcarolle No. 3 in G Flat major, Opus 42. Ravel: Gaspard de la Nuit. Audiofon Stereo 207.

We certainly owe a debt of gratitude to Earl Wild and Peter McGrath for giving us a splendid group of piano recordings. I only pray that this partnership will continue for many more such discs. Mr. Wild's choice of repertoire and his dazzling performances are matched admirably by Audiofon's recordings.

This disc displays Mr. Wild's prodigious technique as well as his maturity of interpretation. Although the "Gaspard de la Nuit" and the Franck "Prelude, Chorale and Fugue" have been previously recorded, the Faure "Barcarolle" is not available on any other disc.

The Franck was written late in the composer's life, some nineteen years after he had written his last work for solo piano. Like so much of his piano music, the composition shows his great interest in organ works. The innovation of inserting the Chorale between the Prelude and the Fugue is certainly most effective. Its chordal structure serves as ballast and balance for the rippling arpeggios found in the Prelude and Fugue. As usual Mr. Wild's playing seems so effortless that the listener is unaware of the difficulties of execution. Unlike so many performers, Mr. Wild seems to feel no need to make a point of his virtuosity; his energies are devoted to the interpretation of the work.

The Faure is a charming example of "French Trickle Music," filled with runs and gentle in its occasionally rocking phrases. For some reason the jacket notes make no mention of this work. As the notes were written by Mr. Wild, I can only assume the

mention of the Faure was omitted for space reasons.

The "Gaspard de la Nuit" is one of Ravel's great piano works. Inspired by the poetry of Aloysius Bertrand, it comprises three rather different tone poems: "Ondine," "Le Gibet" (The Gallows), and "Scarbo" (a will-of-the-wisp). The melancholy legend of Ondine seems to have been a favorite with the French during the early part of the 19th Century. Debussy wrote a prelude entitled "Ondine," and there is a small body of literature concerned with this water nymph who fell in love with a mortal. Ravel's composition, like Debussy's, attempts to recreate the watery milieu. Arpeggios (which seem to be the dominating theme of this recording) abound, and all are played tricklingly by Mr. Wild.

The recording is excellent as usual, although I was somewhat disturbed by pre-echoes in the quiet passages of the Ravel. There are only a few, so it does not seriously mar the generally high quality of this disc. They do however prevent it from becoming a Top-of-the-Pile disc. MG

DARN THAT DREAM. Art Pepper, alto sax. Joe Farrell, tenor sax. George Cables, piano. John Dentz, drums. Tony Dumas, acoustic bass. M&K RealTime Digital RT-309.

This should be of great interest to jazz buffs, as it is one of Art Pepper's last recordings, and a superb recording it is. One hardly feels that one is listening to a disc. Close your eyes and you are in the room with the players. For anyone who enjoys jazz, this record is a must.

The program is most enjoyable, featuring two long improvisational

numbers: "Section-8 Blues," and "Mode for Joe," as well as less heavily textured numbers which include "Someday My Prince Will Come," "Sweet Lorraine," "Darn That Dream" and a piano solo version of "Who Can I Turn To."

Each player can stand alone as an outstanding performer, and the aggregation of this talent makes these interpretations memorable. My personal favorites are the title song, "Darn That Dream" featuring Art Pepper, and George Cable's suave interpretation of "Who Can I Turn To."

Ken Kreisel and Scott Simon are to be commended for this disc. Definitely Top-of-the-Pile. MG

BERLIOZ: *Symphonie Fantastique.*

Cleveland Orchestra, Lorin Maazel.
Telarc Digital DG 10076.
London Symphony Orchestra, Carlos Paita. Lodia 777.

Receiving two different review recordings of the same work always poses a problem for the critic. Should they be treated as separate entities in separate reviews? Or should they be discussed together? Often the nature of the recordings or the works suggests which course to choose. In this case it makes better sense to compare the two discs side by side, due to the nature of the interpretations and the recordings.

The distant passion which Berlioz conceived for Harriet Smithson after seeing her perform Shakespeare in 1827, and his outpouring of his love into the "*Symphonie Fantastique*," is almost medieval in character. To love someone unabashedly for almost five years without ever meeting her smacks of chivalric love (to put it mildly). It was not until the *Symphonie* was performed in 1832 that Harriet Smithson realized the extent of Berlioz' grand passion. They married the following year, but unlike love from afar, their marriage could

not sustain the demands of their artistic temperaments. In less than ten years they were estranged.

The "*Symphonie Fantastique*," or "Episode in the Life of an Artist" as it is subtitled, was written during 1830 in an exceptionally short period of time. The introduction of a musical theme to represent an "idée fixe" (the beloved) as well as Berlioz' use of the symphonic form as a narrative device, separate this symphony from other contemporary works. At first Berlioz conceived the program as depicting the anguished lover, obsessed by the thought of his beloved, but his emotional turmoil interfered with the creative process. However, after hearing a rumor that his beloved was having an affair with her manager, he modified the program. His sense of betrayal and rage allowed him to finish the symphony, in which he sought a vicarious revenge against her faithlessness(!) by having the artist murder his beloved, and having her take part in the Witches' Sabbath. While I do not care to wish unhappiness on others, I think we must consider ourselves lucky that Berlioz felt so betrayed, as his outrage gave the world a far more dramatic work than we might have had otherwise.

This is a piece that cannot be performed in an intellectualized or laid-back fashion, whatever the vogue in interpretation. It is a work out of the Byronic spirit of deeply felt passion and sensitivity, of private suffering and outbursts of anguished fury. It is not polite, restrained, or temperate.

Paita's interpretation is far closer to the mark than Loren Maazel's. In fact, despite the attention to dynamics and tempo that Maazel gives, one has the feeling that his orchestra is playing by rote. Carlos Paita, on the other hand, has given us a stunning performance.

Nowhere is the difference better illustrated than in the opening movement, "*Reveries, Passions*." Paita gives us a sense of melancholy,

punctuated by anguish and torment. Maazel on the other hand seems to have opted for delicacy interrupted by fortes. It is this tension-filled and troubled movement which lends such strength and stature to Paita's entire interpretation, making this a definitive performance.

Maazel's performance is much better recorded, and although the Cleveland Orchestra plays stunningly, there is no sense of urgency or drama in the performance. For the most part, one hears wide dynamic range and fast tempi. The "March to the Scaffold" and the "Dream of the Witches' Sabbath" cannot help but be hair-raisers, but they are not properly set up by the previous three movements.

The recordings are both good, although the Telarc is superior. The Lodia disc seems somewhat confused, multi-miking or not, and the high end is steely. Even though there is the usual sense of massed-string strain in the Telarc recording, the strings sound better than on the Lodia. Great effort was taken by Telarc to do real-time recording of the bells in the last movement. The McGaffin Carillon, a quarter mile away from Severance Hall (the recording site), was used to provide the twelve or so notes which appear in the "Witches' Sabbath." They are effective, but I'm not convinced it was worth the effort. The onstage bells used in the Lodia recording seem just as effective in the context of the music.

The Lodia disc is recorded at a higher level, and oddly enough seems to display more dynamic range than the Telarc. Wide dynamic range seems to have become almost synonymous with the Telarc label. The use of multi-miking for the Lodia may also seem to give it its more apparent sense of bass fullness. I have a feeling, however, that Paita demands and expects more sound from his brass section than Maazel. This may account for some of the apparent differences.

All in all I must recommend the

Lodia recording. It is superior in performance, and while not as well recorded as the Telarc it is almost of audiophile quality. The performance is not to be missed, so despite the flaws of the recording, it is almost imperative to own this disc. MG

R. STRAUSS: Also Sprach Zarathustra. Chicago Symphony Orchestra, Fritz Reiner. RCA Point 5 ATL-4286.

Music lovers, rejoice! RCA is at last digging into its archives for some great performances of the past, and reissuing them on audiophile-quality discs.

The Point 5 of this new series refers to the cutting speed, which is half. According to the jacket notes, "the original multi-track recording is stereophonically remastered (onto another tape) with Dolby noise reduction and without restrictions of dynamic range and frequency response . . . The master tape is played back at half speed from an Ampex 440 that has a flat frequency response from 10 Hz to 20,000 Hz and . . . the signal is amplified by JVC direct-coupled amplifiers that have no audio restrictions of frequency or distortion."

Considering its age (1954), the recording is remarkably good, although the fundamental of the organ pedal in the 2001 opening section is a bit weak — probably because of the equipment used for the original taping. (40 Hz was considered to be the "practical" bottom of the audio range back then.)

I'm not convinced, though, that half-speed cutting was the best way to go with this. Obviously the original tape was not altogether clean to begin with, showing some evidence of muddiness during the loudest passages, and it was inevitable that another taping step (from multi-track master to 2-channel dub) would add some additional distortion, no matter

how good the analog recorder. Thus the sound, while gratifyingly ungimmicked (the high end is gorgeous!), is slightly hazy and becomes a little congested during fortissimi. Considering my findings anent the Sony PCM-F1 digital system, I would (had I been producing this disc) have opted for a mix-down to 2-track digital and, since you can't play that at half speed, a real-time disc transfer. Half-speed cutting is nice (and I suppose it has strong sales appeal to audiophiles), but if it necessitates adding an additional analog tape-copying generation, I'm not so sure it confers that much sonic advantage. (On the other hand, if RCA had opted for a digital mix-down, they would probably have used their professional Sony PCM-1600 system, which is reportedly not as good as the cheap little PCM-F1.)

There is no evidence of tampering with instrumental balances during the work, and while the stereo imaging is quite specific, some instrumental placements are definitely odd, and seem to change from time to time. Double basses and trumpets, for example, are sometimes to the right and sometimes to the left.

All this cannot however detract from the performance, which is simply stupendous! Reiner takes

"Also Sprach Zarathustra" quite a bit faster than most conductors, a decision which I happen to agree with, because this can be (and usually is) a stupefyingly dull piece. Here, it has momentum, tension, and high drama. In fact, were it not for the recording, this would have earned our second Definitive Disc Award. (The first went to Mobile Fidelity, for their Elgar "Falstaff.")

I haven't heard any other releases from the Point 5 series, but their list of initial titles looks very promising. There should be some real collector's items among them. (I did hear Reiner's

Rimsky-Korsakov "Scheherazade" from a radio broadcast through a mediocre system, and that too was the best performance of that work that I've ever heard. Maybe Reiner was our number one underrated conductor of the recent past.) So, whatever the limitations of those old tapes, I'm enthusiastic about RCA's re-release program. I hope they'll dig back even further, because some of the best performances of many other works (the d'Indy "Istar Variations," Stokowski's "Firebird Suite," and Schnabel's Beethoven recordings, to name three) were on RCA mono discs 'way back when. JGH



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Recommended Components

Components listed here are ones which we feel to be the best available in each of four quality classes, based on all of the information available to us at time of publication.

Components are selected for listing on the basis of our own tests as well as reports in other magazines and from users. The ratings are predicated entirely on performance — i.e., accuracy of reproduction — and are biased to an extent by our feeling that things ADDED TO reproduced sound (flutter, distortion, various forms of coloration) are of more concern to the musically oriented listener than things subtracted from the sound, such as some deep-bass or extreme-treble range. On the other hand, components which are markedly deficient in one of more respects are down-rated to the extent that their deficiencies interfere with the full realization of the program material that is likely to be fed to them.

Some of the listed items are discontinued models (*), retained here because their durability and performance distinguish them as "classics," and because they are sometimes available at substantial reductions below their original cost. Upgrade modifications are available

average home component high fidelity.

Class D: Satisfying musical sound but significantly lower fidelity than the best available. Below this level, system colorations start to become so great that selection must rely more upon personal taste than considerations of accuracy.

The order in which components are listed within each class has nothing whatsoever to do with relative quality.

Components which are considered to be near the bottom of one class and the top of the lower class are listed in both classes.

The Recommended Components listing has been completely revised and updated since it last appeared. for many of them.

Component classes are as follows:

Class A: Best attainable sound, without any practical considerations; "state of the art."

Class B: The next best thing to the very best sound reproduction, with cost definitely a factor.

Class C: Somewhat lower-fi sound but far more musically-natural than

Recommended Components

Each component listing hereunder is followed by a series of numbers, each corresponding to one of the numbered notes on the following pages. If you are only interested in knowing what components we are currently recommending, just ignore the numbers. If you are curious enough about a component to want to know more about it, or to ascertain how it might "mesh" with your present components, take pencil and paper and jot down each of the numbered Notes pertaining to it. The result will be a capsule "Quickie" report of that component.

Turntables

- (A) Linn-Sondek LP-12 (9,10,18,190,198)
Oracle (9,10,18,190,198)
- (B) Denon 2500 (15,16)
- (C) C J Walker CJ-55 (9,18)

Tone Arms

- (A) Linn Ittok LV-II (11,198,190)
SME 3009-III (11,136,189,192)
- (B) Mayware Formula 4 (11,136,195)
Grace 707 (12,195)

Cartridges

- (A) **Technics** EPC-203 Mk III (1,4,127,165,166,1888,189,195)
- (B) **Shure** V-15-IVG (1,4,6,7,80,156)
- (C) **Shure** V-15-IIIG (1,4,6,7,80)
- (D) **Shure** M-M95-EJ (1,5,6,80,195)

Preamplifiers

- (A) **Berning** TF-10 (78,80,86,136,142,157,165,166,181,189,195)
Esprit TA-E900 (78,85,86,94,88,94,126,129,136,138,189,190)
Denon PRA-2000 (78,79,88,118,136,126,157,189,190)
- (C) **Hafler** DH-101 (77,86,126,136,179,186,194)
Conrad-Johnson PV-3 (75,77,78,79,92,128,137,156,180)
- (D) **Dynaco** PAS-3X* (80,84,128,137,138,158,160,181,184,187)

Amplifiers

- (A) **Esprit** TA-N900 (88,94,98,136,138,157,165,166,181,188,189,190; does not like Acoustats)
- (B) **Acoustat** TNT-200 (80,88,92,96,127,136,138,157,165,166,181,189,192,195)
- (C) **Hafler** DH-200 (80,94,136,179,186)
NAD 3020 (89,99,198,195)
Sonic Developments D-235 (99,113,127,156,158,195)
- (D) **Creek** CAS-4040 (86,89,99,126,132,134,137,156,177,178,180,184,193)
Dynaco Stereo 70* (92,95,99,137,156,158,178,180,181,184,187)

Speaker Systems

- (B) **Acoustat** Model Four (80,100,107,112,115,117,121,27,132,138,165,166,188,192,195)
Acoustat 2+2 (80,100,107,113,115,120,121,127,157,165,166,188,195)
Quad ESL-63 (198) (Test pair just received at press time)
- (C) **Spendor** BC-1 (108,120,128,129,130,133,139,158,159,194)
Mariah LS-2 (106,118,120,128,134,158,160,194)
- (D) **Bill Reed** 6-02 (77,104,106,113,120,127,130,133,139,156,160,

178,195)

Spectrum 208A (106,113,124,128,137,156,158,160,194)

Signal Processors (200)

- (A) **Packburn** 323 and 103 disc-noise-reduction devices
Benchmark Acoustics ambience restoration system*
- (B) **KLH** TNS-7000 transient-noise suppressor
KLH 1201A dynamic hiss filter*
dbx 3BX dynamic-range expander
dbx 224 tape/disc-noise-reduction device

Recording Equipment

- (A) **dbx** 157 tape-noise-reduction device
Sony PCM-F1 digital audio processor (the first and only 99.7%-perfect recording system).

Headphones

- (B) **Signet** TK-33 (126,136,146,153,155,157,180,193)

Miscellaneous Devices

- (A) **FMI** audio interconnects (189,190)
FMI Gold speaker cables (189,190)
ABX comparator
- (B) **Monster** speaker cables
FMI Brown speaker cables
RWR MCT-1 MC step-up transformer

Record-Care Products

- (A) **LAST** record-preservation treatment
Keith Monks record cleaner (201,202)
- (B) **Nitty-Gritty** II or III record cleaner
- (C) **DiscWasher** record cleaner (201)

-
1. Moving-magnet type; requires no step-up.
 2. Moving-coil type; requires preamp or step-up transformer.
 3. Substantial sample-to-sample variability; should be individually selected.

4. Outstanding tracking ability.
5. So-so tracking ability.
6. Excellent 78-rpm stylus available from manufacturer.
7. Spherical tip; more natural at high end than elliptical.
9. Outstanding immunity to acoustic feedback.
10. Excellent external-shock isolation.
11. High mass, for low-compliance cartridges.
12. Low mass, for high-compliance cartridges.
15. Some acoustic feedback tendency at high listening levels.
16. Basic turntable only; must be mounted on suitably isolated base.
17. Integrated arm/turntable. Performance can be improved by replacing tone arm with better one.
18. Belt drive, low torque.
19. Direct drive, high torque.
20. Includes 16-2/3-rpm speed.
21. Includes 78-rpm speed.
30. High-speed (7-1/2 and 15-ips) model.
31. Separate record/play heads; can monitor from tape while recording or adjusting.
34. Available in 2-track version.
35. Unbalanced inputs. Use input transformers if hum is a problem.
36. Set-up adjustments accessible without removing cabinet.
37. Edit cueing not possible.
38. Built-in test oscillator frequency(ies).
40. Digital PCM.
41. Digital copy facility.
42. Extremely good S/N ratio.
43. No wow or flutter.
44. 10-1/2-inch reel adaptors available at extra cost.
45. Awkward to thread.
46. Does not meter output signal.
47. Instructions describe user calibration for specific recording tape.
48. Adaptor only; must be used with videotape recorder.
50. Precise editing not possible without costly auxiliary equipment.
55. Omnidirectional.
56. Cardioid.
57. Bidirectional (figure-8).
58. Selectable patterns. (See 55,56,57.)
60. Somewhat awkward to handle.
61. High output may overload some preamps.
62. Choice of AC or battery supply.
67. Low sensitivity; for local reception only.
68. Very highly sensitive and selective; ideal fringe-area tuner.
69. Audio section better than tuner section.
70. Tuner section better than audio section.
75. No auxiliary AC switching.
76. No tape-monitoring provision.
77. Available in kit form.
78. No tone controls.
79. No mono A+B channel-blend switch.
80. Outstanding record for dependability.
81. Compressor/expander noise-reduction system usable for encoding and decoding cassettes or open-reel tapes, and for decoding dbx discs. Expander NOT usable with unencoded or Dolby-encoded recordings.
82. Compressor/expander tape-noise-reduction system. Compatible with professional DBX systems.
84. Needs high-impedance load; use only with tube-type-amplifiers.
85. Includes built-in head amp for MC cartridges.
86. Flexible and effective control lineup.
88. Unsurpassed reproduction of inner detail and depth perspective.
89. Integrated preamp/amplifier.
90. Includes built-in power amplifier(s) specifically matched to the speakers.
92. Best with electrostatic tweeters or full-range systems, or others with transient response.
94. Best with dynamic tweeters.

95. Fattens and loosens the low end of many dynamic woofers.
 96. Tends to dry up the low end of many dynamic woofers.
 98. Mono power amplifier.
 99. Low power capacity.

100. Very high power capacity.
 102. Very low efficiency.
 104. Fairly high efficiency.
 105. Will produce very high listening levels with adequate power. Watch for hearing damage!
 106. Does better with good solid-state amplifiers than with tubes.
 107. Difficult load for many amplifiers.
 108. Best driven by top-notch tube amplifiers.
 109. Must be biamplified.

112. Best in large listening rooms.
 113. Ideal for small listening rooms.
 114. May be biamplified for higher output levels, tighter bass, and better control of driver balance.
 115. Unusually critical of room placement.
 117. Beamy high end; narrow listening area.
 118. Unusually spacious sound.

120. Superb stereo imaging.
 121. Very large apparent sound source.
 124. Some audible discontinuities between drivers.
 126. Slightly distant perspective ("Row-M"); somewhat laid-back.
 127. Neutral perspective ("Row-H").
 128. Rather forward perspective ("Row-A").
 129. Very "gutsy," authoritarian sound. (Think how Zarathustra might have spoken.)

130. Some vowel-like colorations.
 132. Tendency toward bass heaviness.
 133. Some upper-bass drumminess.
 134. Somewhat loose low end; requires high-powered, high-damping-factor driving amplifier.
 135. Lean, dry low end in average-sized rooms.
 136. Extremely tight, well-defined

bass.

137. Rich, fat low end.
 138. Very deep bass range.
 139. Noticeably limited bass range.

142. Some phono hiss audible at high volume settings.

146. Must be driven by power amplifier.
 147. 2000 ohms impedance (Hi-Z).
 148. 200-400 ohms impedance.
 149. 4 to 8 ohms impedance.

150. Electrostatic; requires external polarizing supply.

151. High rejection of outside sounds.

153. Designed for minimal rejection of outside sounds.

154. Heavy weight.

155. Very lightweight.

156. Extreme highs slightly soft, sweet.

157. Airy, open high end.

158. Bright, very "alive" sound.

159. Slightly sizzly high end.

160. Slightly hard high end.

165. Extraordinary focus and "snap."

166. Unsurpassed high-end transient response.

177. Rather diffuse sound.

178. Somewhat deficient in snap and sheen.

179. Somewhat flat sound, deficient in depth and perspective.

180. Somewhat over-ripe, richer-than-life sound.

181. Liquidly transparent, lucid.

182. Slightly dark, heavy.

184. Slightly veiled.

185. Very subtly veiled.

186. Slightly dry sound.

187. Many commercial update/modifications available.

188. Despite any deficiencies, this is one of the most ACCURATE reproducers in its component category.

189. Fantastic!

190. But is it worth the money to you?

191. We don't really like this, but a lot of people whose judgment we

respect do.

192. Our personal favorite, as of now.

193. We feel rather so-so about this; audition it yourself before deciding.

194. A mixed bag. We like it but you may not. Audition it.

195. Best performance for the money.

196. Failure rate not yet established.

197. Samples may vary widely. If unhappy, ask to try another.

198. We haven't tested this, but it is an overwhelming favorite of many who have.

200. Not for the purist, but a boon to the music lover.

201. Wet cleaner.

202. Semiautomatic system.

203. Manual, economy system.

204. Record-preservation treatment.

Changes to NOTES:

11. High mass,

for low-compliance cartridges.

12. Low mass, for high-compliance cartridges.

85. Includes built-in

head amp for MC cartridges.

8. Delete this note.

Changes (since

the last listing):

Discontinued

and obsoleted Infinity RS-4.5

speaker system dropped from Class B.

Discontinued & no-longer-

available AR-XA turntable

dropped from Class D.

Discontinued & obsoleted Infinity

HCA power amplifier dropped from Class B.

Class C Audionics

BT-2 preamp and CC-2 power amp

dropped. New versions as-yet untested.

Class B Berning EA-230

power amplifier superseded in Class A by similarly-priced Acoustat TNT-200.

C J Walker CK-55 turntable

added in Class C.

Discontinued

and unavailable Stax SRX-II headphones dropped from list.

(Delete Extraneous characters in

NOTE 96)

Puzzler

Tony H. had saved and scraped what he could from an apprentice hash slinger's wages until, at last, he could afford to buy a high-priced moving-coil cartridge that several underground magazines had given high praise to. It proved to be a disaster.

It sounded marvellous — as far as he could tell through the miasma of floor-shaking hum he got from it. The hum was almost equally horrendous in both channels, and varied in intensity when he shifted the positions of the tone-arm cables. It disappeared entirely when he unplugged the tone-arm cables from his head amp, so he had to assume the problem was between the cartridge and the head amp.

But there was something else very

odd about it. When he disconnected ONE tone-arm cable from the head amp, the hum disappeared from the other channel too, but so did the sound from that channel. He checked his cartridge connections, and although the cartridge had no color coding on its output pins, he ascertained that he did have the ground wires going to the ground pins and the hot wires going to the hot pins. So he had to rule out cartridge mis-wiring.

What was causing his problem?

As usual, we're offering a free subscription or renewal to the reader who sends us the earliest-postmarked correct answer.

The winner of Issue V-9's puzzler was James Lin, of Providence RI, with an

(cont'd on p.54)

Recommended Components

I miss your list of Recommended Components and wish you would revive it. Every list is controversial, but magazine circulation thrives on controversy. Terry F. C. Jang

How can we revive the Recommended Components list when it has not even been laid to rest? This is a continuing feature in the magazine; it is simply not published in every issue.

Please see the latest Recommended Components list in this issue on page 21

AKG Mike Mod

Some issues back, you reviewed the AKG C-34 stereo microphone, saying that its sound was excellent when the rising high end was equalized out, and offering to send details on the modification to anyone who asked. Could you send that please? Carl Boldt

Not exactly.

The simple EQ circuit that we devised for the C-34 worked fine with the mike preamp we were using, but was dependent upon the load presented to the mike by the preamp inputs. When we started looking into mike preamps a little more, we found that available units vary in input impedance all the way from 150 ohms to 2,000 ohms, which made it impossible to publish one EQ circuit for the mike. We concluded that the best place to do the EQing, for optimum results with all preamps, would be inside the mike, between the capsule and the first-stage interfacing transistor, but have not as yet found the time to work out the details on that.

If you wish, however, to jerry-rig

an equalizer to suit your own preamp, here's how:

The circuit is shown below. R1 plus RL should add up to 500 ohms or more. C and R2 will have to be determined empirically, using an oscillator and an AC VTVM. For your measurements, the source impedance from the oscillator should be 200 ohms, and the load at the VTVM inputs should be equal to the input impedance of your mike preamps. RC and RL should be cut and tried until the response measured by the VTVM complements as closely as possible, from 2 kHz to 14 kHz, AKG's published curve for on-axis response of the cardioid pattern.

Missing Listing

Pardon my bringing this up — it's a little awkward asking this about my own performance and recording — but since Margaret Graham said my Shostakovich recording was in contention for a Definitive-Disc award, why was it not listed in her "Top-of-the-Pile" roundup in issue V-8?

Jim Boyk
Performance Recordings

Ms. Graham confesses that the omission was "a dumb oversight," and urges everyone who admires completeness to pen it in at the bottom of the T-O-P list: "PROKO-FIEV: Sonata 3, Boyk, Performance Recordings PR-3."

A Davern Infrequent

In MG's review of Tomas Ornborg's "Blue Five" (issue V-8), she says "Mr. Davern and his friends (whom I assume meet frequently)...". The wording could be taken two ways, but certainly Kenny Davern doesn't

meet very frequently with them. Davern is a well-known American clarinetist who plays a lot of jazz festivals in this country.

Ray Treon, Jr.

What's the second way?

Thanks and Encouragement

This is intended as a note of thanks and encouragement. Stereo-phile is transformed since Mr. Archibald became publisher. It now is very useful, provocative and increasingly focused. JGH, you are doing a wonderful job. Happily, most of your sonic/electronic prejudices coincide with mine, and I appreciate your present regularity.

I like music to the extent that it motivates my equipment interests. Like you, my collection of about 7,000 LPs includes some from 1949, and I often play old mono discs, which seem vastly improved by decent, modern equipment: biamped Acoustat 4's (you ought to try this), NY Audio Labs' Futterman OTL-3's for top end and Threshold Stasis III for the bottom, dbx 20/20 for old/odd equalization problems, Mark Levinson ML-10 preamp, Oracle 'table with Fidelity Research FR-14 arm, Orsonic headshell, Accuphase 2 cartridge. Just a basic rig.

It's very nice to know you share my pleasure in music (some recorded long ago). Howard Herschberger

Thanks for the bouquets. For my part, I am surprised but gratified to learn that there's a real music lover out there who listens on something better than a Silvertone portable. But if that's a basic system, I'm a herpes simplex. JGH

Replaceable Styli

I have subscribed since day 1, have every issue, and even used to read JGH's articles in "Audiocraft."

Your magazine is still the best. I very much enjoy receiving your bite-sized issues frequently. Is this Audio Heaven?

Regarding the Shure and Stanton cartridges for use with interchangeable styli for various groove shapes: frequent stylus changes will soon cause the stylus assemblies to fit loosely, apparently because of bending of both the track within the body and the tube on the stylus assembly. Perhaps Mortite at the edges of the stylus block will help to some extent, but I believe that a better solution is to have a different cartridge for every stylus type used, assuming an arm with plug-in heads. Any comments about this? Don C. Creevy, MD

With the price of V-15-V's these days, even discounted, we'd question the economics of your proposed solution. A good compromise, it seems, would be to have a few cartridge bodies fitted with the exotic styli you use most often, and another for styli that you use only once or twice per blue moon.

Technics Rave

Several issues back, you (or, rather, Alan Edelstein) gave a rave review to a Technics moving-magnet cartridge (the 205-Mk III), in which it was praised for its sonic superiority in practically every respect. You (he) claimed that it sounded less colored than many (if not most) MC's. Added attraction: no step-up device is required.

With all this being known, why aren't we hearing even more raves about this unit? It seems to remain a rather obscure product so far, and I can't find many users to tell me how they like it. Not that I don't trust AE's ears, I am just plagued by the same audiophile paranoia as are most others. Guess we all do far too much second guessing, and require (or at least seek) a lot of assurance that we are making the right choice.



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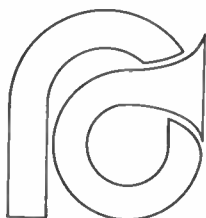
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Anyway, let's hear a little more about this fantastic (?) MM, okay?
Unsigend

We asked that Alan send along his sample, but were told that its mounting arrangement had disintegrated, or some such. We since received a sample of our own from Technics, and will publish a followup report soon.

Actually, the English press also did a lot of raving about this, but we tended to lose interest in it when we learned, shortly after AE's report, how scarce the cartridge is in the US. This, plus several reports to the effect that it was no longer being imported to the US, further blunted our enthusiasm for it. But if our sample proves to be as good as AE's, we will continue to give it the promotion it (perhaps) deserves.

KLH Perplexity

I applaud your forays into the area of reasonably priced components, but I am mightily perplexed as to why you chose a duo of KLH speakers to report on.

If your intent was to discredit mass-produced name-brand speakers I think you succeeded. For all intents and purposes the KLH name and tradition is no longer pertinent to audio. They have forsaken their acoustic suspension heritage and have fractionalized their designs. They are merely a stepson of Infinity whose products are sold out here in discount emporiums.

You would have done better to report on almost any speaker from Acoustic Research, which firm has retained its design integrity and received much acclaim for both its research and its products from the surface press.

Other companies of long standing whose speakers might well be considered excellent, low-cost sleepers are Electro-Voice, EPI and Advent.

I hope you aren't passing up good,

low-cost speakers for fear of being labelled pedestrian by your subsurface peers.
R. W. Clifford

It was not our intent to discredit, but to learn. We did not exactly choose KLH, though. They offered to send the speakers to us, and since it had been a long time since we have tested any product from a "name-brand mass-producer", we accepted. Since they approached us, we felt they must either be very confident about the quality of those speakers, or a bit foolhardy.

We are arranging now to expand our coverage of speakers in this moderate price range, but regret that we will not be able to include Advent, because that firm folded a few months ago. (As a matter of fact, we have more recently learned that those KLH speakers are now discontinued models.)

We are not concerned about what the other "subsurface" magazines think about us. This is largely because of what we think about most of the other subsurface magazines.

Value for Money

I would like to alert you to a product, made for the amateur or consumer market, which is a surprisingly good performer and value. It is Radio Shack's current-model sound level meter.

I compared its performance with that of a Bruel and Kjaer model 2215 sound level meter and found that, within its limitation of a maximum sensitivity of 60 dB, it is within 1 dB of the B&K for most readings.

I wanted to average out small fluctuations in frequency response, so I used the meter to measure "pink noise." The pink noise was obtained by passing the output of a General Radio white-noise generator through the 1/3-octave band filters of the B&K Model 2111 audio-frequency spectrometer. The output of the spectrometer was then fed through a

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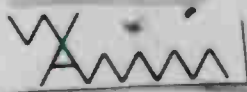
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power amplifier to a wide-range loudspeaker system. I set up the two sound-level meters for simultaneous measurement of the sound field from the loudspeaker.

With both meters set for "A" weighting, I found that at most frequencies the Radio Shack instrument measured consistently 1 dB higher than the B&K. No readings were more than 1 dB high, but a few were 2 or 3 dB low. With white noise, the same slight disparities were observed. Charles G. Nelson

Truth and the Recorded Past

Thanks for sending me the sample issue. I am very much impressed, particularly by the continuity of spirit throughout the magazine.

The "truth" as you see it ("The Truth About High End," Issue V-8) seems harmonious with my own sense of it — often quietly spoken in neutral grays, with changes often disappearing in a maze of larger and larger truths as we see (or hear) the others' views.

I'm also grateful on two other details: one, that you are (collectively) secure enough to not feel the need to poke at the other less secure (but sometimes entertaining) publications.

And two, your review of the Packburn noise-reduction devices should wind up in the hands of all companies which are reissuing early discs and cylinders. When my colleague Don Smithers, who has recorded widely on trumpet, written the definitive book on its history, and specializes in cornetto (as I do), told me that his neighbor had designed this device, as well as one that equalizes the surprisingly wide range of the pre-electric acoustical horn, I became very interested. With these, hearing those early bands, with their attraction to the tuba and bass saxophone, gives us a better idea of what they may have really sounded like.

Enclosed is my subscription check and my compliments.

Steven Silverstein

It's unfortunate that only record archives and companies reissuing old recordings are likely to consider buying the Packburn devices, because record collectors with thousands of dollars invested in their treasures could benefit even more from them, in terms of enjoyment if not financial return.

But collectors of old records often suffer from a very strange mental aberration: they equate the God-awful surface noise from old recordings with "authenticity," and feel somehow deprived of the joy of listening to them if the noise is eliminated. Thus does unconsidered emotion triumph once again over common sense.

No Pin?

I have recently celebrated (?) my 10-year anniversary of continuous subscription to your fine publication. Thanks a lot for the pleasure, but don't I get a 10-year pin? Some form of acknowledgment? Anything? Just kidding!

Best wishes for the holidays.

John Mulderig

A number of our subscribers have just celebrated their 20th anniversary of continuous subscription. They didn't get a pin either. However, they and you get our thanks, reciprocal best wishes, and unofficial membership in FOOF — our Fraternal Order of the Obstinate Faithful.

Just kidding

Less High End

I have been with Stereophile during the bad and the good times. It always covered the kind of equipment that I could afford to own.

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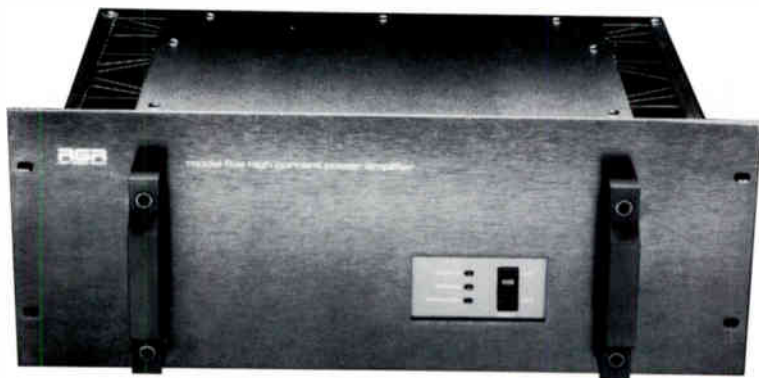
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magazine is now published on a regular schedule, but I notice now that you have gravitated towards the high-end components, which I cannot afford to own.

I remember the days when Dynaco was one of your favored brands. Those components were affordable.

Rudy Burkich

I think you forget the reports we did on the Audio Research D-150 amplifier, the Infinity SS-1 and SS-1A speaker systems, and several other items which were patently unaffordable by most readers back then. We still cover an occasional high-priced item because we want to keep readers (and ourselves) abreast of what is considered the state of the art. But we thought we were doing a much better job lately of covering more-affordable components. We've reported on a \$350 power amp, several \$500/pair speakers, lotsa under-\$600 amps and preamps, and several \$200-to-\$350 cartridges. Nothing decent costs what Dynaco components used to cost 10 years ago, because a loaf of bread doesn't cost what it did 10 years ago.

We think, however, that you'll see a lot more reports on items that interest you in upcoming issues. As well as a few on outrageously priced items. Just because. JGH

Loudspeakers, Not Acoustics

Please add a small correction to your report on the Spectrum 208A speakers. We are Spectrum Loudspeakers, not Spectrum Acoustics.

Eric Johansen, President,
Spectrum Loudspeakers

Salisbury Anthems

In your Volume 5 Number 8 issue, Alan Edelstein gave a favorable review to a record called "Anthems in Salisbury Cathedral," but nowhere in that review could I find either the record number nor the name or address of the manufacturer.

This is the kind of music I like, and I would buy the record if I could locate it. Can you help?

Howard Bird, Jr.

The record company was Meridian, and the record number was E77025. Meridian is English, and its US import office is at 6074 Corte del Cedro, Carlsbad, CA 92008.

The number of the other Meridian record that AE reviewed in that issue (Virtuoso Music In 18th-Century France) is E77046.

On Tape

Herein concludes the comparison of the Otari MX-5050 with the Nakamichi 680 and the Sony PCM F1 (See V-10).

Nakamichi 680

Two-speed (15/16 and 1-7/8 ips) stereo cassette deck. Front-loading. Rack-mountable. Random-access music memory. Two-speed cueing in both directions. Variable-speed playback. True 3-head design. Peak and average fluorescent metering. Full bias and

level calibration for tape types I, II and IV. Record-head alignment facility. Price \$1350. Manufacturer: Nakamichi U.S.A. Corp., 1101 Colorado Ave., Santa Monica, CA 90401.

The 680 was Nakamichi's answer to B*J*C's 2-speed cassette decks except that, with typical Nakamichi chutzpah, their second speed was 15/16 instead of B*J*C's 3-3/4. Although the half-speed feature has

now been dropped, it does reveal some interesting things about transport and cassette performance. And the 0.6-micron gap-width head developed for half-speed operation became the standard playback head in all high-performance Nak decks.

Even after several years, Nakamichi's transport is still unique. The approach follows a Eumig innovation in which servo-driven cams replace solenoids. This makes the transport cheaper, quieter in operation, and less likely to get out of adjustment. Since cams can be rotated to any intermediate position (unlike solenoids, which are either In or Out), it is easy to add a variety of new features. Nakamichi took advantage of this, with two-speed cueing in both directions and the ability to skip selections, in either direction. In addition, all these functions are accessed from existing transport controls (FF, Rewind, Play, Pause and Record), keeping the front panel uncluttered and allowing previous remote controls to work with the machine.

Closed-loop capstan drive is no longer unique, but Nakamichi added an interesting twist. The two capstans and pinch rollers are each of different dimensions. They rotate at different speeds, so if they introduce any wow or flutter, these cyclical speed variations will occur at different frequencies, so as not to add directly. This effectively reduces the magnitude of any speed variations and spreads it over a wider range of frequencies, making the speed fluctuations less audible.

But the most unusual feature of all Nakamichi decks is that they eliminate the head-pressure pad - the major source of scrape flutter (modulation noise) and tape skewing. Every cassette has a pressure pad built into it, right behind the tape where it contacts the record/play head. In Nakamichi's decks, a shield around the play head pushes the pad away from the tape, and the isolating effect of the dual capstans elimi-

nates any feed irregularities due to the cassette shell.

Half-speed recording was doubtless created in response to complaints that 45 minutes per direction is often not enough, as well as from an inclination to thumb the corporate nose at other cassette-deck designers who insisted it couldn't be done.

Response out to 15 kHz (and plummeting thereafter) was in fact achieved at the slow speed with any type II, IV, or premium Type-I tape. So much treble boost is needed when recording however (to get flat play response) that 120-microsecond EQ is used for all tapes, to minimize saturation. And, not surprisingly, the record head has to be critically aligned for each side of each cassette. (Although the 680 has provision for head alignment, Nakamichi says it is only required at full (!) speed if you want consistent response out to 22 or 23 kHz. Otherwise, improvements in cassette shell quality, combined with the elimination of the pressure pad, allow response to 20 kHz on any decent cassette without head alignment.)

The 680 was one of the first cassette decks with fluorescent record-level indicators. The response is essentially instantaneous, giving very nearly a true peak reading. Their display covers a 50-dB range - of little value in dubbing records, but useful for live recording as it allows you to set level from the auditorium audience noise.

One of the 680's most unusual features is that the difference between the 70- and the 120-Msec record EQ exactly matches the difference in playback equalization. (This is not true of most cassette recorders; it is only a result of having such good heads that the tape itself is the limiting factor in the machine's performance.) You can thus trade off high-frequency head room against s/n ratio or vice versa. For example, if the program has a lot of HF energy, you can use Type II tape

and set the EQ to 12- Msec. Or, if you're recording a string quartet, you can use the 70-Msec EQ with Type I tape for lower noise.

Like most recent cassette decks, the 680 has no mike inputs. However, an accessory three-channel (Left, Center and Right) MX-100 preamp can be powered from a separate power supply or from a DIN connector at the back of the 680.

Measurements

Performance measurements were made with Maxell UDXL-II tape, a typical ferric formulation. Peak wow and flutter measured 0.15% at 15/16 ips and 0.1% at 1-7/8 ips. Weighting reduced these figures to 0.14 and 0.08 respectively - much better than the specs.

S/n ratio was measured at 400 Hz and 200 nW/m recorded level, which corresponds to Nakamichi's Zero-db level. Unweighted, it was better than 48 dB at 1-7/8 ips and around 51 dB at 15/16. (This is not an error: since high-end response plummets above 15 kHz at 15/16 anyway, Nakamichi adds filtering above that to lower the



The Nakamichi 680 Tape Deck

noise.) With A-weighting, these figures improved to 53 and 54 dB respectively.

At 1-7/8 ips, 400-Hz distortion was below 0.09% at 0 VU recorded level, slightly better than the 0.1% spec. 3% distortion was reached 5 dB above this level, with no compression. At half speed, 0-VU distortion was about 1.2%, better than the 1.5% spec. 3% distortion was at +4 dB, with about 1 dB compression.

In the cassette medium, headroom is so intimately tied up with the use of noise reduction that I will postpone any further discussion of it until my later report on the Dolby C

and dbx II.

Sound Quality

The 680's main claim to fame is its unique transport; extended response and good headroom are not new, at least to Nakamichi. The manufacturer claims that the reduced modulation noise is audible as increased clarity. I did not hear this difference. Rather, what I DID hear sounded merely like lower noise - subjectively, about 6 dB less.

Cassette decks are most often used for dubbing discs and FM broadcasts, and in this area, the 680 shines. It is possible to record high-quality discs or broadcasts and play them back without feeling that Something Has Gone Awry. The only audible deterioration (usually) when using Dolby B is a slight increase in hiss. With Dolby C or dbx, there is no apparent increase in hiss. This may say more about the noise level of most program material than it does about the absolute merits of the 680.

The signal which the 680 really messes up is a PCM-F1 recording. Switching from the PCM source to cassette playback reveals a quite noticeable smearing. It isn't just an ordinary blur; it's spiky, as if someone scraped a worn-out brush over a wet oil painting. This may not be a fault with the 680 but an interface problem, as is discussed later in my report on the Sony PCM.

As for half-speed cassette reproduction, you have to view this in the same light as the proverbial walking dog: that is, considering not how well it is done but marvelling that it is done at all. Think of it also as a foretaste of what might happen if someone decides to try and make a hi-fi medium of the microcassette.

Although the 680 is a 4-year-old design, its half-speed performance is technologically far ahead of the highly-touted Olympus microcassette system. The best thing one can say is that the sound is remarkably clean and transparent. In this regard, the 680 at half speed is probably better than many full-speed cassette decks,

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WITH SNELL TYPE A SPEAKERS: "The amplifier delivered unusually neutral, uncolored sound. Ambience information and sonic detailing were particularly evident. It showed excellent High Frequency and midrange clarity. The amplifier also seemed to have ample headroom -- 102 dB peaks at 10 feet -- and full rich Bass, particularly when used with the Sony Esprit TA-E901 preamplifier."

WITH KEF 105.2 SPEAKERS: "This Esprit Product gave the (KEF 105.2) speaker something approaching new life. Bass had more definition and appeared to go lower, mids were more coherent, and the highs naturally unstrained and extended. The 901 drove the KEF speakers to very loud levels without any sign of strain."

WITH QUAD ESL-63 SPEAKERS: "This Sony Esprit amp combined beautifully with the QUAD ESL-63 speaker. The resulting sonics had a pristine quality without hardness, particularly in the high frequencies. The upper midranges and trebles were clean, and had no grain at all. The QUAD speakers seemed to reproduce ambience cues, imaging, and bass effects which had not been heard previously."



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but that's about it. In all other respects, half-speed quality is nothing to rave about.

Its most obvious problem is lack of HF headroom. Hard transients are conspicuously dulled, and brass instruments playing at any more than moderate level become quite rounded-off. This is with UD-XL II tape; metal tape is better, but is still not as good as ferric at full speed. The ONLY advantage of half speed is its ability to cram long works and (especially) long broadcasts onto one tape side. If metal tape costs more than twice as much as premium ferric, there is no cost advantage. And if the sound quality isn't up to snuff, you really haven't gained anything at all. (A C-90 cassette at half speed gives you 90 minutes on one side. Broadcast concerts usually run 2 hours, leaving you to somehow edit out 30 minutes of material "on the fly.")

Although the 680 actually makes it out to 15 kHz at half speed as claimed, it isn't very stable. The high-end response "bobbles" all over the place. And although Nakamichi warns you to critically adjust head alignment at half speed, on both sides of the tape, the 680's 400-Hz test tone gives a wide range of adjustment for which the display shows "correct" alignment, but within which 15-kHz response is down 10 dB or more! Therefore, the best way to align the head properly at half speed is by ear or with an external oscillator set to 12 kHz.

Another sonic flaw at half speed is an occasionally bright or hard upper-midrange. Since nothing in the response measurement indicates a rise here, I can only attribute it to an increase in harmonic distortion.

These shortcomings might be tolerable were it not for the most serious flaw: the sound has a subtly "jerky" quality, as if a rapid, erratic tremolo were superimposed on the music. This effect occurs to some extent at all tape speeds, but it seems to be exaggerated at the

slowest cassette speed. It is this lack of solidity more than anything else which draws attention to half-speed cassette operation. All these problems make the half-speed cassette unsuitable for critical listening.

By the time Nakamichi discovered this, product development must have been too far along to allow backtracking. And they probably guessed that awe at this technological tour-de-force of theirs would outweigh any carping about its sonic imperfections. So the half speed appeared on two of their machines, was retained just long enough to prove they had done it, and was then quietly retired a year later. On the other hand, it is well suited for background music, to which no one pays close attention. Or you can dub three Syntonic Research "environments" discs onto one C-90 cassette. And if you can't get to a radio by 5 p.m., your recorder can capture all of "All Things Considered."

This bodes ill for the future of the microcassette as a "hi-fi" medium. The problems noted are probably not solvable; they seem inherent in the use of thin coatings, and (worst of all) the need to use magnetic materials with "reasonable" coercivity to allow biasing and erasure with "practical" heads. (See Box, page XX) I am confident that we will nonetheless see a proliferation of microcassette players a la Walkman, but don't expect the medium to evolve much beyond that point. There is an optimum size for anything, and micro isn't for a cassette.

Comparisons

Although there are measurable and audible differences between the cassette and open-reel machines (most of them format-related), the decks sound more alike than different. The similarities are similarities of faults, and appear to be problems inherent in analog tape recording.

If you own either of Crystal Clear's "Sonic Fireworks" albums as well as its dbx'd version, you can hear what I'm describing. The first

version released was the direct-to-disc one, the second, dbx'd version is from an analog master. The difference in sound is readily apparent, even on inexpensive systems.

The direct disc is dry, "crisp", and relatively uncolored. There is great detail, and the characteristic bite and attack of acoustic instruments is well preserved. Although the dbx version has slightly wider dynamic range, the tonal character is quite different. The sound has been "prettified," with the sharp little edges, burrs and filigree politely rounded off, but with a noticeably "mechanical" quality added. It's sweeter, more liquid, and much less offensive to those brought up on hi-fi rather than live sound. But much of the life and vitality is gone. (Even audiophiles who regularly hear live music tend to prefer the dbx'd version. They seem to judge the increased detail and definition of the direct disc to be a kind of edgy distortion, compared to the suave "liquidity" of the taped version.)

The problem has nothing to do with the dbx encoding. If your dbx has simultaneous encode/decode, you can demonstrate with a bypass test how little effect the dbx has on the sound. Connect short cables from the dbx-encode outputs to the dbx-decode inputs, and play the direct-disc version. Switching the dbx in and out, you should hear little or no difference, and certainly nothing of the magnitude or character that distinguishes the taped disc from the direct.

Although we cannot rule out the deck's electronics, most of the sonic deterioration seems to come from the medium itself (see "Analog Tape: The Fatal Flaws"). Careful contouring of the head surface and precise shaping of the pole faces can reduce time smearing, and violining can be reduced by use of "flutter filters" near the heads and by low friction pole-piece materials, but neither problem can be eliminated.

The two best-known attempts to

develop better recording heads have been at the extremes of analog taping speed. At the cassette end, Nakamichi has made R/P (record/play) heads with such well-shaped recording zones that response to 20 kHz is possible in a 2-head deck, yet time shift remains an insoluble problem at cassette speed. On the open-reel front, Keith K. Johnson has been working for more than 20 years on improved heads for high-speed recording. (Interestingly, both call their designs "focussed-gap.")

But it has largely been Keith Johnson's state-of-the-art 30-ips machines which have fueled the claim that the best analog recording is superior to digital. Because the time-smearing effect is wavelength-dependent, any speed increase diminishes it (assuming coating thickness is constant). And with improved recording heads, having a straight, sharp transition region, analog should, it seems, be able to compete with digital in the area of time-domain integrity.

Interestingly, most engineers I've talked to claim that the transition from 15 to 30 ips produces much more improvement than that from 7.5 to 15. This would suggest a "smearing threshold," below which the sound is great and above which everything sounds about the same. Or (more likely) it shows that 15 ips machines have poorer heads than the 30-ips decks.

(contd. on page 42)

Analog Tape: The Fatal Flaws

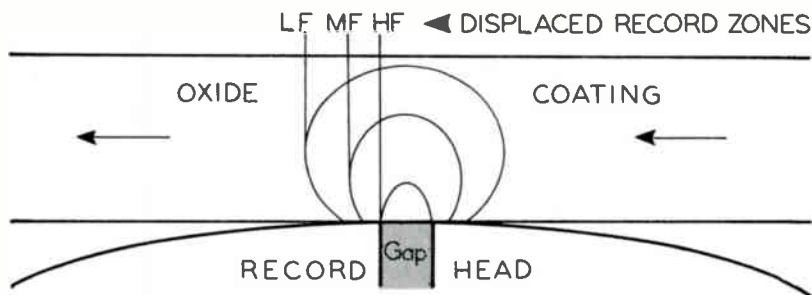
When audio frequencies are fed to a recording head, curves of magnetic flux radiate outwards from the head gap and through the magnetic tape coating in arcs of finite dimension. The higher the frequency of the signal - that is, the shorter its wave-length - the less distance these arcs radiate from the pole-piece slot and the narrower they are.

At any frequency, the narrower the head gap, the more the opposite poles of magnetism will cancel at the gap, and consequently the less distance the arcs of flux will radiate outwards. With an extremely narrow gap, the head must carry an inordinately large amount of signal current in order to throw the flux arcs through the entire thickness of the tape coating. High current causes the head to overheat and increases the tendency for the tape to adhere to it. For this reason, the optimum record and playback heads have different geometries.

The ideal record head has a relatively wide gap, so that the magnetic flux will radiate far enough from it to fully penetrate the tape's magnetic coating. Nonetheless, high frequencies get recorded only at the surface of the tape's oxide coating.

place there! While the tape oxide is in that zone, it is subjected to whatever variations in bias and audio signal occur during that interval. The "recording" - that is, the final arrangement of the magnetic domains - occurs as the tape LEAVES the recording zone.

Because the flux arcs for low frequencies radiate from a wider area of the head than those for high frequencies, the length of tape in a recording zone at any moment varies with frequency. The higher the frequency, the shorter the recording zone. If a high and a low-frequency wave reach the record head simultaneously, the low-frequency one will leave its recording zone first (because that zone loops out farther from the head gap), and the high-frequency one will be laid on the tape after it. This introduces a brief time



How analog tape causes frequency-dependent time smearing.

Lower frequencies penetrate increasingly into the oxide layer, and the lowest frequencies effect the entire thickness of the oxide layer. A playback head does not have to radiate flux arcs, but it DOES have to be able to resolve extremely short wavelengths in order to reproduce high frequencies. ITS ideal configuration is with an extremely narrow pole-piece gap.

When recording, that part of each arc of magnetism where most of the magnetic energy is concentrated is called the recording zone. But paradoxically, no recording takes

delay at high frequencies, the subjective effect of which is to "round off" transients.

(Each time a tape is duplicated in the normal direction, another HF time delay is added. Duplicating a tape BACKWARDS restores the original phase relationships, resulting in a tape with BETTER transient reproduction than the original master. This is why many people who buy prerecorded 4-track (bidirectional) tapes observe that they often sound better in one direction than the other.)

Another form of time smearing can occur on analog tape if the

trailing edge of the record head gap is not perfectly straight and smooth. Since high frequencies are laid onto the tape at the trailing edge of the pole-piece gap, any irregularities here will cause some HF energy to be laid down at slightly different points along the length of the tape. And because these irregularities are never the same on the record and play heads, their effect is the same as widening the play-head gap: HF resolving power is lost and, along with it, high-end response.

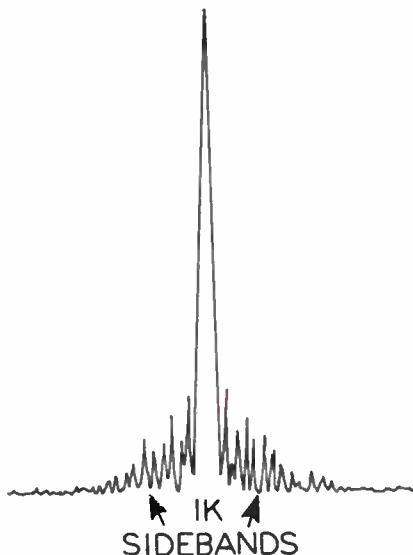
Both of these smearing phenomena are functions of the signal frequency versus the head dimensions. The faster the tape is moving, the smaller these errors become in comparison with the recorded wavelength, so they tend to diminish in severity with increasing tape speed.

While digital recording has large amounts of phase shift (from the sharp filtering of ultrasonics that is required), it does NOT have time smear. And time smear is far more audible than phase shift. (In fact, no one to our knowledge has proven conclusively that phase shift is audible at all.)

There is another problem which seems inherent to analog tape: Sideband generation, due to what has been called "violining" or "slipstick" effect.

When a bow is drawn across a violin string, friction between them causes the string to be pulled to one side until resistance to that pull (from the string's tension) causes it to slip along the bow. It then stops, friction grabs it again, and the string is pulled to one side again until it slips again. Magnetic tape behaves in a similar fashion. Friction between it and the head surface causes it to adhere, stretching the tape until the pull of the capstan causes it to slip and then stick again. And so on. In other words, a tape's motion past the head is never perfectly smooth, but is instead a continuous series of tiny starts and stops. The effect is called "violining" or "slipsticking."

If the friction between the tape and the head were fairly constant (as is the case when a head overheats because of excessive current through it), each amount of slippage would be about the same, and the tape would emit a squeal (recording this on the tape, if recording). When the friction is low, as it should be, the slipping movements are very small but are



A 1-kHz-tone playback and its scrape-flutter (violining) noise sidebands.

highly irregular. And since each represents a small but abrupt change in tape speed, it will have a profound effect on the pitch of any recorded or played signal. A single constant tone becomes averaged in frequency, with other spurious frequencies appearing adjacent to both sides of it.

These "sidebands" are too random in pitch to be audible as tones but, when the original frequency is low in pitch, they are audible as hiss riding on the original tone - so-called "modulation noise." At higher frequencies, the sidebands add a distinct roughness to the sound, and act to further blur transients and inner details in the sound. JGH

Another common difficulty is that all analog tape recorders depend on the mechanical motion of a less-than-stable recording medium. "Steady" test tones are NOT steady; the output continually fluctuates and bobbles. And that's 1 kHz at 15 ips. Higher frequencies and slower speeds are considerably worse. These fluctuations are caused by slight speed shifts, tape skew, and variations in tape thickness. Digital doesn't have these problems.

In spite of their common shortcomings, though, the 680 and 5050 do not sound alike. The decks were compared by synchronizing recordings of the same performance, and switching back and forth between the two machines. The Otari used dbx-II noise reduction, the Nakamichi used the original Dolby C.

The differences are not gross, but they are significant when recording the best discs and broadcasts, and live music. The Otari is the clear winner, but bear in mind that there are open-reel machines that are sonically quite inferior even to the Nakamichi cassette deck. All the perceived differences seemed to relate to the higher distortion and reduced head room of the cassette medium. At all signal levels, even the lowest, the open-reel recording was crisper, slightly more detailed, and "brighter" as well as less smeared. The top end of the Otari was more open, that of the Nakamichi more closed-in. In complex passages, the cassette became muddy-sounding while the open-reel retained its cleanness. Above about -10 dB, the cassette showed some dulling (especially with voices), and it dulled loud, sustained applause quite badly.

This description gives the impression that the 680 is worse than it really is. Most of its errors are relatively innocuous deletions. But regardless of what anyone may tell you, a good cassette deck is still no match for a good open-reel machine, at least for critical recording. On the

other hand, the Otari should be much closer in sound to the Sony than to the Nakamichi. That this is not so is less a compliment to Nakamichi than it is a criticism of the Otari. Your average \$2,000-to-\$4,000 open-reel deck still has a long way to go.

Sony PCM-F1/SL-2000

Although I agree with JGH on the clearcut superiority of this particular digital system over the general run of analog machines, my perception of the PCM-F1 is somewhat different.

The system provides a video-compatible signal at its output, to allow for storage on the only practical medium now available for such a large amount of data: videotape. (For those readers who are into computing, a 1-hour 14-bit PCM recording represents about 4.5 megabytes of data.) The deck is just a storage medium for discrete numbers, and is not required in playback to follow something continuously variable, like an analog video signal. So as long as there are no tape dropouts too severe for the system to compensate for, the quality of the tape cannot affect the sound at all. This makes it possible to run a meaningful bypass test on the entire system by simply connecting a cable from the digital processor's Video Output to its Video Input. The cable cannot affect the sound either. (Yes, I'm aware of the seeming irony of bypass-testing a recording system without the recorder in the system. But in this case it makes sense.)

In performing the test, most material got through unaltered, but I heard a brightening and hardening of flute tone, particularly at higher levels. I listened again for the problem in the live recordings I had made, but was unable to hear it without a direct comparison. So while I think the PCM-F1 colors the sound in that respect, I haven't had time enough to be certain.

I, too, tried the test of recording at extremely low levels, but I did it

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to see if there was any audible increase in distortion as theory would suggest. Using direct-disc piano recordings, I, like JGH, ran out of gain before I ran out of clean signal. This is quite against common sense, and there are researchers who have demonstrated audible modulation noise and distortion at low recording levels. (See Barry Blesser's article in the 10/78 AES Journal.)

Unlike JGH I had occasional dropouts, several lasting 2 to 3 seconds. The longer ones were preceded by a high-pitched beep. In each case, rewinding the tape and replaying the same part eliminated the dropout. This suggested dust, not tape-surface defects, as the likely cause.

Sony advises mating the PCM-F1 with their SL-2000 Betapack, but while that matching recorder is a cute little bugger, 4-headed VHS machines record a wider track at the standard (SP) speed, and thus might make longer-lived recordings with fewer dropouts than Beta machines. And since Beta II, the preferred digital-audio speed (2 hours on an L-500) is roughly comparable to VHS's LP speed, you MIGHT be able to make good 4-hour recordings with premium tape on VHS.

The question of PCM tape life seems to be one nobody wishes to talk about. As an analog recording deteriorates, its extreme high end diminishes and its noise level rises. The sound of a digital tape does not change with frequent use, but its rate and severity of dropouts increases. If there are dropout problems on the first playback (admittedly due to dirt) how bad will they be on the 10th? The 50th? The 200th? This may not be a problem with your own master tapes, which will seldom be played, but what about those \$75 PCM cassettes from Mobile Fidelity? You're not going to lay out that much for a tape you rarely listen to. Is the user expected to buy a \$15 premium cassette and use it to make a backup copy for

daily use?*

Microphone noise was far more of a problem with the digital recordings than with either analog one. It had the kind of "breath-taking clarity" that was most irritating. I have confirmed this with other recordists who use digital. The only plausible explanation is that the greater smearing produced by analog recording masks tape hiss to the same extent it masks subtle detail. If state-of-the-art 30-ips tape is really as good as claimed, it should have similar problems with mike noise.

Both the PCM and the 2000 will run on rechargeable Nicads, for up to 4 hours of recording, so you could tape an entire concert without access to a wall outlet. Why then does the PCM-F1 have 1/4-inch phone-type mike inputs instead of 3-pin XLR connectors? And why does it not have internal phantom-powering, as does the Nagra (the "classic" battery portable)? Must your deck be free to soar with eagles while your mikes convene with turkeys?

My most amazing experience with digital came when I played one of the live tapes on an acquaintance's system (with modified Dyna electronics). The gentleman is a professor of philosophy and an incredible pianist with the ability and talent to move from classical to jazz and back with equal facility. Not surprisingly, his system sounds awful: muddy, grundgy and veiled. The sound from the PCM tape was HORRENDOUS! Bright, brittle, edgy and thin. He commented "I want to like digital, but you haven't played anything which demonstrates why I should." I couldn't disagree. On my own system,

** I didn't play any PCM tapes 200 times, but I did put a recording on Pause for five minutes at a time (for 9000 passes of the head across each of those spots on the tape), several times during the selection, and subsequently found no evidence of dropouts at those spots. So wear may not be a concern after all. JGH*

the sound was great.

Let it be noted that Stereophile was the first publication to recognize this problem. It seems that some systems don't "like" digitally recorded program material. Other users have observed the same thing. It may explain, at least partially, some of the animosity toward digital recording, as well as many of the awful-sounding digitally mastered analog discs.

The source of this incompatibility is not yet clear. One recording engineer has suggested that true digital playback has a much higher slewing rate than analog, and that what we are hearing is severe slewing-induced distortion. I disagree. Analog tape has a wider bandwidth and less phase shift than digital, so it should have higher slew rates. I will verify this when I get hold of an F1 again. The aberrations I heard from my friend's system were coming from tubed equipment, but they were distortions we associate with transistor amplification. Tubed preamps seem to have little trouble coping with enormous amounts of ultrasonic garbage from MC pickups, so there seems little reason why a tubed line-level amp shouldn't be able to handle the much more benign signal from a PCM source.

Then again, this may have just been an interfacing incompatibility between the Sony and the particular preamp. (Similar problems occur between amps and preamps.) But if it is a problem inherent with true digital playback, it will appear with digital audio disc players as well. We could be on the brink of a new era of incompatibility.

I don't feel JGH sufficiently emphasized the differences between analog and digital sound. They verge on the gross! A good analog machine (and I think both the Nakamichi and the Otari fall into that category) produces an exceptionally clean, liquid, almost unctuously rich but not realistic sound. Woodwinds and strings in particular are stripped of

some of their characteristic "bite" and attack and are euphonically rounded off, while subtle detail is smeared. Digital is more adept at preserving the lifelike qualities. The PCM-F1 retains more of the characteristic timbre and "life" of instrumental sound than either the Otari or the Nakamichi.

Perhaps I should add that I am neither pro-digital nor anti-analog. I simply favor absolute accuracy. My preference for the Sony is not because I "like" its sound better than that of the Otari or the Nak, but rather because it comes closer to being like "live" sound than either of the analog machines. Further, I was criticising analog recorders (for slurring detail and altering timbre) long before I ever had a digital recorder to compare them with.

I am confident that this report, like JGH's, will bring in the usual spate of hate mail from digiphobes, telling me what's the matter with everything from digital to my hearing equipment. There are those anti-digital folk, such as Mastering Lab's Doug Sax, whose opinions about digital are backed by many years of recording experience, and we welcome comments from people like that. But as for those of you who have never done live recording (particularly you reviewers who have access to the equipment but fail to use it), and whose only exposure to digital sound has been from analog discs, be it known that your second hand opinions are not of interest to us. But try some digital recording yourself, make your own comparison recordings, compare the relative accuracy of digital and analog, and we'll be happy to hear from you.

Conclusions

For live recording, the Sony PCM-F1 is the clear choice. Not only is it the most accurate recording medium, it is also much less trouble to lug around than a good open-reel machine (all of which are HEAVY). The tapes are smaller too, and there is no need for noise-reduction add-ons. An

entire on-location system can be carried from car to site in two trips.

The Otari is essentially a professional-quality analog machine at a "serious amateur" price (2-channel models run about \$800 less). Based on what I hear from commercial discs, and from speaking to recording engineers, the Ampex ATR-100 is probably the only non-customized pro machine that is significantly better-sounding than the Otari, and it costs a bit less than \$10,000. I am willing to bet, however, that it is not as accurate as the under-\$3000 Sony PCM system, at least at 15 ips and below.

If most of your recording activities consist of dubbing discs and broadcasts, you should be happy with any Nakamichi costing more than, say, \$500. (Alternative: a used Harman-Kardon HK-2000 - a great-sounding machine with the widest range of adjustments ever put on a

cassette deck.)* If you occasionally make live recordings, use Dolby C or dbx II and I think you'll be quite happy.

If you are serious about collecting open-reel tapes - prerecorded or otherwise - and are currently listening to them on a Pioneer or Teac or something comparable, you may be missing something, such as clean, transparent, detailed sound. It is sad but true that a machine in the \$1- to \$2-thousand range may have much better sound than your \$500 deck. The high cost of true digital discs (now estimated at \$20 apiece) will assure the continuance of prerecorded open-reel tapes, so a better deck may be a worthwhile investment in terms of listening satisfaction.

BS

** But it only has two heads, making those adjustments quite tedious to perform.*
JGH

A PROVACATIVE QUESTION is why the supposedly archaic tube is responsible for so many state of the art electronics! We don't have a full answer to this question but would suggest that using modern computer analysis techniques, modern power supply design theory and sensitive listening has permitted us to advance the art of tube electronics to a point unimaginable only a few years ago. In fact we believe that the art of designing tube electronics has just begun and to help explain this phenomenon we have a 72 page book entitled UNDERSTANDING TUBE ELECTRONICS which will give you a basic understanding of tube circuits. In addition there are a complete set of technical papers on all the products we manufacture including the Futterman OTL amplifier. Send \$5 domestic \$10 foreign - Ask for Book J. New York Audio Laboratories, 33 North Riverside Ave., Croton-On-Hudson, N.Y. 10520.

CES Stop Press

JGH was busy missing a deadline at CES time, so LA and MG covered the show. Their reaction: the biggest splashes at Las Vegas this January were made by the digital audio disc, Beta Hi-Fi, and Solar-Charge batteries.

Practically every major manufacturer had a digital-audio disc player on display, but few had any firm idea when they would be in dealers' stores. Most of the display units were evidently prototypes. Only Sony seemed sure that their DAD's would be available "early in the spring." AudioSource helped to dispel some doubts about the availability of software by handing out a catalog of direct DAD imports from Japan, listing about 50 titles. Denon was feeling good about their huge library of digitally mastered tapes, from which they will reportedly select 10 to release as Compact Discs each month.

Beta Hi-Fi is Sony's new audio system for Betamax VCR's, for which they claim 20 to 20kHz bandwidth and 85 dB s/n ratio. The system uses scanning heads for the audio track, much like those being used for the video-signal recording. Track-to-track transitions (60 times a second) are claimed to be totally inaudible. The new VCR's include conventional (but stereo) heads for compatibility with previously made cassettes.

Several firms were showing rechargeable batteries for portable videocassette recorders, and the batteries came with their own solar rechargers. They must have more sunshine in Japan than Easterners are accustomed to in the US.

Other items of interest included a tiny portable stereo disc player from Audio Technica (see picture), a

diminutive pocketable B&W TV set from Casio (with a liquid crystal screen and smaller than Sony's Watchman), and several new large-screen projection TV systems. Both LA and MG commented on the unusual number of respectable-sounding audio components, particularly loudspeakers, at unprecedentedly low prices.

Best sound at the show? Hands down, the WAMM system by Wilson Audio. Line up, folks; its price has regrettably gone up to \$35,000, but can now be ordered through several high-end audio dealers around the country, whose significant commission on the sale should assure their loyalty to you as a customer in years to come.

Digital Audio Discs

Sony has announced that CBS in the US will be releasing its own DAD's, making them the first domestic major to do so. While this is hardly Big News for audiophiles, who view CBS as a paragon of poor taste in sound, it is the first indication that the domestic biggies may adopt the DAD system.

RCA is still hedging its bets for US participation, but has announced its intention of jumping in with both feet when the system is released in Europe, probably in mid-1983.

Follow-Up

Dynavector 17D Cartridge

Bill Sommerwerck liked his sample of this so much he bought it (see Issue V-8). Our first sample of the cartridge was defective, as reported in an addendum to Bill's review. Our second sample of the 17D does only
(contd. on page 54)

Heard Briefly

The Iverson Pickup System

Mainly out of curiosity because of its \$3200 price tag, we requested one of these legendary systems (now being manufactured by Robertson Audio) in order to find out what those of us who can't afford it are passing up by opting for something cheaper.

Initially, we were immensely impressed with what we heard, but an initial reaction is all we were able to get. After about 2 hours of listening, one channel developed horrible distortion. And that was that.

Another example of the system is now in-house and undergoing testing for Volume 6, Number 2, so we'll let

you know if we continue to be immensely impressed.

The Hartley SPL-1 Satellite Speaker System

This sounded excellent for the few hours we had a chance to hear it before a sudden overload (a phono ground opened up) scuttled one woofer. A replacement is on its way to us.

The PS-IVA/VK Preamplifier

We were unimpressed with this, mainly because of its dry, gritty high end. We are now informed that it is obsolete, having been replaced by a new version with a better power supply.

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FROM THE CD FRONT: They did it! Sony promised delivery of their Compact-Disc players to dealers in March, and had already shipped around 1000 of the players by the end of the month. The selling price, it turns out, is not the anticipated \$1000, but a mere \$900. • The first classical CD releases from Sony (CBS and Decca labels) are little better than the samples we got with the CD player we reviewed: Conspicuously multimiked, often badly mixed, and rather dry over-all. The best sound to date has been from pop releases. Interesting... • M&K has taken the CD plunge with 2 releases -- one pop, one classical -- already out. More are planned by mid-summer. • Despite some literature they were handing out in Las Vegas that made Poly gram CDs seem just around the corner, the firm has still not released anything, and a company spokesman said their release date now looked like August of this year. • Telarc has received some in-house sample CDs of their Firebird and 1812, but is not planning to release anything until June, when they expect to get 15 titles out. The prospect of those 1812 cannons in digital is almost too much to bear! • RCA is still silent about US CD release plans, but is going through motions to start releasing in Europe this summer. • DOUBLE-BARRELLED BERLIOZ: For the first time in the history of the world, two different recording companies aimed their recording microphones at the same performance and will be issuing separate and presumably competing versions of it. The Utah Symphony under Varujan Kojian performed Berlioz' "Symphonie Fantastique" for both Varese-Sarabande and Tam Henderson's Reference Recordings labels. The RR is already out (cut at 45 rpm by Doug Sax's Mastering Lab). The V-S release has been postponed because producer Tom Null plans to replace the orchestral bells with honest-to-God church bells. V-S has a wait-and-see attitude towards CD, but JVC will be releasing two of their recordings on CD in Japan this year. • CES EAST: Many audio manufacturers' reaction to recent suggestions that Summer CES be moved to New York City is "Hell no, we won't go!"

The Audiophile Murder Case, Part IV

by Barry Ergang

A mystery after S. S. Van Dine, whose Philo Vance novels constituted a genre of their own.

To date: When aristocrat and amateur detective Milo Rance and his associate Von Din arrived at the home of Winderly Manner, publisher of the underground magazine Semper Fidelis, for a listening session, they were greeted at the door by District Attorney Wotsper. Manner had been brutally murdered - decibeled to death by his own system, in a room locked from the inside. Wotsper, Rance, and Homicide Division Sergeant Plinth have been interviewing Jason Linderman (editor of Hi-Fi Assessor, a test-bench oriented commercial magazine) and Addison R. Corman, designer of the much-abused (at least in the pages of Semper Fidelis) Minotaur amplifier. It has been clear from their testimony that either had more than sufficient motive to carry out the murder. This episode commences with the interview of the third person present.

"And you, Mr. Ericson. I suppose you'll confirm that you met Mr. Corman in the lobby. When did you join Mr. Linderman?"

Selwyn Michael Ericson was as unlike Corman and Linderman as an Orvieto Secco is unlike a Chateau Latour. Of medium height and build, elegantly attired, he had styled white hair, appraising eyes, and a resonantly confident voice. He radiated an airy stability, an ambiance not of smugness but of fundamental self-assurance.

"We came up and found the apartment door open," he replied in a liquid, well-modulated tone. "Linder-

man was here when we came in."

Linderman went a shade paler at the implications of the statement. "I - I had just gotten here myself. They arrived right after I did. TELL him, Selwyn." He leaned across Corman and put an imploring hand on Ericson's sleeve.

"I can't, Jason. I don't know it for sure."

"But you've g-got to . . ."

"Just take it easy, Mr. Linderman," Wotsper soothed. "Nobody's accusing you of anything. We're only trying to establish a few facts. I appreciate your compliance in tracing your movements for us." He waited for them all to absorb this. "So. . . Mr. Ericson, why were YOU here?"

"I was invited too. I own one of New York's more specialized audio salons. Mr. Rance, in fact, has purchased from us." Rance nodded in assent. "Among our other distinctions, we have designed some modifications for equipment manufactured by other companies, to update older pieces and improve some of the newer ones. We recently developed a circuit that can enhance any component with a power amp section. We call it the Clarity Accrual Signal Hybridizer Feedback Loop Obliteration Winding Generator, and . . ."

"Wait a minute," interrupted Plinth. "What's all this jargon mean?"

Rance said "It's known acronymically as the Cash-Flow Generator, don't y'know, old dear."

"No, I DON'T know! I'll take your word for it. Proceed, Mr. Ericson - in English, if you don't mind."

"I'll do my best," he returned suavely. "Windy tested an amplifier that was supposedly modified with our circuit, and said in Semper Fidelis that he found no improvement whatsoever. He even went so far as to say our modification degraded the amplifier's performance. He practical-



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ly called me a fraud, and told his readers that our mod was a rip-off — a deception. Well, I happen to know that the mod he installed was faulty — it was an early design — and that our newer circuit will perform flawlessly."

"You mean you modified your modification?" said Wotsper.

"Certainly. We're constantly updating circuits to elicit those subtle nuances that are so crucial to perfectionist sound."

Wotsper shook his head incredulously.

"Not too extraordinary, Wotsper, though often deucedly expensive to one who must keep abreast of the latest refinements," said Rance. "Quite common in high-end audio, actually. I've even had my own equipment fine-tuned, so to speak." He cleared his throat, almost apologetically.

"Made a vast improvement, didn't it?" Ericson asked.

"I think I perceived a slight difference each time, but I confess to wonderin' if the cost hadn't affected me psychologically."

"I don't understand," said Wotsper.

"Gents, we're gettin' off the track here," said Plinth.

Rance persisted. "Given that I paid a lot of money for those modifications, I may have heard what I wanted to hear."

Erickson bristled. "Psychoacoustic tests and our own tests have proven . . ."

"That's ENOUGH, gents!" Plinth boomed. When they ceased, he said quietly, "I am not interested in psychological tests, Mr. Linderman. I am interested in knowing what happened after you got here. Where was Manner?"

"Uh, well, he — he was in the listening room when I arrived. Ad and Selwyn can attest to that."

"On the contrary," said Rance. "They hadn't yet arrived."

Linderman wiped his palms on his trousers.

"Did you see Manner at all?" Plinth pressed.

"No!" he exploded. And in a calmer tone, "Nobody came when I rang the doorbell. The front door was unlocked, so I just came in and waited."

"Nothing odd about that, Sergeant," Ericson said. "When Windy scheduled a listening session, he always left the front door open so his guests could come in and wait for him. I think it appealed to his vanity to have them wait."

"Didja let him know you were here when you arrived tonight?"

"I knocked on the listening room door, but Windy didn't answer. I turned the knob but the door wouldn't open. I thought maybe he was listening to headphones and didn't hear the knock."

"Or simply didn't want to be interrupted," Ericson prompted. "He'd just ignore you if he was busy. He could be just as overbearingly arrogant in person as in print."

"Right," Wotsper clipped. "Then what happened?"

Linderman rubbed a hand across his pale face. "After Ad and Selwyn got here, we all tried to rouse him. We couldn't hear anything, but we didn't think too much about that. He'd had the room soundproofed because of complaints from the neighbors. But then we started to worry. However else he behaved, he was always fairly punctual . . ."

"Get on with it!" Corman spoke suddenly, as though instantly inflated. "We called the building super when Gold Ear didn't come out. He came up and took the door off the hinges."

"And we found Windy like that . . ." Linderman swallowed audibly, his eyes glassy, ". . . and c-called you."

"Didn't the super make any comment about the locked door?" Wotsper asked.

"He wasn't surprised," said Corman. "He obviously knew about the extra lock. He made some comment about how he'd told Windy he'd lock

himself in there someday."

"But Manner didn't lock himself in," contradicted Rance. "The murderer did."

Wotsper shot a piercing stare at him. "Oh, did he now? I am making that assumption, Rance. What makes you so damned certain of it?"

"Because I know how the locked room was locked, and who locked it."

Moments later, he stood next to the shelf of components that were to have been evaluated, and we grouped around him.

"We know how the murder was committed," he said, "and that by its nature it was premeditated. But why does the fatal tape recording begin with music before building to its murderous cacophony? To give the killer time to escape the room unscathed. He probably wore ear-plugs, but he wouldn't be able to protect his body from the shock waves generated by the Belchfires at that volume."

"But how did he lock the room?" Wotsper demanded.

"He used the Minotaur amplifiers for that. Remember the missing fuse from one of the Belchfire speakers? The murderer knew that a fully roused Minotaur amplifier can put out more power than even a Belchfire Supreme can safely handle. You might say he fused the lock."

Wotsper started to sputter. "What in the devil are you talking about, Rance?"

"In due time, old thing," said Rance. "See these little specks of white powder? I think your laboratory people will find that it is magnesium oxide — the remnants of a metal which, when ignited, burns with a white-hot flame. In powdered form, magnesium used to be employed by photographers before the days of flashbulbs. It is still easily obtained in small rolls of thin, narrow wire — wire which can be used to convey that flame across a room such as this one."

"But it takes a very high

temperature to ignite magnesium. You might wonder, then, how the murderer started the magnesium burning after he had left the room. It was simple. He merely removed the loudspeaker fuse and inserted one end of the magnesium wire into the receptacle, wedging it lightly in place with the fuse cap. He then unrolled the wire, draping it carefully across nonconductive objects so as not to quench the flame, and brought the other end to the door. There he was fortunate enough to find a small hole in the door, right next to the drop bolt. He inserted the other end of the wire tightly into that hole, raised the bolt, and laid it on top of the protruding wire — where it would be poised right above the catch that would lock the door."

Wotsper was nodding vigorously in agreement as Rance continued. "He left the room, pulled the door gently closed after him, and the Minotaur did the rest. As the sound reached titanic levels, it ignited the magnesium fuse, the flame travelled over to the door, turning the wire into powder on its way, and when it burned past the bolt, it swung home into its catch. Presto! The door was locked from the inside."

"That's IT!" said Wotsper. "Your incredible definition lifts that obscuring curtain."

"Yeah," Plinth agreed. "But who iced him?"

Rance looked at Linderman, Corman and Ericson, each in turn, coldly. "Ah yes," he mused. "Who killed Winderley Manner, eh?" He turned to Plinth and Wotsper. "Gentlemen, I surmise that it was, in fact, NOT one of these three."

(To be concluded)

(con. from page 25)
envelope dated 1-16-83.

Also correct but post-marked later were: Stephen Baumann, David Bogorad, George K. Boghosian, Randal Cauffield, Jim Daley, Chuck DiGiorgio, Dr. Leonard Drasin, George Huntzinger (also honorable mention for funniest alternate answer), Dave Easton, Richard Harrison, W. Jackson, Eric Johanson, Fred R. Koehn, Nick Lombardi, Thomas W. Mallen (honorable mention for most detailed reply), Al Milbert, T. Paide, Robert Roemer, Don F. Scott, N. Shattles, Scott Soloway, A. Travis, and Henry Yee.

As may be obvious, this was a rather easy one. Next month's won't be.

(contd. from page 47)
moderately well on test records, beginning to mistrack at a 60 micrometer modulation level even with tracking force set at 2.25 grams, a level at which the Dyna-vector Ruby sails through the tracking test up to 80 micrometers. However, when playing music the 17D's midrange tracking limitations are only rarely in evidence. And it is a truly lovely sounding cartridge, particularly on older, non-audiophile records. JGH will have more to say on the subject in Volume 6, Number 2.

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Gentlemen:

The "ad" (Volume 5, Number 9) brought a dozen offers of copies of 3-1 and I accepted one, so it need not be run again. Good testimony for the pulling power of Stereophile. Neil D. Thompson

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