

Special Issue: 1981 Chicago CES

\$2

stereophile

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The Original Independent Magazine for the Audio Perfectionist



As We See It

Plain Talk About
the Unmentionable

Well, (Phew!), we made it -- a bit later than anticipated, but we made it nonetheless. We managed to publish three issues out-of-pocket and despite increases in postage and printing costs which almost kayoed us along the way. We are now only slightly bankrupt, but there's a silver lining! As of this issue, some of your loyal (We hope!) souls out there are up for renewal. The chosen ones are those of you whose mailing label on this issue bears the legend IV-10. We'd like to have a word

This issue which you are holding in your hot little hands was actually ready to go to the printer the first week of July. Had it done so, it would have been mailed to you around July 25, only about 2 weeks later than our schedule called for. What held it up? We know it's in bad taste to discuss such matters, but the problem was

money -- or rather, a shortage of money. Our printer took the uncharitable view that he was not obliged to print this issue until we paid him for the last one. It took a while to scrape up that scratch, plus a few hundred more (say, \$900) to mail it.

Don't ask where we got it. Suffice it to say we did nothing illegal. We also, while at it, got enough extra to get out the next issue after this one, but not much more. So, that's where all you IV-10s come in. If all of you renew your lapsed subscriptions now, we'll be home free, over the hump, and finally on our monthly publishing schedule. If some of you renew promptly, we may or may not be able to go monthly immediately, depending on how many of you do come through

In other words, IV-10s, you can make the difference between whether we're off and running at

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last, or whether we're going to have another hand-to-mouth struggle with the next few issues. And while you're muttering under your breath (Don't do it; only the English know how to do it properly!), consider this: We helped to bring on these hard times by promising you 2½ issues of our newer, skinnier issues (with the fraction in your favor) for each of the old, fatter issues still due you when we switched to the new format. We were neither legally nor morally obliged to do that; we just thought it would be pretty rotten of us not to do that. So, we are now, quite blatantly, appealing to your undying gratitude when we ask that you renew your sub now. Think of it as a self-fulfilling vote of confidence: Without that confidence, we may prove that your confidence was not justified; with it, it WILL have been justified. We need not remind you of how much you enjoy your *Stereophile* when it arrives. Think how nice it will be to see it arriving every 4 weeks, and being able to pat yourself on the back and say "I helped to make that happen."

And please don't make that all-too-frequent assumption that your renewal won't make any significant difference because there are so many others. If so many others feel likewise, we could still be up the creek without an Evinrude.

Finally, we call your attention to the fact that, as of this issue, our rates have had to be raised -- for the first time in 3 years. The coupon on page 36 gives the new rates. These apply to all NEW subscriptions now. But since this hike has been sprung on all of you without warning, we are allowing IV-10s to renew (and present subscribers to extend their subs) at the old prices until November 30. (Old prices were: \$16 for 3rd-Class mailing or \$20 for 1st-Class mailing.) This cut-rate offer to those of you who have

stuck with us despite everything is our way of saying "Thank you for your patience" while holding out our upturned palm.

Please don't make the mistake of assuming that your renewal won't count all that much because there are so many others. If so many others think likewise, we could still be up the creek without an Evinrude.

News of Our Demise?

In response to some letters printed in the Boston Audio Society *Speaker's* Issue IX-6/7, be it known that *Stereophile* IS still in business, and that JGH did NOT move to New Mexico "for his health," but simply wanted to live here.

Instead of publishing rumors, it seems to us that the *Speaker's* editor could just as well have telephoned us and asked, as did a couple of dozen people who read those letters and their reply.

Coming Up

When we bannered this issue as a special CES issue, we meant it. It is entirely devoted to the Summer CES because, if high-end audio continues to decline economically, there may not be another high-end-audio CES.

As of the next issue, though, we'll be back to normal, with our lists of Recommended components, systems, and recordings. Equipment reports will include the fabulous Packburn disc-noise-reduction devices, Sony's new "Esprit" power amps and diamond-cantilever cartridge, an almost-stupendous stereo microphone from AKG, and two genuine sleepers: A \$275 loudspeaker kit that rivals the Acoustat Four and clobbers the Sequerra 7, and a circa-\$375 stereo power amplifier that gives the large Bedinis a run for the money.

Pax vobiscum.

JGH

The Summer 1981 CES

JGH was unable to attend the Summer CES in Chicago this year, so he handed the job of reporting on it to two very capable audio reporters: Bill Sommerwerck and Ralph Hodges. Ralph has been an audio writer for a number of years and, prior to his present position with Dolby Labs, was employed by *Stereo Review* where he earned the reputation (among outsiders) as the only SR staffer who could hear. Bill Sommerwerck came to writing more recently, and until now has been best known as a writer of pithy and entertaining letters to many of the audio publications. Ralph's overview of CES starts below. Bill's exhibit-by-exhibit report starts on page 9.

When I accepted this assignment to report on the Chicago CES shindig, I warned the editor in advance that, every time someone says to me "See, you can't overload this amplifier," I discover once again that it is perfectly possible to overload me. And because it is not reasonable to expect a reporter covering a show this size to retire for recuperation every time he catches a bit of temporary auditory threshold shift, I will make no apologies for what I failed to hear. Seeing alone was almost enough to overload my sensory system.

Pathological working conditions for the press are not the worst of it, however. The daunting fact is that many of the exhibitors cannot, themselves, hear much after they've gone through pre-show preparations, set-up jitters, too many appointments in too little time, crazy meal schedules, crazier drinking schedules, little or no sleep, and ever-increasing sound levels from their own exhibits and everyone else's. If they cannot hear, then they cannot properly set up and demonstrate; and it is to this (as well as to Chicago's difficult RFI problems that can lay anyone low) that I attribute many of the discouraging reports (including mine) about the sound at Chicago CES every year.

Generally, I find such shows to be of negligible value for on-the-spot judgment of sound quality.

RF interference, unflattering acoustics, and the thuds of subwoofers in adjacent rooms all conspire to mask any of the aural subtleties which distinguish one perfectionist component from another. The best I could do, really, was to look at what was new, and come up with some impressions about where things are going as of mid 1981. Video, for instance, is still not too interesting for an audiophile/perfectionist. The quality of the video presentation is system-limited at a level of ho-hum mediocrity, with variable color fidelity and abominable resolution. And although high-resolution video systems (rivalling 35-mm film) have been demonstrated, their total incompatibility with our now-standard NTSC system puts their availability to consumers far into the future.

As for the audio that comes with the video, it continues to be an afterthought and an embarrassment. This may be just as well, because the sound tracks of many films now available on video software deserve no better. The helicopter attack from *Apocalypse Now*, heard just the way Walter Murch mixed it for Dolby Stereo surround presentations, would be worth something. But no matter. Such audio is not yet a twinkle in any video promoter's eye, although the necessary technology is right at hand, to the point where some people working privately have man-

aged to marry video to some very impressive audio.

What of video technology in the service of digital audio? This bears attention, but not the sort that would cause me to break track records getting to every digital demonstration at the show. If all is going reasonably well, any consumer digital-audio format under current consideration will *sound* exactly like any other so much of the time that the differences seem hardly worth talking about. No, wait, I'll raise one possible exception to that.

This show saw the formal debut of the Sony/Philips digital audio disk, which (just when everyone assumed that a 14-bit format was a shoo-in) turns out to be a 16-bit affair. In theory this is a step in the right direction, but even Sony and Philips spokesmen admit that the practical significance for the home listener is likely to be miniscule-to-vanishing. Yet for its own specialized reasons, the Sony/Philips alliance wants 16 bits established as a disk standard. If they have the clout to bring this about, so be it. We lose nothing; but neither are we likely to gain much. (I expect some argument on this point, incidentally.)

There remains a small fly in the Sony/Philips soup. The availability of single-chip 16-bit D/A converters that behave completely linearly is nil just now; and without such devices the disk players cannot be produced within a sensible consumer-price framework. Predictions have it that the necessary chip will emerge next year. But until then, nobody is going to be forcing you to buy a digital-audio disc player.

Which returns us to analog and, specifically, to loudspeakers. For me, the show's standout was certainly "Fred" -- the Quad ESL-63. This new "full-range" electrostatic (the first from Quad in 23 years) ingeniously manages to prop-

agate a spherical wavefront from a flat planar diaphragm, while seeming to retain all the other characteristics of its genre. I found the absence of that typical electrostatic on-axis sizzle to be spooky at first, and then very satisfying. I wouldn't have expected the difference to be so apparent, but it struck me immediately. The tendency to experience bizarre shifts in stereo localization as one passes in front of the speakers was gone, as was the over-all other-dimensionality of stereo imaging that I never consciously associated with electrostatics until I heard one without it.

On the debit side, low bass response is still largely dependent on an active imagination, and the manufacturer gives fair warning of "ample" but decidedly limited output capability, enforced by no-nonsense protective circuits that obviate any benefit from using more than 100 watts of amplifier per channel. But the speaker has become a "substantially"-resistive 8-ohm load, and should co-exist happily with any decent amplifier. Even better, the screens have now been sealed against airborne contaminants, which means you can now smoke in the same room with a Quad (bad news for the anti-smoking forces).

Of other speakers, the news is not quite so good. The Acoustats, which I have liked extravagantly of late, did not impress when I heard them early in the show. But a reliable source who heard them later pronounced them splendid, and called the new Model Four "...the closest thing to a satisfactorily working full-range system that a normal person can afford." Mid-show improvements are not unusual, as exhibitors learn (among other things) to button-up against RFI and to cope with the cantankerous acoustics of their various, mostly-uncongenial spaces;

so I would tend to take my source's word for it.

The reaction to the Sound Lab curved-panel electrostatic was considerably better, although it is presumptuous to suggest that any

sort of perfection was being approached--at least not under this show's conditions. I'm sorry to say that Alan Hill's Plasmatronics system sounded worse than I've ever heard it, but in a different

Golden Tongues, Not Golden Ears

Early on, the trade press took to calling the CES a video show. It was a fair appraisal. This is not to say that video developments confronted one at absolutely every turn -- much as it often seemed that way. Instead, I'd ascribe video's dominance to the prevailing spirit of the event.

Everybody who comes to this show knows that, as tight times stay tight, the enterprising businessman will grab at the new Main Chance in favor of the outworn formulae. Today, accordingly, there may no longer be room in dealer budgets and inventories for the next "This-is-it!" pre-amp from Sioux Falls or MC cartridge from Hokkaido. Present lines may, in fact, be dropped by dealers if they cannot be sold easily and speedily to a steady flow of store traffic -- a flow to be brought about by new customers, with new money, impetuously (and perhaps not very discriminatingly) in search of a new technological kick. Like video.

Even specialist audio dealers read the trade journals, where they are told incessantly that they'd better think about adopting video or contemplate going to the wall. And even high-end audio manufacturers now recognize the counter-currents that are building against their inter-

ests at the retail level. You can see it yourself -- in every hi-fi salon in which a video projection system has usurped pride-of-display place from the large full-range electrostatics that bleated mellifluously there a year ago, and in every display ad that now features Pioneer LaserDisc instead of Mark Levinson Audio.

Hence the direct and, equally important, the indirect impact of video on the show. Even at the Pick (now Americana) Congress Hotel, the bastion of high-end manufacturers, one heard from exhibitors at least as much argument in support of the audio business as audio itself. Much equipment had not been set up for demo, because of advance realization that this year the persuasive tongue, not the golden ear, would determine whether or not a product gleaned dealer orders. Where really new models were to be found, they were generally modest in comparison with their predecessors, and were rather obviously designed to make friends with the dealer, enable him to turn his inventory faster, and thereby recoup his investment quicker.

This was not a show for challenging the state of the art, but rather the state of the market. Ralph Hodges

way. Alan was having upstream signal problems, I suspect, as was Dan Queen, whose interesting "Controlled-Arrival Loudspeaker" seemed to be doing what he intended spatially, but probably not what he wanted otherwise -- due to Chicago's confounded electronic hash at its inputs, if to nothing else. And the Snell speakers seemed similarly afflicted, although not quite as seriously.

I had not known what to expect from the new Ohm/Walsh speaker, the second (third, if you count the short-lived Model A) attempt by the company to harness this obstinate technology, so the fact that I was generally impressed is probably a good sign. There may have been a touch of raucousness, and I am not quite sure about the integration of the extreme top with the rest of the spectrum. But at \$275 a side, there is certainly some room for minor shortcomings if the system is as well-balanced a design as it seemed to be.

"May you live with interesting tweeters" is, of course, a traditional audiophile valediction to which I generally subscribe.¹ So when I heard of Dahlquist's plan to import the exotic Magnat, an essentially non-directional update of the lost and long-lamented Ionovac,² I scrambled brains and schedules in an effort to get to hear them, but failed. I also failed to hear the Dayton-

1. Based on the traditional Chinese malediction "May you live in interesting times" -- that is, in times of upheaval.

2. The Ionovac "blue-glow" tweeter, first introduced in the 1950s, was the first transducer to use a massless plasma of ionized gas as a transducer. The principle is the same as is used in the Plasmatronics speaker.

Wright systems for the second time since the outfit's reorganization. I did get to hear, not a tweeter, but a tweeter/midrange housing -- one made of a glass-and-concrete composite for the outboard modules of the (as usual) marvelous-sounding B&W 801 and 802. (Incidentally, the immaculately-produced demonstration tapes B&W assembles for these shows are among the true glories of audio technology.) The new and previous housings were compared, and I'm damned if I can say at this time which I preferred. The "Fibrecrete" housing sounded distinctly "darker" and more distant. If you were to argue that this is because the new housing gets less involved with the actual propagation of sound, I think I'd be inclined to believe you.

I wasn't completely taken with any of the satellites-cum-bass-commode(s) systems I heard in Chicago, including the new one from Sequerra. In one exhibit I was allowed to experiment with the placement of the commode, and was able to make myself somewhat happier. However, the new positioning didn't match the visual appeal of the original, and so it wasn't kept. I have heard such systems work well though, and I certainly do not object to the modular principle as a principle, as some do. Yet the bass cabinet can wind up in strange places for best sonic results, while one of the necessities of this show is to arrange equipment so that touring dealers can immediately see and relate to what is happening.

There was a new tuner from Carver Corporation, claimed to reduce noise and the effects of multipath interference to a dramatic degree. The demo began with a signal that was so degraded as to be unacceptable by any standard (easy to find in Chicago hotels), and ended up with something you probably wouldn't object to strenuously if trapped with it in a

Muzak-burbling elevator. Clearly the product does something, as do so many of Bob Carver's designs. But what it does I couldn't say, and Carver isn't yet telling. This is one to watch, although the demo didn't qualify as "good sound" at any time; merely much-improved sound.

The CBS CX disk-noise-reduction system, in the form of the first available decoders, was afforded show space by Audionics of Oregon, Phase Linear, Sound Concepts, and MXR. CX uses a wide-band compander, and as such can be expected to generate a little noise-pumping,³ as a few of its exhibitors admitted freely. Some people will put up with it, and others won't. For myself, I was surprised at the subtlety of the dynamic-range enhancement it afforded on the material used. But then, the encoded records are intended to be compatible with non-decoding equipment.

Dolby C-type noise reduction, of which you already know, cropped up in well over thirty products, in which it did just what it's supposed to do, *without* noise pumping. What will interest some is that the new system is encouraging the rebirth of outboard Dolby processors. Most are designed to interface only with existing cassette decks from the same manufacturer, but Nakamichi was showing an outboarder that will work with anything (including, if you insist, your open-reel machine) and which provides B-type proces-

sing as well. (The hesitant note on open-reel is offered because the Dolby systems are specifically designed for slow-speed recording. Can't hurt on high-speed, however.)

IMF⁴ has become a vigorous booster of the Ambisonics system, an outgrowth of quadraphonic matrix technology that was devised by Englishman Michael Gerzon and associates, and which has been championed by the BBC. IMF played me some (of all things!) bluegrass music, and sure enough, instruments in front, handclaps behind, with satisfactory separation all around. However, with this material one couldn't guess what would happen in an attempt to put a natural concert-hall environment around the listening area, so the jury remains out on this one for the time being. (Incidentally, IMF's latest speaker system is the Special Application Control Monitor, available only on a factory-order basis. Its sound was clean, robust, authoritative, a little on the cool, clinical side, and perhaps a bit hemmed in -- a frequent reaction of mine to large systems in smallish rooms.)

It appears that new turntables of interest will not be so ruinously expensive this year. SOTA's Sapphire (the name referring to the jewel platter bearing, which is located in the plane of the platter -- a good idea if executed with painstaking care) can probably be had, armless, for not too much more than \$500, and its suspension

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3. Noise pumping is a rapid, volume-related fluctuation in background hiss produced under certain conditions by some noise-reduction devices. It is, in theory, supposed to be "masked" by the signal, but the fact that it is audible is further proof that subjective observation does not always coincide with theory.

4. IMF is a British company, and is not to be confused with Irving M. Fried Products in the US. They were once one and the same firm, under the brand name of IMF (in the US), but parted company. The British contingent managed to pry loose the IMF name from the American contingent.

CES Rundown

With all of the discussion these days about the audibility, or the lack thereof, of miniscule differences between components, the listening conditions at CES are laughable. There are no "scientific controls" at all, room acoustics vary from mediocre to terrible, and component "compatibility" is irrelevant because, in many instances, a loudspeaker manufacturer (or preamp or cartridge or power amp manufacturer) will "choose" associated components on no better basis than that he is offered their use by other exhibitors in his vicinity. Even with the best components, a CES exhibitor has no guarantee that his setup will sound good, because of the environmental factors (bad acoustics, RF interference) over which he has little or no control. Luck cannot make a bad system sound good, but it can often make a good one sound bad. So, while mentioning exhibits that sounded good to me, I have devoted most of my space to what I saw, rather than to nit-picky analyses of what I heard.

Certain trends in audio (besides its economic slide) were clearly evident at the Summer '81 CES. I'll consider them first, before plunging in, feet first, to my booth-by-booth rundown of the show.

Even before that however, I should like to express the usual token apology to those exhibitors whole I may have inadvertently offended by omitting them from this writeup. I did try to be as complete as possible.

TRENDS:

Polypropylene: There is a substantial movement towards "polyprop" drivers, and for good reason.

Polypropylene is much "deader" acoustically than Bextrene, and the difference is immediately audible. The sound is "tighter," more detailed and far lower in coloration than with Bextrene. Instrumental sounds are crisper and truer to their true timbre, with none of Bextrene's tendency to soften, sweeten, and prettify things. The differences are not the least bit subtle.

Although there has been talk about polypropylene for several years, it has only been recently that companies have solved the problems of forming the cones and gluing them to the surrounds and voice coil forms. Hence the output. Listen critically and see whether or not you agree.

Electrostatic speakers: The 80's are shaping up to be the golden age of the electrostatic. There is no question but that the success of the Acoustat (the first truly reliable electrostatic), as well as the many construction articles in the *Audio Amateur*, has encouraged other designers to go into business. Unlike dynamic speakers, electrostatic panels can be cranked out in a garage, without a major capital investment. There must have been at least a half-dozen firms showing electrostatics.

Vacuum tubes: The 80's will also see a renaissance of the vacuum tube amplifier. Tube equipment refuses to die, and a wide range of firms are catering to the needs of tube freaks, at both ends of the price spectrum.

Pocket Stereo: The Walkman started this trend. Now everybody -- but everybody -- has some kind of tape player, radio, or combination

thereof, that fits in the pocket and plays back through headphones. Sony even has one that records stereo with built-in mikes. It has reached a point where Walkman has joined Kleenex and Jell-O as a generic term -- much to Sony's chagrin.

Portable Components: The micro component has finally found its home -- away from home! Several companies showed micro-component systems that pack up with a handle (speakers included) to go wherever you go! Usually they include a tuner and a cassette deck. No turntables, yet. Probably never, since cassettes are easier to carry.

Micro Cassettes: Speaking of cassettes, the micro cassette developed by Olympus Optical (as in Cheryl Tiegs) bids fair to become a music medium. Fisher showed a portable stereo recorder/player that snaps into a larger unit which provides stereo FM and speakers. Sony also showed a micro-cassette version of their recording Walkman. With metal and super-premium tapes, along with Dolby C and HX, micro-cassettes could become a respectable medium. How well they sell will depend on how much people value storage space over fidelity.

Good Sound: Do you know that I didn't hear any *really* bad sound anywhere at the show? And only one company was blasting listeners out the room? Maybe they're learning...

ACOUSTAT showed the "slimline" series of full-range electrostatics, identical to the older models, which they do *not* replace, except that the drivers are set at a shallower angle. The Reference Preamplifier (model 2) includes a head amp and a power supply comparable to that in the Hafler power amp! The volume control is a

stepped attenuator, and only polypropylene caps are used in the signal path. At \$650, the unit seems underpriced.

James Strickland, the founder of Acoustat, also announced an important breakthrough. He has reversed the polarity of the high voltage supply, so the diaphragm is now positive, instead of negative. Since we need to *remove* electrons to get a net positive charge, this means that there is a concomitant reduction in mass, which is always desirable. Careful listening did, indeed, reveal a subtle increase in detail and reduction in veiling.

ADCOM introduced the GRT-1 digital tuner to go with their previously-announced GFP-1 preamplifier, and an improved version of the GRA-1 power amp.

ADVANCED AUDIO SYSTEMS INTERNATIONAL was demonstrating the Dynamic Noise Reduction System (licensed from Burwen, and using a National Semiconductor chip) with a variety of videotape, videodisc, and car stereo equipment. This is a single-pass system for removing noise from *non-encoded* sources. When video discs and tapes are played over wide-range systems, the noise can be irritating. AAS is promoting the chip for manufacturers to incorporate into their equipment, with optimization for the characteristics of that player. Used properly, the technique can reduce or eliminate noise with little or no loss of high frequencies.

ADVENT announced a new, higher-powered receiver, the 350, with 50 W/ch, and further circuit refinements over the original 300. They also showed a series of mini-components, disguised as tiny radio receivers, ranging from about \$150 to \$300. The top unit bears a striking resemblance to

the old Quad 22 series, even down to the rounded corners of its metal cabinet.

AKG announced a new line of TS (Transversal Suspension!) pickups, with improved cantilevers, magnetic systems, and a new stylus shape called Analog-6. They also offer good-quality dynamic mikes, the D-40's, for only \$99 per pair!

ALLISON was showing its full line of speakers, with a relaxed, low-key display. Especially impressive was the Six (Le Cube), a diminutive bookshelf system of surprising openness and aliveness.

AMPLITON is a French line of vacuum tube electronics which copy some of the most recent developments in solid state circuits. For example (if I understand the fractured English in the brochure), one amp has a sliding bias output. Another copies Hitachi's "Turbo" system (they even use the same name) where a triode provides the low-power part of the output, and a pentode delivers the waveform peaks. There is also an OTL Class-A amp. (Throughout the brochure, the slew rate spec is constantly referred to as "Slow rate", which at "4.5 micro[volts?]/second" is *incredibly* slow. That's about 140 volts/year.) There are matching tube preamps and an electronic crossover.

APT showed the prototype of a "power-supply-tracking" amplifier in which the supply voltage follows the signal level, a la Soundcraftsman and Carver. The supply itself is a pulse-width-modulated switching supply. Both these features make for a cool-running, efficient amp. It will be used first in an integrated design. The obvious problem with such an approach is that the circuitry must not change operating characteristics with voltage level. Apt claims these

problems are solvable.

ARC is *not* Audio Research Corporation, but a British Speaker firm. The sound in their room was exceptionally good, even by the high standard of most British speakers. Roy Gandy of Rega Research, who apparently doesn't like *anything*, had told me earlier that these were among the few speakers he could tolerate listening to. After listening, I could understand his feelings.

AUDIBLE ILLUSIONS unveiled the Uranus 1 vacuum tube preamp, which



The Benjamin cassette changer.

is two mono preamps on a single chassis, each with independent and fully-regulated power supplies. They also showed an 80-watt Class-A tube mono power amp, and a "budget" preamp and power amp, also tubed.

AUDIO CONTROL, besides its usual line of equalizer/analyzers, had a combination electronic crossover and half-octave bass equalizer. A microphone and warble-tone generator are included for proper set-up.

AUDIO ILLUSIONS showed the Kenner Model S-1 "Acoustical Image Projector," an unusual little speaker in which the tweeter fires away from the listener into a curved surface to spread the sound over a wide listening area.

AUDIO INTERFACE was promoting the

"Missing Link" audio cable (using oxygen-free copper and litz-wire* construction), two MC transformers (one of them a kit!), and a phono preamp module with a wide range of gain, EQ, impedance and capacitance options, and intended for "professional" applications. (Good psychology, guys.)

AUDIO INTERNATIONAL (i.e., CM LABS) had a variety of (nominally) professional power amps, as well as a new version of the 301a preamp, with built-in CX decoder.

AUDIO PRO demoed a new satellite-cum-subwoofer system, the S2-7/B2-40. The woofer uses the same "active parameter" technique of their first subwoofer.

AUDIO RESEARCH unveiled the SP-6C preamp, a "quantum leap in sonics over the SP-6B." It now uses Litz wire for both the input and output cabling. This and the D-79 "are a statement of who we are and what we do in this industry. [They] will know no masters." Asking about solid-state equipment, I was told that "The vacuum tube, in this situation of up-and-down economics, allows us to achieve better sound at a lower price." (If memory serves me, I seem to recall them having said the same thing about their solid-state components just

1. Although very much In these days among the audio elite, the term "litz" has actually been around for well over 40 years. It is supposed to refer to stranded wire in which each strand is insulated from the others, but it is frequently mis-applied to any wire made up of many fine strands. Litz is not the name of a person, but is an abbreviation for the German word "litzendraht." Perhaps one of our readers can clue us in as to what it means.

a few years ago.)

Indeed, Audio Research is now almost completely back to tubed components, with no solid-state preamps in their current line at all. The new SP-8 preamplifier is a "budget" version of the 6-C, with tube rather than transistor power-supply regulation (!). (I have been told that it doesn't sound quite as good as the SP-6C.) The



Cerwin-Vega's new studio monitor.

D-111 is a 120 W/ch solid state power amp at \$3950, and the D-400 is two of them, bridged, with a bigger power supply, at \$5000.

AUDIO-TECHNICA is an "odd" company in that it is a "mass manufacturer" that seems to be genuinely concerned about sound quality. It's hard to tell how much of this is the company's attitude, and how much is Jon Kelly's. A little of both, I think. He was kind enough to run me through the current product line. He didn't say so in so many words, but I got the impression he thinks the current top-of-the-line AT155LC cartridge is better than the Signet TK7.

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Introducing FRED

The first new design from Acoustical Quad in over 20 years, the ESL-63 Full-Range Electrostatic Dipole may become the standard by which all other loudspeakers are judged. Bill Sommerwerck reports from Chicago CES.

His mug-shot hung just inside the door: left profile and full-face, in full color. His ID -- "ESL-63" -- was right below, in a typeface that identified the company he kept. Above, in bright orange poster-paint letters, was his name: FRED. To paraphrase Jon Dahlquist, he had been on some people's "most-wanted" list for over 25 years.

"He", of course, is the new QUAD electrostatic speaker. After

several years of speculation, and very recent claims that he was only a laboratory experiment that would never be commercially made, FRED was making his first appearance in the US, accompanied by Ross Walker, son of Peter Walker, founder of Acoustical Manufacturing, Ltd. and FRED's sire. FRED is a full production product and will be available in limited quantities this fall.

"FRED" stands for Full-Range



Flipping him around, Ross W. exposes FRED's naughty parts to the audience.

Electrostatic Dipole. (The "full-range" refers, I think, to the fact that full-range *drivers* are used. The original QUAD ESL was also a full-range system, but used a separate woofer and tweeter.) The design is based on two simple acoustical principles which have not really been used before in any commercial product.

The first principle was illustrated by Ross, holding a sheet of plastic film in front of his face. As he speaks, the sound waves impinge on the back of the film, making it vibrate back and forth. In turn, the film moves the air molecules on the other side, and we hear Ross' voice. The sound does not actually pass through the film; that is merely an intermediary between the air motion on one side and the air molecules on the other.

Now, imagine that we have found a film material so perfect that, no matter what sound source we hold it in front of, we cannot tell whether or not the film is there. Such a material would be *acoustically transparent*, neither adding nor subtracting anything from the incident sound wave, but

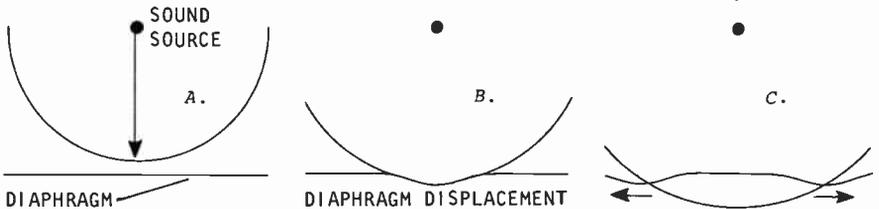


Figure 1. Cross section of a sound wave passing through a membrane.

merely "reproducing" it on the other side. But the film has no way of "knowing" whether the forces driving it are from a pressure wave behind it or from an electrostatic field acting directly on it. To put it another way, it doesn't matter how we set the film in motion; it transfers those motions to the air perfectly. Such a material offers the theoretical

possibility of an electrostatic speaker system with essentially zero coloration.

It is actually a bit more complex than that. In an article in the November, 1980 *Journal of the Audio Engineering Society*, Walker père explained that, for an acoustically transparent driver, the radiation impedances and cone velocities drop out of the design equations, greatly simplifying the task of predicting -- and controlling -- the driver's behavior. In addition, any aberrations in the radiation pattern can be corrected by electrical networks in the speaker.

The second unusual aspect of FRED's design lies in the way the diaphragm is driven. And before we can explain *how* it is driven, it's necessary to get back to some acoustical basics.

All musical sounds originate from a virtual point source. Even a 9-foot concert grand piano represents a point source when we sit some distance from it. Sound waves emanating from a point travel away from the source in all directions, like a series of concentric expanding balloons (or like the current-

ly fashionable theory of an expanding universe).

If we place a large, flat membrane some distance from the sound source, an expanding "sphere" of sound pressure will encounter the center of the membrane first, and will spread across the membrane towards its outer edges as it moves closer to it, as in Figures 1A through 1C. In other words, the

resulting outwards motion of the membrane will NOT take place across its entire surface, but will occur first at the center and then extend outwards towards both edges.

With all previous electrostatic designs, the radiating membrane is actuated (by the electrostatic

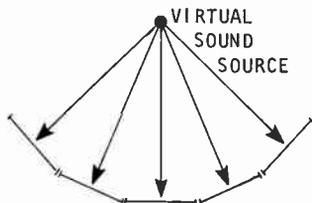


Figure 2. Typical flat-panel array.

field) uniformly over its entire surface. While this provides a lower-distortion transducing system than a large area (a cone) actuated from a small area (its voice coil), it does not replicate the kind of spherical sound waves created by musical instruments. Because sound waves leave the outer edges of the diaphragm at the same instant as they leave the center, and thus travel slightly farther (than the ones from the center) to the listener's ears, some phase

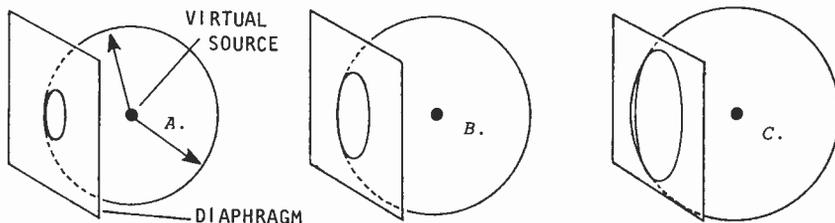


Figure 3. How the ESL-63 simulates a point-source of sound.

interference takes place between the center- and the edge-radiated sounds, causing somewhat choppy high-end response. When the listener is off to either side of the flat panel's axis, the difference between the arrival times of the nearest edge and the farthest edge aggravates the phase cancellations, causing a pronounced attenuation of the entire treble range. The result-

ing difference between on-axis and off-axis treble response causes the familiar electrostatic treble beam or on-axis "hot spot."

Since no one has yet devised a way of making large, curved electrostatic panels, the hot-spot problem (which causes vague or ping-pong stereo imaging) has to date been attacked by using several high, narrow radiating panels arranged in a shallow convex configuration (Figure 2). This approximates a point source (at the focus of the axes of the diaphragms), but not well enough to eliminate a small residual amount of beaming and ping-ponging. (Ping-pong imaging is most easily heard from a pink-noise hiss signal, which will seem to oscillate from side to side as the head is moved laterally. It is also called vertical-venetian-blind effect.)

Which brings us back to FRED. Here, the fixed driving electrodes are arranged in concentric rings circling the center of the diaphragm. The innermost ring receives the incoming audio signal directly. The ring next to that receives a signal which has been very slightly delayed. The next ring has its signal delayed

slightly more, and so on out to the outermost ring, which gets the greatest delay. Thus, a single input impulse will cause diaphragm displacement starting at the center and spreading outwards in all directions, essentially replicating the movement of our hypothetical flat membrane when responding to a sound wave. What we have, in effect, is a flat diaphragm which

behaves as if it were curved, to produce the kind of wavefront that would come from an almost-perfect point source. (Figure 3A to 3C)

Although it would have been possible with this design to obtain an almost-perfect spherical radiating pattern at all frequencies, Peter Walker chose to design in a small amount of beaming throughout the middle and upper range to reduce the effect of room acoustics on the sound of the system. (Directing the signals towards the listener reduces reflections from sidewalls, floor and ceiling.)

Such a design is revolutionary on two other counts too:

1. By bringing the speaker system close to one's ear, with a sound source on the other side, you can determine about how much the system colors the sound -- without even feeding an audio signal through it! Naturally, this test would best be done with complex sounds.**

2. A single-element electrostatic panel can now have broad dispersion at all frequencies. This eliminates the need for many panels, set at a shallow angle, and the attendant "venetian-blind" effects at close listening distances.

My brief description here cannot do justice to the beautiful simplicity of Peter Walker's arguments. If you have any technical background at all, don't hesitate to read the *AES Journal* article. It may take a few readings to get everything out of it, but it's worth the effort.

Before playing music, Ross gave another demonstration. He claimed that the basic design is

so well thought-out, and production tolerances controlled so tightly, that the frequency response of any two samples will match within $\pm 1/2$ dB! To prove this, he fed square waves into both units, out-of-phase with each other. Moving a small probe microphone around the speakers, we could see that the wave was well-reproduced, at a wide variety of positions. With the microphone on the floor, exactly half-way between the speakers, the out-of-phase signals cancelled almost perfectly, indicating an incredibly close match in response.

As for the sound -- well, this is one of the five or six loudspeakers against which everything else is going to have to be compared. There is an uncanny sense of focus and detail, without the snap and sizzle that mar so many electrostatics. Voices and instruments have a definite "shape" and contour, and an almost three-dimensional, palpable presence. The acoustic space around the performance becomes an integral part of the sound, neither obscured nor drawing attention to itself. Sounds emanate from all around the ESL-63's, and from specific spaces defined by the recording's acoustic field. Everything is pristinely focused, unstrained, and extremely natural-sounding. Words cannot do justice. (This is the best judgment I could make in 10 minutes' listening in a large hotel room with unfamiliar material. Close listening will no doubt reveal other strong points, as well as the inevitable flaws.) If you think you want a pair, you'd better get in line. The price is \$3300 per pair, and the waiting list is expected to be one to two years "long." For some listeners, this will be the *only* speaker to own. I might just be one of them.

Bill Sommerwerck

***"Hey, Mister -- what the hell are you bringing them funny lookin' speakers into Carnegie Hall for?" "Well, as the music starts, I'm going to hold them up to my ears, and...."*

CES: The Sommerwerck Report.

(The A-T line is widely discounted, whereas Signet is not.) The TK7 is an exceptionally clean and effortless-sounding cartridge. A-T has a line of "mini" headphones (A la Sony's MDR series), with optional fake-fur ear pads for winter wear! They also have a nifty little battery-operated stylus cleaner. I'm not sure how this is an improvement over the Disc-washer SC-1, except that it keeps the battery companies happy.

BEDINI is one of the few companies making Class A amplifiers that really are class A. Like many firms at CES, they were using Acoustat speakers. They're great



Denon's DP-100 Magnefloat 'table.

speakers, but I have never before heard them sound so clean, pure and sweet as they did here. Which Bedini amp was it? I dunno...

BENCHMARK ACOUSTICS was showing a new ambience system of exceptional sound quality. (Quickie-code 118: "Unusually spacious sound".) The designer, Francis Daniel, a professional recording engineer of unusual intelligence, has really done his homework on this one, and we will be reviewing it soon, along with the Audio/Pulse 1000.

BENJAMIN ELECTROACOUSTICS had a greatly improved version of their 15-hour cassette changer. Even more interesting was their \$600, made-in-Spain, linear-tracking turntable. All controls are on the front, and the platter slides forward to receive the record. There is no need to lift the dust cover, except to

clean glop from the stylus. Benjamin is also importing a Spanish speaker, the Vieta B-10,000, yet another attempt at an omni. A woofer faces downward into the enclosure, with midranges and tweeters above it on a kind of cupola. It looks like a prop from *Dr. Who*.

DAVID BERNING, in addition to the TF-10 preamp, showed the new EA-230 power amp, of 30 W/ch. This tube unit is claimed to have the ability to drive even difficult reactive loads, even those (theoretically) requiring higher power. It can be strapped to produce twice the rated power.

Harold BEVERIDGE's new RM-1 preamp has a power supply with almost half a farad of B+ storage capacitance! (That's *farad*, not microfarad!) He also showed a 3-foot-high "System 4" speaker for those on a budget. It uses a single transducer per side, with a simplified lens assembly, and a 12"



The Vieta speaker's HF cupola.

woofer. It may be uni- or bi-amplified.

BML ELECTRONICS' Tracer speakers

come in two series -- one to look good, and the other to provide the best imaging and most neutral sound at reasonable cost.

BOSTON ACOUSTICS premiered the A200, a tall, thin three-way system. The woofer, which goes up to 450 Hz, is placed near the floor to minimize mid-bass anomalies. The sound was not "Boston Blah," but was, rather, noticeably forward and authoritarian.

B&W had all their speakers on display, but I was unable to hear them demonstrated. I did however hear them in Crown's room. They produce an incredibly 3-D image, with sounds to the front, behind, and beside the speakers. The sound was also very immediate and alive. (Yeah, yeah, I know. "Just think how much better they would have sounded if you hadn't been hearing them on those crappy Crown electronics." Well, you're *wrong*, so just button your lip.) No wonder they've garnered raves in England.

The CABASSE exhibit surprised me. I had listened to these speakers for a long period of time elsewhere, and felt they suffered from terminal blandness. Here they blossomed forth with an incredible sense of aliveness. Unfortunately, they were sort of cheating, by playing master tapes through a Revox instead of records, but I think it is safe to say that if tapes sounded that good, the best disc reproduction would sound better. It would be nice though if everyone at a show was required to use the same kind of program source. With our present, anarchistic system, comparing components is like trying to compare reconstituted orange juice with freeze-dried tangerine juice. There is, as JGH has put it, a certain lack of controls.

CAMBRIDGE PHYSICS showed a variety

of two- and three-way systems which are designed to play loudly and cleanly, and have a better-than-average low end, all to take advantage of today's improved recordings.

CANTON, a German firm which makes a wide range of highly-efficient home and car speakers, had a new tri-amplified system, the Ergo. What most impressed me, though, was the Plus L mini- (and I mean *mini*-) speakers, and the Plus B subwoofer. The woofer contains three power amps and an electronic crossover. Maybe it was the Susann McDonald harp record playing, but they struck me as having some of the most elegant, exquisite sound I've ever heard from speakers. If you work in your den, or want a second system in your bedroom to listen to before you drop off to Slumberland, or need something in the dining room for guests, this may be just what you are looking for. And I mean that as a compliment.

Bob CARVER's exhibits are developing a reputation as *the* place to go if you want to find out what Yamaha will be producing in six months. (They have already copied the Magnetic Field power supply design, and now have an image-enhancement circuit in their receivers.) Bob is some kind of genius. His current piece of wizardry is a tuner with special circuitry that cancels out multipath distortion and noise, automatically, without otherwise affecting the sound. The multipath canceller worked beautifully, removing a hard, brittle, spitty edge from the sound of a local station. The noise-reduction system seemed to work equally well. Bob claims that his technology eliminates the need for Dolby noise reduction, as it is now possible to hear clean, quiet stereo at much greater distances

from the station. The unit shown was a (beautifully-constructed) prototype, and should be in production by Christmas. Price is expected to be \$400 to \$450. Anybody want to take bets that Yamaha will have something similar out by November?

CERWIN-VEGA had a studio monitor system with an unusual coaxial arrangement of the midrange and tweeter. A strange-looking perforated metal grille served as an acoustical filter to prevent the output of one driver from Doppler-shifting the other. Interestingly, GE used the same idea in a coaxial speaker more than 23 years ago.

CONRAD-JOHNSON DESIGN exhibited several moving-coil transformers, some with silver wire, along with a Nuvistor (!) head amp. This was in addition to their regular line of vacuum tube electronics, which includes two preamps (one at \$399) and two power amps (the MV-75 and the new MV-45, 75 and 45 W/ch, respectively).

MITCHELL A. COTTER finally showed a production prototype of the long-awaited control center for his blue bricks. It is a husky, chunky-looking unit, about as tall as one of the bricks is wide. A long cabinet holds the control center at one end, with the bricks turned on their sides, in a row. (The "blue bricks" are Cotter's phono transformers, preamps and bandwidth filters.)

COUNTERPOINT is the name of a slimline tube preamp which has been on sale in California for several years. The firm is now "going national." The preamp is beautifully constructed, and has a separate power supply with a "standby" position for extended tube life and "quick-on" when it's time to listen.

The COSMOSTATIC is a hybrid electrostatic/dynamic omnidirectional speaker system. The sound was appropriately spacious and rich-sounding. They sounded quite unlike anything else I've ever heard. (Ahem!)

CROWN mounted an elaborate multimedia presentation that kept a bank of Kodak Carousels gasping for breath. They introduced a wide range of slimline "home" components, and several new "pro" amplifiers. This completes the separation of their lines into audiophile and professional. I was told that Crown has developed an



The Magnat, with ion tweeter atop.

analog/digital system for analyzing amplifier distortion under musical operating conditions. It apparently will be possible to both quantify and qualify the distortions. I know some of the people at Crown fairly well, so I will try to pry loose whatever discoveries they make.

The DAHLQUIST exhibit emphasized their new, MAGNAT-derived designs. I had heard the DOM-7's several months ago, when John Chen visited a dealer to demonstrate them, and I was most impressed with the incredible width and depth of the sound (they make the DQ-10 sound like painted scenery, by comparison). But I was bothered by a certain "etched," wiry quality to the highs. "Oh, don't worry," said Mr. Chen. "That's been taken care of in the production version. We coat the cabinets with a special paint." (!!) My reaction to that was that Mr. Chen was ready for a canvas jacket.

Well, at the show, Saul Marantz was kind enough to explain all this. It has to do with a special 3M paint called Nextel. It was designed for solar collectors, and has a very low albedo and an almost "nappy" texture. (I had first heard of the stuff several years ago when I saw it on a mixing console. It actually feels like a thin layer of suede.) The stuff is easy to clean and very wear-resistant, so it was decided to use it instead of wood or plastic veneer. It also gave a desirable "professional" appearance.

Anyhow, during listening tests, it was discovered that one of the prototypes had this treble wiriness, but another one didn't. The two speakers measured identically. They tried switching drivers, crossover networks, etc., but the characteristic stayed with the enclosure. Finally, somebody realized that the bad-sounding cabinet was plain, and the good-sounding

one had been painted with Nextel. Painting the plain cabinet cleared up the problem! The theory is that somehow the drivers are coupling part of their energy into the cabinet, and the surface of the wood "buzzes" along. The Nextel paint damps the surface and eliminates (or diminishes) the effect. God help me, it actually seems to work!

Also on display with Dahlquist were Dr. Siegfried Klein's latest ionic tweeters. They are hornless (unlike his earlier Ionovac) and have a built-in amplifier. No helium is required, but they only go down to 3,000 Hz. They were demonstrated as part of a prototype three-way system, using MAGNAT drivers for the midrange and bass. From what I understand, Jon Dahlquist will be responsible for producing a commercially-viable design using the ionic tweeters. How soon is anybody's guess. But Jon is a methodical, thoughtful worker, so I would say at least a year.

db SYSTEMS showed an electronic crossover using in-phase, Linkwitz-Reiley filtering. It is available on custom order; the user specifies the frequencies desired.

dbx announced the long, long, long-awaited car dbx decoder. (You no longer have to make a separate tape for the car.) They also showed the 20/20 automatic room equalization system. (JVC has already copied it, at half the price.) The thing has great potential, but I honestly feel half- or third-octave equalization would give audibly superior results, so I question the value of a \$1500 full-octave equalizer, automated or not.

DCM had a bookshelf speaker, the Macrophone, made long and narrow to maximize the internal volume for a given shelf width. High power-handling capability and wide dynamics are claimed.

The DELPHI speakers are a kind of two-way, crossoverless design (if that makes any sense). Unfortunately, some sort of damage had occurred and I was unable to draw any conclusions from what I heard. (This is the company that prevented Oracle from changing its name.)

DENNESSEN had a lot of new things, including a belt-drive American-made table, the Zolt. (That's the designer's name!) They also have a variety of tube electronics (the Sirius and Antares), an imported headshell that allows all the mechanical parameters of the cartridge position to be adjusted, and an arm base which allows VTA to be adjusted while the record is playing. All for only \$80.

DENON showed several turntables using the Magnefloat principle. (Does anyone remember Stanton's magnetically-suspended platters?) There was a new preamp using passive RIAA equalization. The DP-100 transcription turntable is a humongous, no-holds-barred design that will set you back \$3 or \$4 thousand.

Denon also unveiled an integrated amplifier and a power amp that are true Class A,* but have sliding bias to keep efficiency high. An interesting idea.

DESIGN ACOUSTICS had a *non-omni-directional* three-piece system designed to have both high efficiency and good power-handling

capacity, called the Triad.

DYNACO, now owned by ESS, is now a full-fledged mass-market company, with some "God-knows-who-made-them" rack-mount components. No more kits, no more esoteric stuff. A moment of silence will now be observed.

HAFLER demoed a new loudspeaker, at \$400/pair, in a cylindrical enclosure. Yes, it uses polypropylene drivers. The sound was OK. They also showed a more "stylish" version of their preamp, with refined circuitry, all nicely laid out on a single, large board. The knobs and controls are well-marked and attractive, and the unit rack-mounts. It was finished in the classiest shade of battleship gray I've ever seen!

HARMAN-KARDON had a prototype of, but did not demonstrate, the Matti Otala-designed Citation 20 power amp. Mr. Ottala's signature is prominently displayed on the front panel. (MO "invented" Transient Intermodulation Distortion.)

HARTLEY products told me that one of their woofers was used to augment the low bass from the Allen electronic organ appearing in the Telarc *Prologue to Mephistofile*. Their new products are claimed to be part of an overall upgrading of the product line, for greater accuracy and improved performance. (I also got soused at this booth. I don't remember much except that the sound was both musically

obnoxious form of distortion called crossover or notch distortion.) Sliding bias reduces current flow through the Class-A outputs when power-output requirements are low, conserving electricity and providing cooler-running operation.

** In a Class-A amplifier, both halves of the push-pull output draw power-supply current at all times. (In Class B, each half draws current for only half of each cycle of input signal; the transition from one half to the other is not always completely smooth, introducing a particularly*

satisfying and very pleashant.)

HEGEMAN showed the HAPI 2, a single-chassis version of the HAPI 1.

INFINITY showed a car-mount version of the 0.1 "Infinitesimal", called the "i-car". The 0.1 is an out-standing speaker, so this one is worth investigating. They also had "Intimate Stereo," a (you-guessed-it) Walkman-derivative pocket cassette player. Except that *this* one has 70/120 microsecond EQ, and Dolby-B! There is an optional snap-in Stereo FM tuner. (It is made for them by Akai.) The main action at Infinity, though, was with the new RS-III system, selling for about \$900/pair. Driven by an NAD integrated amp, and playing the new Telarc Carmina Burana with a Grado cartridge, it was producing some of the most realistic sound at the show. Both the midrange and the woofer are made out of guess-what.

JACKSON, LTD. was showing a series of omnidirectional speakers using both cone and horn drivers. They are a series of stacked oak "drums" separated and supported by dowel-like columns. If Frank Lloyd Wright had designed a speaker system, this is what it would look like. This is the most striking example of industrial design I've ever seen in a speaker.

JANSZEN electrostatics are still made! The company is called Sound-mates, and is located in Minneapolis. They make at least a half dozen systems, some with enormous arrays of tweeter elements, others with acoustic lenses. All use dynamic woofers.

JUMETITE LABORATORIES, a Canadian firm, showed an unusual two-way system using a horn-loaded ribbon driver of their own design and manufacture. The horn is bent at

90° (like a microwave horn) and sits facing downward above the woofer cabinet. The sound was superb, without the exaggerated "presence" of so many horn systems. If you like the Decca ribbon, give this one a listen.

KLH demoed a stereo table radio with the receiver and speaker in one cabinet, the second speaker



The Plasmatronics direct-drive all-tube Class-A power amplifier.

in a second cabinet (shades of 1960!). They, too, had their own Walkman-derivative portable. The better KLH speakers now all have polypropylene drivers. And (if anyone is interested) the legendary KLH Nine is no longer made. An era has ended! KLH is now almost exclusively a mass-market company, even to the extent of having their own "system-in-a-rack."

KRELL ELECTRONICS showed an enormous, 100 W/ch Class A power amp. It was being played through the dismal-sounding Fourier speakers, so it was impossible to make even the vaguest judgement of its sound quality. Worst of all, their brochure manages to completely scramble the explanation of the company's name. (The Krell were the inhabitants of Altair-4, you dummies!) They also say that the Krell were "a race of people ... far advanced from their peers." They ought to look up the meaning of "peer".

I bought the trial size sample of LAST. My first treatments of some cherished records* did indeed suggest that this stuff cleans up and brightens the high end. I am seriously considering the purchase of the pint size -- at \$111! (But look, guys, we all know that D-4, and this stuff, and all the other magic nostra are grotesquely overpriced. You could sell them for 1/3 the price and still make a nice profit. In fact, sales of one-shot treatments would zoom. Why can't a person treat his record collection without having to lay out several hundred bucks.

LINN-SONDEK will have a less-expensive turntable coming out soon, possibly with a cast-resin base. They also have a less expensive arm, complete with cartridge, selling for around \$150! It is made by the same Japanese firm that makes the Ittok, whoever the heck that is. The cartridge is a Nagaoka (i.e., Nagatronics).

LSR & D SALES represents Leach products. They showed the Leach Amp and Superamp, along with a battery-operated head amp. Demonstration was through the Impulse Ribbon Speaker, a speaker of great clarity, definition and perhaps too much detail. I have heard them at length, elsewhere, and feel that they are one of the few speakers over \$2,000/pair that aren't a ripoff.

LUX is a strange firm. Although nominally a maker of esoterica (and generally priced accordingly) they have a breadth of product line that would do Pioneer proud. Although they are mostly solid-state, they still maintain a tube line, and constantly improve it. They even sell kits, in Japan!

There were many new Lux prod-

ucts. Among the most interesting was the \$600 PD-375 fully-automatic turntable/arc system. That's unusual? It is, when you consider that the \$600 also gets you a full vacuum clamp system! I assume that a cheaper, armless version will follow soon.

MAGNEPAN had two new designs. The SMG speaker (small MG) is just that: a smaller version of the MG-I. The MG-IIIB is a further refinement of the II. Frankly, it is the first Magneplanar I've heard that doesn't sound as if you're listening to the music with cotton stuffed in your ears.

MICRO-SPEC is a company associated with Audio Control. The microphone supplied with the A-C equalizers is a true condenser made by Matsushita. A-C found it to be so wide-range and smooth that they will be offering a pair of them in special clip-on mounts to go behind your ears on your eyeglass frames! (Hence the name.) A pair of fake eyeglasses will be provided for those with perfect vision. The idea is to provide a better-quality mike for miniature stereocassette recorders, like the Sony TCS-300, and to allow the recorder to be hidden. Joan and Luciano -- watch out!

MISSION ELECTRONICS is a British firm specializing in the more esoteric kind of product, usually of unusual design. The 700 is a bookshelf system in which the woofer sits above the tweeter! I can think of a few good reasons for doing it this way. You may want to try to figure this one out for yourself. (The literature acknowledges the situation, but otherwise offers no comments.)

Mission also exhibited a turntable mat made of some material called Sorbothane, and a preamp that runs on lead-acid batteries

*That's taking a chance! (JGH)

which recharge when the unit is turned off (but plugged in).

KEITH MONKS exhibited his record-cleaning machines, including the CR500 "domestic" unit, which sells for \$940. I realize that the sealed pumps used aren't cheap, but does the thing have to cost *that* much? Why doesn't Mr. Monks design a product using *American* parts, and set up a company here to make an *American* version? Then maybe we could afford one.

MUSICAL FIDELITY showed an AC-powered solid-state head amp with better than 1-megahertz bandwidth. An intrinsically high input impedance allows the cartridge's load impedance to be changed simply by changing input resistors.

NAD introduced an improved version of the 20-series preamp, the 1020, as a separate product.

NAGATRONICS had a \$400 silver-wire moving-coil step-up transformer. There will be a "ribbon" cartridge to go with it later, for a combined price of \$2000! Whoopee!

NAIM AUDIO of England announced a \$3500 FM/AM tuner, designed to automatically optimize reception to provide the most listenable sound. The AM section too is claimed to be of extremely high quality.

NAKAMICHI, having dropped most of their receivers and amplifiers, have returned to cassette decks with a vengeance, unleashing at least 14 models. The half-speed models, alas, have been dropped, at Philips' insistence, in exchange for letting Nakamichi do something else that they are as yet unwilling to talk about. All Nakamichi 400-, 500- and 600-series decks (except the 480B and 480S) now include Dolby C and wide-range fluorescent

metering. The 480's have dropped \$100, to \$395.

The Hi-Com II noise reduction noise unit is still available, but has been joined by the NR-200 Dolby B/C outboard unit. The T-100 audio analyzer is again being made, but at a greatly increased price (\$990).

I was told last summer, by a Nakamichi rep, that they would be making a portable 3-head machine. There was no sign of it at the show, and I doubt that there ever will be. Knowing Nakamichi, they won't make one unless there is some way to keep the play head



RTR's electrostatic, subwoofers, and mini-monitor speaker system.

aligned in a machine that has to withstand being knocked around.

Finally, in the believe-it-or-not department, I invite you to consider Nakamichi's claims for frequency response. With metal tape, and the Dolby C *on*, the better Nak's now have a response that extends from 20 to 20 kHz, *flat* -- at 0 VU!

NYTECH AUDIO is a British firm

making preamps and preamp/tuners that look like big desk calculators! All controls are pushbuttons and sliders, arranged for easy operation. Nytech claims this is for ergonomic purposes, not cosmetics, and that the circuits are the best they know how to design.

OHM ACOUSTICS announced the Walsh 2, a new incarnation of the Walsh driver. Nominally a full-range unit, it is assisted at the top end by a dome tweeter. The total enclosure is about 2-1/2 feet high by 8 inches square -- remarkably small. A brief listen indicated that it did not have the severe midrange ringing that marred the original Ohm F. The overall sound was a bit dull and bass-heavy.

ORACLE has to be complimented on their brochure. They are almost alone in explaining the technical aspects of their turntable design, without resorting to complex pseudo-scientific gobbledegook intended to impress the gullible. They claim that turntables do, indeed, sound different, and that theirs sounds better because 1: the record is tightly clamped to a highly absorptive mat sitting on an inert platter, and 2: the whole system is designed to be as immune as possible to external influences. Thank you, Oracle. (By the way, I have always liked the implicit humor of the company's name, suggesting, as it does, something totally contrary to the intended function of the product.)

PAISLEY RESEARCH is *not* a company specializing in gaudily-printed fabrics. Ian Paisley turned out to be one of the few speaker designers I've ever met who actually knows what he is talking about (i.e., we agreed on almost everything). He makes all of his parts, including the drivers and the heavily-braced cabinets. The speakers

have received rave Canadian reviews, and the sound was quite good. Mr. Paisley is one of those designers who feels that polypropylene does not sound as good as Bextrene, and he uses it in his cheaper speakers because it costs less. Like Mission, some of his designs are "upside-down". The more expensive designs have fully-rounded edges, for minimum diffraction.

PETERSON AUDIO ENGINEERING had a wide range of litzwire, premium audio interconnects, and an interesting technical brochure.

PHASE LINEAR had a whole bunch of new things. The Dimensional Sonic Localizer is intended to provide



Two Sony Esprit PPM speakers.

three-dimensional, wrap-it-around-you headphone listening, as well as enhanced speaker listening. There is an onboard CX decoder, apparently without a level-match control, to keep the cost down. (Gotta watch them 10¢ parts, or they'll eat ya alive!) And the Auto-Correlator has been repackaged as a universal video sound/stereo noise reduction system. P-L also showed an inexpensive spectrum analyzer.

The PLANAX is a French-made plastic record clamp that grabs on for dear life to the spindle, so that it

can be pushed down *hard* against the record. This gives good contact with the underlying mat, without a heavy weight on the platter bearing.

PLASMATRONICS exhibited the prototype of a fully direct-coupled vacuum-tube power amp. That's right -- *no* output capacitor! The unit would have to sell for \$4000 and I was told that was too much for the present market to bear.

If that sounds hypocritical when the Type 1 Plasma speaker sells for \$10,000 a pair, please consider that Dr. Hill is extremely upset that he cannot sell them for \$2000 a pair. He would like every serious listener to be able to afford them. He once told me what the parts alone cost, and I can assure you, he is *giving* the things away. The only reason he can sell them even at \$10,000 is that Plasmatronics is a *laser* company, and its success in that area underwrites the speakers.

POLK AUDIO showed an improved version of their Reference Monitor, the RTA 12B. They are one of the few firms with the guts to show the square wave response of their system. It actually looks like a square wave. Interestingly, this performance is achieved with a *24 dB/octave crossover*. (Gaussian, in this case, not Butterworth. Gaussian is a constant-group-delay approximation.) They also introduced the LF14, a subwoofer with a built-in passive crossover. It can be used with Polk or other speakers.

PROFESSIONAL SYSTEMS ENGINEERING displayed improved versions of their amp and preamp, a matching tuner, and a speaker-switching LED power-output control box.

PS AUDIO had a Model II power amp, unusual in two respects: the low-level stages are fed by a com-

pletely separate power supply, to prevent interaction with the output stage. And, in mono, this is the only amp I've seen which exhibits the theoretical ideal quadrupling of power. This would indicate an output stage of very low source impedance, and a very high-current power supply.

PYRAMID unveiled the Metronome 7, a mini-monitor capable of very high output, and with time-aligned drivers. The price was a surprising \$275/pair. (JGH now has a pair for testing.) There is a matching Model 8W sub-woofer, and a lower-priced full-range system with ribbon tweeter, the Model 9. The add-on ribbon tweeter line has been extended to three models, the original T1, with the new HF1 and HF2.

QED showed a Model 7 preamp with specific inputs for video sound, a stereo expansion circuit, loudness compensation supposedly based on the latest research, a separate bass boost intended to compensate for most speaker deficiencies, and a phono section that can handle moving coils without the need for a separate head amp.

Roy Gandy of REGA PLANAR is present to promote his company's line of tables, which have been well-received in England. We had a long conversation, of which I remember absolutely nothing; Mr. Gandy is very laid-back. It's the performance that counts, though, and Regas are supposed to be close to state-of-the-art, at very reasonable prices.

RG DYNAMICS had an improved version of their dynamic-range expanders. Since musical instruments become richer in harmonics as they are played louder, the level-sense circuits emphasize the upper midrange to give a better

sense of the real change in level. The top-line unit uses this information not only to vary the gain, but to change the *slope* of the compression, on the assumption that the loudest passages are the most compressed.

ROBERT GRODINSKY RESEARCH is a related company making preamps and power amps. They announced a Model Five high-current amplifier, capable of 50 amperes peak current per channel. Unlike most amps, this one is rated into 2 ohm loads.

Fans of RTR electrostatics will be happy to know that this firm is back into the full-range electrostatic business. (The Crown ESL series and the original Servo-Statik were RTR designs.) This new one is a two-panel, hinged design, with the tweeters separate from the midrange. The whole thing looks like the Mangeplanar Tympani, but in bronze fabric. (It is assumed that you will add one of RTR's subwoofers.) They also showed dynamic systems using a new plastic tweeter, a 25-mm dome with aramid (Kevlar) fibers to stiffen its surface. It will undoubtedly earn the nickname of "spiderweb" or "Spiderman" tweeter. Claimed response for it is to 40 kHz. The free-air resonance is 700 Hz so, with a good woofer, a decent 2-way system can be built with broad treble dispersion.

SAE showed the Transar Air-Motion Transformer (a scaled-up version of the Heil Driver). On familiar program material, the sound was dull and bass-heavy.

SHAHINIAN ACOUSTICS had several models of the Obelisk speakers, with quasi-omni directional output. The sound was immensely spacious, much like the Bose 901 but without that speaker's veiling, distortion and coloration. The sound was a trifle boxy, but I don't know whether this was the room or

the speaker.

SIGNET products were, of course, exhibited separately from Audio-Technica. The TK-30 headphones are new, almost matching the TK-33's in quality but for \$90 less. The TK9E and TK9LC moving-magnet pickups have been improved with a new cantilever. The MK110E moving coil has an interchangeable stylus and lists for \$125. And the TK100-LC was announced; a moving-magnet design, with a *hollow* ruby cantilever(!) -- and a (gasp!) \$1200 price tag. (Eat your heart out, Joe.) The coil windings are pure silver.

SNELL ACOUSTICS unveiled a speaker system using one of those "Why-didn't-I-think-of-that?" ideas. When the output of any driver reaches a boundary (i.e., the wall or floor), it reflects and interferes with the direct sound. This can be modeled acoustically as an identical driver located symmetrically on the other side of an acoustically transparent boundary. (Got that?) Now, if somehow both the real and "virtual" driver were brought right up to the boundary, there would be coincident, and all interference would disappear. (In practice, all that would be required is to bring them much closer than within one wavelength of the highest frequency they reproduce.) Peter Snell has achieved this in the Type 1 speaker by building a little sloping ramp in front of the cabinet, and bringing both the woofer and tweeter right down next to it!

SONIC RESEARCH (SONUS) had an improved version of the Formula-4 arm which they now import. Peter Pritchard also showed me the unusual method they have for attaching the stylus to the cantilever in the Dimension Five pickup. The stylus tip is inserted in the end of the hollow tube, which is then

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bent to the desired position. Mr. Pritchard feels this gives a more secure bond, greater stability, and better control of the rake angle. When I (quite innocently) asked him what he thought of moving coils, he became uncontrollably violent and attacked me with the model of the stylus. I barely had time to snap a photo and run.*

SONY introduced the ultimate "boom box", the CFS-99 "Studio 99", a 26-1/2 pound monster complete with



Mr. Pritchard in high dudgeon.

mike mixers, panpot, and electronic reverberation. They also showed the PROFEEL line of video components, with exceptional picture quality (350+ lines of resolution). ESPRIT is Sony's new line of esoteric equipment, supposedly de-

Fraud, fraud, fraud! The picture was staged, with Mr. Pritchard's cooperation. It makes for a dandy story, though. JGH

signed with a great deal of careful listening. In fact, the press handout included a three-page discussion of the designers' philosophy. The flagship is the TA-N900 power amp (currently in-house for a Stereophile report) whose output stage has no negative feedback round it. The unit features a variable-voltage power supply like the APT, so that maximum current can be delivered to low impedance loads. (There are many other features I don't have room to discuss.) The matching preamp shows a similar attention to fine detail. Sony was also showing two of their (very expensive) monitor speakers, using those flat, square piston-like diaphragms. The sound was high-powered and forward, more like a very good horn than anything else. I noticed the power amps sitting on acoustical isolators. "Oh, no!" I thought. "Oh, yes," I was informed. If you can't figure it out for yourself, I don't have the guts to tell you.

The Esprit line also includes a moving-coil pickup with a diamond cantilever, in which the stylus is laser-cut from the cantilever itself! If nothing else, that neatly solves the problem of how to keep the stylus from falling out!

Sony also showed a one-point stereo mike using M-S technology (i.e., matrixed omni and figure-8 patterns). A more expensive version has three cardioid capsules, for "three-point" recording, and level controls to vary the output from center-only to sides-only. The TCD-5M is a stereo portable about the size of a large paper-back -- about 6" x 8" x 2". A "cassette Nagra" is what comes to mind, and the machine is intended for "serious" recording. The "Walkman" family is multiplying like incestuous bunnies, with a smaller Walkman, a cheaper Walkman, and two pocket stereo FM receivers. Although somewhat big-

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- GOLDMUND TONE ARM
- DENON
- COLONEY AB 1 TURNTABLE
- MUSIC REF. RM 4
- PROMETHEAN

studio 1

- B&W 801 SPEAKERS
- KEF 105.2
- SNELL ACOUSTICS
- LINN DISC PLAYBACK SYSTEM
- SUMO "HALF POWER" AMPLIFIER
- THETA PRE-AMP
- MARCOF PPA-2 MC AMP
- YAMAHA T-2 TUNER
- TANDBERG TCD 440A CASSETTE DECK

- HILL TYPE 1 PLASMA SPEAKER SYSTEM
- DAVID BERNING TF-10 PRE AMP
- SUMO "POWER" AMPLIFIER
- TANDBERG 3001 TUNER
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- GOLDMUND T3 TONEARM
- WIDYNAVECTOR KARAT DIAMOND CARTRIDGE
- TANDBERG TD 20A DECK
- SPATIAL COHERENCE PRE-AMP

studio 2

ger than the Walkman, the TCS-300 also records in stereo, with built-in cardioid mikes.

SOUND CONCEPTS wasn't even showing their time delay system, concentrating instead on their Image-Restoration Control. Used discretely, it broadens and deepens the sound field without introducing too many nasty side effects.

SOUNDCRAFTSMEN introduced a \$450 digital tuner and an octave-wide spectrum analyzer at the same price, with claimed 1/10 dB accuracy.

Hands down, the most ingenious piece of design at the show was the SOUTHER tone arm. This is a straight-line tracker with no motors, no gears, no pulleys, no servos, no linkages, no *nothing*. The arm has tiny stainless steel bearings that sit on a pair of glass rods extending across the record. There is so little friction, that the groove simply pulls the cartridge across!



The Souther arm: Passive traverse for a straight-line-tracking arm.

Mr. Souther played a record with a moderate (about 1/8") eccentricity to show that the arm had no trouble following it. There is an easy-to-use cuing lever on the side, and a rod sticking up from the arm proper allows the cartridge to be moved across the disc by hand. This action is sure and non-fussy.

The arm is currently available only as a hand-made unit, for \$500.

It *could* sell for a lot less, if there were enough demand to justify a 10,000-unit production run. Mr. Souther has discovered that nobody seems to know exactly how many tone arms are sold throughout the world each year. And until he finds out, he can't risk the production costs. Anybody out there know anything about tonearm sales?

SPATIAL unveiled yet another improved version of the Spatial Coherence preamp.

SPECTRAL introduced the DNC-10 preamp, using *power* MOSFETs! (And that's not for a headphone amp, either.) I guess that the phono section will have *no trouble* driving the RIAA EQ circuits.

STAX showed a two-way loudspeaker using electrostatic tweeters (natch) and a mica (!) woofer. (Not a single sheet of mica -- it appeared to be a composite material, sort of the mica equivalent of particle board.) They are also considering importing an ultra-high-quality condenser microphone power supply, having extremely tight regulation and ultra-low noise.

SYMMETRY was generating some of the best sound at the show. Their chief engineer was playing master tapes he had made, through a Pyramid ribbon tweeter/Quad/Symmetry sub-woofer system. They also showed the prototype of a new preamp, with passive phono EQ and provision for moving coils. High inherent-RFI-rejection is claimed

THIEL struck me as another company that seems to know what they are doing. All aspects of a speaker design come under their scrutiny, rather than just those that are momentarily faddish. Like Polk, they are not afraid to show square-wave response. The sound was

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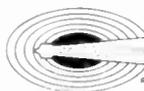
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3D ACOUSTICS exhibited the prototype of a three-way, time-aligned, low-diffraction speaker system, the Crescendo. The brochure for the Crescendo concentrates on the technical aspects of accurate reproduction rather than on metaphysical descriptions of the unparalleled listening experience this transcendent engineering achievement provides. It was a refreshing change.

3M (SCOTCH) gave a free breakfast to promote their new products. I attended by accident, so here goes the plug: "Scotch announced a new open-reel tape, Master XS. This super-premium formulation replaces Classic, and is comparable to the TDK SA and Maxell UD XL open-reel formulations."

UNITRONIX is a line of Polish loudspeakers, specifically designed to sound like JBL studio monitors. They do.

VANDERSTEEN showed an AC-powered head amp with dual-mono construction, switch-selectable input impedance, and variable high-



Weber's game-board subwoofer.

frequency equalization. There was also a prototype of a new speaker, the model 3.

VPI, the isolation-base people, had a non-working prototype of the "Audio Bathtub," a machine to

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We still have on hand a limited number of the soft-bound reprints of our first and second 12 issues. If you're curious about how, and why, this whole business of perfectionist audio got started (It was all our fault, remember?), these two reprints are a not-too-compact history of the whole sordid affair.

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clean both sides of your record at the same time. The guesstimated price was around \$400.

VSC, Inc. was showing their variable speech control system, now greatly improved. These devices allow the listener to speed up or slow down speech recordings without a change in pitch! Their obvious application is on video recorders -- you can watch "60 Minutes" in 30 minutes. At the highest speeds, the sound becomes slightly "choppy" but there is surprisingly little loss in intelligibility.

WEBER ELECTRONICS was making the sincere if grandiose claim that their best speaker, a corner quasi-horn, was at least the equal of the Infinity IRS, etc. Well ... Their sub-woofer, which they claim makes no audible contribution to a system, reproducing only the subsonics, is a double-threat device.

The top has a well, covered by a glass plate that just happens to be the size of a Parker Brothers game board! The possibilities are endless. Are you way far behind at Sorry? About to land on a hoteled Boardwalk? Somebody else about to announce whodunnit in Clue? Just crank up the bass and pop the pieces off the playing board! (A dbx Boom Box would help, considering how little really low bass there is on most records.)

Bill Sommerwerck

CES: The Hodges Report (*From Pg. 8*)

seemed to keep performance quite stable even when the base was whacked around. The same test was passed successfully by a new Audel turntable, designed by Sao Win and expected to be priced in the same ballpark.

The one new amplifier *design I*

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encountered in Chicago was a transformerless (and output-capacitorless) behemoth from Plasmatronics, variously rated at 50 or 100 watts per channel continuous according to operating mode. Presumably it was being used to drive the Hill Type 1 Plasma speaker, with results on which I've already commented.

I generally leave evaluation of phono cartridges and associated electronics to times when I can spend a preliminary week in an ashram, chanting mantras subvocally. I made an exception in the case of the Mirror Image Transducer moving-coil cartridge by John Marovskis. This pickup has a deliberately mass-loaded van den Hull tip, intended to counter the effects of material springback on the included angle of the groove when a record is cut. John's explanation made interesting listening, but the pickup did not make impressive sounds. Gremlins again, I suspect, as I hate to cast doubts on the work of some-

one as generally competent as Marovskis on the basis of a brief audition under impossible conditions.

To wrap it all up, let's say that the Chicago show was an event in need of some sympathetic tweaking. By way of underscoring this, one of the industry's prominent tweakers, David Shreve (of VTA fame), was at hand to adjust tone arms for some of the exhibitors, and reportedly left many gratified and grateful clients in his wake. I was not able to audition a before/after comparison (at this show, anyway), but I believe it. If any prospective Las Vegas exhibitors are reading this, Shreve intends to offer his services for \$25 a shot at the Winter CES this January. You might do a lot worse, because he will tell you and show you things about your sound that your best friend won't. (I speak from experience here.) Furthermore, he seems able to preserve, through all the show

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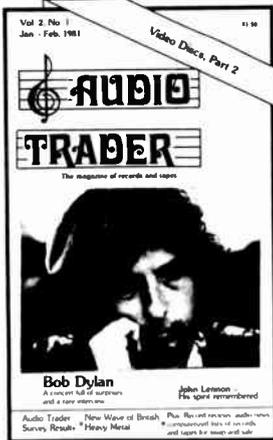
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chaos, what many of the rest of us can't: a fully functioning hearing mechanism. Ralph Hodges

Miscellany

Briefs

Since last we went to press, many moons ago, we did something absolutely unprecedented for this magazine: We gave a "Definitive Disc Award" to Mobile Fidelity for their re-cut of an EMI tape of Elgar's "Falstaff" and "The Sanguine Fan." More details next issue.

Of all six power amps that we

have in-house, the one which elicits the best sound from Acoustar's new slim-line Model Four speakers is, believe or not, a current version of the \$325 Sonic Developments D-235 reviewed in Issue IV-8.

Mobile Fidelity's new real-time-dubbed cassettes are stupendous; almost as good as their best discs but not quite.

We will definitely test FRED as soon as we can obtain a pair.

Stereophile Record Service has now added BIS, Budapest, Supraphon, Nautilus, Pearl, Hungariton, and the entire Japanese super-disc line from YSL to our catalog.

A cryptic note for HP: There wasn't room in this issue.

Several free-lance recording engineers have expressed disappointment with CBS's new compatible expansion (CX) noise-reduction system. One said it's okay for pops but not so hot for classical music.

DBX's 3BX expander does wonders for dynamically-compressed records with minimal audible side-effects. Recommended for collectors.

Audio Mart

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Apt-Holman power amp, 9 month old, \$400; Audio Research SP-6B preamp,

4 months old, \$1000. Both in perfect condition, with original cartons and literature. Darrell Hinshaw, 1901 Merritt Dr., Greensboro, NC 27407. (919) 299-0553.

Bravura preamp, \$450; DBX 117 compander, \$100; both in excellent condition. Jeff, (202) 547-3991.

Thorens TD-125-11 w/ SME 3009-1 arm. Both like new, with papers. Best offer. Crawford Best, 1809 Mason Smith Avenue, Metairie, LA 70003. (504) 887-0215.

Audio Research D-110 amplifier, magnificent performer, very little use, perfect condition. Best offer. (603) 224-6721.

Dynaco Stereo 70 tubed power amplifier, PAS-3 tubed preamp, FM-4 tuner, all factory-assembled, in excellent condition. Best offers. Ted Meredith, 6501 SW 35th, Portland, OR 97221. (505) 248-7388. (Equipment located in New Orleans, LA.)

Berning TF-10 preamplifier, new condition, original carton, \$800 plus shipping. JGH, Stereophile, P.O. Box 1948, Santa Fe NM 87501.

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