

THE **BAS** SPEAKER

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In This Issue

You're going to get a little surprise when you open this issue. The new BAS printer (an IBM 50 electronic typewriter driven from the computer by an Escon interface) is finally on-line, and after going through several hours of experimentation, which we won't bore you by describing here, we have arrived at a format that seems to take maximal advantage of the peculiar combination of hardware and software now available to us. The result: we are back at least temporarily to a single-column format with proportional spacing and no right-justification. (Actually there is justification, sort of...oh, never mind.)

Perhaps in reflection of the current economic hard times in the audio industry and elsewhere, Open Forum is largely about the question of who gets paid for what, and by whom. Members Stephen Temmer and Will Martin take diametrically opposing views on the question, which was raised by Temmer and discussed by Peter Mitchell in the March/April issue. This might be a good time to remind everyone once again that the BAS as such has no opinions and attitudes about anything, although its members certainly have both in abundance.

There are two meeting reports here, one on the lecture/demonstration given by John Allen et al last May at the Wellesley Community Playhouse. If all goes as currently planned we will be having another meeting there in late February, complete with more slam-bang sound. Stay tuned for details.

The second report describes presentations by several local members who attended the summer CES; additional material on the same subject is to be found at the back of the book. This CE show was more interesting than the previous one from an audio standpoint, and if the fall AES convention is any indication there will be big news on the digital front for the consumer in the next six months.

Coming up soon: the report on the BAS power amplifier test clinic, an explanation of how audio signals are digitally encoded, and, more than likely, further controversy.

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THE BAS SPEAKER

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INS AND OUTS OF THE BAS

Articles

The *Speaker* is, always has been, and will remain a free and open forum for the membership. We edit for style, grammar, and spelling, but do not enforce any particular point of view. Contributions should conform to the style of the *Speaker*, with a title at the top and your name and state at the end. Each item should begin a new page and should be separate from other correspondence; drawings should be clear and neat, and please send originals, not copies. All material should be typed and **double-spaced**; this helps us enormously. Address contributions to *The BAS Speaker*, Trapelo Road, Lincoln, MA 01773.

Reviews

We encourage you to report your experiences with components, but we must remind you that subjective reviewing is fraught with peril for the unwary. This is especially true if the listening environment is unfamiliar; for this reason, listening sessions in dealers' showrooms are frequently misleading. Be sure to describe in detail the methods and controls used for listening tests, so that others may judge the degree of certainty of your conclusions. For other particulars, see "Articles" above.

Ads

Ads are a free service for the personal use of members only. The line between an active equipment trader and a dealer is sometimes hard to draw, but we try: commercial advertising, and non-hi-fi ads, will not be accepted. Ads should be of reasonable length, typed or neatly printed, on a sheet of paper separate from other correspondence, and mailed to *The BAS Speaker*, Trapelo Road, Lincoln, MA 01773. Include everything you want printed, and nothing you don't. If your name or address is **not** to be included, leave it out of the ad itself and put it in the

upper right-hand corner of the page. We cannot honor requests to run ads in more than one issue; if you want us to run it again, you'll have to send it in again. There is a delay of four to eight weeks built into the system.

Monthly Meetings

The normal meeting time is 6 PM on the third Sunday of the month. We send meeting notices to local members only, so if you are from out of town you may check your BAS directory, find a local member, and get the information you need. Meeting notices usually arrive about one week prior to the meeting.

Directories and Constitutions

For a copy of the current BAS telephone directory or of the constitution and bylaws, send a self-addressed, stamped envelope (business size) to P.O. Box 7, Kenmore Square Station, Boston, MA 02215, and mark it to the attention of Frank Farlow. Postage is 15 cents for either.

Address Changes

If you move, send notice two to four weeks previously to Box 7, attention Frank Farlow. Returned *Speakers* cost the Society about 60 cents each and create extra work for Frank, so don't delay.

Speaker Staffing

Editorial assistance is always welcome. We are particularly in need of meeting summary writers, who are now paid for their work. Volunteers should write to the Trapelo Road address or contact Brad Meyer.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION (Per 39 USC 3685) 1. TITLE OF PUBLICATION – The BAS Speaker
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2. Return from News Agents	NONE	NONE
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Advertisements

FOR SALE

Shure SME 3009/II-Improved arm w/2 headshells, manual, protractor, etc., exc. condition, \$65 postpaid; pickup mounting board for Thorens TD-125 turntable, new, \$5. Ben Schurman, 100 Biscuit City Rd. , Kingston RI 02881, (401) 783-3255.

One pr Daline speakers, and one pr LS3/5A equivalent, both for moderate-size rooms and medium sound levels; sonic highlights: Daline has true full-range response, LS equivalent has excellent image. Perfectionist designs, built by me to strict specifications with caring craftsmanship, photos available; Dalines \$350, LS's \$300, plus shipping (negotiable). Carlos E. Bauza, GPO Box 1220, San Juan PR 00936, (809) 789-2309.

Audio Technica record weight, new, \$10 plus shipping; dbx 124 2-channel encode/decode, 4-channel encode OR decode, just back from a factory overhaul, performs a bit better than when new, lifetime warranty, box and manual, very good condition, \$200; Fairchild programmable video game + five cartridges, manual, no box, good condition, \$75; Eico brain wave monitor, box, manuals, vy. good cond., \$20; Hewlett-Packard HP-41C calculator, complete, fresh set of cells, vy. good cond., \$150; Integrex Dolby B, simultaneous encode/decode, separate Dobby FM inputs, front-panel cal knobs for record, play and FM, alignment tone, manual, no box, good cond., \$125; Signet XKSP1 spare arm tube for Signet XK50 tone arm, exc.cond. except that one of the wires has been torn (cartridge mounting clip is still intact), otherwise complete with box, hardware, etc.; if you can make the simple repair, it's a steal at \$20; Sony TC-55 "pocket-size" cassette recorder, hardly used, vy. good cond., complete with case and all accessories, manual, box, \$80. All prices except record weight are UPS postpaid. William Sommerwerck, Apt. 519, 2120 Brooks Drive, Forestville MD 20747.

ADS2002/Nakamichi 250 sound system, 115 VAC/ 12 VDC for home or car operation, consists of 2 biamplified (40 W continuous) 2-way speakers, electronic crossover, cassette deck with volume, balance and tone controls, ADS 2002PS AC converter/ power supply, high-impact carrying case and full mounting hardware for car installation, used approx. 10 hours, cost \$1200, asking \$595. Call (617) 687-0874.

Tandberg TR-2025 receiver, mint, \$225; Pickering XSV-3000, new, \$50; Bogen PR-200 tube receiver, \$25; Scott 99D integrated amp, \$25; Jensen System C speakers, mint, \$495/pair. Jack Smith, 59 Millpond, North Andover MA 01845, (617) 686-7250.

Cerwin-Vega V-35 P.A. speakers, surprisingly good, list \$1800/pr, sacrifice for \$990/pr; Teac Model 2 mixer, high impedance, 6 in/4 out, \$250; Numark DM-1500W disc jockey mixing console with built-in five-band graphic EQ, inputs for 2 mikes, 2 turntables and 2 tape decks, pre-cue, \$150; Technics SL-5300 turntable with Stanton 680-EL disco-duty cartridge, fully automatic, fast start-up, \$220. All equipment is in very good condition, prices don't include shipping. Ken Dockser, (617) 444-7581, leave message.

Audionics CC-2, \$350; Infinity Black Widow II GF, \$150; AR-XA turntable w/o arm, \$100; Discraker, never used, \$15. Call Jeff, (617) 969-8232.

WANTED

Dynaquad, or plans. Kevin Campbell, 5761 Harwich Ct. #221, Alexandria VA 22311, (703) 998-0922 (days), (703) 931-3256 (eves).

Kenwood KC-6060A Audio Lab scope. Terry Eckert, 33 Greene St., New York NY 10013, (212) 226-0199 or (212) 226-0188.

McIntosh C-8 cabinet; mint faceplates for Dyna FM-1/PAS-2 units; 5751 tubes; Magnepan MG-2B speakers; all old Fisher mono equipment in any condition. Jack Smith, 59 Millpond, North Andover MA 01845, (617) 686-7250.

University older (1960s) speakers: 12" 3-way #312, #UC-123; coaxial #6201, #M-12T ("Mustang"); 8" 3-way #308; Sphericon tweeters #T-203, #T-202 with or without case, box, and "MS" super-tweeters. Old Wharfedale full-range speakers: 12" #12/FS/AL or #12/RS/DD; 8" #8/FS/AL or #8/RS/DD; 10" full-range speakers; Super 3 tweeters, including the "purple-plastic" kind. J. B. Lansing 8" fullrange #LE8T. Trusonic (Stephens) coaxials: 12" #120CX, #122AX; 8" #80CX, #80FR. Norelco 8" full-range drivers, marked "Made in Holland", #AD4800M, #AD4877M. Single items OK, no cabinets. B. Kalish, 565 Walnut Ave., Redlands CA 92373 or call collect, (714) 792-0220.

Open Forum

J. GORDON HOLT IS ALIVE AND KICKING

The phone calls started coming in a week before I got my 6/7 BAS "Speaker". "Why," they inquired, "was the BAS reporting us out of business when the callers were up to date on their subscriptions and able to reach JGH merely by dialing 505, asking information for our number, and placing the call?" Why indeed?

Stereophile is NOT dead; it is just playing possum. Seriously though, I do not understand how these rumors can get inflated to the point of pomposity, when it is only necessary to make a phone call to ascertain whether or not they are true. I am not exactly accusing the Speaker of printing untruths, but...

It is true that I moved to Santa Fe because I was sick. I was sick of the Northeast's pollution, crowding, noise, and execrable climate. I did NOT move here "for my health", although if anyone reading this plans to be sick in the foreseeable future, I can recommend this place a one of the pleasantest ones to be sick in. I moved here because I like everything about it, and because -- since Stereophile is delivered by mail all over the U.S. -- I had the option to live where I chose.

At present, we have a paid circulation of well over 5,000. Since we are not 100% organized and efficient, it is inevitable that an occasional subscription or back-issue order will get lost, fouled up, or otherwise botched. The vast majority of our subscribers received issue #9 a couple of months ago, before I took a vacation (my first in five years). Issue #10 was held up because of a shortage of scratch to pay for printing and mailing the thing, but is at the printer's as I write this (9/9/81), and should be mailed two weeks hence. Any of our subscribers who didn't receive issue #9 are advised to write to us about it. We can send you your missing copy. If you're not in our circulation file, don't bother writing for a freebie.

J. Ross Robinson and God-only-knows-how-many other Canadian subscribers may have missed recent issues because of the Canadian postal strike. They, too, are invited to complain to us. (I am still plowing my way through a humongous stack of mail that accumulated in my recent absence. Missing-issue complaints are being handled as I come to them, usually by simply sending off replacement copies.) We are not morally or legally bound to replace copies that the various and sundry postal services lose, but we do it anyway because it's good PR.

I have no explanation for Vernon Smith's foul-up, particularly the bit about the Certified letter being unclaimed. We really would like to send him the back issues he ordered, and I can only suggest that he write to us again about his gripe, including his full address so that we have a place to send them.

Meanwhile, for the benefit of other BAS/Stereophiles who may want to contact me directly, our correct address is P.O. Box 1948, Santa Fe NM 87501, and my office phone number is (505) 988-2372. I am available to field calls from 9 to 11 AM on every non-holiday week day. (Well, almost every one. If there's no reply, try the next day.) Those hours are Mountain Standard Time, two hours behind Eastern Standard and one hour ahead of Pacific. After 5:00 there is usually no one here.

-- J. Gordon Holt
Editor, Publisher, etc.
The Stereophile

Ed. note: We apologize for failing to telephone Mr. Holt. That was just sloppy reporting. It did look, though, as though there might be something seriously wrong, and at such times one tends to be a bit overcautious.

The note about JGH's moving "for his health" came out of a telephone conversation between Peter Mitchell and Holt that took place a couple of years ago. We will probably never find out just where the confusion arose. Needless to say, we are happy to hear that Mr. Holt's health is good.

J. Ross Robinson has had quite a bit of trouble getting his issues, trouble which dates from long before the Canadian postal strike. We have also received several other letters from people who have not been able to make contact by mail with the Stereophile. We will forward these, but we hope that BAS members (except for one from Germany, about whom we shall call JGH) will avail themselves of the phone number he has provided rather than use the Speaker's editorial offices as a forwarding facility.

There are times when a phone call from the "BAS" will attract more attention than any letter, and we will try to help our members when we can. But please save us for extreme cases.

THE PIRACY QUESTION: STEPHEN TEMMER RESPONDS

My comments on your diatribe are brief and to the point. It has always been my basic premise that what makes it possible for you and me to live as neighbors in these United States is our pledge to each other to support the Constitution of the United States, and to seek redress of grievances through the due process of law.

You have chosen to violate that pledge and to write your own rules on how you will change our society -- yours AND MINE, and I cannot tolerate your methods, even if I were to agree with them, for they do not meet the test of due process to which we have pledged ourselves.

I believe that your almost three pages of irrelevant discussion do not deserve even the slightest attention. If you do not like the way others behave, or for that matter, the way I behave, you have no right to take matters into your own hands. I will not do that to you, and I'll be damned if I'll let you do it to me. My criticism as expressed in my letter which you printed stands. I fail to see any merit whatever in your counter-arguments. I will continue to oppose, in every way I know how, the off-handed way in which the BAS treats matters which are not only unethical but illegal in every sense of the word. The discussions at your meetings disseminate and propagate practices and means for violating the rights of others. (P.S. Please note today's Federal Court decision re MCA/Disney making the recording of video off the air A CRIME!)
-- Stephen F. Temmer (New York)

PIRACY: VERY DIFFERENT VIEWS

The whole reason this discussion exists is because we do things wrong. The very heart and basis of the way we pay for artistic or theatrical endeavors is wrong. There really is no ethical issue about copying records or videotapes or picking up any signal and running it through any manner of electronic decoder or descrambler. The principle that our entire culture has forgotten is this:

The only reasons to do something are (1) because it's fun or (2) because you're paid to do it. Once you are paid for it, that's it.

The whole concept of paying an artist over and over for something he did once is ridiculous! The members of a symphony orchestra should be paid for their time while a recording is being made. Once they are done, that is the end of it! An author should work for a publisher, writing a book under contract or as a salaried employee. What happens to the words he has written afterwards is of no consequence. He shouldn't be getting "royalties" for subsequent sales, and a musician shouldn't be getting any for sales of records. People should be paid for their time by some person or entity who believes there is something to be gained from buying their efforts. The way for that person or entity to combat copying is to make it uneconomic! It should be cheaper to buy

a record than to copy it. As long as the unrealistic situation exists in which the individual can save money by investing some effort in making a copy, of course there will be copying. As soon as there is no savings, the incentive goes away.

It is ridiculous that in this age of mass production and manufacturing skills we cannot produce a perfect record for a pittance. The only reason we are not doing it is because there are enormous numbers of parasites hanging on the process, from lawyers to interior decorators. They are the ones who are making the most noise about this entire "ethical" issue, although not for ethical reasons! If we would only recognize that the correct procedure is to pay authors, musicians, actors or whomever for their time only (the way I am paid, and the way every other worker is paid), and then produce records, books, and films efficiently, the problem will just disappear!

--Will Martin (Missouri)

I would like to congratulate Peter Mitchell on a fine article about piracy in the April issue of the Speaker. Peter's response, and the letter by Frank Angel in the July issue of "High Fidelity" (which was a rebuttal of comments by Jack Valenti) have brought out many points that will need careful scrutiny before adoption of any strong anti-piracy legislation. It would appear that many of the comments directed at the audiophile (and videophile) community by the two industries are being made by groups which could stand a closer look at their own intentions and principles.

--George J. Mileon (Massachusetts)

Peter Mitchell replies: One of the possible solutions to the problem of paying artists and producers is to require the owners of all receivers or recorders to pay an annual fee for each set. In my note I used just two countries as examples, but it seems Britain and West Germany aren't the only nations whose citizens pay an annual license fee for their TV sets. The Sept. 27, 1981 issue of "Parade" magazine reported the following TV license fees in effect in various European countries:

Sweden	\$132	Ireland	70
Denmark	118	Great Britain	68
Norway	102	West Germany	68
Switzerland	98	Italy	68
Austria	96	France	66
Belgium	94	Netherlands	52

How do we determine the "value" of something? Mr. Martin's argument has a powerful intellectual appeal; the idea of people being paid solely for their labor is, of course, rooted in the concept of a socialist economy. In a capitalist economy the value of something is determined by the market, i.e. by the willingness of other people to pay for it, meaning that a product which a million people want will generate a lot more income for its inventor/producer/creator than a product which only a few people want. This system creates severe inequities, but it also provides an incentive for creativity: most major advances in science, engineering, agriculture, and medicine have arisen in capitalist economies. But whenever the price of something exceeds its perceived worth, the temptation of piracy arises -- especially if technology makes it easy.

What the appeals court in California decided on Oct. 19 was that off-the-air recording of movies and TV shows is indeed a copyright violation. No attempt will be made to stop people from making such recordings; instead the appeals court directed the lower court to devise some means of compensating copyright owners for their presumed loss (via a tax on the sale of VCRs or blank tape, for instance). Meanwhile the EIA and others have argued that VCRs actually increase the audience for shows in conflicting time

slots, by allowing them to be time-shifted for later viewing; Sony, for its part, is expected to appeal the decision to the Supreme Court. Meanwhile in Congress, where a law was passed a decade ago explicitly legalizing off-the-air taping of radio programs (including copyrighted records) for personal use, two bills have already been filed to accomplish the same for video taping (HR 4808 and S 1758). Here in Boston Ch. 68 pay-TV continues to charge an exorbitant \$300/year subscription fee for its service, and the marketing of unauthorized decoder kits is becoming increasingly aggressive.

In response to Mr. Temmer, I would point out that the BAS is guilty only of reporting the availability of such decoders; we have not published the circuit schematics nor produced a kit for our members, though we have done both in the past for other useful products. Does he think free discussion should be suppressed? PWM

AUDIO SCENE'S CARTRIDGE TESTS

(The following is the text of a letter by Alvin Foster to Ian G. Masters, the editor of "AudioScene Canada", now renamed "Audio Canada", concerning the cartridge test published in last month's Speaker.)

Your April, 1980 article, "Subjective Comparisons of Six Cartridges", was an excellent example of how to demystify audio component differences. It is partly because I admire your pioneering work in objective evaluations that I wish you could have examined the following additional phenomena:

1.) If the cartridges could have been equalized to yield the same frequency response, the case for the measurability of the phenomena that produce audible differences in cartridges could have been made even more strongly. Until that additional experiment is done, we won't know for sure whether other audible but unmeasurable differences exist. (Shure Bros. representatives have maintained that when proper equalization is applied, cartridges performing within their tracking limitations sound identical.)

2.) Research conducted by me and others (see the "Speaker", January 1979) suggests that some cartridges present a closer stereo stage than others. We have tentatively traced the effect to the level of L-R output. We compared the output of two moving-coil cartridges (a Signet MK 112E and a Yamaha MC-1S) on the horizontal and vertical 120 Hz bands of the CBS 151 test record. The Signet yielded an output in the vertical (L-R) band of +0.5 dB relative to the horizontal (L+R) direction, while the Yamaha measured -0.5 dB on the same band, a difference of 1 dB.

To simulate this difference, a colleague and I constructed a variable circuit to produce it while playing musical selections. Even though the measured difference was very small, there was a significant change in the stereo image. The position of the switch that increased the L-R level gave a more diffuse stereo stage, more hall ambience and a more distant perspective. The center image especially was both farther away and harder to localize.

To verify our findings, I contacted George Alexandrovich, Senior Engineer at Stanton Magnetics, Peter Pritchard, President of Sonus, and Roger Anderson, Senior Engineer at Shure Brothers. All three engineers agreed that the technique I used to simulate the difference was proper; however, they maintained that the design of the test does not exactly duplicate the real world. A more definitive test would be to compare two cartridges which were equalized to have the same frequency response while differing only in their L-R output.

Neither psychoacoustician Mark Davis nor the "golden ears" employed by you reported hearing differences in stereo imaging. Their testaments cannot be easily dismissed solely on the basis of my incomplete tests, especially given the evidence we have that the image of a pair of loudspeakers can be manipulated by altering the

frequency response. (For example, some speakers have a peak in the presence range which causes them to sound "up close", while the "east coast sound" with its characteristically flat upper midrange and rolled-off top end is usually described as more distant.)

All three engineers agreed that cartridges do vary slightly in L-R output; they also claimed that their companies control this, albeit indirectly, by striving for maximum L/R separation and by rejecting cartridges with more than a certain amount of phase shift.

Both Anderson and Alexandrovich said that they would complete a similar experimental design to determine the degree of audibility of L-R output and its effect on the stereo image. Peter Pritchard, on the other hand, was very aware of the L-R phenomenon and its effect on imaging. He maintains that after completing the usual battery of production tests on his cartridges, he sometimes runs the L-R output test as well.

To summarize, my research indicates that there are three possible sources of differences among modern cartridges: 1) frequency response, 2) distortion, including tracking and tracing ability, and 3) the stereo image.

Incidentally, an experiment designed to measure the distortion produced by various generating mechanisms has yielded the result that THD is independent of the type of mechanism used. I placed the stylus of the cartridges on a horizontally mounted two-inch speaker with a flat diaphragm. The drive level was increased until the cartridge's output matched its output at Standard Operating Level (5 cm/sec peak at 1 kHz), and the THD was measured. The result varied more with the individual cartridge than with the make or the operating principle, and was generally around 0.1%, or -60 dB. When the cartridges were actually playing a recorded 1 kHz tone on a disc, however, none measured lower than -45 dB, or 0.7%. It looks as though the distortion in all the generating mechanisms is small compared to the gross effects of the stylus/record interface, at least at that frequency and level.

--Alvin Foster (Massachusetts)

CASSETTE COSTS

The following information regarding the cost of producing cassettes comes from the June 1980 issue of "Consumer Electronics Monthly", a dealer/trade magazine. I recall that it sort of enraged me when I first saw it, and it should give the rest of you ulcers too, especially if you have bought high-priced premium cassettes at any time. In this cost breakdown for the ingredients in manufacturing a cassette all prices are in cents.

ITEM	PREMIUM	CHEAPIE
Styrene for shell and box	5.2	3.5-5.2
Film (backing)	4.14	3.2
Oxide and other chemicals	2.25	1.0
Screws	0.6	0.6
Hubs and rollers	0.535	0.535
Liners	0.757	0.58
Spring pad assembly	1.0	1.0
Miscellaneous (labels, index cards, etc)	2.883	2.553
Depreciation, wear & tear, fixed overhead	3.815	3.815
Research and development amortization	2.5-5	0-2.5
<hr/>		
TOTALS (maximum)	26.18	18.483

The data come from Terry Wherlock, who has been with EMI Tape and was head of Intermagnetics when he wrote the article in 1980. Though inflation would have had some effect on the numbers over the past year, the big increases in costs had already taken place, due to oil and the like, so the figures are probably just about as valid today as they were then.

These prices are for a C-60. For a C-90, add 3 cents more for film; the other costs remain virtually identical. The maximum figure for a premium cassette is 26.18 cents; plugged into the standard formula for retail cost (six times parts costs), this suggests that a fine premium cassette should have a LIST price of \$1.57! (Let's be generous and say \$1.75.) A cheap but reliable version (these figures don't cover the rip-off models without spring pads or other internals, that probably stop working after two passes) would range from 16.783 cents to 20.983 cents to make, for a "six-times" range of \$1.01 to \$1.26. While marketing expenses like advertising are not spelled out in this list, they are accounted for in the "six-times-parts-cost" formula. I would assume that wholesale cost would be about half retail.

So how do "they" (the ubiquitous enemy) get by with charging \$6.95 (or whatever) list for a blank cassette? I don't know. I paid \$1.00 each for TDK "D" series C-60s years ago and haven't exhausted my stock yet; they were on special sale at the time, but the figures suggest that what I paid then should have been a normal selling price. I don't know where to start, but it seems that heads should roll...

Of course, we open-reel users are no doubt paying the same sort of illicitly maintained and highly inflated prices for our tapes; seems like a cartel or trust must be at work here. The purpose of the article, by the way, was to explain why there were fewer really cheap and skungy tapes around; it was cheap to do it right, and avoid hassles with returns and the like. It certainly seems like a license to coin money.

-- William G. Martin (Missouri)

(Ed. note: Tape manufacturers or retailers are welcome to reply. For our part, we feel compelled to point out that the "standard" formula setting retail price at six times parts cost applies only to complex products containing a large number of parts -- such as a stereo amplifier or a TV set. Tapes fall into another category known as "commodities" which are individually simple and cheap, and which are sold in huge quantities; their pricing is mainly based on distribution and marketing costs and has virtually nothing to do with the original cost of manufacturing. A \$3.00 roll of Kodachrome costs a few pennies to make; a \$1.00 tube of toothpaste contains about two cents' worth of talc, mint, and fluorine; a liter of Pepsi is just water with a penny's worth of flavoring, sugar, and pressurized CO2.)

May 23 BAS Meeting

The special BAS meeting on May 23 was a joint session shared with the Boston sections of the Audio Engineering Society, the Acoustical Society of America, the Society of Motion Picture and Television Engineers, and the National Association of Theater Owners. Since the subject of the meeting was cinema sound, it took place in the Wellesley Community Playhouse. This movie theater was generously made available to the BAS by its owner, Lee Spencer; located on Washington Street (Route 16) about a half-mile south of Route 9, the theater has been operated by her family since it opened 60 years ago.

Technically, movie theaters can be grouped into two classes. 70mm houses employ enormous, costly projectors to show 70mm films, and their ticket prices reflect the high cost of both the equipment and the film rentals. 70mm films usually have multi-channel magnetic sound tracks, though many 70mm houses still employ antiquated sound reproduction equipment. A smaller subset of 70mm houses are equipped for 70mm Dolby Stereo; setting up a theater for 70mm Dolby involves not only installation of the decoders but also one-third octave equalization of the entire reproduction chain including the theater's speakers, to widen and flatten the response. 70mm Dolby Stereo films have as many as six discrete sound channels, including subwoofer and surround-sound tracks, recorded on magnetic oxide which is coated along the edge of the film outside of the picture area. Because of the high cost of the equipment and the films, there are only a handful of 70mm Dolby Stereo houses, mainly "first-run" theaters in downtown districts of major cities. (It costs \$14,000 to make a 70mm magnetic print, vs. \$1000 for a 35mm optical print of the same film.) The Ziegfeld theater in midtown Manhattan is a good example of a successful 70mm Dolby Stereo house; in Boston the Charles 1 and Cheri 3 can sound good when they try to, but they do not have a reputation for consistently fine sound.

Most other urban theaters and virtually all suburban cinemas are equipped to show only 35mm films, usually with an optical soundtrack. The audio waveform is recorded as a transparent stripe of varying width and density along the edge of the film, admitting varying amounts of light onto a photocell. For stereo optical sound two narrower tracks with reduced modulation are used, yielding poorer S/N ratios. (This stereo optical system was developed by RCA during the Thirties; the opening of each modulated track is limited to a maximum of 33 thousandths of an inch.) The 35mm optical format suffers from severe limitations in frequency bandwidth, dynamic range, and spatial reproduction, especially when compared to the multichannel 70mm magnetic sound system.

35mm optical Dolby Stereo attempts to overcome these limitations through the use of Dolby A noise-reduction encoding, third-octave equalization, and matrixing (similar to SQ or QS quad audio) to obtain left, right, center, and surround stereo channels from the two slim optical tracks available on the film. Several other less widely advertised schemes for upgrading theater sound are also in circulation; the most successful is the Kintek system, which takes a 35mm mono optical track and makes spacious wide-range sound out of it.

The meeting at the Wellesley Playhouse successfully demonstrated that when full advantage is taken of these advances, and when everything is done right, 35mm optical reproduction can be remarkably satisfying. If it does not fully match the very best multitrack 70mm magnetic Dolby Stereo sound, it comes surprisingly close, and it is certainly better than the average 70mm house. In these showings the films -- and the theater -- exhibited an impressively wide frequency range, low noise, wide dynamics, solid bass, and a notably spacious ambience. If anything, the sound was a bit too reverberant, with the theater's lively acoustics unnecessarily augmenting the effect of the surround-sound speakers. (Of course a satisfying movie-going experience involves more than good sound; the attractions of the Wellesley theater include a sharply-focused projection system, smooth reel changes, and a clean and comfortable audience area -- attractions which are rare enough in today's theaters to deserve notice. As in most suburban houses, the admission price is low; the practical effect of this is that theaters make virtually no profit on ticket sales but must depend on food and drink profits for economic survival.)

The meeting began with a brief welcoming talk by Bud Rifkin, co-chairman of the technical committee of the National Association of Theater Owners, who stressed that with the rapidly increasing availability of commercial-free movies at home (via cable, subscription TV, cassette, and video disc), one of the principal remaining incentives to draw people into the theater is the latter's ability to provide a superior quality of presentation, i.e. high-resolution imaging and wide-range sound. Yet to date only about 10 percent of the nation's theaters have equipped themselves with Dolby Stereo equipment, and only about 20 percent of current movies are being made with Dolby soundtracks.

The heart of the meeting was the showing of excerpts from several feature films. They were selected, rented, and introduced by John F. Allen, who designed and installed the sound system in the Playhouse and organized this special showing. Previously known as an expert installer of fine CATV and MATV antenna systems, Allen has lately turned his attention to the creation of high-quality stereo sound systems for public places. The best-known example of the latter is the fine outdoor stereo system he installed at the Hatch Shell on the Esplanade for concerts by the Boston Pops et al several years ago.

His sound system in the Wellesley theater employs three Klipsch TCM 3-way horn speaker systems behind the screen to provide left, right, and derived center channels, plus ten Klipsch Heresy speakers arrayed along the walls of the auditorium for surround sound, and a Kintek subwoofer to augment the bottom octave of bass. (According to Allen, the Klipsch TCM speakers by themselves can produce 30 Hz at 112 dB SPL continuous output, as measured in the theater.) One advantage of the TCM speaker is that its flat-mouthed axial midrange horn directs sound efficiently through the holes in the screen toward the audience; curved-mouth radial horns cause much more sound to reflect off the back of the screen and reverberate backstage. The placement and aiming of the surround speakers was done by Allen according to a proprietary formula (which reportedly involved more than just plotting the standard horn dispersion angles), in order to produce a uniform distribution of the surround sound throughout the audience area without hot spots and dead zones. Allen: "It turns out that the polar pattern of the Klipsch Heresy is just right for surround use, because it allows you to get the coverage that you want while putting them on the wall where you want -- about 12 feet up. You want them 12 feet up so that people can't climb up and pull them down." System electronics include a Dolby CP-50 processor for optical Dolby Stereo films, third-octave equalization, 150W Kintek amplifiers, and a Kintek Cinesonics processor for use with all optical mono film soundtracks.

To kick off his presentation with a bang, Allen began with a showing of the now-legendary third reel of Coppola's "Apocalypse Now" (featuring the helicopter attack on the beach), with a very dense and complex audio mix of dialog, engine roar, artillery explosions, and music by Wagner. Its successful reproduction testifies to how far cinema sound technology has advanced, particularly in view of the fact that the recorded signal is only two narrow stripes passing light to a photocell. Allen described the signal path through the Dolby electronics, discussed the Klipsch speaker systems, and then showed the first reel of "Superman," which -- unlike "Apocalypse Now" -- makes effective use of the matrixed surround-sound capability of the 35mm optical Dolby Stereo format.

Kintek is the motion-picture division of Dbx, formed five years ago. After trying to market a discrete four-channel optical format called Comtrak, Kintek decided to apply Dbx technology to the problem of improving the sound of the 80 percent of films which are distributed with mono optical sound. The Kintek Cinesonics playback processor was described by marketing manager Dan Taylor. The first unit in the signal chain is a modified version of the Dbx 3BX three-band dynamic expander, which separately expands the dynamics of low, mid, and high-frequency signals (thus avoiding the noise-pumping and volume pumping of single-band expanders). This expands the noise levels downward and the peaks upward. The unit also contains Dbx II and Dolby decoders for use with appropriately encoded films.

The signal next passes through a "stereophonizer" which synthesizes some spatial spread by dividing the frequency spectrum into 32 bands (each a little less than one-third of an octave wide) and channeling 16 to each side. The resulting signals may be fed into the Dolby Stereo processor's matrix decoder to produce surround sound, or into Kintek's own surround-sound synthesizer which generates five channels of output using psychoacoustically-tailored logic circuits which use the signal's frequency, dynamics, and attack time to direct signals into appropriate channels. Finally a modified version of the well-known Dbx "Boom Box" subharmonic synthesizer is used to produce powerful bottom-octave bass which is fed to the Kintek subwoofer powered by a

built-in 500W amp.

The effectiveness of the Kintek process was demonstrated by showing the reel of Spielberg's "Close Encounters of the Third Kind" in which the mother ship lands. At intervals all processing was switched off and the sound reverted to standard Academy mono for comparison; clearly the Kintek process not only yields an airy, spacious sound with dramatic enhancement of bass power and a welcome suppression of noise, it also appeared to improve the clarity of the dialog. While the result was not quite as impressive as the magnetic 70mm Dolby Stereo version of the film, it was a remarkably close approximation. This impression was supported by a showing of the first reel of "Excalibur," a film which was originally planned for release in Dolby Stereo but at the last moment had to be distributed in mono instead. In effect the presence of the Kintek processor and associated equipment assures that, in this theater, virtually every film shown -- including older classics -- will be heard in spacious wide-range sound regardless of whether the soundtrack is inherently praiseworthy. (On the other hand, distortion in the soundtrack will be heard all too clearly; here it won't be masked by the treble rolloff found in most theater sound systems.)

The meeting was completed by a filling lunch and a complete showing of "Star Trek: The Movie." Special thanks go to Lee Spencer for the use of her theater (and for gambling \$25, 000 to upgrade the theater at a time when home video increasingly threatens the economic life of local theaters); and to John Allen for organizing an unusual, interesting, and most entertaining meeting. He is now working on plans for a followup session in the same theater on February 27, featuring a presentation by Tom Holman who is presently engaged in sound engineering for Lucasfilm, home of the "Star Wars" saga and other entertainments.

-- Peter Mitchell

June BAS Meeting

The June meeting opened with a report of the Executive Committee. Annual BAS dues, which used to be \$14, were reduced to \$12 three years ago when the Treasury seemed to be unnecessarily fat. Since then rapid increases in the cost of publishing the Speaker have produced annual deficits, depleting our reserves, and the dues now must go back up. (In effect, part of the dues which you should have been charged for this year were subsidized by the Treasury.) Based on projected expenses for the coming year, the dues would have to be at least \$16 **or** \$17. But since out-of-state members do not receive the monthly meeting announcements it was proposed that they should not have to share the cost of those notices. Therefore the officers proposed, and the members voted, to set the dues at \$15; those members wishing to receive the meeting notices will pay an extra \$2 to cover the cost of printing and mailing.

Dissenters objected to the "outrageous" idea that the organization will charge its members for telling them when meetings are going to be, and pointed out that it is the local members who do all the work of keeping the BAS going and publishing the Speaker; out-of-staters do benefit from our meetings of course, since the meeting report is one of the most interesting features of the Speaker. Others suggested that the value of the BAS could easily justify a dues rate of \$17 or \$18. But the officers argued that a steep increase in the subscription cost of the Speaker would diminish its circulation, raising the per-capita printing cost. The vote was 2:1 in favor of the \$15-plus-\$2 fee structure.

MEETING FEATURE -- REPORTS FROM CES

Each year an increasing number of BAS members journey to Chicago for the Consumer Electronics Show, and the remainder of the June meeting was devoted to a series of reports on new products. Some of these reports were illustrated by slides and brochures, and two by video. Brad Meyer was unable to be at the meeting, so he recorded his presentation on videotape, illustrating his talk by training his close-up lens on some of the brochures he had brought back from Chicago. Dick Glidewell spoke in person and also showed a tape which he made on-location in Chicago. (It's hard enough to cover the miles of CES aisles and hotel corridors carrying a sack of brochures; to do so while weighted down by a VCR and color camera, especially with an injured ankle, is a victory of ambition over mature judgement! -- PWM)

Brad Meyer's on-screen report focused on the topic he had been assigned to cover for Stereo Review magazine: one-brand rack systems and minicomponents. Although these items are not of primary interest to BAS members for their own use (as their power-per-dollar value is relatively poor), some of the design trends are relevant, and those of us who recommend systems to friends and relatives should probably know something about the latest wrinkles in one-brand systems, as they offer a simplicity of approach that can be appropriate for some of our "customers". (The article that came out of this coverage is in the December 1981 issue of Stereo Review.)

One-brand systems were everywhere at the CES. The inattentive show-goer stood an excellent chance of stumbling over one in almost any of the display areas of the major manufacturers. Clearly the Japanese companies are feeling the effects of the recent slowdown in the audio business, and they are seeking to broaden their market to include the millions of people who, being outside the class of age 18-34 males, don't own stereo equipment. This means simplifying the bewildering array of choices and connections; it is hard for most of us to remember how intimidating hi-fi stores were when we first started going into them years ago, but many people still feel that way about them and that is ultimately bad for business. So single-brand systems are appearing everywhere from mid-fi audio stores to general department stores. These systems are not cheap; they range from four hundred to over two thousand dollars. They are not all plain vanilla, either; virtually all have quartz-synthesis digital FM tuning, many have straight line tracking turntables, and others have full-function remote controls, moving-coil phono preamps, octave equalizers, separate recording outputs, and so on. The speakers that come with them are generally of mediocre quality, though, according to Meyer's report.

Pioneer is also producing rackless rack systems, called "shelf component systems," for people who want to make an easy one-brand buying decision but don't want a new piece of floor-standing furniture. Kenwood and several other companies have married a cassette deck to a 30-watt receiver; the combination becomes a "casceiver" by straight cut-and-splice editing, or perhaps "casceiver" if you insist on the old rule of "i before e except after c". Dick Glidewell suggested that we could avoid this spelling conundrum by splicing the other halves of the words: the product becomes a "recette."

KLH is returning to the market with a compact phono system in addition to a couple of rack systems. The new "compact" looks like a small rack system but is really more like the old KLH compacts in functional terms, as one power supply serves for all the units. Meyer asked a KLH rep (their badges were labeled with the name of the parent company, IKC International) whether they had thought of bringing out an updated version of the old compact format, and they announced that their market research had indicated that the public's image of compacts was of "low-fi garbage".

Moving away from racks to "conventional" audio gear, Meyer showed the quite unconventional Boothroyd-Stuart Meridian line of components, including a tiny preamp and an equally tiny tuner. The latter has, in place of a continuous tuning mechanism, a six-position switch with tiny screwdriver presets. The preamp has three lever switches

(radio/phono, tape monitor, and mono/stereo) and concentric balance and On-Off/Vol knobs. That's all. The preamp and the tuner are about \$500 each. Associated power amplifiers are equally compact but drive speakers well, being free of current-limiting. The Meridian loudspeakers are tall, narrow, and fairly deep, designed to sit on stands away from walls and floor. They are internally biamplified and are said to have unusually good imaging and frequency response. (The company showed its speakers at the October BAS meeting, and they were impressive. --Ed.)

Philips showed its CD digital disc player again at CES. The unit they demonstrated had a raft of external electronics attached to its compact player because the dedicated ICs were not yet available. This CES marked the end of the digital audio disc standards war: Sony, Kenwood, Pioneer, Technics, Sansui, Fisher, Marantz and others have announced for the 16-bit CD format. Sony announced that a couple hundred records will be released to accompany the first marketing of the product in Japan and Europe in late 1982 and around mid-1983 in the United States. Sony also showed its thirty-inch deluxe television receiver, which sells for a mere \$10,000. (This observer wonders who makes up the market for such "consumer" equipment. --BG)

Pioneer mounted an impressive LaserVision video display consisting of five Sony Profeel monitors operating synchronously from as many video disc players. Four of these were stacked, each depicting 25% of a life-size image of six-foot tall Susan Anton. Surrounding the video display, which also featured a Liza Minelli concert shown on a projection TV, was an elaborate array of brilliant multicolored lasers and reflecting mirrors flashing with the music's beat in a mesmerizing display.

Dick Glidewell's on-location videotape, produced with a Panasonic PV-3000 VCR and PK-800 color camera (which he sold after the show to buy the remarkably sensitive RCA model 011), surveyed some of the more extravagant exhibits, including a stretched Cadillac with gold-plated trim at Marantz, 15 brands of satellite receiving dishes, 60 TVs displaying JVC VHD videodiscs, hordes of people playing Atari videogames, a million dollars in cash to promote the profitability of Odyssey games, a 3-D laser hologram, and lots of projection TVs.

The largest exhibit at the show was a special display of technology by Matsushita including 1125-line high-resolution TV with 30 MHz bandwidth, a TV ghost eliminator, a tape duplicator which dubs 2-hour VHS videocassettes in four minutes, three-dimensional TV (using glasses which are electronically switched to become alternately opaque and transparent), an induction stove (it stays cool but the food in the pan gets hot), lots of electronic parts, and a 170-inch projection TV. The 1125-line high-resolution TV was shown in conjunction with a miniature 12 GHz band transmitter and receiver; the dish can be about three feet across at this frequency and still have good directivity, as opposed to about twelve feet for present satellite receivers. The picture has a width-to-height ratio of 5:3 instead of the 4:3 ratio in conventional TV, and each channel would occupy a bandwidth of 30 MHz, compared to 6 MHz for normal broadcasts (of which 4.5 MHz is occupied by the video signal). They also showed a lightweight one-piece VCR/camera, expected to be available in a few years. Matsushita's National brand of test equipment will be imported soon. Other technological goodies included the auto "dashboard of the future" with LCD displays in various colors for speed, fuel remaining, RPM and distance indicators. They also had a complete digital recording studio with tape decks and editing equipment.

Glidewell's video tour of the CES concluded with a look at some of the high-end audio gear in the Congress hotel, plus short interviews with some of the designers, including Larry Schotz (designer of the classic Micro-CPU digital tuner and of the hot new NAD tuner, about which more later); Lou Souther (whose low-mass straight-line-tracking arm attracted a lot of attention, with friction so low that no tangency-correcting drive circuits are needed); J. Peter Moncrieff, who was using an unusual configuration of an electrostatic speaker to demonstrate "sonic holography" in mono (by standing in the right spot you could localize the image eight feet away from the

speaker); and Harold Beveridge, who described his new Model 4 -- a cylinder about five feet tall and 17 inches in diameter, with a downward-facing 12-inch dynamic woofer. (Beveridge's company, unfortunately, has since gone under, devoured by the cash flow problems that have sent a dozen other hi-fi manufacturers into bankruptcy proceedings this year. --Ed.)

CES reports were next presented by Peter Mitchell and Stephen Owades, live and in person, accompanied by color slides and additional commentary from CES attendees Ira Leonard, Al Foster, et al. Peter noted that the product mix at CES is about 40% video, 25% audio, and the remainder computers, games, digital watches, etc. -- and you have to run to see everything.

Among new tuners, the \$600 Crown FM-2 (also designed by Larry Schotz) uses a pulse-count detector and a JFET front end for exceptional immunity to overload, while the Toshiba ST-480 (\$420) has 15 presets and an alphanumeric display into which you can program any four-letter expression for each station. But the hot news came from NAD and Carver; each went to the show with a new tuner design which was claimed (and demonstrated) to yield a radical improvement in effective stereo sensitivity, turning weak and noisy signals into listenable ones. The NAD 4020S will sell for about \$250; the Carver TX-11 (\$500) also featured a second button which engaged an inverting delay line to cancel multipath interference, and its specs include an unbelievable 100 dB S/N ratio.

Among the 30 or so cassette decks featuring Dolby C, one of the most attractive was the JVC DD-9 with microprocessor tape matching and a flutter spec of 0.019% wrms, listed at \$900, and Pioneer's CT-9 and CT-8, also featuring Dolby C and microprocessor tape matching, at \$700 and \$600 list. Nakamichi has retrofitted Dolby C into every deck in its line, and also has the NR-200 outboard Dolby C with simultaneous encode/decode, which ought to be good for open-reel decks, at \$450. Only a handful of cassette decks were introduced with Dolby HX.

The new Quad ESL-63 electrostatic (also known as FRED, full-range electrostatic doublet) was shown at a hotel a mile or so north of the show. It has twice the diaphragm area at low frequencies as the old one, so it plays a bit louder and goes an octave deeper, and has very uniform response. Quad used an oscilloscope to demonstrate its capability of reproducing a passable square wave, and then demonstrated excellent sample-to-sample equality by using a phase-inverted second ESL-63 to cancel that squarewave on the stereo axis! Infinity demonstrated the "Reference II" which at \$1000 is about \$20,000 per pair cheaper than the big IRS. A pair of seven-foot tall Sound Labs A-1 electrostatics were producing wretched sound in the big Mobile Fidelity demo room, and the channels were reversed, but nobody there seemed to mind. (At a more recent BAS meeting the A-1s sounded splendid. -- PWM)

The new Dahlquist box speakers with Magnat drivers play very loud and seem designed to compete in the JBL market. Sequerra's new Metronome 7 mini speaker, sized and priced like the ADS 300, drew favorable comments. The Koss Pro/4X headphone combines a dynamic driver with a piezoelectric tweeter for extra sizzle. The Morel speakers from Israel feature an inverted driver arrangement (woofer at the top and tweeter at the bottom) for time alignment. The DCM "Macrophone" is a midi-speaker, one-half of a Time Window in a smallish but deep box. The Q1n mini-monitor has won praises for its sound.

Among new preamps, the choices range from the \$148 NAD 1020 (similar to the preamp section of the 3020 integrated amp) up to the \$2200 Audio Research SP-6C. (Let's arrange a blind A/B test between those two. -- BG) Among the more noteworthy power amplifiers is the Denon POA-8000, a 200-watt mono class-A unit costing \$2300 (i.e. \$4600 for a stereo pair), weighing 48 pounds (98 pounds for stereo), and sporting an enormous peak-reading meter that covers nearly the entire front panel. Even flashier is the Soundcraftsmen RA-7503, rated at 200W/ch at 8 ohms or a horsepower (750W) in bridged mono, with 140 LEDs on its front panel.

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Activity in the CX camp is growing. Sound Concepts, Audionics, Phase Linear and MXR announced outboard CX decoders, and CBS said that they will release all of their records in encoded form. (Ed. note: That hasn't happened.) The claim is that their compression is not much greater than that used by most record companies anyway, so that undecoded playback will be acceptable to casual listeners, and the use of a standardized re-expanding curve makes the full dynamic range of the master tape available to those listeners who want it. The approach has been adopted in order to eliminate double-inventory problems for the retailer. However, Stephen Owades learned that some of Columbia's classical producers are not pleased with the sound of CX-compressed records when heard without re-expansion; the compression is too obvious.

Open-reel tape recording will now benefit from the CrO₂ and chrome-equivalent tape technology that has been so successful in upgrading cassette formats. Maxell and TDK will market "EE" tape which is said to provide 4 dB more high-frequency headroom, while Akai and Teac will make decks with EE switching (boosting the bias and cutting the playback EQ) in order to optimize performance at 3 3/4 ips.

The Kloss NovaBeam projection TV, "still the best" according to Glidewell and Mitchell, is now available as a video monitor (without tuner or remote control) for \$2495, and the regular version now has video and audio line inputs. And for \$3395 Kloss also has a 10-foot flat-screen projection set. Of conventional CRT sets, the Sony Profeel is the best. How's the video disc doing? According to the panelists, not too well. The problems are confusion about standards, lackluster software and stupid marketing. The RCA CED machine is not sophisticated enough for videophiles and has mainly stimulated a lot of VCR sales when people discovered that it doesn't record broadcasts. The introduction of the third disc format, JVC's VHD, has been postponed again. (Two VHD representatives, asked when the players would be in the stores, replied "About the time the RCA disappears.") The verdict obviously isn't in yet.

It is obvious from the June meeting that the consumer electronics business remains a dynamic environment. Many new product introductions seem to have been held back in the current uncertain economic climate, but many exciting products are nearing readiness or are simply on the shelf waiting for more opportune times.

-- Bernie Gregoire

The Boston Audio Society does not endorse or criticize products, dealers, or services. Opinions expressed herein reflect the views of their authors and are for the information of the members.

CES Reports

Bob Unterbrink and E. Brad Meyer

(Ed. Note: These CES reports are somewhat longer than the usual members' essays, and they fall naturally into sequence after the previous meeting report, which explains why they are (1) in the back of the book, and (2) preceded, rather than followed, by their authors' names. The first of the pair is from Kentucky member Bob Unterbrink.)

I visit Chicago every now and then in my work, and for the past four or five years I have managed to take in the summer CES show. I thought I would pass on my observations as an interested audiophile posing as a retailer. I spent most of my time at the Pick Congress hotel (now the Americana Congress -- Ed.) where most of the high end gear was. I would have to say that crowds did seem smaller than in recent years, but still quite substantial.

There are basically two kinds of exhibitors at these shows: those who are interested in accurate and natural sound and those who are interested in sheer volume. There were many rooms where the sound was so loud that everything in sight was trembling, mostly from mid-bass thud and boom. A lot of this stuff is really P.A. equipment being played at ear-damaging levels. These people don't care a whit about clean sound and are trying to out-shout the competition. I really feel sorry for the manufacturers who end up next to these clods and who have to put up with the background din. This certainly doesn't help in demonstrating the subtleties of electronics, cartridges, arms, etc. It would be nice if the volume freaks could simply have a floor to themselves where they could indulge until their ears water. (! --Ed.) Whatever it is that they are after, whether it's bone conduction or skin sensory response, can probably best be had by wiring themselves directly to electrodes anyhow. Why bother with speakers?

Despite this there were interesting things here and there. I saw little new activity in the cartridge area though; Dynavector Karats, Denons, FR 201s and an occasional Koetsu seemed to be the norm. There were a few Adcoms with the Van den Hul stylus. Only two arms caught my eye. The Wheaton decoupled arm is an exotic-looking beast sporting many interesting features including precision gimbal bearings, low mass, VTA adjustable during play, silver wire, wooden arm tip, anti-skating force defeatable during cueing, etc. It was highly touted by Peter Moncrieff of IAR. I had a pleasant chat with Herbert Papier, its designer, a retired gentleman and former watchmaker. The product, a complex design with superb machining, is obviously a labor of love. The other interesting arm was the Goldmund straight-line-tracking arm, which looks superficially like the old Rabco. It is far more complex, though, with a servo mechanism in an external control unit. It was set up on the Goldmund table, which has a large platform for the arm. The speakers used in the demo of the Goldmund were a European design whose name I don't remember. They are tall and narrow with a vertical row of dynamic drivers. While not the best available, they are definitely very good. I must grudgingly concede that there may be something to the straight-line concept. The sound did seem to have an uncanny "focus". It is said by some that the *raison d'etre* of linear tracking is not the reduction of tracking error, but rather the elimination of the need for anti-skating force. I wouldn't say I have been converted, but I'm willing to keep an open mind on the subject.

There was a profusion of Oracle turntables from Canada, far more than last year. I can't believe it is all just because of good reviews. There were a few of those exotic Micro Seiki models with a separate motor assembly and a thread-like belt driving a massive platter from a distance away. I didn't pay much attention to electronics, but without question the predominant high end amps were the Threshold products with some Bedinis here and there. I remain impressed by the little PS Audio outfit. Their products eschew the show-biz frills and go for the purest sound they can get, which is remarkably good.

Speaker design captured most of my fancy, as usual. Dayton-Wright had rented a room but didn't show up. There was a sign on the door stating that because of complexities of uncertain company ownership and tax considerations, they could not attend. Acoustat had their new models and were creating considerable interest. They now have models with two, three and four of their electrostatic panels per side. The panels incorporate a plastic matrix which looks suspiciously like that used below fluorescent lights. It seems to be a totally rugged and reliable design. Their new biformer, which consists of two transformers driving the same panel, one of them optimized for low frequencies and one for high, is an obviously clever and valid approach. The larger models, as expected, were so wide as to be somewhat vague in their imaging. All of their models show some beaming on high frequency material.

I must admit that the Acoustat panels, with their capability for wide excursions, will produce more bass than any electrostatics in my memory. Hearing "The Dark Side of the Moon" played on the four-panel system was proof of that. Yes, they go low; yes, they move lots of air; and yes, they couple tremendous bass energy into the room. That said, however, I must also say that this extended bass sounds a bit flabby and rubbery, and is still not the equal of the best cone systems. Also, to my ears the Acoustats aren't as transparent as I had hoped. The mylar used is not the thinnest; also the conductive coating looked thick enough to add some mass, though I can't be sure. It may be that the wide spacing or the plastic matrix are factors. All I know is that they are NOT as transparent as electrostatics can be, though they are remarkable speakers in many ways. My requirement for the best sound is the sensation of "looking through" a speaker, as though one could reach out and touch the performers. The Quads, and some home-built units I have heard, have that characteristic; the Acoustats and the Beveridges do not. (It may be partly because their better bass response masks detail that their bass-shy cousins reveal. --Ed.)

The Beveridges were putting out nice sound in a large, fairly quiet room. Their smaller, transformer-driven System Four was being shown. This is the first time I have been even somewhat impressed by the Beveridges; they were facing inward so that their axes intersected at the listener's chair. Set up in this way, they sound good. I have never liked the side-wall position favored by Mr. Beveridge any more than I like sound coming from the corners of the room, as with Klipschorns. It's just not natural; central images can't really be created that way. However, with the slots facing the listener, the System Fours are clean and dynamic, though you notice the fact that the speaker is a line source rather than a plane. To each his own.

The West Sound Labs people had three models on display. Two use angled panels and dynamic woofers, the the third is a huge device, perhaps six and a half feet by three, which is constructed differently from the others. I didn't hear the smaller ones, but most reviews indicate they are good and reliable speakers with some beaming problems. The big one, the A-1, caught my fancy because of an advertising claim made in the literature to the effect that it was "literally one large curved element." The word "literally" is generally taken to mean "the same as". Either something is curved or it's not; I could see the light reflecting through the grill cloth and it gave the appearance of flat segments. I queried Dr. West about this and he said the segments and the angles between them are small so it approximates a curve. Not so! Each segment will act as a flat speaker. It is true that the construction is continuous, with no separate mounting structure between segments, but in no way is the diaphragm itself curved. It appears

that the segments are about five inches wide. The speaker is also bisected vertically, leaving a fairly wide undriven area. This cuts it into two halves which can be driven separately. The forgoing aside, I can't really say that it sounds all that transparent. (An upcoming meeting report will describe the lecture and demonstration that Roger West gave the BAS. For now, we can say that the A-1 speaker shows so little beaming that it is, while not literally curved, at least virtually so. --Ed.)

The big question on everybody's mind was the new Quad. I made the pilgrimage all the way to the Drake Hotel where there was a very formal and professional demonstration. Groups of about twenty were ushered in about every half hour; it was like entering a church. By now most people know something of how the speakers work. They are about two feet wide by three high and are floor-standing with open backs. The driving plate is broken into a central disk and concentric annuli surrounding it. One diaphragm is stretched across the whole area. The entire bandwidth is fed first to the center circles and then progressively to the annular rings after delays of 25 microseconds for each division. The man said the delay came from eight miles of wire on a bobbin. I didn't know if he was joking or not. (He wasn't. --Ed.) By driving first the center of the diaphragm and then the annular rings in an outward-moving sequence, the speaker creates a spherical wavefront approximating that produced by a point source. In effect we have the long dreamed-of pulsating sphere. The engineering is conceptually brilliant, although there may be many questions about the electrical end of things.

Allegedly the speaker presents a resistive load to the amplifier. The Quad literature makes considerable mention of the fact that only amplifiers capable of sustaining a dead short may be used. This rules out many models. I heard some talk that while the speaker can stand loud peaks of short duration, there is a low limit to the average power it can absorb.

The demonstration was impressive. The accuracy, or at least the consistency, of the speaker was demonstrated by sending square waves through both channels and locating a microphone on the floor so that they cancelled acoustically. The speaker does have good directional characteristics with remarkable freedom from beaming. Its radiation pattern is unique; it really sounds like a pulsating sphere.

The speakers were more widely spaced than I had expected. Whether the image is "accurate" or just different I can't say. They sounded transparent in the midrange insofar as I could determine from the source material, though they may not sound as intimate as the old Quads. Only three discs were played. One had a rock cut from Opus 3 which sounded suitably spacious. A male operatic voice, singing a selection from Tosca I think, was played at fairly loud levels without breakup. The voice sounded powerful and natural, but the demonstrators were careful about cranking up the volume on that one. I had the feeling that the speaker was right at its limit. It does play louder than the old Quad, but not dramatically so.

Bass is improved over the older model, which makes sense because the surface area used is probably twice that of the original Quad bass panels. There were some nice bass shots which had the sound which is characteristic of large-surface bass radiators. However, the bass is no match for the impact of the big cone systems.

I have some question about the performance of the new unit in the high frequencies. There weren't enough highs in the program material to make much of a judgment. I think jaded audiophiles should listen critically to the highs before they reach any conclusions; I have qualms about highs coming from a large surface so close to the floor. I would like very much to have heard orchestral material with wide frequency and dynamic range as part of the demonstration. What I heard was impressive but was far short of a full workout. With the new sequential driving technique the possibility of tailoring the sound to account for precedence effects has become a reality. Still, I found it interesting that the Quad spokesman said they felt a conventional dispersion pattern with somewhat directional high frequencies was still the best. All in all, it

was a most impressive demonstration. The engineering is brilliant, but whether the new Quad will be all things to all people remains to be seen; I doubt it!

What can one say about the Cosmostatic hybrid behemoth? This loudspeaker, nearly two feet square and five feet tall, is unique. Multiple fast woofers are loaded by separate chambers. An upward-firing dome tweeter fills in the range between 1K and 3K where the electrostatic tweeters come in. The flat electrostatic tweeter elements, arranged on an umbrella frame, are odd in that the perforations are very large and few in number. Perhaps the usual openness ratio of 40% is achieved, but this is an odd way to do it. An integral 1200-watt amplifier drives the electrostatics, so compatibility is no problem. From the outset let it be said that this is a fully omnidirectional speaker system. It sounds airy and spacious, and unreal because the signal undergoes so many reflections. What you hear is the room working on the signal, not the signal itself. I have never heard an omnidirectional speaker that I liked and don't expect to in the future. The signal already contains direct and reflected components; to splatter them around the room cannot lead to accuracy. That said, however, I must give credit for the system's strong points: it plays very loud, has excellent bass and is very dynamic. It is really a dynamic system with an electrostatic tweeter, which goes a long way towards explaining its merits.

The Hill Plasmatronic system continues to improve; it now has better woofer blending and fewer amplifier difficulties. It sounds clear and powerful but is still not "a window on the sound". If the plasma driver went an octave lower I could almost become enthusiastic. With a 700 Hz crossover there is a lot of information above 1K being reproduced by dynamic drivers in sealed enclosures. I don't believe there is any way to delegate this much of the job to dynamic drivers and completely get away with it. Every time I look at the Hill I marvel at the technology and a little voice in the back of my head says, "there sits the world's most exotic tweeter."

Nice sound was to be heard at several suites featuring hybrid systems with Quads. Mitch Cotter was crossing over Quads to Janis subwoofers, I think at 100 Hz. His line of electronics now appears to be housed in attractive packages. Symmetry had a triamped setup with their new Curl subwoofer crossed over to Quads at 80 Hz with ribbon tweeters on top. Physically, the system is a little ungainly, but the sound is outstanding. This is a fine subwoofer.

Despite the musical sound in these two suites a profound question comes to mind about these or any other attempts to use the old Quads in the midrange. The Quad is not a flat speaker! A recent frequency response curve published in *Wireless World* showed it to be down roughly 3 dB at 500 Hz, 8 dB at 200 Hz, 12 dB at 100 Hz and nearly 15dB at 80 Hz before peaking at 50 Hz. This is to be expected from dipole cancellation. Nobody seems to say much about this, or to try to correct the problem, which makes one wonder.

Only a handful of the dynamic speakers appealed to me. There were tons of box speakers sounding loud, boxy and colored in every way. Dahlquist seems to have left his purist days behind and thrown his lot in with the mid-fi loud-is-better crowd. He and the German Magnat firm seem to be intertwined. Just being assaulted by the volume and looking at the drivers, which appeared to me to be well suited for sound reinforcement, was enough to prompt me to leave and not even hear the plasma tweeter allegedly extant there.

Good sound was to be heard in the Thiel suite. Their floor standing models with slanted fronts and electronic bass equalization are really nice, with plenty of unstrained bass. They sound spacious, but depth imaging may be questionable. I remain impressed too with the little Spica speakers utilizing sealed woofers. They have flat fronts and curved cabinets, and they sound something like the Rogers JR149 with deeper bass. These people are going for natural sound.

The British firm of Boothroyd Stuart were displaying their intriguing Meridian M2

which graced the cover of the January issue of Hi-Fi Answers. Small boxes, considerably deeper than they are wide, house two specialized amplifiers, an electronic crossover, and a pair of the little KEF B110 woofers with a tweeter between them. The bass performance of these little drivers is simply amazing and flies in the face of all the theories about huge drivers and the alleged impossibility of coupling to the air with little ones. Of course the upper bass was superb because of the transient capabilities of the B 110.

For those who really need more bass, and I think it's really only the bass freaks who need more, why go half way? Get Tam Henderson's whopper of a woofer system. I remain convinced, though, that the very lowest, very deepest bass is not really germane to musical enjoyment, and I would not compromise the midrange one iota to get it. I enjoyed my chat with Tam who is spending most of his time with his Reference Recordings operation these days. His woofer incorporates a line of boxes housing 8-inch woofers from floor to ceiling with exotic servo systems. He was playing a Japanese disc with drum shot after drum shot, and the pressure waves nearly dry-cleaned my clothes (I stole that expression from Bert Whyte). I guess the big Infinity woofer system is something like that. I can easily live without it, but for those who want to be nearly knocked off their feet the servo approach is probably the way to go.

I made it to McCormick Inn to find the vaunted \$20,000 Infinity system. No luck. Only one channel was on display and it wasn't playing. It is physically humongous, needless to say. I was quite surprised to find that the diaphragms of its magnetic midrange drivers were floppy and loose between the plates, and there appeared to be no concern for equidistant spacing between the plates. I wonder what the design criteria were. Infinity was demonstrating their new IRS model II; it uses polypropylene drivers, some open baffled, with a curved front baffle. Two Watkins woofers are used, rolled off at different frequencies in the higher part of their range. There is some clever design here. Infinity had a good listening environment, but I could make no real judgment about these speakers other than that they are capable of playing very loud.

One of the speakers I was most interested in hearing was the Fourier 1, godchild of Peter Aczel. Allegedly it was designed according to his oft-stated criteria: Theile-aligned ported woofer, simple crossover, drivers in phase, low Q, etc. Well, I must give the devil his due! It is a good speaker, better than I expected. It proved to me that a 10 inch woofer in a ported three-cubic foot box can yield deep, tight, loud bass. Whether the upper bass is that good remains to be seen. The flat etched-diaphragm tweeter is limited in vertical dispersion, of course. The speaker sounds smooth but still a little boxy, not as open-sounding as the Dahlquist DQ10 and of course not as transparent as an electrostatic. Overall though, I feel it is a quality product and worth consideration in its price range.

And lastly there was the ever unpredictable J. Peter Moncrieff. I don't agree with everything he has ever said or written on the subject of audio, but he is one of the field's great thinkers. He comes up with some harebrained ideas, but he also latches on to some fundamental truths from time to time that slide right on past the rest of us. This year's Moncrieff speaker system was only half a system, as he could only fit one system into his car, so the sound he was playing was mono. Imagine a couple of Acoustat panels, one on top of the other, with a shallow box (4 inches deep) enclosing the back wave. Bisecting the front of the electrostatic is a foot-deep particle-board partition facing the listener edge-on, and behind the box is another similar partition a foot deep, reaching back to the wall. This rear partition has a couple of 12 inch woofers facing sideways next to the wall.

This was mono that sounded different from any mono that I have heard before, at least from the centerline facing the partition. Moncrieff was spouting off arcane theories about imaging, most of which went right over my head. Pd have to hear a pair of these to make any judgment at all, but they were new and interesting. The electrostatics had good transient response, but not the openness they can have. Enclosing the back wave costs something and I've never seen it done completely

successfully. This was exotic mono though, no doubt of that.

All the foregoing aside I must reach a conclusion. There is no perfect speaker system and there never will be because of the conflicting demands of the laws of physics. These designers have made intelligent trade-offs and compromises that had to be made.

One real treat was the privilege of hearing Bertil Alvig (who tapes the Proprius discs) conducting demonstrations with some of his master tapes. The room was usually packed. Once a tape got tangled in the Nagra tape transport and I started to panic. Mr. Alvig muttered, "Good thing its a copy!" I nearly fainted; I thought it was the original. I realized that there was a little tape hiss, but I had no idea that copies could be this good. My faith in unprocessed analog tape has been renewed. He played a tape of a choral performance he had taped in Finland; if arrangements can be made it will be released here later. The sensation of being able to reach out and touch the performers was incredible. Yes indeed, source material is the "real" weak link in it all. Alvig was using excellent Swedish QLN mini-nonitor speakers. He played some organ material and decisively convinced me of the validity of the low Q approach, as these speakers roll off gently below 70 Hz and still sound like they have deep bass.

For me the fun of these shows is getting to meet the great designers we read about the rest of the year, and getting a chance to pick their brains. I thoroughly enjoyed it!

-- Bob Unterbrink (Kentucky)

I had a few impressions of the CES that didn't seem to fit into my taped presentation. The first concerns the single-brand systems that seemed to be the favorite new product among the Japanese giants. One might very easily be appalled at seeing a huge, slick catalog containing expensively done pictures of thirty or forty "rack" systems from a single manufacturer. What can they be thinking of? They're supposed to be making things simple for the consumer. Ah, but the CES is not, despite its name, intended for the consumer. Consumers are carefully kept out, unless they get in on someone else's coattails. (You can always spot the real consumers; they're the ones who look impressed, and slightly self-conscious. Everybody who is supposed to be there, on the other hand, is looking purposeful, or greedy, or -- if adorned with a press pass -- exhausted). At any rate, the idea of the show is to find out what sells, and sell it. The company with the catalog full of different systems isn't really expecting anybody to take on the entire line; they just want to have something for everyone.

The bottom line for many manufacturers, of course, is that selling components as a group allows them to break into that hitherto impregnable bastion, the American speaker market. About a third of the makers of these things sell them only as a package, with no substitutions, and some of the speakers are, to put it mildly, bad. This isn't true for all of them, but if a friend asks for your recommendaiton about one of these systems, you'd better go and listen to the specific unit he or she is contemplating, at least if you value the friendship.

One good idea that has come out of this whole trend is the cabinets, or "racks". They aren't professional 19-inch racks, most of them; the vertical spacing for the mounting holes is wrong. But a cabinet of that sort is much better than a simple stack of components, which is what many audiophiles wind up with by default. The cabinets are not, as a class, pretty, although some of them have fairly nice veneers. But they provide protection from dust and from prying little fingers, if there are any of those around your house. And they make it possible to wheel your components out to your listening chair, where you always wanted them, and back out of the way when the listening session is over.

Since we seem to be willing to entertain questions of orthography in these pages, I have a minor gripe. The combination of a receiver and a cassette deck into a single package demands the coining of a new word to save everyone the trouble of saying both

names over and over. The word, as it first appeared in the press handouts, was "casceiver", obviously created by crude cut-and-paste surgery from "cassette" and "receiver". But the "ei" is there because it's preceded by a "c" in the original word. "Casseiver" should be pronounced CASS-SAY-VER; or if the pronunciation is to be kept, the word should be spelled "cassiever". Fat chance. I am happy to report, however, that the enlightened editors of Stereo Review, whose ranks include the famous BAS member and fussybudget, David Ranada, have consented to use a compromise spelling, "casceiver", which may at least temporarily halt the onrush of linguistic entropy which is about to swallow us all.

Oh, yes -- the new Quad electrostatic. The original model has been around so long, and is so well-regarded, that the new one just had to arouse all kinds of speculation. The new design, as you must know by now, has a series of annular electrodes which receive the audio signal with various amounts of delay added, beginning with the center and progressing outward. The diaphragm is therefore supposed to create the same waveform as it would if it were a section of a pulsating sphere. This is a nice idea, and it promises to reduce the extreme directionality, especially in the upper midrange and high frequencies, that was characteristic of the old Quad.

But there is something else going on here. The delays in the signal reaching the outer electrodes are created by sending the waveform through thousands of feet of wire. This has got to attenuate the highs progressively as the signal moves outward. It makes sense to do this, too, because then you have small effective radiating area for the highs and a large diaphragm for the lows, which is what you need to give the speaker more constant directionality at all frequencies.

Only trouble is, it may be the directionality "problems" that endeared people to the Quad in the first place. Sure, you have to place the things very carefully because of the back wave, but once you do that the speaker is well away from any reflecting surfaces, and within its somewhat limited frequency and level ranges it is very smooth and clean. To help you appreciate why such a speaker might have certain desirable listening qualities, imagine that you're wearing a pair of electrostatic headphones. Now pull them away from your head and forward, simultaneously enlarging them so they'll play loudly enough for you to keep hearing them as they recede. You'll want to keep each headphone pointed right at your ears, because as they get bigger they'll become very beamy at the top. In fact, you may want to put in a separate, smaller tweeter panel to give yourself a little larger sweet spot. What you now have is a pair of dipole speakers, which are fussy, hellishly hard to place, have no bass below their relatively high cutoff point, and which, when you get everything just right, sound so good that they can raise the hair on the back of your neck. You can hear every little detail in the music, every chair creak, all the conductor's out-of-tune singing, everything.

There is really no profound mystery about making such a speaker. It's just that when you position your headphones so far from your head it's hard to get them to go low enough, and play loud enough, and present a halfway decent load to an amplifier, and not cost the earth in the bargain.

So now Peter Walker has given us a new speaker which is less directional in the highs and goes lower and louder in the bass. The audiophile reviewers really want to like it, but it may be hard to find the old magic. There is only one way for a speaker to attain greatness, and that is through the accumulation over the years of many really wonderful moments for many different people. The new Quad has gotten rid of some faults that may have been essential to the old speaker's unique character. In return, what has it gained? It still doesn't play very loud, or go very low; its attainments in those areas are significant only in comparison to the older Quad. All I could tell from the hushed and reverential twenty-minute session in the Drake Hotel was that on typical Philips records, the new Quad is quite clean, but nasal, slightly wiry, and unpleasantly pinched below 100 Hz. This could mean any of a number of things; it might mean that the new Quad is a perfect reproducer because that's the way the records really sound. But there is no way to tell whether it's a great speaker just yet.

-- E. Brad Meyer

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