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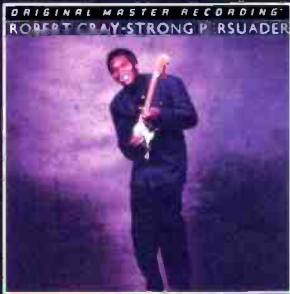
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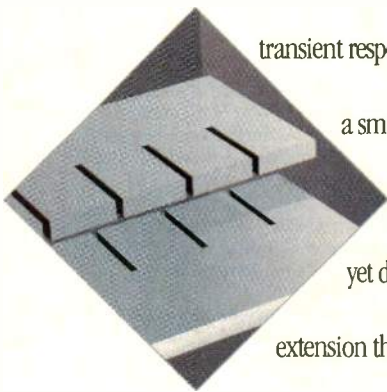
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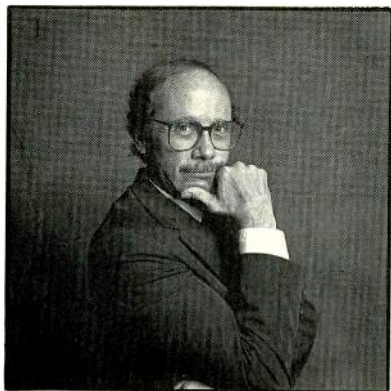
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Pictured, the DIGITAL PHASE AP-1, one of five DIGITAL PHASE systems featuring the patented ACOUSTA-REED technology.

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Last night I had dinner with Ken Kantor, an interesting fellow who is Vice President, Technology, for Now Hear This, one of the speaker-making divisions of International Jensen. Ken said several things worth passing along during the course of describing how the price had been determined for NHT's new 3.3 speaker.

While most audiophiles are quite knowledgeable about many engineering and technology topics, says Ken, "this group of inquisitive and opinionated people seems generally oblivious to the economic and business factors that shape the audio industry." While I personally find that many audiophiles and industry engineering types have something akin to disdain for business questions, it never ceases to surprise me how poorly these same people understand how retail prices are arrived at. They seem to think that the best-performing products, too often confused with the highest priced ones, are the ones that sell best.

Kantor makes the point that "audio companies vary widely in size, with American brands alone varying by a factor of more than 1,000 in the number of people they employ, number of units shipped each month, and the total income generated." Obviously, a company at the big end of this spectrum is going to play by different rules than little ones.

Basically, there are two ways of determining price structure, says Kantor—overhead driven and materials driven. Big manufacturers commonly start with a "bill of materials," and parts costs forms the

basis for most of their thought process. To the price of woofer, tweeter, crossover, box, carton, etc., is added labor, though this usually is a minor percentage of the total. "Ultimately," says Kantor, "the dealer price is simply a linear multiple of the parts plus labor, usually just about a factor of two. If parts and labor equal \$100 a pair, then the dealer pays \$200, more or less, and the customer sees a Manufacturer Suggested Retail Price of \$400."

"But Ken," I said at one point, "how about the folks who think they are in business just to make the very best speakers they can? It looks to me that they ignore costs and mark-up ratios. Their prices appear to indicate some inflated notion of how 'great' their speaker is. How do they price?"

"The smaller companies pay most attention to overhead, to what it costs them to survive," responded Kantor. "It doesn't really matter what the box costs, because usually this is a labor of love. Market reality is that they can sell, say, 30 pairs of speakers a month, which really isn't an unusual number. Let's say, too, that there's six people with modest salaries, about \$15,000 a month, but even adding rent, phone, utilities, ads, supplies, it's just \$30,000 a month to keep the doors open. At 30 pairs a month, it doesn't matter whether the bill of materials comes to \$100 or \$200, but if the company can't get the dealer to pay \$1,000 for the speakers, they need a new line of business."

There are a lot of things that fall out of this sort of analysis—such as why there are so few labors of love on the market and so many middle-of-the-road speakers. And why the Law of Diminishing Returns seems to have such a long upward curve with so few really good values. But I think we'll leave them for another time.

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What's In A Name?

Dear Editor:

Thank you for your review of the Acurus DIA-100 in the July issue of *Audio*, in which the headline called it an integrated amplifier. We think of the unit as more nearly a basic amplifier—but one that has some very special, if not unique, circuitry. While the DIA-100 may take the functional place of an integrated in someone's system, its unique circuitry allows operation in a radically new way. In fact, we think of the DIA-100 as establishing a new category of equipment, the Direct Input Amplifier.

In contrast with an integrated amplifier, in the DIA-100 there is no active gain stage equivalent to a line stage in a preamp. We do this, as you pointed out in the report, to maintain the integrity of the original signals and to eliminate unneeded circuitry. We do include source selection switches and volume and balance control pots, but in our view, this does not make the DIA-100 an integrated amplifier.

The important thing about the circuitry is the extremely high input sensitivity, some five to 10 times higher than usual, which we rate at 200 mV for full output. This allows such sources as CD, tape, or tuner to be directly connected to the DIA-100, but without the need for a preamp. Even a passive preamp with its potential for impedance mismatches isn't needed.

We hope that the simplicity of the DIA-100 will be fully appreciated for what it really is, the result of many hours of hard engineering work.

Anthony Federici
President
Mondial
Ardsley, N.Y.

A Review of Our "Profiles"

Dear Editor:

I'm a longtime reader of *Audio* and a subscriber since 1988. I think it is one of the best magazines in the world, but would you please let me make a few comments?

Some "Equipment Profiles" are too technical. You should do more tests of

high-quality budget equipment (and "budget esoterica," too). You will reach more people who do not have the money to buy at premium prices but who still want a fine-sounding system. Why not let the "Auricles" take care of the very top gear? A less technical profile will allow space for more tests as well as for comparative analyses (a mass test of CD players, maybe).

Anyway, keep up the good work.

Claudio Lousada
Petrópolis, Brazil

The Editor-in-Chief's Reply: Thank you for your kind words. They are always nice to hear, and believe me, compliments aren't what we always get.

While you don't specify which profiles are "too technical," I think I can guess—speaker reviews. I believe, as does the reviewer, that our speaker reviews are as technical as they ought to be in *Audio*—that is, technical enough to be the best in the world. I don't believe that the "Auricle" style of reviewing is as good as that of the full report. I know how easily my ears can get fooled and how much they change from day to day. Just going up the elevator in this office building, coping with humidity, as well as fights with family, readers, co-workers, boss, etc.—all these things influence how well I can hear. That is why I want to measure as well as listen to equipment. So let me turn your argument around on you: Why not reserve the best reviewing style for the "very top gear"? Actually, the "Auricles" were started to enable the magazine to give space to various brands of first-rate equipment. Tony Cordesman had just come available, and I could get to the marketing managers of these few firms who wanted their gear written up in his style. It was like saying Bert Parks was going to do the Miss America Pageant instead of Andrew Dice Clay. Which reviewer do you want?

But yes, there are more of the "Auricles" in the magazine these days, and for the very reason you commend them—to get more equipment covered.—E.P.

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V.P./GROUP PUBLISHER

Thomas Ph. Witschi
(212) 767-6269

V.P./ASSOCIATE PUBLISHER

Tony Catalano
(212) 767-6061

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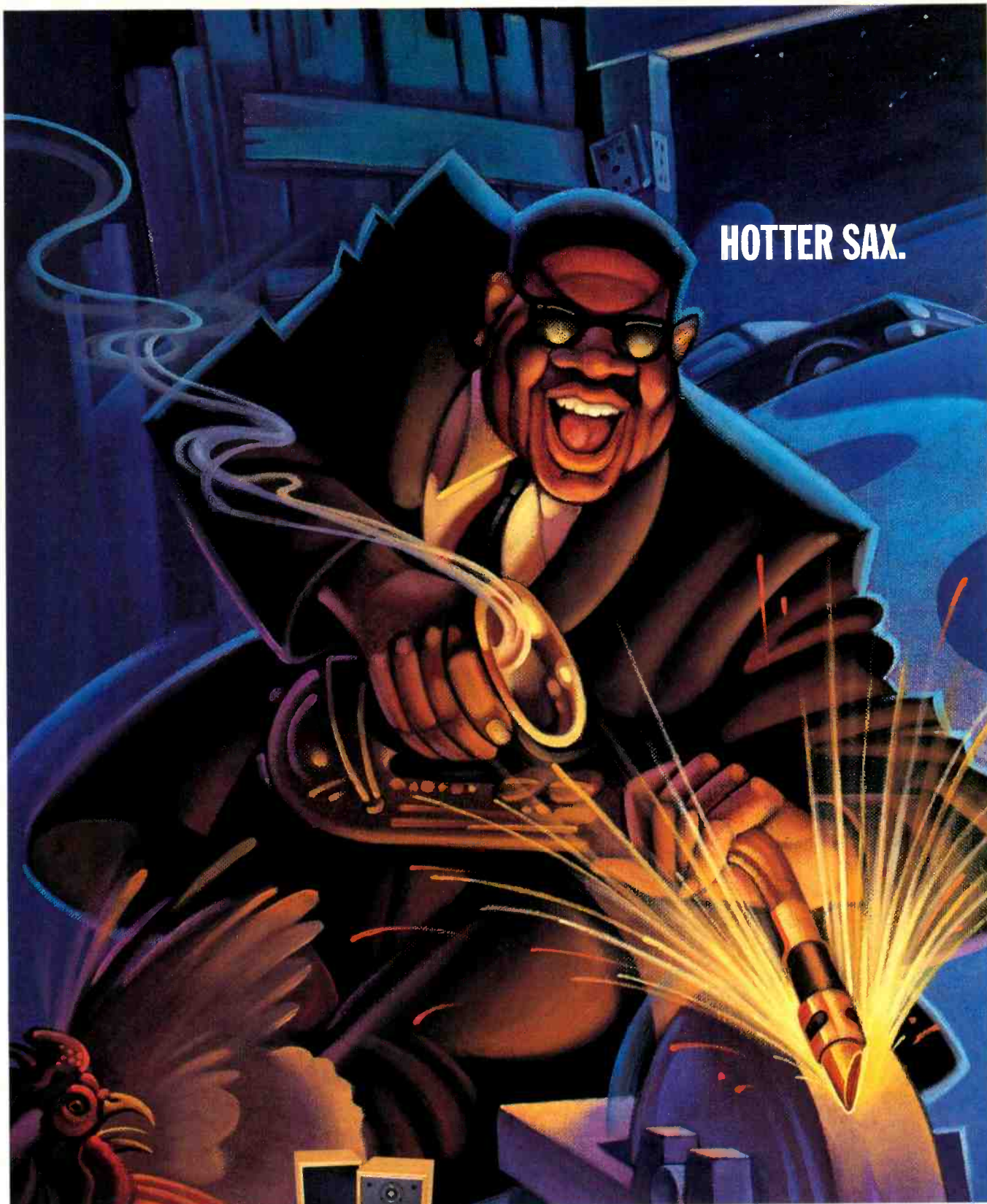
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So when the engineers at Adcom went back to the drawing board to try to top their latest success, they were hard-pressed to find areas for improvement. The electronics and sound reproduction were already near perfect. And then, *Voilà!* The idea: add a carousel changer.

Round and round she goes.

One disc, superbly reproduced, was a magnificent accomplishment...but five discs mean five times the enjoyment. In typical user-friendly fashion, the Adcom GCD-600 lets you change four discs while one is playing, offers true random capability for one disc or all five, allows direct clockwise or counter-clockwise access for faster searches, and plays 3" discs without an adapter. The standard remote control gives you complete access to all playback features—including variable volume control—from the comfort of your favorite chair.

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*Peter W. Mitchell, *Stereophile*, Vol. 12 No. 6, June 1989

** *Stereo Review*, 1989

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DAT Recorders and a TOC

Q. *Is there any sort of keyboard I could buy that would allow me to fill in a TOC (table of contents) on my home DAT recordings?—Martin Gil, Miami, Fla.*

A. I haven't heard of any kind of computerized keyboard that would permit you to add a "table of contents" at the start of your DAT recordings. Making such a TOC would require that you leave some blank space at the start of the tape to hold it. There must also be some way for your keyboard to know the exact starting and ending frames of each section to be marked for retrieval and the start and end frames of the TOC space itself. I think this would be a tall order. Meanwhile, I suggest that you use "the old-fashioned way:" Put all the data into a database, including counter numbers of timings. Print out a sheet, and keep it with its matching tape.

Fuse-Blowing Problem

Q. *The fuse blows on my amplifier during every lightning storm. The fuses do not blow on any other components plugged into the same power-strip surge protector. When I called the manufacturer, I was told that the toroidal transformer kicks out a voltage that blows the fuse. What can I do to prevent the fuse from blowing? In just the past two months, four fuses have blown.—Dennis S. Goren, Newtown, Pa.*

A. It is hard to imagine that every lightning storm that comes your way would be close enough to blow the fuse in your amplifier. I have never heard of this sort of thing happening, especially to just one, single piece of equipment. However, knowing that this is going to happen, you should unplug the amp whenever a storm is approaching or when you will be away from home for some time. Perhaps other readers will have some light to shed on this.

Adequate Component Ventilation

Q. *I want to put my components in an enclosed cabinet that has glass doors. I have a 100-watt amplifier, a dual-well cassette deck, a VCR, and a CD player. There's*

more than enough room for all of these items. My concern is placement. I have heard that the amplifier should be placed on top. Without using ventilating fans, how much distance should there be from the top of the amplifier to the top of the cabinet to allow for proper cooling?—Michael Marker, Sandy, Utah

A. Yes, the amplifier should be mounted above all other components, because it produces most of the heat from the entire system. If the amplifier was placed on the bottom level, its heat would rise and warm up the other components.

Try to leave a minimum of 2 inches of space between the top of your amplifier and the underside of the top of your cabinet. If the back panel of this cabinet does not have holes for both air and for wiring to pass through, then it is a good idea to drill some. Most home entertainment centers have back panels that are very thin and easily drilled. Leaving the doors open while the equipment is operating will also help maintain good airflow.

If you still find the equipment to be running warmer than you like, I suggest that you direct a small fan so that it blows over the amplifier. I know that fans add background noise, but this can be minimized by mounting the fan on rubber. I have used such fans with little added noise. I attached a 14-gauge wire to the underside of the top of the cabinet and attached the fan with it. It may not be elegant, but it's quiet.

If your fan has a greater capacity than needed, experiment with light bulbs of various wattages in series with one side of the a.c. line and the fan. You'll find one wattage that slows the motor down but still produces enough air for good cooling. Because this bulb will produce some heat, keep it away from the equipment. **A**

If you have a problem or question about audio, write to Mr. Joseph Giovanelli at AUDIO Magazine, 1633 Broadway, New York, N.Y. 10019. All letters are answered. In the event that your letter is chosen by Mr. Giovanelli to appear in Audioclinic, please indicate if your name and/or address should be withheld. Please enclose a stamped, self-addressed envelope.

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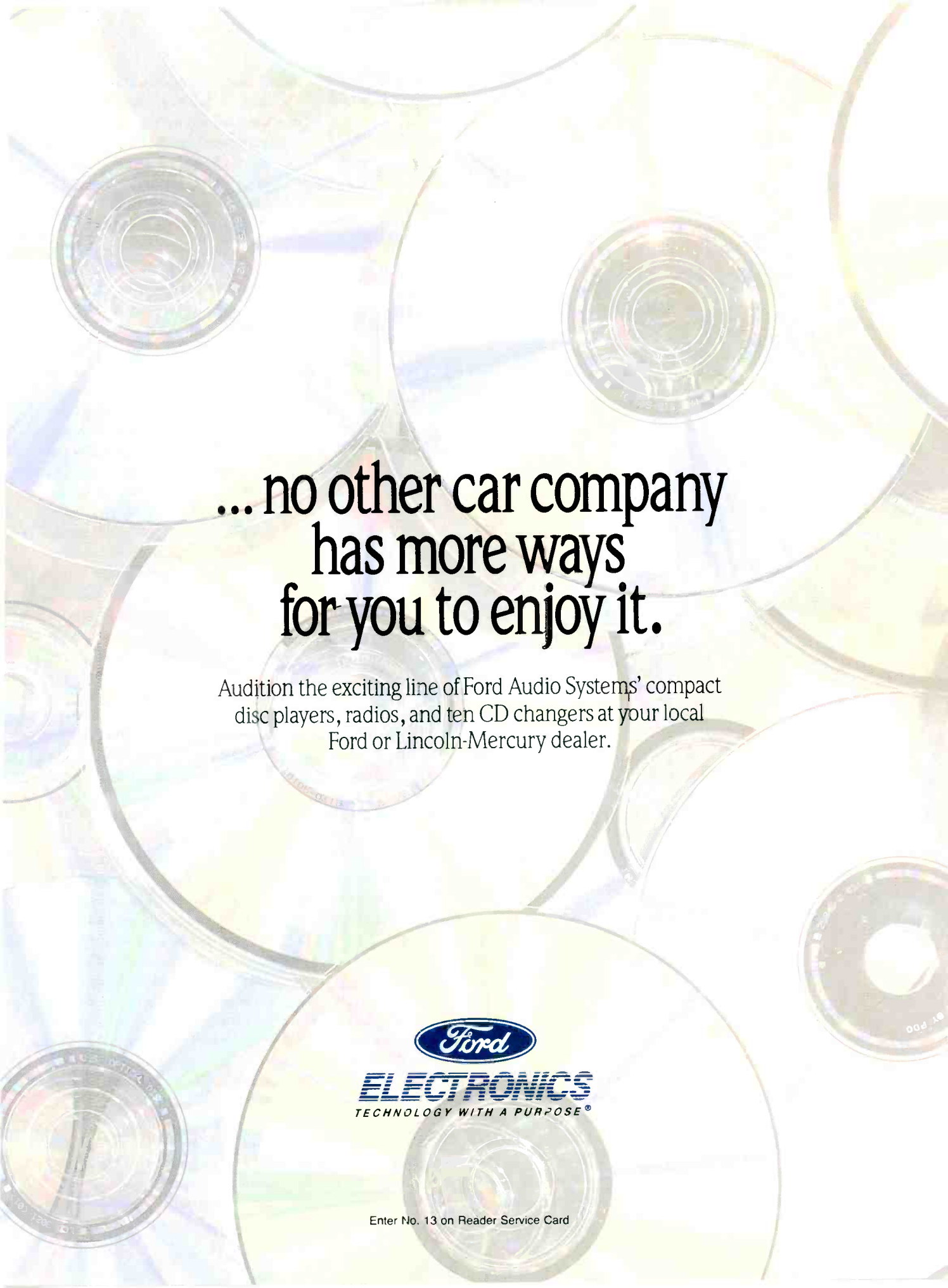
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EDWARD TATNALL CANBY

MATH FOR MUSIC



I jumped when I read it—"I am Doctor Brahms, Johannes Brahms ("Making Wavelets" *Scientific American* June, 1993). Spoken from a recording. Could it be? Could it possibly be true?

For years and years I had read about the Edison cylinder record of the great composer playing his own First Hungarian Dance, music that is still ultra-familiar today. There are references to it everywhere. But always it is "lost." A small tragedy in sonic history, both for audio engineers and for musicians. Until now, I did not even know that Brahms spoke a few words of introduction on the cylinder in the manner of that distant time. Imagine it, Brahms himself actually *talking!* Even more a *musical* wonder than an audio mir-

acle of history. If by some faint chance that cylinder is still intact, lost somewhere, it is now more than a century old. Talk about archival preservation. Or the lack of it.

Unfortunately, the restored recording is still not "available," our quaint word for commercial production in quantity. Its newly intelligible form comes out of a computer, working from an ancient 78-rpm "instantaneous" record made, in turn, from an AM broadcast of atrocious quality, probably dating from the middle of the 1930s. The important point here is that the computer has been able to clean up that sound via a new wrinkle on an old analytical approach, grandchild of Fourier analysis, so to speak, called *adapted waveform analysis*. According to the article in my usual source, *Scientific*

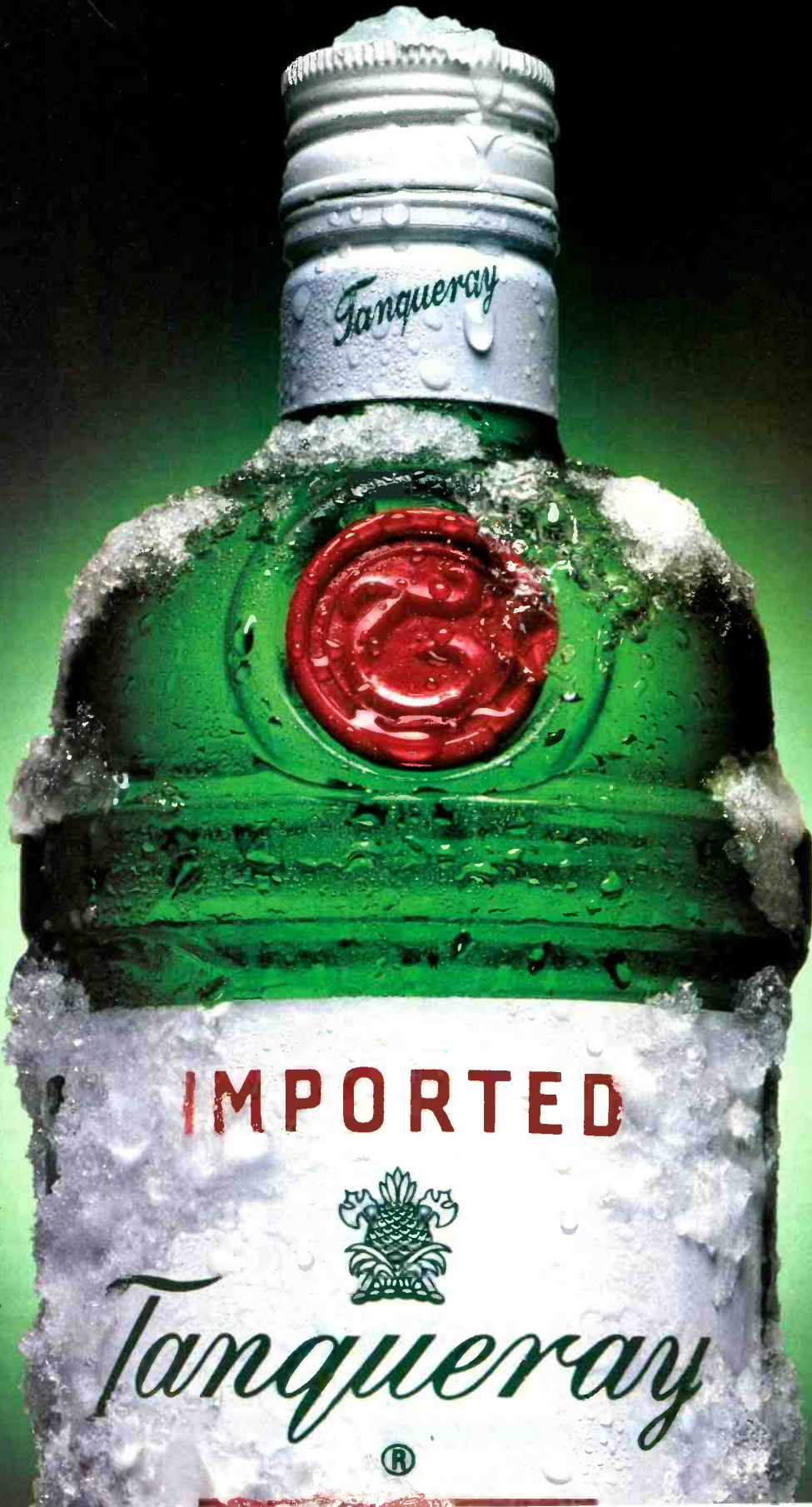
American, a mathematics professor at Yale University, Ronald B. Coifman, has applied this complex computer math to the sonic chaos of the Brahms copy and lo—Herr B. speaks. And plays his own music, at least recognizably. Astonishing.

Now I am not exactly a whiz at mathematical analysis with a computer, but there are aspects of this cleanup process that will strike almost any audio person, pro or consumer, as of extraordinary interest to us. As we know, restoration of historical sound is the hinder end of audio archiving, the front end, of course, the other half, being preservation from the beginning, onwards in time. There are things we all can understand here—most noticeably, of course, the achieving of at least some order out of sonic chaos, perhaps far beyond many of the present immensely ingenious (and occasionally destructive!) advances within the audio restoration profession. Professionals will note that this adapted waveform analysis is an enhancement, a further development, of a more widely known approach (a "deluxe model," *Scientific American* calls it) called wavelet analysis which, in turn, is a recent development of a much more familiar and older technique called Fourier analysis. Now we get into familiar engineering territory.

But there is more to catch the mind. The new analysis, of course, is not limited to Brahms. Indeed, this is a mere tiny sideline, a demo of what can be done, among a hundred other things ranging from pinpointing tumors in mammograms to improving military radar's ability to tell things apart. (Maybe like friend and foe?) But in our own small audio area, the very nature of the analysis shows its importance for us. We deal, after all, in waveforms. And in these days we deal in pulses. "The big payoff . . ." says W. Wayt Gibbs in *Scientific American*, "will likely be in data compression . . . [and] the ability of wavelets to condense information efficiently by representing it

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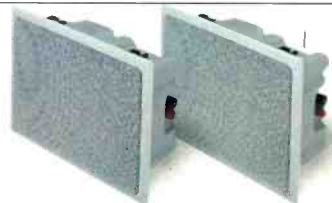


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in terms of common patterns." Do I see some audio engineering heads popping up? Indeed we are, as everyone knows, in the very middle of the first crucial applications of consumer data compression in the two new commercial systems, DCC and MD, now being competitively launched. Data compression, indeed, is the name of the audio game, and in dozens of other areas of communication. What we can do with this approach will very likely determine the audio future.

Common patterns. You may have noticed that phrase, just above. Does this ring more specific bells? But yes, as the French say. The essence of data compression, as well as I can now understand it, is what an accountant might call prorating, or an IRS agent something much more complicated: Spreading out the substance, so that each sub-unit is related to and contains a part of many others. Error correction? Same sort of thinking and deeply related, too. I will not ever forget the digital processing and editing of my own first digital music via the Canby Singers, whereby before we started work the entire master tape was *copied off*; no, not for safety but to *reduce* the errors of various sorts in the master. All that sort of thing depends on, er, prorating, information *shared* and projected over numerous bits. It is indeed our biggest present game. Would Brahms be baffled!

Yes, even unto the hologram, a species of "3-D" that is astonishing because you can look around corners and see from different perspectives. Waveforms again. I could write a few pages on the pros and cons of holographism, to create a word, and they might mostly be cons. A lot of artistic and philosophical/mystical hoopla, based on not very much science, if you ask me. Not *wavelet* science, anyhow. Want a holistic massage? Easy enough, though not audio.

So, back to Brahms. That missing cylinder is perhaps the most famous nonrecording ever to have existed. It was "lost" at some indeterminate time. A unique cylinder, just one, not a copy, however rare that might be. In its time, 1889, there was no way to copy a cylinder recording except by a tedious and clumsy pantograph arrangement. This sufficed commercially for some years, until, at last, a way to mold duplicate cylinders was worked out in 1901, a dozen years after the Brahms cylinder. One would

think that *some* 1890s archivist, perhaps an Edison employee, might have tried to assure a future life for this little audio item! Brahms, after all, was famous. So were many others at the time who made cylinders, including Gladstone, the British prime minister, Teddy Roosevelt (1902), and, oddly, many who were claimed to have made recordings but never did.

I quickly turned from *Scientific American*, not exactly an audio sheet, to my favorite phonographic history, by Roland Gelatt—*The Fabulous Phonograph* of 1954. Mr. Gelatt was then a very serious young man with an absolutely fanatical flair for facts. (He does have a quickie sense of underplayed humor, larded neatly into the fact mountain, to mix my metaphors.) I knew *he* would know all about it.

Brahms. There it was, on page 101. Count on Gelatt. It seems that the 1889 recording was made by Edison's German agent for the newly developed Edison phonograph of the year before, 1888. At that time, the inventor—prodded by outside developments of his own phonograph that took it far beyond his first efforts a dozen years before (he had dropped it for his electrical distribution system and the workable electric light)—went back to work and “borrowed” the wax cylinder and vertical engraved groove that his rivals, Bell and Tainter, had launched. Edison sent agents out to produce “demo” recordings of famous people in order to publicize the new Edison development, complete with cylinder players—and to play the same before kings, queens, the Kaiser, and, of course, financial giants.

Typical Gelatt. Edison's German agent in 1889 set up his equipment in a music room at No. 4 Carls-gasse, Vienna, and recorded Brahms playing a Hungarian Dance. So there it was, at the Beginning.

My only non-Gelatt thought is, while he was there, didn't they take down a few more two-minute renditions, just to be sure? Something to fall back on after repeated demo playing? Wax is not a durable medium. It seems logical, but maybe Brahms twinkled behind his beard and said politely, NO. Once is enough. Or more likely, *Nein danke*. Similarly, my non-*Scientific American* thought is—did Brahms really say what appears to be an English phrase, “I am Doctor Brahms . . .” on that

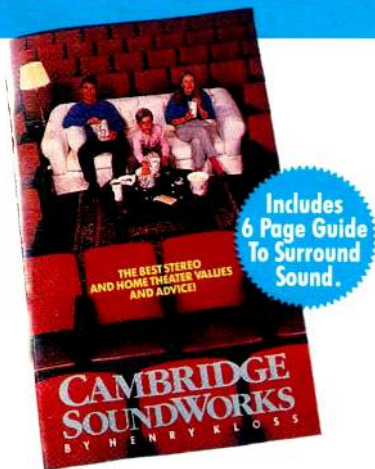
cylinder? Highly unlikely. Brahms refused an invitation to go to England for an honorary degree and, in deepest Vienna, would have said *Ich bin* or *ich heisse*. My German probably equals his English or worse. *Herr Doktor Brahms?* Gelatt doesn't say.

But there is more in Gelatt than I had hoped for. Where *Scientific American* says the cylinder was “recorded on a wax cylinder and since lost,” Gelatt drops a nice bombshell. Nothing about “lost” at all. After all, “lost” often means merely “mis-laid.” Instead, he says “This cylinder came to light in Germany in 1935.” Indeed, it was mislaid, not “lost.” And he adds, helpfully, “. . . according to those who heard it then, the sound of Brahms's piano was barely audible.” That was nearly 50 years gone by. And how did it get to Germany? Again, mislaid. The biggest bugaboo of all historical research, any sort.

And now almost 60 years back from the present! What happened to it after 1935? Nary a word. Lost again! But this Gelatt info does a lot to explain Yale Professor Coifman's 78-rpm source. Surely, the recorded radio broadcast, complete with oceans of static and noise, dates from that time, 1935. It was indeed a “reproduction” of the original cylinder! All that was needed was the clean-up—adapted waveform analysis by computer. Again, talk about archival preservation. The hinder end, the far tip of the tail, this.

There are fascinating side-aspects to the recovered (more or less) Brahms sound, and questions galore. Coifman, a professor in mathematics, not music nor audio, has enlisted musicological help at Yale. Some of the music, it seems, is no longer on pitch and, more interesting, the rendition of the Dance is reported as curiously “jazzy,” with shortened notes. The cylinder had perhaps “melted”? Wouldn't “softened” be more likely? A “flat” on one side would indeed make for added pitch. But the curious “jazz” must be something quite else. I suggest as a musician, that this was very much in the style of free playing still dominant in that day. I heard the same, much later, in a Chopin recording by Alfred Cortot on an ancient 78. Piano music experts will know what I mean.

Please, Professor Coifman, make your Brahms “available.” I'd give a lot to hear it, and so would plenty of others. **A**



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BERT WHYTE

WHEN STAGGERED HEADS PREVAIL



Last month, in the August issue of *Audio*, I reported on the 94th AES Convention in Berlin, which happened to coincide with the 50th anniversary of stereo magnetic tape recording. I also made note of my early stereo tape recordings, beginning in 1950. As a sales executive and musical director of Magnecord,

**A GOODMAN IS
HARD TO DUB
WITHOUT PROPER
RECORDING GEAR.**

the Chicago-based pioneer manufacturer of magnetic tape recorders, I was involved in many projects. In 1952 I sent a Magnecord PT-6BN stereo recorder to a Mr. Edward Tatnall Canby of *Audio* magazine. The always inquisitive and indefati-

gable Ed Canby made all sorts of stereo and binaural recordings, including, if memory serves me, quite a series on bird calls! Some years later, Ed sent the Magnecorder back to me, and I used it for a while until the ravages of time and the battering of frequent travels with it rendered it inoperative.

When I left Magnecord in 1953, I took with me most of the binaural and stereo tape recordings I had made. Back in 1950, the "quick and dirty" way of ensuring good stereo separation on the Magnecord tape machine was to employ staggered recording heads. Later recorders like the Ampex used the now standard stacked heads. Before the Magnecord stereo recorder jointly used by Ed Canby and me gave up the ghost, I transferred a few Woody Herman and Stan Kenton stereo tapes (made in the Blue Note club in Chicago) to the stacked-head format on an Ampex 350 tape recorder.

Thus, for many years, all the jazz and classical stereo tape recordings I had made with the Magnecord were stored in my home under the conditions of temperature and humidity normal in a domestic environment. I have long wanted to transfer those staggered-head tapes to standard stereo format, and several times I thought I had found Magnecorders in working order. But the machines proved unsuitable, and I relegated this project to the back burner.

One of the great things about writing "Behind the Scenes" is the correspondence I get from readers. In 25 years, I have had the pleasure of hearing from many fascinating and interesting people—audio engineers, musicians, audiophiles, and music lovers.

In late December of 1992, I received a quite incredible letter from Michael G. Seidl of Hillsboro, Oregon, which set off a whole chain of events. Seidl is a man with widely diverse interests. An electrical engineer from the University of Wisconsin, he has been heavily involved in audio, acoustics, and music. From 1948 to 1953, Mike worked in the Acoustics and Electrical Division of the Boeing Co., principally involved in noise reduction and sound-proofing. He recalls that there was a semi-anechoic chamber and one wall had a very heavy steel plate in which four Jensen 18-inch theater woofers were mounted. Sections of fuselage or wing assemblies could be placed on this plate and subjected to very high level sounds at various frequencies to check noise transmission. At that time, the B-52 bomber was under development, and it was necessary to run noise reduction and suppression studies on the J-57 jet engines (to be used on the B-52) at full power. These tests were limited to five minutes and used huge quantities of fuel. Since frequencies ranging from ultra-low to very high had to be checked, the direct-readings method with SPL meters and octave filters was very tedious and expensive. Mike and an associate, Ken Young,

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acquired a Magnecord wire recorder. The device had good frequency response and low distortion and the pair made some satisfactory recordings of the jet engines. But they wanted to loop the wire so they could play the data over and over for analysis. To do this, they had to tie a knot in the wire and not many passes were possible before the knot broke going over the recording head. However, they were convinced that recording the engine sounds was an essential procedure. They acquired a Magnecord PT-6 tape machine, mono of course. This gave great results with calibrated Western Electric "8-ball" microphones, and the tape could be reliably looped for study. Having proved the validity of the magnetic tape recordings for sound analysis, Boeing acquired more Magnecorders and also specialized crystal (!) microphones from Massa Laboratories, which had very flat frequency response and could handle the very high-intensity sound fields of the B-52 tests on Boeing Field. Seidl aptly sums up his pioneering efforts in the use of magnetic tape recording applied to noise analysis: "In short, then, what the magnetic tape recorder did for us was to allow more engine conditions and microphone locations than did direct-reading methods, permit narrow-band and other analyses, better accuracy, and make it feasible to do analysis of fly-by conditions. The bonus of having permanent recordings of the actual phenomena we were investigating was also no small factor. It's sometimes helpful to be able to return to the tape later to perform analyses that may not have been considered particularly important at the time of the test."

After five years at Boeing, Seidl was offered the job of chief engineer at, of all places, Magnecord! Having used Magnecorders, and in consideration of his great love of music, he accepted and joined Magnecord in 1953 just after I left the company. He quickly became familiar with the Magnecord PT-6BN stereo tape recorder and soon was playing some of the stereo tape recordings I had made. He used the Telefunken U-47 microphones I had acquired for Magnecord, making a few Woody Herman recordings and taping some classical piano music in Orchestra Hall in Chicago. Mike told me in his letter how much he enjoyed the good sound room and equip-

ment—two 50-watt McIntosh amplifiers and a pair of big Jim Lansing loudspeakers I had installed at Magnecord. In his three years at Magnecord he said he had been privileged to meet such audio industry figures as Rudy Bozak, Gordon Gow, and Joe Grado. He also said that his stay at Magnecord was one of the most chaotic periods in his life. I can well understand that, because one of the reasons I left was that for a variety of technical and personnel reasons,

**I CAN WELL UNDERSTAND
WHY SEIDL'S TIME AT
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PERIOD IN HIS LIFE.**

the fortunes of Magnecord were declining. Unsuccessful new tape recorder designs, and ventures into "entertainment" activities that foundered contributed to a confused and unhappy work place. Mike left Magnecord and returned to Boeing in 1964. He continued his acoustic work and was engaged in many aerospace projects when he was forced into retirement in 1974 because of severe cardiac problems.

All this information was contained in Mike's letter, and then he got to the main thrust of his writing to me. When he left Magnecord, he had bought a PT-6BN stereo tape machine, and he took along a number of the stereo tapes I had made. In the years since his retirement he had made some recordings with his Magnecorder but mainly enjoyed listening to my tapes and tapes he had made in Chicago. Now his chronically poor health was further curtailing his activities, and incredibly, he wanted to know if I would like to have his Magnecord PT-6BN and all of his stereo tapes! I was absolutely stunned by such a kind and generous offer.

Mike pointed out that the Magnecord needed some work. The amplifier section was noisy and probably would need new tubes and electrolytics. The transport was noisy also and in need of general cleaning, some parts replacement, tension adjustment, and frequency alignment. I could not undertake these repairs, but one of *Audio's*

long-time advertisers, Audio Classics of Walton, New York, came to the rescue. This company specializes in buying and selling older "classic" audio equipment, as well as dealing with a selected line of new equipment. They can also repair all manner of old equipment, or furnish hard-to-get parts. Proprietor Steve Rowell was keen on the idea of rehabilitating the Magnecorder and had former McIntosh engineer Richard Modafferri assigned to the project.

In due course, Seidl sent his stereo tapes directly to me, and the Magnecorder arrived from Audio Classics.

My intention was to be quite ambitious and transfer my stereo analog tapes to a digital format. I wanted to feed the output from the Magnecorder's amplifier into the analog inputs on a Wadia 4000 A/D converter, which provides either 16- or 20-bit digital audio output. I used the coaxial digital output to feed into either a Sony DT-1000 R-DAT recorder or the digital inputs on a Marantz CD-R1, using TDK recordable CDs.

Naturally, I wanted to preview some of my old stereo recordings to select likely ones for transfer. Remember that I had not looked at these tapes for many years. To my dismay, I found most of the tapes were "cupped." The plasticizer had dried out, causing the tape to curl across its width and, in addition, the acetate-based tapes were rather stiff, but at least there didn't appear to be much oxide shedding. In one of the group of special AES papers on the early days of stereo recording (presented at the 94th AES Convention in Berlin), the authors reported that the tapes selected for the transfer to the anniversary CD were also cupped and stiff. Thus, in their case and in mine too, it was very difficult to get good tape-to-head contact. The transfer engineers ascertained that, contrary to the general feeling that old historical tapes should be played back on the same original equipment on which they were originally recorded, this is the most damaging thing of all and should be avoided. Instead, for transfer they used modern AEG tape recorders with precise, smooth-running tape drives.

With this in mind, I played a Benny Goodman tape I made at the Blue Note—"Flying Home," with Lionel Hampton on the vibes. It was quite a thrill to hear this

1952 stereo recording, but sadly I had to admit that wow and flutter was audibly evident. I found that if I played (at 15 ips) just the first 15 minutes or so of a recording it was at least tolerable. Thus I transferred to the CD-R the Benny Goodman, a piece of Hindemith, "Symphonic Metamorphosis" with Kubelik conducting the Chicago Symphony Orchestra, and Antal Dorati conducting the Minneapolis Symphony in the battle scene in Richard Strauss's "Ein Heldenleben." The Marantz CD-R1 faithfully recorded all this, including the accursed wow and flutter. Having read the AES paper on the transfer of the historic tapes, I decided to play back one of my tapes on a Technics 1500 open-reel tape recorder. This machine has an Isoloop tape drive that

TO MY DISMAY, I FOUND MOST OF MY OLD STEREO TAPES WERE "CUPPED" MAKING TAPE-TO-HEAD CONTACT POOR.

affords very good tape wrap and a very smooth-running mechanism. Of course, the recorder uses standard stereo stacked heads, but the unit has two switches allowing cut-off of either left- or right-channel playback. Sure enough, with superior tape-to-head contact and such smooth tape motion, the offending wow and flutter was virtually eliminated.

Obviously, I'm saddened by the fact that the Magnecord just isn't practical for this transfer project. However, the entire head block assembly of the Technics 1500 is easily removed. I have a friend who has long manufactured special custom heads for various recorders, and I think I can prevail upon him to make staggered heads for this block assembly, so I can save my old stereo recordings. I am also working on transfer projects involving Everest tapes and LPs, which I intend to put on CD-R. I will be reporting on these endeavours ere long!

As for the remarkable Mike Seidl, I was very touched by his generosity. It is nice to know that there are wonderful people like Mike among *Audio's* readership. A



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Matthew B. Polk



BLUES

THE AUDIO INTERVIEW

Arguably, at 45, Alligator Record's co-founder and president Bruce Iglauer has done more over the last two decades than any other individual to popularize the music he loves—the blues. Iglauer, who describes himself as a “white kid from the suburbs of Cincinnati,” fell in love with the blues in 1966 when the then-Lawrence University student heard Fred McDowell at the University of Chicago Folk Festival. “It was as if he reached out and grabbed me, shook me, and spoke to me even though there was a complete cultural difference and probably 40 years between

us,” recalls Iglauer, sitting in his living room in Chicago, surrounded by LPs, CDs, and audition tapes.

The one-time shipping clerk and co-founder of *Living Blues*, the genre's long-time bible, started Alligator with a \$2,500 inheritance, no staff, and an artist roster of one, Hound Dog Taylor. The label's name came from the fact that Iglauer's teeth chatter when he likes a band. Today, Alligator grosses \$4 million, supports a family of 18 people, and claims about 140 titles from some two dozen artists including Koko Taylor, Lonnie Brooks,

with
a



JONATHAN
POSES

BLUES

BRUCE IGLAUER

Photograph: Greg Gillis



Alligator's roster includes James Cotton.

Johnny Winter's *Guitar Slinger* was a turning point, both for him and for Alligator.



KoKo Taylor found Iglauer's approach to producing for different than that at Chess.



Photographs: ©David Gahr

Albert Collins, Johnny Winter, Buddy Guy, James Cotton, and Son Seals.

A self-taught entrepreneur, Iglauer says he can't add and does not read music. Still, the "little label with the big bite" continues to grow, no mean trick in these taut economic times for a label dedicated to a non-mainstream genre, the blues. J.P.

How was it that you became interested in the blues?

I remember the blues first slapping me in the face in 1966 at the University of Chicago Folk Festival. They had Fred McDowell. I had never heard of him. It was as if he reached out and grabbed me, shook me, and spoke to me . . .

I wasn't much interested in the English-rock bands doing blues. I liked Janis [Joplin] and Big Brother, and a few of the other blues/rock people, but I came much more from the acoustic end of things—folk interpretations of blues material. In the summer of '66, I went to the Mariposa Folk Festival where I heard Big Walter, Johnny Young, Sunnyland Slim, and Sonny Terry and Brownie McGee. They fascinated me.

How do you make the jump from being interested in the blues to putting together enough money to record your first artist, Hound Dog Taylor?

I wanted to bring a blues band to my college, Lawrence University, in Appleton, Wisconsin. I talked the student activity board into sending me to Chicago to find a blues band. I hired Howlin' Wolf for the Homecoming. He'd had a couple of heart attacks, but he did a real good show. Still, I was disappointed. The turnout was [meager]. Meanwhile I was working Bob Koesler for a job at Delmark. He was my hero. He's an amazing guy. My father died when I was five. Bob was one of the people I adopted to be my father.

[Eventually] I became the shipping clerk for Delmark, after moving to Chicago in January 1970. I was living in a one-room apartment. I just went to clubs and worked for Bob. Musicians would come by. At that time, there were so few opportunities for them—blues and jazz people, both. Chess was folding, and had been sold. Leonard [Chess] was dead. They were still doing a little recording, but not much. There were some singles labels, all local, though—and

then there was Delmark. A lot of musicians would come around and pull Bob's coat. About four months after I started working there, Bob had his first child. I began to do more of the day-to-day work at Delmark. I filled orders, did paperwork, billing, dealt with the press, dealt with the jacket covers.

Every time Bob went into the studio, I went. The first session I went to, a few days after I got to Chicago, was Junior Wells's *Southside Blues Jam* [Delmark 1970]. I went to [several] Delmark sessions—any opportunity I could get to see what was going on in the studio. Junior Wells took a liking to me and would get me into Theresa's [the famous club].

I met Hound Dog a few times. [It seemed like] nobody could play with him. I thought he was kind of a joke. He'd start a song, play a few bars and stop, tell some story I couldn't understand, laugh, and light a cigarette. He'd try another song, and it would fall apart. I figured here's some funny, likable guy, not a serious musician.

I kept running into him [at clubs]. He told me I should come down Sunday afternoons to Florence's Lounge and see him with his own band. I thought, "What the hell. . ." I was floored. Hound Dog with his own band was altogether different than Hound Dog sitting in.

I went back to Bob and said, "You got to record these guys for Delmark." I probably added, "And I want to produce it." [Laughs] But Bob never took Hound Dog seriously.

Four of us at Jazz Record Mart were fans. One, Wesley Race, from Wichita, Kansas, was a blues pilgrim just like me. He began talking about making a record. I remember him saying, "I have \$1,000, and if there were just somebody else who would get involved, I'd put in to make a Hound Dog record—even if I didn't get it back—just so [he] would get recorded." I remember saying, "I'm your man."

Was Hound Dog receptive to the idea of a recording?

He had done two singles about 10 years previously. I think he knew something was going on because he realized we kept show-

ing up and started making lists of songs he was playing. Then I said, "I'd like to make an album with you." He said, [Iglauer affectionately imitates Taylor's gruff voice] "I'm wit chu, baby. I'm wit chu."

From the time Wesley Race and you first approached Taylor, how long was it before the first Alligator record was born?

We recorded it in two sessions in late May 1971, and released it in August '71. The record was done direct to two tracks. I mixed it as we went. There weren't any effects either. It was either right or wrong. We recorded fast and furiously. The first session, we recorded 21 songs. And we recorded it all live—live vocals, live playing, live distortion.

Hound Dog had an old Sears Silvertone amp with six JBL speakers. Six 10-inch speakers! Two of the speakers were cracked, so we often had great distortion. I've since reissued it on CD—you can really hear it crack and pop now!

Did you have any idea what you were doing?

I used the same studio—Sound Studios—and the same engineer—Stu Black—that Bob [Koester] used. Stu went back to the Chess days. He had some concept of what blues were supposed to sound like. He knew live recording, which a lot of engineers don't know even now.

Describe that concept, please.

Stu understood that the performance was much more important than the pristine quality of the recording. We set up the band as they set on stage. Hound Dog had a boom mike so he could sing and play sitting down—which he did because he had bad feet. Everyone was close together. We didn't worry a lot about bleeding. The drums, as I recall, were miked very simply: A snare, a kick, and two, or maybe one, overhead.

Stu knew a lot about mike placement. If you listen, the sounds are actually pretty sophisticated. The room had a lot of hard surfaces. The floor was linoleum. We didn't attempt to put up baffles between anything. We didn't attempt to have separation. We did it to the extent that in the stereo mix Hound Dog is more on the left, the drums

are in the center, and Brewer Phillips (the other guitarist) is more on the right. The whole point was to capture the atmosphere, to make it ambient. That's still what I try to do. My recording philosophy, relatively speaking, has changed little. The difference is, these days, sometimes I will use the studio to make things *feel* as if I haven't used the studio, rather than in the old days where I basically used the studio as a medium for live recording.

Is there an Alligator "sound"?

There is an Alligator sound to this extent. When I first came into the scene, I realized that the bass and drums were a lot more prominent, a lot more energetic, and more bold than what I was hearing on blues records made at that time. When I began making records, I had louder bass and louder drums, consciously—significantly so from other recordings, but not live performances. I wasn't making dance mixes. It was the way I heard it.

It's certainly true that over the years my records have been somewhat rhythm intensive. I've encouraged other producers I've worked with to mix somewhat in that style. And I try to make my records feel as ambient as possible, as if you're in the room with the musicians, not as if you're in a studio. I accomplish that by using a fair amount of ambient miking. I use studios

with hard surfaces. In the '70s, everything was padded and it was a problem. Seeing a parquet floor was a miracle!

I used to look for plywood, fiberglass, anything I could bounce sounds off. I'd put amps on wood. I'd put them out in the hall. I remember for Lonnie Mack's *Second Sight* putting an amp in a hallway and untacking a rug to get to the concrete floor.

Beyond that, I use technical wizardry to make things seem ambient. That's the area where, working with engineers, use of digital delay comes in handy. If you do find something that dies too quickly, you can fool some of the people some of the time. [Laughs] I use that technique a lot—in bits and pieces—on a lot of my records.

Looking back, is there a period where you may have gone overboard in the studio with a particular technique or method?

I TRY TO MAKE MY RECORDS AS AMBIENT AS POSSIBLE — AS IF YOU ARE IN THE ROOM WITH THE MUSICIANS.

In the mid-'80s, I became [almost too] fascinated about making records where the drum sound was big, like rock 'n' roll records. I listen to some of my records [now], and I feel that the drum sounds are too "twisted," that I was trying, for example, to make more out of snare drum hit than was there. I think I was thinking too commercially.

Now, I've returned to more natural sounds. I worry more about how the sounds bounce around the room than about the actual sound. The problem is in reality there's no such thing as "real sound" when you're recording. People don't understand that, for instance, tape has EQ built into it. If you take the same microphone, the same board and record music on two or three different brands of 24-track tape, then the sound of the instrument will be somewhat different.

There is no such thing as the "pure" sound of an instrument. You can take the same drummer, the same snare drum, the same stick, and have that drummer hit that drum the exact same way in five different rooms, and it will sound quite different.

Yes. It keeps changing, too. I carry a lot more bass drum in my mixes now. I realize the whole band locks into the bass drum. I think I'm in a period where I'm mixing my vocals louder than I used to. I'm returning to echo-plate reverb on vocals rather than delays.

How many copies did you press of that first Hound Dog Taylor disc?

Initially I pressed 1,000 copies. It was all I could afford. I pressed them on credit. I used the same jacket printer and pressing plant as Delmark. At that time, I think an LP cost 27 cents to press. So they extended me \$270 in credit. Big risk! [Laughs] The jackets were the old kind—the slicks that you glued onto cardboard.

How did you get the word out?

I knew there was this new kind of radio—progressive rock—that had sprung up around the country. I had a once-a-week blues show on WXXFM, a weird, time-brokered station. At the station, I ran into Augie Blume, a legendary promo man who had been around. I told him I was getting ready to put out a record. He gave me a list of every commercial progressive rock sta-

Michigan and visited stations. I went to Ann Arbor and two Detroit stations and received air play. Then I went to the distributor and said, "There are three stations in your market playing this record. Are you interested in distributing it?" Of course he was interested. I did all his work for him. I went to Cleveland [and beyond]. I think I ran out of records by the time I reached Boston. My timing was absolutely perfect. I remember station people saying to me, "God, a blues record. We don't even get B.B. King records."

How did Koester or anyone else producing blues records react to you initially? Did it hurt or foster your relationship with Koester/Delmark?

I came back from my big road trip, and I'm pumped. I'm 24. Delmark had moved into its own building, but I was still pretty much its only employee. I was chomping at the bit to do more. People were calling me to book Hound Dog. I tried to turn it all over to Hound Dog, but he didn't know how much to charge, or how to book a hotel room in advance, or where some of these places were located; I became a de facto

WHAT IS THE MUSICIAN GOING FOR? THAT'S WHAT I TRY TO CAPTURE AS FAITHFULLY AS POSSIBLE.

However, now I tend to think more about listening for what a musician is going for and try to capture that as faithfully as possible on tape. So now I think about how tight drum heads might be. I'm thinking, "Let me fool around with it in the recording, not in the mix."

In several instances, you mention trying to capture a "live" sound in the studio. How do you decide when to make a live concert recording versus a studio recording?

I like making live albums because they tend to be very exciting. This music communicates very well live. Usually, if I'm doing multiple albums with an artist, I might try to make one every fourth album, especially if a band is in a particularly good time of interaction. When I do a live album, I make sure the band is in the musical position of having ideal personnel. If I feel it isn't the right moment in the history of the band, I'll put a live album on hold.

If there isn't an Alligator sound as such, is it fair to say that the "sound" of your records has changed?

tion in the country. I sat down with the Delmark distributor, Seymour Greenspan, who owned Summit Distribution. I told Seymour I didn't want to be with the same kind of distribution as Delmark. I said, "You're a real distributor. You've got real labels. I want to be with distributors who have real records, who can get my stuff into the stores. Will you make a list [of distributors] for me?" He did.

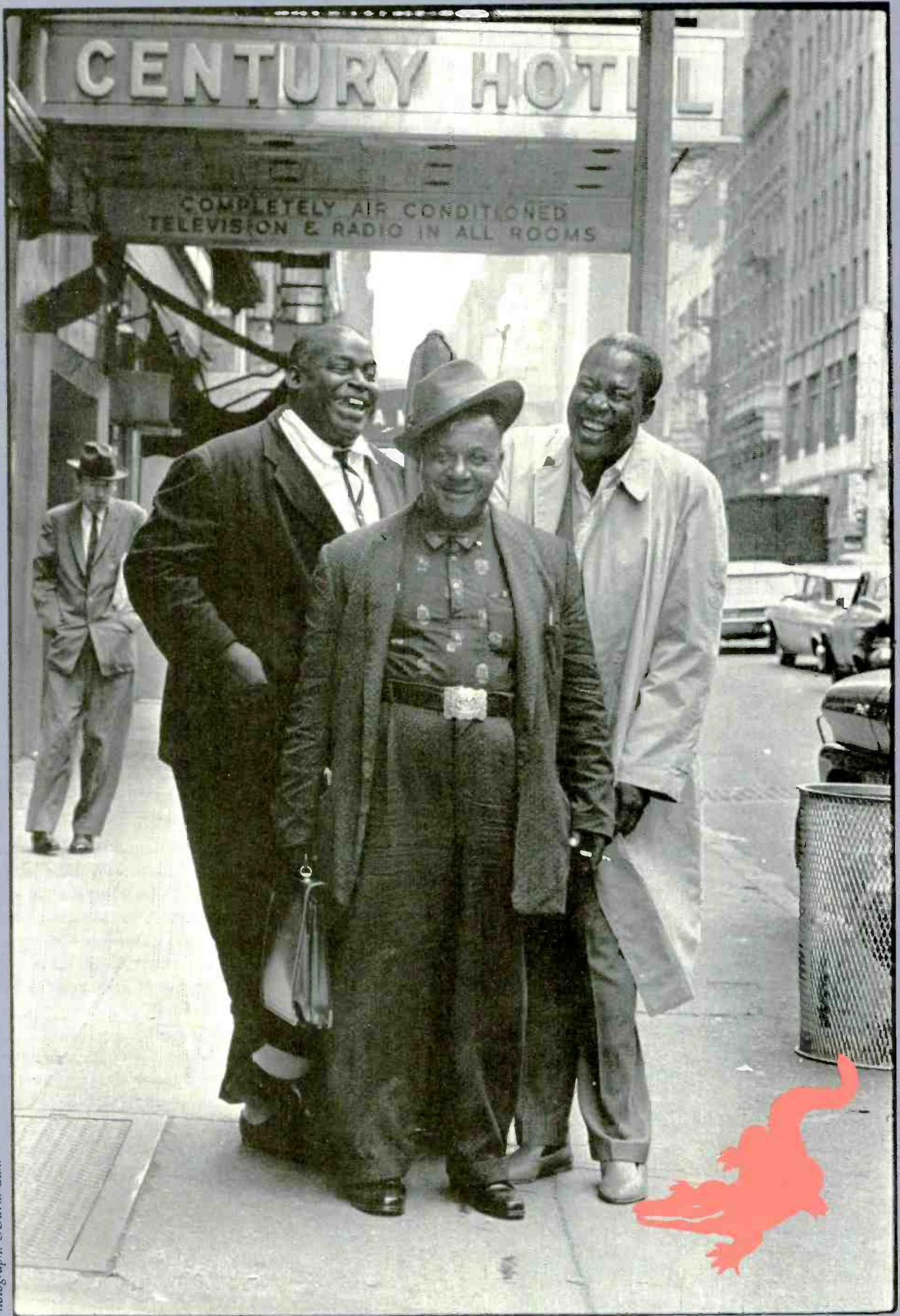
I took a five-week leave of absence from Delmark. I gave 200 copies of the Hound Dog record to Summit. I went to the two Chicago progressive-rock stations. They could give anything air play then. Every jock could program his own show then. That pretty much changed by '74. In fact, if I had started this company in 1974 instead of 1971, I would have failed. Radio changed that quickly—[they would have] pigeonholed my music.

I hit the road. I had a list of college stations, and I knew everyone Delmark serviced. I took all the records in the back of my car. I drove around the Lake to

booking agent and personal manager. I tried to do all my Alligator work at home in the evenings or before I came to Delmark. Still, I found I had to make Alligator calls from Delmark. Then I produced my second album, although it wasn't released yet.

Sometime in the spring of 1972, Bob sat me down and said, "Either you're going to work for Delmark or you're going to run your own company, but you can't run your company out of my place." I left Delmark in mid-1972.

Bob had fostered a lot of labels and artists. To a great extent Nessa records grew out of the Jazz Record Mart. [So did] Testament Records, Flying Fish, Earwig, Rooster. . . . Anyone who worked for Bob was inspired by him. And Bob sees himself as a father figure—and I certainly do—to a lot of people on the scene. However, as Delmark Records has received less and less recognition for what I perceive as a very crucial role in the popularity of blues—and certain kinds of jazz—I think Bob has become just a little bit bitter.



Photograph: ©David Gahr

Willie Dixon, Big Joe Williams, and Memphis Slim after a recording session.



Dr. John (Mac Rebennack) taught *Alligator* about space, simplification, and voicings.

Alligator boasts such blues artists as Buddy Guy.



Partly because of Albert Collins, the blues industry perceived *Alligator* had become a major blues label.



Photograph: Carla Gahr



Photographs: ©David Gahr

How long did it take you to move from the first record—Hound Dog—to a second project and beyond?

In four months I was back in the studio for a second record. This time it was Big Walter Horton with Carey Bell. I think we rehearsed in Carey Bell's basement. It was somebody's basement. I remember when we got to the studio, none of the stuff we rehearsed was ever played. Walter did whatever came into his head. At one point, we were on break. Walter and [guitarist] Eddie Taylor were sitting down playing "Trouble in Mind." Carey said, "You ought to cut that, just like that, just the two of them." It's on the 20th Anniversary Collection. It's one of the best things I have ever recorded.

I could afford one record a year. August 1971, then June 1972, then not until fall '73. I was almost failing. Radio changed a great deal, and quickly. A lot of stations that supported *Hound Dog's* record wouldn't play Big Walter because it didn't boogie enough. [A lot of stations] had changed formats entirely, where they didn't play old, colored people anymore. . . . [However], by the summer of 1973, I realized I would have to do a second *Hound Dog* Taylor album. It had never occurred to me to do more than one record with any artist. I was seeing dozens of musicians who deserved to be recorded, so I figured I'd do a different artist every record.

My first *overtly* commercial move was to make a second *Hound Dog* Taylor album. [Big laugh] I was actually upset with myself. I felt as if I were selling out, turning my back on the scene. That's what, to a degree, led to me doing anthologies—to expose the musicians I couldn't do full records with.

When did you arrive at the point where you felt stable enough to go with two, three, four records a year?

Most of my decisions have been made as, "Okay, this is somebody I really want to record." Occasionally, as with the *Living Chicago Blues Series* [four volumes], I made a deal with a European label—Sonet Records—to co-finance. So, sometimes, it's been infusions of money that [has led to releases].

When did you begin to receive solicitations from bands and people to record them?

From Day One. Remember, there were very few options for blues artists from Chicago

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or anywhere else. I'm sure word of a royalty payment to Hound Dog spread like wild-fire.

You say you became more of a producer with Koko Taylor. What do you mean?

It means greater input into choices of players, choices of songs, arrangements, creating more musical textures. With Hound Dog and others, basically what I was doing was taking them into the studio and recording what they did on the bandstand.

Was Koko Taylor receptive to your added input?

Yes, because I was receptive to her. She told me at Chess they told her what songs she

rious. Albert can adopt other people's songs and make them his own.

Dick Shurman and I created this kind of musical persona for Albert. He became more comfortable as a vocalist. I worked with Albert for eight or nine years. As a touring artist, I was his manager. I was his agent for a long time.

How did having Collins on the label alter perceptions?

He came to Alligator with a much bigger reputation than anyone else I'd recorded. The automatic sale was a lot greater. His first record with me (*Ice Pickin'*, 1978) was my 16th. In part, because of Albert, the

Simplification. A lot of space. I learned things about horn voicings. He really built the arrangements around 'Fess and left more holes. The band was too frantic. He laid them back. He wasn't the arranger. It was never that official, but 'Fess was not a guy who liked to tell people what to do. One of the reasons he appreciated Mac was because he was able to say something to him and Mac could interpret it. Ironically, 'Fess died of a heart attack at 59—the day we shipped the record. He never saw the final cover. I felt like his death—and this is almost crazy—was as if he were saying, "I finally created what I wanted to create. I

WHEN I CONSIDER AN ARTIST, I LOOK FOR ONE WHO SPEAKS TO ME, WHO SPEAKS TO HOW I FEEL.

would record and basically which musicians she could play with.

Have you looked for other women blues artists? Why haven't more emerged?

I don't consciously look for women blues artists any more than I consciously look for men blues artists. I look for artists who speak to me, who speak to how I feel. A & R criteria for Alligator remains: Does Bruce feel it? I've recorded other female artists—Katie Webster and Saffire. Both are stylistically very different from Koko. Many female artists around Chicago try to do Koko's thing. To me they don't do it as well. Katie's is a mix of blues, R&B and gospel, and southwest Louisiana. Even a touch of country. Saffire comes from the acoustic folk end, the singer/songwriter end.

Is it safe to say Albert Collins ranks near the top of your list? What did Albert offer that attracted you?

I was very much in awe of him, like Howlin' Wolf and Muddy. But they were way senior to me, whereas Albert seems much younger than his years. Dick Shurman, a good friend of mine, wanted me to record Albert. I had never worked with a non-Chicago artist. I wasn't terribly interested in working with someone who wasn't going to sing much. Voice is my favorite instrument. [But] I liked his music so much and he was so exciting live that I decided to go for it. Albert has a limited range, a small voice. What he can do is sing and talk the meaning of words. And, he can deliver a humorous lyric. He does well with songs about domestic strife that aren't entirely se-

blues industry perceived Alligator had become a major blues label—or perhaps for a period of time from the mid-to-late-1970s to the mid-1980s—the major blues label.

After you signed Collins to the label, did you begin to view yourself as an archivist? Did you face a dilemma about where to go next? Did you find yourself wondering whether to continue to record the under-recorded, lesser-known artists or to become more "commercial"?

Recording Albert Collins put me in a position where clearly I could take more chances. However, once I had a catalog, and had artists I was responsible to—their livelihoods depended on me—I couldn't let the company fail. I did feel a greater amount of commercial pressure to not do something totally stupid because it felt good. [However], Albert made it possible to record Lonnie Brooks—who took four albums to break even—and to reissue [certain out-of-print acquisitions].

Contextually, explain 'Fess's—Professor Longhair's—Crawfish Fiesta. Why was it so emotionally important for you?

I listened to the New Orleans piano reissue on Atlantic all the time. Professor Longhair was a unique piano player. The rhumbas, the odd metric form, the amazing technique. I loved his singing, the intentionally cracked vocals. I knew he was an important artist. I pursued him from the mid-1970s. *Dr. John helped you with that recording. Specifically, what did you learn from Dr. John [Mac Rebennack]?*

How to make shuffles not sound too busy.

made the record I wanted to make." We gave him tremendous artistic freedom.

Did your role as producer change after the 1980 Professor Longhair release?

This was a period of time when I was growing as a producer. I was having to push people. I felt even though I was dealing with a traditional music, I didn't want to make new records that sounded and felt like old records. During the time of singles, if two or three of Muddy's singles sounded very much alike, they were separated from the listeners for months and months. They weren't back-to-back on a record—or, now, CD.

The challenge of recording 10 or 12 songs by an artist and having them listened to all in a clump is the challenge of trying to get the artist to stretch without taking away that which is the essence of the artist. If I had been making Hound Dog Taylor records for another five years, I would have been in big trouble. He played in three keys, and only used certain rhythms. I could have varied the formula, but . . .

Specifically, at this point, how did you change as a producer?

I went through my "Let's have a horn section on every session" period—around '81 to '82. The artists liked the big sound, but I ended up falling into a rut, trying to be more R&B.

Are there artists you should have signed but passed on?

The two main ones are Robert Cray and Stevie Ray Vaughan. I first saw Robert Cray in 1978. I was impressed. In 1979 or '80, I

SOUND THE HORN

As we go to press, Alligator has just released four CDs from a new reissue series from the Trumpet Records label. Trumpet, which flourished during the early '50s in Jackson, Miss., was run by Mrs. Lillian McMurtry as part of her store, The Record Mart, which in turn was in the back of her husband Willard's furniture store. Significantly, Iglauer disclaims that the series is a "reissue," saying rather it is a way "to honor one of my heroes." Most of the recordings were previously reissued in 1990 by Acoustic Archives but had only slight distribution. Interestingly, Acoustic Archives was run by Eldridge Johnson III, whose grandfather was quite involved with the development of the gramophone at the turn of the century.

However, paid bills are a lot of what Trumpet was originally about, as Mrs. Lillian apparently went out of her way to make certain that Trumpet musicians got their royalties. One story Iglauer told me about her concerned hiding a black musician from some whites who were after him, and it gave me pause to think what that would have meant in Mississippi during the 1950s.

Sociology aside, the first four CDs in this series are *Clownin' With The World* from Sonny Boy Williamson and his friend and piano-player Willie Love; *Delta Blues—1951* by Big Joe Williams, Willie Love, and Luther Huff; *Strange Kind of Feelin'* from Jerry "Boogie" McCain, Tiny Kennedy, and Clayton Love, and *Deep South Gospel* by The Southern Sons. In line for release are *Goin' In Your Direction* featuring Sonny Boy with Arthur "Big Boy" Crudup and Bobo "Slim" Thomas, as well as a gospel and an R&B anthologies.

My favorite—so far—is *Clownin'*, which Iglauer says is one of his too. Mostly, good, clean discs have been used to make the transfers, with a minimum amount of digital noise reduction. The original tapes would have been used, but they've long been gone, says Iglauer. "They were dumped to satisfy an unpaid bill." He says, too, that there is some high-frequency loss with the digital NR but that this was preferable to the noise that would have otherwise been present.

Have a listen for yourself, however. I think these are good and interesting additions to the catalog. **E.P.**



went to Spokane, Washington, to look at the Robert Cray Band again. I offered them a deal, but there was a catch. This is an example of how my personality and hard-headedness can work against me. At the time, there was a member of the band—someone who toured with them, not a permanent member—who I felt wasn't contributing musically. I suggested using a studio musician for the recording, that the other musician was holding back the flexibility of the band. They considered it, but Robert said he wanted to work with the band as is. That was the make or break in that situation.

When Bruce Bromberg produced *Bad Influence*, he didn't have a label. Bromberg, who I had worked with previously, offered the master to me. I listened, played it for

other people I trusted, and we all felt it was "Robert Cray's other side." It didn't seem to capture the on-the-bandstand Cray I knew, the band that did shuffles as well as slow blues. It was too much "change of pace" material. I passed. Consequently, Hightone Records formed because I took a pass on the Robert Cray master.

As far as Stevie Ray Vaughan, somebody brought him here for the NAMM show in 1980 or '81. Two members of my staff were wild about him. I didn't hear it. He was doing a lot of cover versions at that time. I heard a lot of Albert King, a lot of Magic Sam. I wasn't that impressed with his singing. Within two years, however, he grew a lot as a player. I also think I was still in the "don't take white guys seriously" state of mind.

Any other people who may have fallen through the signing cracks?

Of all the people I haven't signed, the one I feel the worst about is Joe Louis Walker. I consider him one of the major blues talents of his generation, a person who will be making important records forever. I saw him live, and he didn't kill me. It was one night, and it was a bad night. I made a wrong decision. Whereas Robert's "uptown-ness" doesn't always speak to me, whereas Stevie's guitar pyrotechnics were just a little too far on the rock 'n' roll end of the spectrum for me, Joe Louis Walker is a contemporary bluesman very well rooted. He [plays genuinely] without doing imitations of old records. He's deeply soulful. I feel his music a lot. I kick myself about not signing Joe Louis Walker.

How do you react to artists choosing to leave the label?

In almost all cases, it's been very hard for me when an artist leaves. I don't perceive Alligator being a record company in the sense of Sony, MCA, etc. Rather I perceive Alligator to be an extended family. There are some business relationships, but they are not necessarily more important than personal relationships. When I record somebody, I kind of assume we're making a commitment beyond the length of any contract. I make a commitment to that person and that person's music. When somebody leaves, it's kind of like the child rejecting the parent.

Turning to one of your big successes, how did Showdown!, the 1985 summit between Collins, Johnny Copeland, and Cray, come about?

It's not as strange a situation as you might think. As the talent chairperson of the first Chicago Blues Festival, I suggested a Texas guitar summit. Specifically, I thought of Albert, Johnny Copeland, who was emerging at that time, and "Gatemouth" [Brown]. Gatemouth was under contract to Rounder at the time, but I think they would have given me permission to record him. Gate, however, said if he were going to be involved, then he was going to use his band. Me, Mr. Hard-headed, wanted Albert's rhythm section. I knew them. I didn't know Gate's people.

I also wanted to record in Chicago. I wanted to co-produce with Dick Shurman, use a studio I was familiar with, etc. I'm

sure the reason so many Blue Note or Prestige records employed the same or similar personnel wasn't just because they were talented musicians—which they were—but the producers knew those people were reliable, their personalities sparked good performances in other people, and there was a level of professionalism, a positive attitude.

Gatemouth bowed out. Albert suggested Robert, [who was] then his protégé. I wanted it to be Texans. Robert wasn't from Texas, but everyone seemed to be up for it. We had three different labels [Alligator, Rounder, Hightone] represented. You had everyone's manager as a support system to the different artists. You had the dream rhythm section of Johnny B. Gayden [bass] and Casey Jones [drums], and Allen Batts on keyboards. . . . It's a very live album. I think we re-took a couple of guitar solos. All the vocals were done live; people really playing off each other. I remember Dick [Shurman] saying an hour into the first night, "Is this as good as I think it is?" We weren't being producers. We created a situation—and the situation produced itself. The record just flowed.

Is Showdown! your best seller?

Yes. We're over 200,000 [units] in the United States, and maybe half of that in the foreign market. It continues to sell.

Did you think it was going to do that well? I remember being scared. I recall it had a break-even of about 13,000 or 14,000 units. I remember worrying if it was going to do that much. [Laughs]

strategy? Once a coterie of artists was established, how did you decide where to go?

There's that period where I'm repeating artists, licensing others, dabbling in reggae. The company is growing. I'm experimenting as a producer—using larger groups, larger horn sections—and different types of material. I'm not necessarily expanding my roster. I'm looking to expand the catalog and use outside producers. Then along comes Johnny Winter. I would say that's when the company turns a corner. He was tired of trying to make rock 'n' roll hits. He was also tired of making blues records with New York guys. He came out here, and we picked amongst the great players. Johnny's first record [with me] was fun, particularly because I was able to experiment—putting different players together for different songs. However, I was laying out more money than I ever had for an artist. In that sense it was scary. When we released *Guitar Slinger* [1984], it did extraordinarily well by my standards—something in the neighborhood of 35,000 copies right away. It ended up selling between 75,000 and 100,000 copies, I think. It still sells. A lot of people think it was Johnny's best record. I was very proud of it.

Serious Business [1987] was the second album. We were real happy with the music, but Johnny and I had big fights over the mix, arguing about drum sounds, of all things. We ended up having a falling out. When we did the third album [*Third Degree*, 1988], he did it with Dick Shurman

a-half to three years, which is fairly quickly for me. Hard-core blues fans had the perception that I was thinking, "What bluesy rock 'n' roll guitarist could I find to sell a bunch of records?" Many thought I was selling out. In fact, all that happened was some people I liked became available then. *But you had gone from, let's say, pure blues—Hound Dog Taylor—to . . .*

Let's remember that I began changing that approach fairly early. Son Seals was 30 when I made his first record, *Son Seals Blues Bank* [1975]. He was not a known artist who had paid dues during the '40s, '50s, or '60s. He was not Muddy Waters' peer, as Hound Dog and Big Walter were. Virtually right away, I didn't do what the traditional blues fan might have anticipated. I used horns on my fifth album. It is true that through my first 20, 25 albums, I was considered the standard bearer for mainstream Chicago blues.

How did you deal with those hard-core blues fans? Did their not-so-kindly opinions have an adverse impact upon you? At any point did you question your own direction? As the label's focus shifted, did you ever sit back and say, "Is this what I want to do with this label?"

As the years pass, I've become less concerned about what people think of the label. I see myself as less of a blues purist than I was. I also see the blues as a changing, evolving medium. I've said this before. When Muddy Waters came to the Chess Studios in 1947 and he plugged in, Leonard

I SEE MYSELF AS LESS OF A BLUES PURIST NOW; THE BLUES ARE A CHANGING, EVOLVING MEDIUM.

In Alligator's earlier stages, were the only artists who you were interested in recording—preserving—black artists?

Yeah. I was a real racist then. I didn't think white people had any worthwhile statements to make in the context of blues, except of course as producers. [Laughs] Seriously, it took a long time for me to change that attitude. I was very much a Chicago-ophile, too. I had this sense of local pride. Plus, there was this huge talent pool. Why would I need to go out of town?

Let's turn to your roster's growth. You mentioned you reached a point where you're making follow-up recordings of various artists. Did you have a second-tier

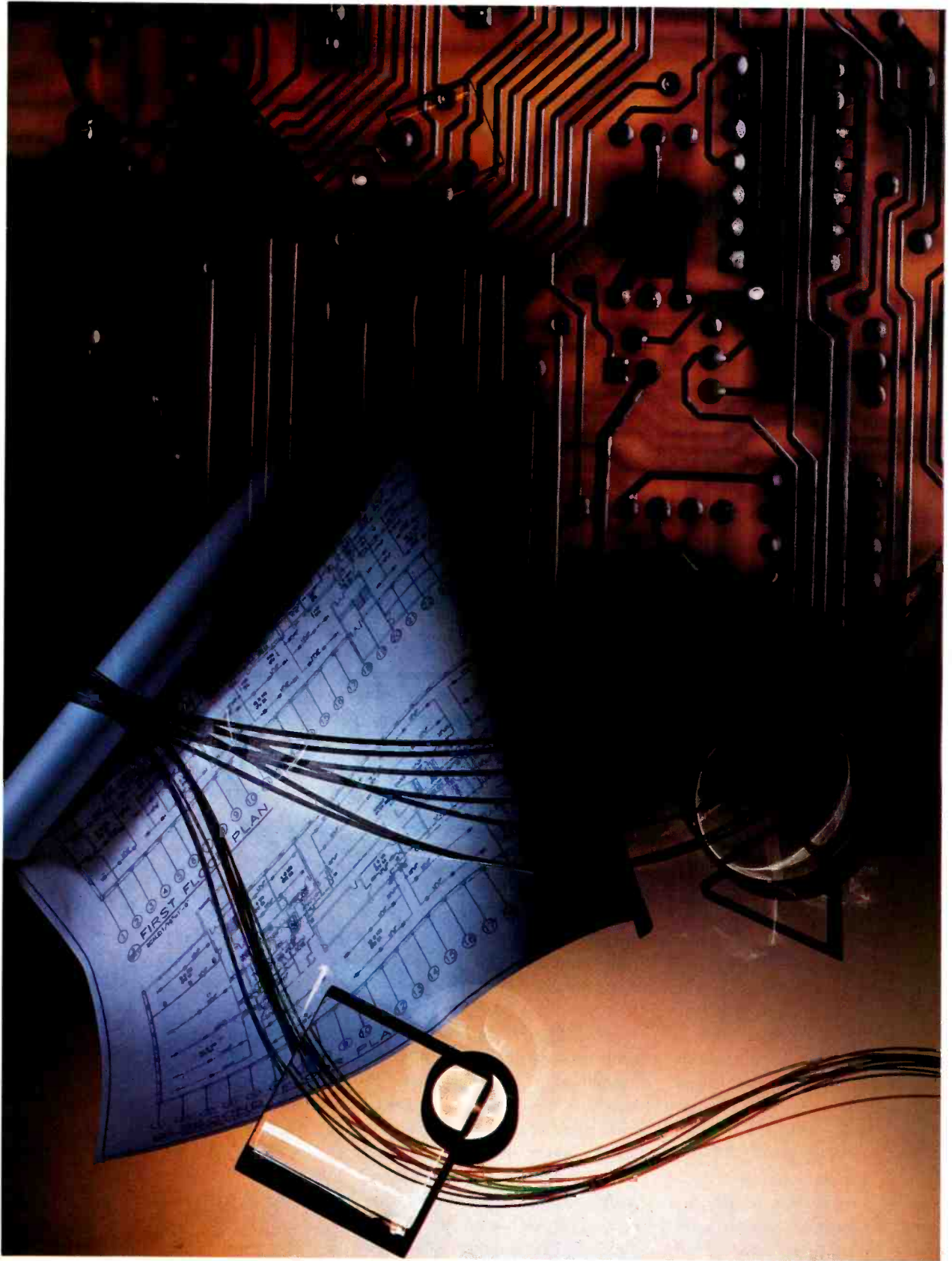
producing; I acted as executive producer. I [was involved with] only a couple of songs and some re-mixing. That may be the best, sound-wise. Performance-wise, too.

It seems as if after working with Johnny Winter, Alligator [you] made a conscious effort to change directions. Is that true?

I would call it "semi-coincidental." In retrospect, it looks planned. I signed a few white guitar heroes who had had careers in the late '60s or the early '70s where they had some sort of rock/pop acceptance. I'm talking about Lonnie Mack and Roy Buchanan. I made two records with Lonnie, three with Roy, and three with Johnny. All of these records fall in a clump of two-and-

Chess did not say, "No amplifiers, Muddy, you won't sound like Son House." [Laughs] There was never a sense that this music is holding still or this is the way this music should be. It's a question of does this music communicate, does it speak, does it push those tough, emotional buttons?

In the case of the newest generation of white artists I signed—The Paladins, Tinsley Ellis, Little Charlie—you have people who are more influenced by records than [directly] by people you would call bluesmen or blues women. More than anything else, the signing of people depends on how they move me in live performance. That's still the Alligator criteria. A



Photograph: ©1993 William Westheimer

George Schulson

▽ Quiet ▲

by

■ design □

Many factors contribute to the noise environment of your media room; unfortunately, your home's electrical system can be a primary factor. The nature of the electrical system, how that system is hooked up, and the individual pieces of equipment it contains, can all contribute to noise problems.

This noise comes from both the electrical power supplied by your power company and from noise-generating equipment and wiring within your home. The noise can easily affect the performance of audio/video components, adding to the noise floor, limiting power available for transients, or allowing breakthrough of CB or AM radio.

Determining what the noise sources are and eliminating or overcoming them will give you an electrically quiet media room in which the only signal you receive will be the one you want to hear.

NOISE SOURCES

Some sources of noise have been with us for many years; refrigerators, air conditioners, and fluorescent lamps are common sources. However, new sources of noise are beginning to come on line from equipment within the home (such as personal computers) and from the surges that result when a community's electrical load-management system remotely starts or stops numbers of central air conditioners or other large devices at once.

Some types of noise, such as the repetitive, narrow-band noise produced by some

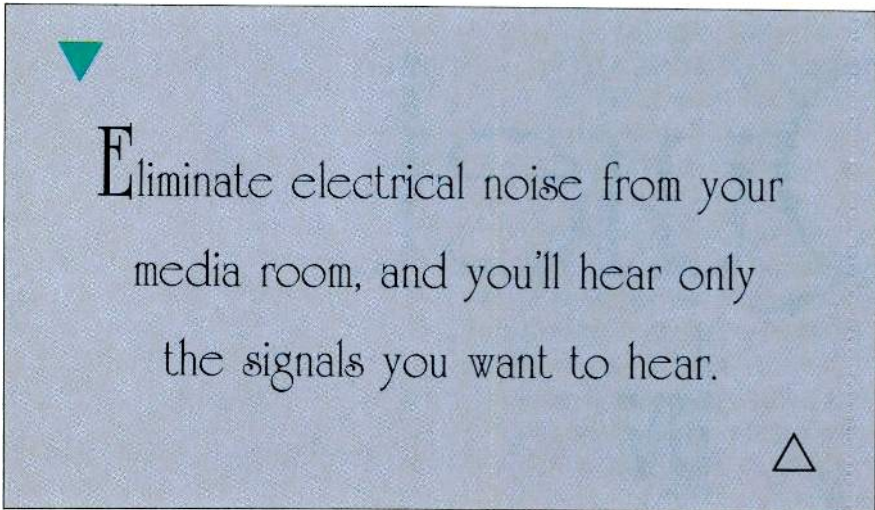
▽

George Schulson, Vice President and Analog Design Engineer at Niles Audio, in Miami, Fla., wrote this piece with the company's entire engineering staff. Niles makes a variety of systems and accessories for custom-installed multi-room and multimedia entertainment systems.

domestic appliances, are readily filtered. But many other noises are more difficult to filter and should be eliminated at their source.

Solid-state lamp dimmers, for example, are a common source of electrical noise. Although they are very popular, they are extremely noisy and it is very difficult to filter out their noise once it is on the audio/video power line. These solid-state dimmers can also transmit their noise as radio signal, invading sensitive audio/video circuits and corrupting the signal.

Surprisingly, some noise can come from audio/video components themselves. Most televisions today use a type of power supply that has a poor power factor. Power factor, technically defined as the true power in watt-amperes, or the cosine of the current/voltage phase angle, indicates how a component draws power. The power factor rating can be anywhere from 0 to 1.0; a rating at the low side of the scale is poor and



Eliminate electrical noise from your media room, and you'll hear only the signals you want to hear.

ceptable type of low-voltage system uses a single incandescent bulb, a step-down transformer, and a variable potentiometer to control the brightness from off to 100%. It does not generate perceptible noise.

Needless to say, fluorescent lights, neon lights, or any other gas-discharge lamps are not recommended. These lamp types create electrical noise. Halogen lamps, however, are simply incandescent lamps filled with halogen to increase the lifetime and brightness of the bulb.

AVOID SOLID-STATE DIMMERS

The use of dimmers in residential and commercial properties has been very popular for quite a while. With the advent of the silicon-controlled rectifier and the triac, inexpensive solid-state lamp dimmers became a reality.

Unfortunately, these devices are among the worst generators of electrical noise. Because they are most frequently produced with an eye on competitive pricing, they are rarely filtered to the degree necessary for a quiet media room.

Although the NEC requires these devices to be filtered, the basis for this requirement and the standards set for this date back to the early 1970s or before. They only address the interference these devices cause to AM radios operating in the 500- to 1600-kHz radio band. But the frequency of the noise that these dimmers generate ranges into the tens of megahertz.

In fact, the only reason noise generated by dimmers was regulated at all was because they came out in the heyday of AM, and they made AM noise. Audio, on the other hand, was such an infant industry at the time that a dimmer's effect on audio components was not even considered.

Solid-state dimmers control incandescent lamps by a method technically known as "phase control." Instead of allowing the 60-cycle current to flow continuously, these devices turn it off each half cycle and then turn it on again after so many milliseconds of delay from the beginning of the

1.0 is ideal. A poor power factor suggests that the component utilizes a switching-mode power supply that does not draw energy in a consistent or efficient manner, but rather pulls current in surges. This distorts the power-line waveform and causes noise on the electrical lines.

SEPARATE ELECTRICAL FEEDS

Ideally, the electrical feeds for the media room should be derived from separate circuit feeds off the main breaker. In most cases, they should be passed through high-attenuation electrical filters. There are a number of brands of these filters: Corcom is probably the largest U.S. supplier; another prominent company is Delta.

High-attenuation filters will form a first line of defense against noise getting into the electrical service line. They also help prevent whatever noise is on the line from getting out to the rest of the system. These filters, which generally should be installed by licensed electricians, must have voltage and current ratings at least equal to the circuit-breaker ratings for each of the electrical feeds to the media room.

According to the National Electrical Code (NEC), a feed rated at 15 amperes is good for about 1,440 watts, while a 20-amp feed is good for 1,920 watts. That's less than you might calculate by multiplying the current by the nominal line voltage of

120 V; this is because the NEC allows only 80% utilization of the service rating, not 100%.

The use of isolated-ground outlet receptacles should also be considered. These outlets are differentiated from normal grounded outlets by their orange color-coding; note that a *separate* ground return wire must be run back to the service panel and that the conduit is not used as the ground return.

QUIET LIGHTING

All media rooms have to be lit. However, it's important to determine what lighting is suitable, not only from the point of view of generating light, but also to avoid generating noise.

The rule is "incandescent lights only" and to be even more particular, low-voltage (6 to 24 V a.c.) incandescent lighting that uses step-down transformers, because the electrical noise generated is almost imperceptible. Such low-voltage systems use different electrical principles than low-voltage incandescent lighting utilizing solid-state supplies, and do not generate noise. As an added benefit, the light output of low-voltage, incandescent lamps is greater than that of standard 120-volt lamps of equal wattage. They are available in a variety of formats, including round ceiling-mount light cans for track lighting. Another ac-

cycle. What you end up with is an electronic device that is switching on and off 120 times per second. Because the device turns on so quickly, and the rise of current is limited solely by the lamp and other circuit parasitics, a noise pulse is generated each time these devices turn on.

As you can see, this is not exactly the type of device you would want in a media room. The question comes up, if you have to dim, how can you dim and not create noise?

The answer is, use the venerable old variable-voltage isolation transformer. Manufactured by a number of companies, these devices have been used for many years in recording studios' dim lamps without generating the "nasties" associated with solid-state dimmers.

These devices are perhaps 10 times more expensive than solid-state dimmers and are larger (they may require a two- or three-gang conduit box). They are also available with motor drives, should you want to remotely control them from a convenient location. In that case, the devices that actually dim the lamp can be located back at the service panel, and the devices that control the motor drive can be placed where the light switch normally is.

INSULATE INCOMING POWER

If incoming electric service is routed through metal conduit pipe, noise will be kept to a minimum. The metal conduit was a safety requirement in residential and commercial properties for many years and is still required in commercial properties in many states. But you generally do not see this type of electrical wiring in new houses today. If it has not been installed in your house, then you will have to make do with what you have.

If we are talking about a house that has not yet been constructed, I strongly urge the use of steel electrical conduit pipe rather than Romex wiring. Although it may cost a good deal more money, you have the increased benefit of protection from fire,

the ability to more easily replace broken or worn-out wire, and the obvious shielding benefit of the steel conduit pipe.

PROFESSIONAL WIRING

You may be tempted to do your own electrical wiring and, in some states, you are allowed to wire your own house, but you still must meet the NEC codes that pertain to this work. I think it best to call in a professional. Not only are professionals trained, but they are also familiar with all the minute details of the NEC regarding electrical hookups in the residential environment. They are licensed by their states and counties to do electrical work and have the advantage of being legally recognized as qualified.

Further, if you ever want to sell your house and it is not up to code, you would have to bring in a professional anyway. Perhaps most important, if the wiring you install yourself results in problems, you would be liable for all damages.

POWER IN YOUR COMMUNITY

In the past, the quality of electrical power had not been a concern for audiophiles. But the marketing of more and more electronic devices using microprocessors, especially the personal computer, necessitates

that consumers take a closer look at the effect these devices have on the quality of the electrical line power.

For a long time, power factor was something only electric utilities were concerned with. However, because of the proliferation of computers and other devices that use switching power supplies, it now also affects us. Further, these switching-mode power supplies have had, until recently, poor power factors, so they are capable of distorting the power-line feed and could make the effective quality of the power worse than it was previously.

Because there is so much switching-mode equipment in use that does not have an adequate power factor, there have been electrical fires in commercial offices with a concentration of these devices. Because of this, safety agencies throughout the world, such as Underwriter's Laboratories in the U.S., have now set new standards governing the power factor of switching-mode power supplies. As devices with adequate power factors of 0.9 and above proliferate, they will greatly reduce the distortion in the power-line waveforms coming into the home from the utility company. This will provide the residential user with power of higher quality, unaffected by devices with poor power factors. Other devices can also have poor power factors. Generally, the power company is responsible for and interested in seeking out loads with poor power factors. It is in their interest not to have to generate excess power.



When microprocessors came into the home, they brought noise problems formerly found only in offices.



Harmonic distortion on a power line can range from a low of 0.5% at night to a high 3.5% in the daytime.

If you are curious, have the necessary test equipment at hand, and are knowledgeable working around open fuse panels, the following method, proposed by The John Fluke Co. in a pamphlet entitled *Sources of Harmonic Distortion*, can be used to detect if harmonic distortions are present on the power line.

You will need two pieces of test equipment—an average-responding clamp-on current meter and a clamp-on current meter with true rms response. With each meter, measure the current being drawn through the circuit that will feed your audio/video system. Divide the average current by the rms current. A value of 1 would indicate little or no distortion. If, upon performing this test, you obtain a value of 1, you can hook up your hi-fi system without fear of distortion. However, an indication of 0.5 or lower would indicate substantial harmonic distortion. Since you are measuring the circuit feed to which the hi-fi will be connected, you must disconnect, one at a time, each of the devices currently connected to that feed. After disconnecting each device, perform these two measurements and calculate the product. You will be able to determine which of the devices is causing the problem.

Of course, this test assumes that the feed coming into the panel itself is reasonably clean, and that the source of the distortion is equipment you are plugging into the circuit. Unfortunately, this may not be the case. Other devices, which are drawing cur-

rent from the fuse panel but are not on that circuit feed, may be the cause of the distortions. To determine whether any of the devices in your house are causing the distortion, perform the same two measurements on the main feed wires coming into the panel itself. If they indicate less distortion, then one or more appliances within the house is causing the problem.

OTHER SOURCES OF DISTORTION

Tests by some colleagues using high-end audio systems reveal a definite sonic difference between listening during the day and listening at night. Measurements undertaken by these colleagues during day and night have shown that harmonic distortion in a power line can vary from as little at 0.5% in the nighttime to as much as 3% or 3.5% during daylight hours. This change in distortion level is directly attributable to the various industrial loads with poor power factors that are present during the day but not used at night.

Some high-end audiophile companies are aware of this problem and are bringing out devices to address it. These plug into the same electrical outlet as your other equipment and are, in effect, connected in parallel with your devices, in an attempt to correct the power factor problem. The makers of these devices do not go into great detail in public about how these devices

work. Much of the technology is proprietary or patent-pending, but I believe that most of these devices attack the problem via power-factor correction.

LOCATING NOISE

You can use a portable, battery-operated AM radio to seek out amplitude-based noise interference. By tuning the radio through its band and placing it close to suspected noise-inducing electrical devices, you'll be able to hear, through the radio, the impulse noise these devices create. Even the turning on of a light switch should show up on a radio. By bringing the AM radio close to fluorescent light fixtures while they are operating, you will be able to hear the noise the devices create. The same goes for placing the radio near solid-state lamp dimmers.

Remember, the noise may only be present in a certain area of the AM radio band. Therefore, you must continuously tune in order to locate the noise. In other cases, the noise is repetitive and of such a broad-band nature that tuning the AM radio is unnecessary.

An unusual source of noise are items called "carrier current devices." These devices send coded pulses over the a.c. power line, giving you control over the lights and lamps plugged into the 120 V a.c. line. They can generate noise that may get into your media room sound system. Because these devices operate only when you want them to, it is not critical that we look at them as a potential continuous noise source, but be aware of them.

In some cases, carrier-current devices are interfered with by high noise levels on the a.c. power line. Should this be the case, you should seek out the devices that are making the carrier-current devices inoperable. These same devices would most assuredly affect the quality of electrical lines in the media room.

In conclusion, let me hope that you have good luck in hunting down any sources of electrical noise you encounter in your media room, and wish you quiet listening. A

Why won't conventional hi-fi speakers work for Home Theater?



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You need three front speakers - left, right and center - to achieve realistic home theater, because a stereo pair would place the dialog in the center (where it belongs) from only one listening position. You can't use conventional hi-fi speakers for the center channel, even shielded models, because their dispersion patterns prohibit raising them too high or laying them on their sides.

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"...absolutely majestic... a boon for audiophiles."

"...clean percussion, authoritative bass and a general sense of ease and openness that I cannot quite get from other fine speakers."

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Yet, they'll perform with as little as 35 watts per channel. Like we said – efficient.

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Contact us today for more AL-III info, or amaze yourself at your Carver dealer.

Carver AL-III's are beautiful, with hand matched solid oak panels. And a nice fit. 48" full-range dipole driver ribbons and new 10" woofers are only 14.5" W x 72.5" H x 16.5" D. (Hot tip: Pair the AL-III's with Carver's TFM-35 Power Amp and CT-3 Preamp/Tuner for an awfully sweet package!)

Amazing

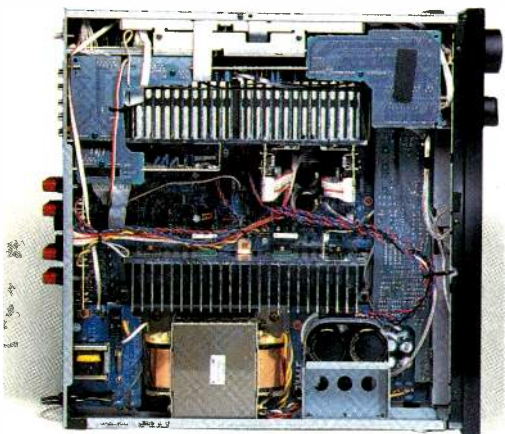


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YAMAHA DSP-A2070 DIGITAL SOUND-FIELD PROCESSING AMPLIFIER



It's been well over two years since I tested Yamaha's DSP-A1000 Digital Sound-Field Processing integrated amplifier (June 1991 *Audio*). Since then, I have not come across a more versatile or effective single component that could provide as many home-theater and surround sound functions with such stunning sonic impact. Until now! And not sur-

prisingly, it is Yamaha that has outdone their earlier effort.

Physically, the new DSP-A2070 is almost indistinguishable from the earlier model (which, by the way, is still available). One big difference is the price, which is some \$500 higher than that of the DSP-A1000. What, I wondered, had Yamaha done to justify this rather steep increase in price? After a hands-on comparison between the older unit and the new DSP-A2070, it didn't take long to conclude that the increase was fully justified. The DSP-A2070 provides three times the sound-field processing capabilities and nine times more early-reflection and reverberant sound-field data, and it calculates 64 times faster than the DSP-A1000. The result, to my ears and to others who heard the old and new products compared, was increased dialog intelligibility, greater separation between music, effects and dialog, and a larger, broader soundstage. After I outline the

amplifier's basic features, I'll give a brief comparison between the features of the DSP-A2070 and the older model.

Like the earlier DSP-A1000, the DSP-A2070 is a seven-channel surround sound amplifier that provides digital sound-field processing and digital Dolby Pro Logic decoding with digital enhancements. It provides at least 80 watts each for the main (left, right, and center) channels, while the four effects channels (two front and two rear) get at least 25 watts apiece. A built-in test-tone generator provides a sequential sweep through the channels for use in establishing proper balance.

Control Layout

The upper half of the DSP-A2070's all-black front panel houses the power switch, a "Tape 2 Monitor" switch, a rotary "Input Selector" and the "Volume" control, which is calibrated in dB from 0 dB (maximum) to -80 dB and then full off. A centrally positioned LCD display shows selected program names and parameters and information about a wide variety of settings and adjustments, with adjacent LED's showing activation of the Pro Logic and "Sound-Field Processor" circuits.

**FOR THE BEST POSSIBLE
BASS, YAMAHA PROVIDES
TEST TONES AND SPLIT
SUBWOOFER OUTPUTS.**

Lowering a swing-down hinged panel reveals additional controls. These include an "Input Trim" rocker that adjusts input levels of each program source and also adjusts items selected by a "Set Menu" button. That button brings up seven different items for adjustment: Center mode, center graphic equalization, a low-frequency test, parameter initialization, memory lock, VCR3 video out (record out or monitor) and input level trim. A "program" rocker sequentially selects the digital sound-field processing programs, while an "Effect" switch turns the center and effects speaker channels on and off.

Along the lower section of the panel, and also hidden by the hinged swing-down flap,

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are a stereo headphone jack, a "Bass Extension" switch, bass, treble, and balance controls, a record output selector switch and a set of "Auxiliary" audio and video input jacks including an S-video connector.

In addition to duplicating the control functions found on the front panel, the supplied remote control offers buttons that adjust rear and center levels relative to main channel levels, on-screen display adjustments, and keys for operating other compatible Yamaha components. Yamaha supplies a couple of blank templates with which to cover the existing remote control labels. All the keys on this remote can be "taught" commands other than those preset at the factory. Each key, in fact, can "learn" two different functions.

The rear panel of the DSP-A2070 is crammed full of jacks and speaker terminals. There are seven pairs of jacks for audio-only program sources (including



"Tape 1" and "Tape 2" record-out jacks), eight sets of audio/video program jacks (including output jacks for three VCRs) plus a video-monitor output jack, with S-video jacks for all video inputs and outputs. The eight sets of speaker terminals include two main, four "Effects," and two center-channel terminals; line-level "Mono" and

"Split" subwoofer jacks allow use of powered subwoofers or separate amplifiers powering passive subwoofers. There are also "Effects Out" jacks (for those who prefer to use separate amplifiers for surround channels), jacks for interconnection of preamp and main amp sections, and in/out jacks for the center channel. A small "Main Level" rotary control adjusts the main-channel line output level at the "Main Out" jacks. A "Front Mix" on/off switch, a center-speaker impedance switch, three a.c. convenience outlets (two switched, one un-

**IN AUDIO-ONLY MODES,
ONLY THE EFFECTS
CHANNELS ARE DIGITAL,
BUT IN CINEMA MODES,
THEY ALL ARE.**

switched) and a ground terminal complete the rear panel's layout.

Despite strong similarities between that description and my description of the DSP-A1000 back in 1991, there are substantial changes and improvements in the new DSP-A2070. In place of the separate DSP and Dolby Pro Logic chips used in the older model, the DSP-A2070 uses a new LSI that incorporates both functions, plus two additional DSP chips; this setup replaces a huge signal-processing p.c. board used in the DSP-A1000. The D/A and A/D converters are new, interpolative designs that provide the equivalent of 19-bit processing.

Eight different sound-field parameters are now adjustable including, for the first time, effect trim and independent front effect (presence) and rear effect (surround) delay times, reverberation percentage, and reverberation level. Parameters can be reset to their factory levels at the touch of a button, and a "Memory Guard" feature prevents unwanted changes to parameter settings.

Both mono and "Split" line-level (2-V) subwoofer outputs are provided. The use of dual subwoofers can, in many installations, improve bass response and directionality as well as provide a greater feeling of presence. To help the user optimize subwoofer output and placement, the unit can provide

SPECS

Audio Section

Power Output (20 Hz to 20 kHz): Main and center channels, 80 watts/channel into 8 ohms, 100 watts/channel into 6 ohms; front and rear effects channels, 25 watts/channel into 8 ohms, 30 watts/channel into 6 ohms.

THD: Main and center channels, 0.015%; effects channels, 0.05%.

Damping Factor, Main and Center Channels: 120.

Input Sensitivity: High-level inputs, 150 mV; phono, 2.5 mV; main and center amp inputs, 1 V.

Maximum Input Signal (1 kHz, 0.05% THD): High-level inputs, 2.3 V; phono, 130 mV.

Maximum Preamp Output: 3 V.

Headphone Output Level: 0.19 V at 1 kHz, for 8-ohm load.

Frequency Response: 20 Hz to 20 kHz, ± 1.0 dB, via high-level and main amp inputs.

RIAA Equalization Deviation: ± 0.5 dB.

S/N: High-level inputs, greater than 96 dB; phono, greater than 86 dB.

Residual Noise: 150 μ V.

Tone Control Range: Bass, ± 10 dB at 50 Hz (350 Hz turnover frequency); treble, ± 10 dB at 20 kHz (3.5 kHz turnover frequency).

Bass Extension: +7 dB at 70 Hz.

Audio Muting: -20 dB.

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Video Input Levels (peak to peak): Composite and S-video luminance, 1 V; S-video chrominance, 0.286 V; maximum, greater than 1.5 V.

Video Input Impedance: 75 ohms, all inputs.

Video S/N: 50 dB.

Video Frequency Response: 5 Hz to 10 MHz, +0, -3.0 dB.

General Specifications

Power Requirements: 120 V a.c., 60 Hz, 400 W.

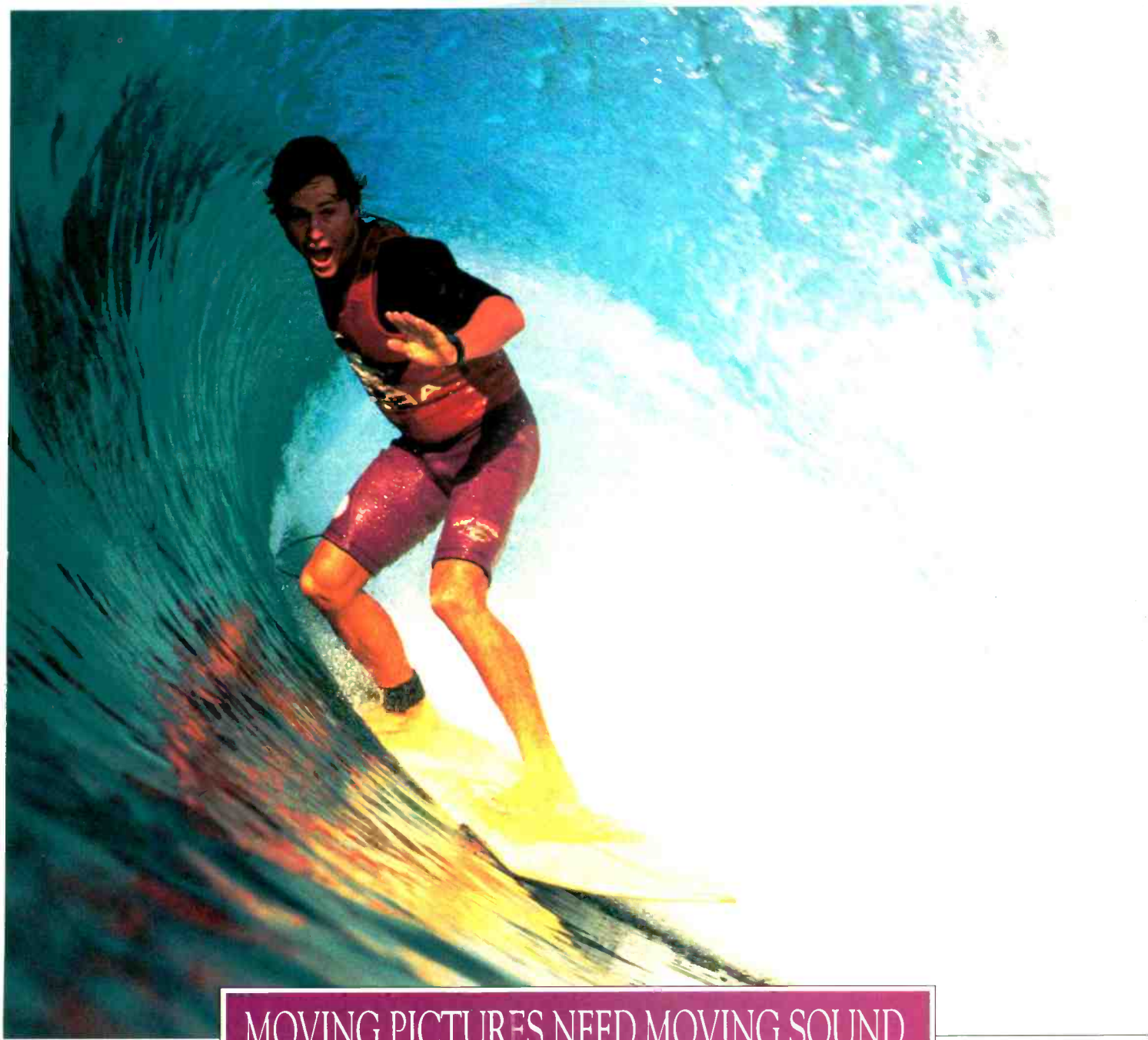
Dimensions: 17 $\frac{1}{8}$ in. W \times 6 $\frac{3}{4}$ in. H. \times 18 $\frac{1}{16}$ in. D (43.5 cm \times 17.05 cm \times 46.85 cm).

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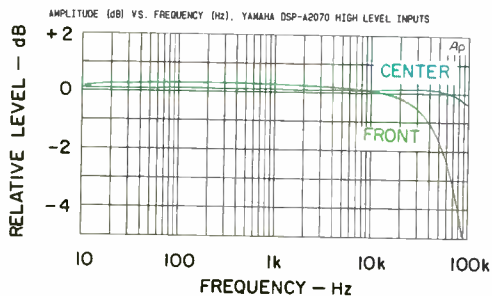


Fig. 1—Frequency response, front main and center channels, at 1-watt out.

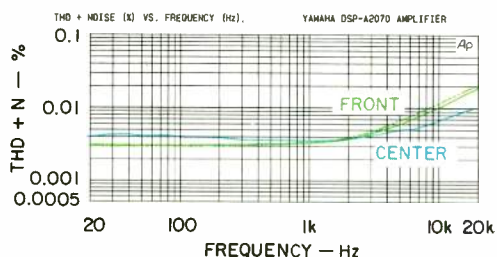
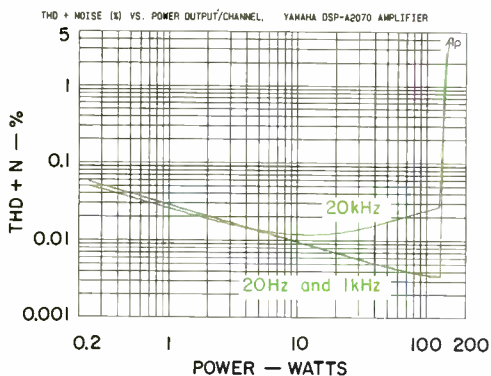
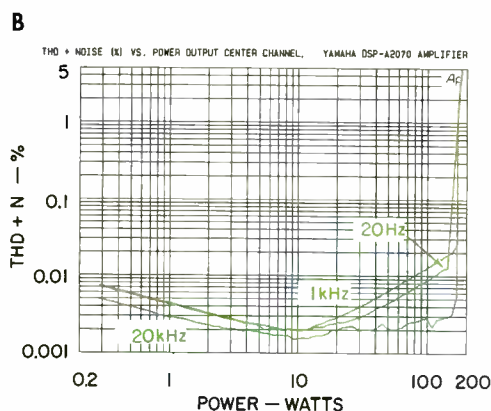


Fig. 2—THD + N vs. frequency at rated output; see text.



A



B

Fig. 3—THD + N vs. power for front main channels (A) and center channel (B).

separate low-frequency test signals from 35 to 250 Hz.

While only the four effects channels are digital in the 12 audio DSP settings (the left and right main channels are unaltered analog), all seven channels are digital in the audio/video modes. Four new such modes have been added: 70 mm Spectacle and 70 mm Musical, Recital, and Pavilion.

Connections are now provided for a third VCR, and the "VCR 3" output can be switched for use as a second video monitor.

In an audio/video system, adjustment and readjustment are simplified by on-screen displays that show the differences between the user's current settings and the factory settings. New cursor indicators also mark which adjustment is being set. The front-panel LCD display has been enhanced, too, to provide better contrast.

Lab Measurements

For all its complexity, the main purpose of the DSP-A2070 is to amplify and process audio signals, so my first objective was to measure the basic performance of its amplification channels. Figure 1 shows the frequency response of the main (front) amplifiers. Response in the left and right front channels is down less than 0.5 dB at 20 kHz, and the -3 dB cutoff point extends to 65 kHz. The frequency response of the center-channel amplifier, when fed directly from the "Center In" jack on the rear panel, actually extends even further than this (there is about 0.5-dB attenuation at 100 kHz) because this jack bypasses all the preamp functions.

Since response of the effects channels is largely dependent on the DSP mode chosen, I decided not to attempt to measure the frequency response of these channels objectively. I did, however, measure their power output capability by "getting inside" the unit and tapping into those amplifier inputs

at points beyond the DSP processing circuitry. Both the "front effects" and "surround effects" channels were able to deliver their rated power output of 25 watts per channel with no more than 0.03% total harmonic distortion, as against 0.05% specified by Yamaha.

Returning to the front channels, I next measured harmonic distortion plus noise as a function of frequency at rated output (80 watts per channel) using 8-ohm loads (Fig. 2). At 1 kHz, THD plus noise in the front left and right channels measures just under 0.004%, increasing to just over 0.01% at 10 kHz. Results for the center channel are fairly similar. For both tests shown in Fig. 2, input levels were regulated

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to maintain constant 80-watt outputs into 8-ohm loads.

Figure 3A shows how THD plus noise varies as a function of output power level at the front channels, for 1 kHz, 20 Hz, and 20 kHz. Figure 3B represents results of the same test, conducted for the center-channel amp.

Figure 2 suggests that at high frequencies (above 10 kHz) the sample exceeded the rated distortion figure quoted by Yamaha. In fact, that is not the case, since Figs. 2 and 3 both represent readings of THD plus noise. To obtain a true THD reading for the front channels, at their rated output, I used my Audio Precision test equipment to run a spectrum analysis of the actual harmonic content of a 1-kHz test signal (Fig. 4). The most significant harmonic (at 2 kHz) is 100 dB below reference level. This corresponds to a true THD reading of only 0.001% as against the 0.003% reading observed in Fig. 2. The difference can be attributed to random noise rather than actual harmonic distortion, and it is safe to presume that at the higher audible frequencies, a similar difference would be observed, rendering the true THD at 20 kHz far lower than the 0.015% quoted by Yamaha.

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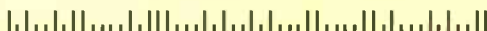
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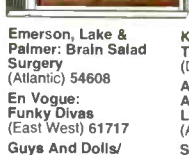
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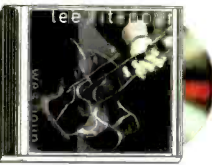
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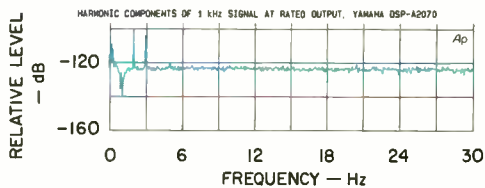


Fig. 4—Spectrum analysis of 1-kHz signal at rated output.

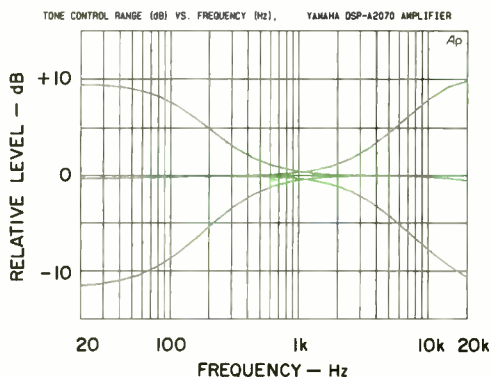


Fig. 5—Bass and treble control range.

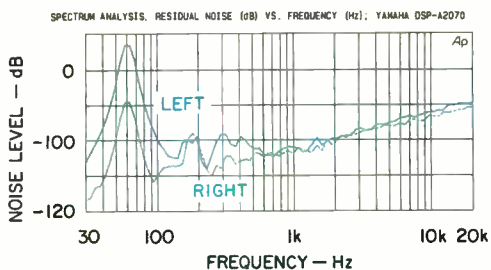


Fig. 6—Spectrum analysis of residual noise.

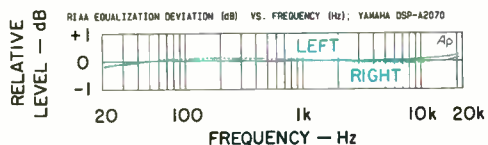


Fig. 7—Deviation from RIAA equalization.



The maximum boost and cut ranges of the bass and treble tone controls (shown in Fig. 5) were pretty much as specified by the manufacturer. The “Bass Extension” feature peaks the response at 70 Hz and then attenuates bass response steeply to avoid amplifier overload (not shown).

The A-weighted signal-to-noise ratio for the high level inputs of the amplifier measured 83.4 dB for the left channel and 84.6 for the right channel. It should be noted that I measure S/N below a referenced output of 1 watt, obtained by lowering the master volume control to that level while feeding an input signal of 500 mV. Yamaha obviously obtained their higher published S/N readings by referencing rated output, rather than the 1 watt called for by the long-established IHF/EIA Amplifier Measurement Standards. Had we added the difference, in dB, between 1 watt and 80 watts, we would have come up with S/N readings well in excess of Yamaha’s claims. The same holds true for the M&M Phono S/N, where we measured an A-weighted reading of 80.6 dB for the left channel and 81.4 dB for the right channel. Again, our reference is a constant 1-watt output, this time referred to an input of 5 mV at the phono inputs.

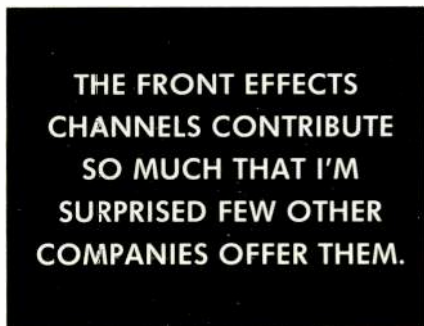
Figure 6 is a spectrum analysis of the residual noise at the outputs of the front amp channels, using the same reference output and input levels as reported for the overall A-weighted single-readings of S/N. Of course, in this plot no weighting curve is used, and it is clear that the major “noise” peak is a hum component at the power-line frequency of 60 Hz. This plot is referenced to 1-watt output. Referred to rated output, even the “hum” peak would be better than 90 dB below rated output.

Input sensitivity for the high-level inputs was 34 mV for 1-watt out, while in the phono mode, 0.3 mV was required to produce the

same 1-watt output at a test frequency of 1 kHz. Figure 7 shows the deviation from standard RIAA equalization of the phono preamplifier section. There is less than 0.2 dB of deviation from the standard playback curve, and even that minimal amount showed up only at the frequency extremes.

Viewing and Listening Tests

As was true when I tested the earlier Yamaha DSP-A1000 more than two years ago, three members of the Yamaha staff set up the DSP-A2070 in my relatively small “home theater” viewing and listening room. What’s more, in addition to arriving with a full complement of eight speaker systems (a pair of front-main units, pairs of front and rear effects speakers, a center-channel speaker, and a powered subwoofer), a LaserVision player, mounds of interconnects and speaker cables, and some test CD and LaserVision discs, the Yamaha team insisted on hooking in a sample DSP-A1000 and a switch box so that we would be able to judge the difference between the older (less expensive) amplifier and the newer DSP-A2070. The only element of my own “home theater” that was incorporated into this installation was my reference 32-inch direct-view TV set, whose internal speakers were turned off for our listening



tests. A single center speaker was used, though the Yamaha provides for a pair.

Let me first report that the differences between the older and newer Yamahas are anything but subtle. Much as I had admired the DSP-A1000, switching virtually any program source material from it to the newer unit revealed an obvious improvement in dialog intelligibility, more authentic sound-field simulations when playing either CDs or videodiscs, and, depending on the parameters chosen and the sound fields selected, a feeling that the Yamaha engineers had extended the technology of

DSP well beyond anything I had heard to date.

Yamaha provided me with a specially recorded "Cinema DSP Check Disc" CD that contains some 37 tracks of dialog samples, musical samples, and test tones. Many of these tracks were designed to illustrate the multitude of listening modes available with this amplifier. I was especially impressed whenever I switched from "Normal" Dolby Pro Logic to "Enhanced" Pro Logic mode. Sounds were more enveloping and seemed to wrap around more as they do when in a properly equipped Dolby Stereo movie theater.

Yamaha also provided me with a specially recorded "Yamaha Digital Home Theater" laser videodisc containing 11 chapters—everything from a segment of a rock concert to a concert recital by Luciano Pavarotti. Each chapter is intended for use with one of the digital sound processing modes. There were also four movie demonstration tracks on this disc, which afforded me the opportunity to check out and evaluate the differences between the "Normal" Dolby Pro Logic mode, the "Enhanced" mode as well as the "Adventure"

and "Spectacle" modes. The latter mode seemed to expand the front soundstage well beyond the limits of the front-left and front-right speakers themselves. In all of these listening tests, I switched back and forth between the older unit and the DSP-A2070 I had tested. There was always an improvement in the sound field when I switched to the DSP-A2070, though the

**I FIRST WONDERED WHY
THE DSP-A2070 COST SO
MUCH, THEN MARVELLED
THAT IT COST SO LITTLE.**

difference seemed less significant when dealing with narration or spoken dialog alone.

The contribution of the "Front Effects" speakers to the overall sound-field experience continues to be extremely significant. I am surprised that Yamaha, to the best of my knowledge, remains almost the only major manufacturer to incorporate those

extra channels in their products. Of course, the DSP-A2070 can be installed with as few as four speakers, using the Dolby "phantom channel" mode that's one of the virtually countless options available on this product. Bear in mind, too, that each of the factory-preset sound-field modes can be modified to suit your taste and your room size and seating position. Should you elect to choose this remarkable product as the central component in your home theater system, it is likely to take you quite a while to set it up and adjust all the parameters to obtain preferred settings. The on-screen programming and cues are a definite improvement over the older model, but even with them, the process of installation and adjustment can be somewhat intimidating. Were it not for the help I received from the Yamaha team, I might still be tweaking the adjustments and settings. The results that can be achieved with this amplifier are well worth the effort. Finally, after living with this system for only a short while, I am not only able to justify its price but am amazed that Yamaha could bring all this technology to consumers at under \$2,000!

Leonard Feldman



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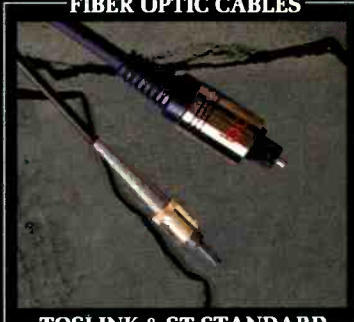
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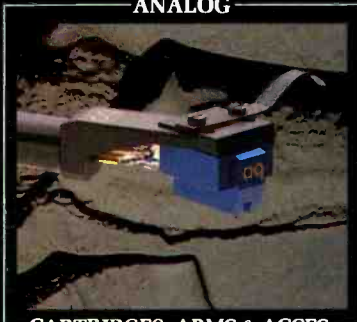
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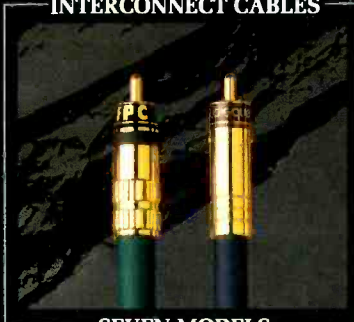
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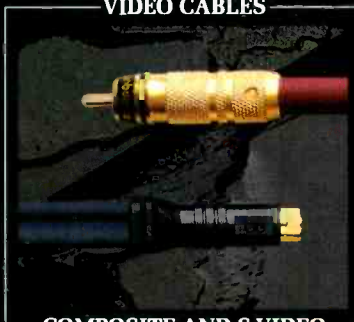


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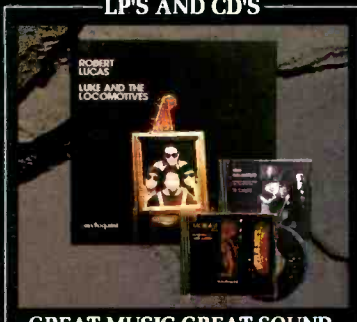
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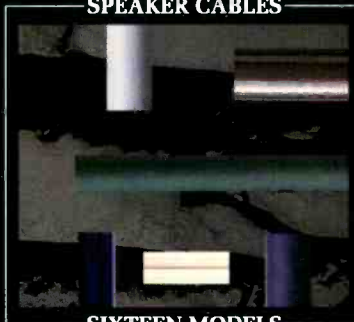
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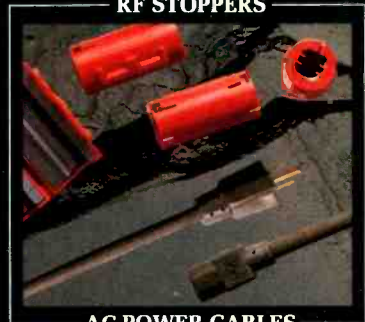
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GENESIS GENRE I LOUDSPEAKER

The Genre I is the top-of-the-line model of three affordable high-end systems produced by Arnie Nudell's new company, Genesis. As you may recall, Nudell co-founded and was the chief designer at Infinity Systems from 1968 to 1989. When he left Infinity, he and Paul McGowan, a co-founder of PS Audio, joined forces at Genesis to produce speakers and amplifiers for the high-end audio market.

Genesis currently produces 12 loudspeaker systems ranging in price from \$499 to \$6,199, including two subwoofers, and

SPECS

System Type: Three-way, floor-standing, closed-box system.

Drivers: 8-in. cone woofer, 4½-in. cone midrange, and 1-in. planar-ribbon tweeter.

Frequency Response: 46 Hz to 34 kHz, ±3 dB.

Sensitivity: 88 dB SPL at 1 meter, 2.83 V rms applied.

Crossover Frequencies: 500 Hz and 3.7 kHz.

Impedance: 4 ohms nominal, 2.9 ohms minimum.

Recommended Amplifier Power: 75 to 200 watts per channel.

Dimensions: 10 in. W × 38½ in. H × 14 in. D (25.4 cm × 97.8 cm × 35.6 cm).

Weight: 65 lbs. (29.5 kg) each.

Price: \$1,299 per pair; available in black ash or rosewood.

Company Address: 953 South Frontage Rd. West, Vail, Col. 81657.

For literature, circle No. 91

The enclosure of the Genre I is rectangular, with a slanted front panel that houses a vertical array of drivers. The woofer is vertically centered on the front of the enclosure, with the midrange above and the tweeter on top. The slanted front panel, in concert with the drivers and crossover, form a time-synchronized configuration that is said to provide the smoothest transition from driver to driver.

The enclosure is strengthened internally by the addition of half of a heavy cardboard



the new \$7,000 Stealth B-200 remote-controlled power amplifier. At the recent summer Consumer Electronics Show, they also previewed a very large, very expensive high-end system called the Genesis I. This system superficially looks like the Infinity IRS but is much different in execution, according to Nudell.

tube (cut lengthwise), joining the top, bottom, and rear of the cabinet. In addition to reducing cabinet wall vibrations, the semi-circular strengthener is said to reduce internal standing waves.

The cones of the 8-inch long-throw woofer and 4½-inch midrange are of injection-molded Kevlar and polypropylene.

Our new audiocassette is extraordinarily captivating, amazingly dynamic and incredibly distinctive. And that's just the wrapper.

If you think we give the wrapper of Fuji's new ZII audiocassette a lot of credit, it's nothing in comparison to how we feel about what's inside.

That's because ZIIs are Fuji's most advanced, high-bias, master quality audiocassettes. With Fuji's innovative Double Coating technology, ZIIs have an



incredibly wide dynamic range, and virtually no hiss. Which means they capture more sound. And ZII cassettes come in a sleek, black Extraslim case. Considering all this we couldn't wrap it in just anything.

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According to Genesis, these materials and the construction techniques used contribute to clarity and accuracy in the midrange and accurate bass response, due to superior cone damping and rigidity.

All of Genesis' systems, including the Genre I reviewed here, use a 1-inch planar-ribbon tweeter with a very thin circular diaphragm made from a 0.0005-inch membrane of film and foil, and a spiral voice-coil. Genesis claims that the tweeter's diaphragm has less mass than the mass of the air that it moves! They also state that the tweeter operates as a perfect piston to well over 30 kHz and provides a near-perfect point source with virtually nondirectional hemispherical dispersion.

The crossover is designed with the use of proprietary computer software to optimize the efficiency and accuracy of the overall

**THE SEMICIRCULAR BRACE
REDUCES INTERNAL
STANDING WAVES AS WELL
AS REDUCING VIBRATIONS.**

response. The network contains a total of 20 parts including: Seven resistors, five capacitors (not including paralleled units), five inductors, and, for tweeter protection, two zener diodes and a self-resetting circuit breaker. All parts are of high quality. Iron-core inductors are used in the bass and midrange circuits, while all large-value, non-polarized, electrolytic capacitors are bypassed with higher quality polypropylene units. All drivers are connected in positive polarity. Bi-wiring is supported.

The tweeter is driven by an inductor-capacitor, second-order, high-pass filter, with back-to-back zener diodes in parallel for limiting and protection. The midrange is driven by a second-order, high-pass filter in cascade with a second-order, low-pass filter, thus forming a bandpass filter. Interestingly, the woofer is also driven by a similarly configured bandpass filter. Here, in addition to the usual low-pass filter that rolls off the woofer at high frequencies, a low-frequency LC high-pass filter is added.

This added high-pass filter serves two purposes: First, it rapidly rolls off the low-

frequency response of the system, thus greatly increasing the system's subsonic power handling. It also allows the response of the system to be extended downwards through resonant amplification at and near the cutoff of the high-pass filter. (Here, the voltage applied to the woofer can actually be higher than the voltage applied to the input of the system.)

In the Genre I, the high-pass frequency is about 45 Hz, which is also approximately equal to the corner frequency of the system's closed-box enclosure. So, the anti-resonance of the added high-pass network is essentially at the same frequency as the system's closed-box resonance. This extension of low-frequency response does not come free, however; it greatly lowers the system's impedance at and near the cutoff frequency of the high-pass filter.

Remember that at low-frequencies the Genre I is a closed-box system that normally rolls off at 12 dB/octave. With the added second-order, high-pass filter, the overall system rolls off at 24 dB/octave, similar to a vented-box (bass-reflex) system. Unlike a vented system, however, the closed-box system with cascaded second-order high-pass filter is quite insensitive to subsonic energy, whereas ordinary vented-box systems are quite susceptible to subsonic material at frequencies below the box tuning.

Genesis does not say much about this added high-pass filter except to state that "The Genre I . . . has unusually deep and non-resonant bass due to a unique anti-resonance circuit that effectively cancels the speaker enclosure resonance normally associated with all sealed and ported designs."

The Genre's grille frame is made from a solid piece of medium-density fiberboard, 3/4-inch thick, with beveled circular holes to accommodate the drivers. Without the grille, the drivers protrude from the front panel; but with the grille on, the front of each driver is essentially flush with the

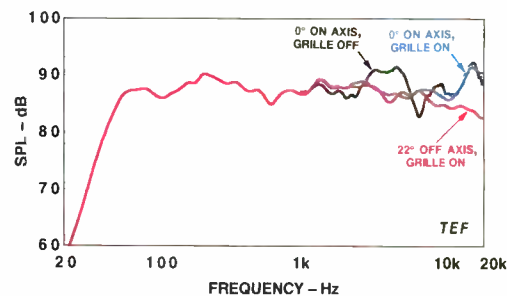


Fig. 1—Anechoic frequency response.

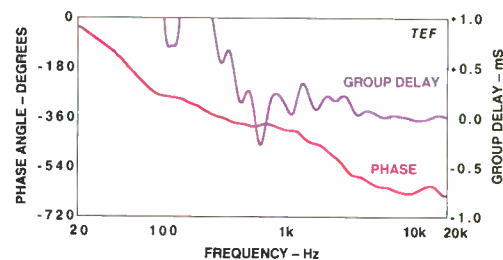


Fig. 2—Phase response and group delay.

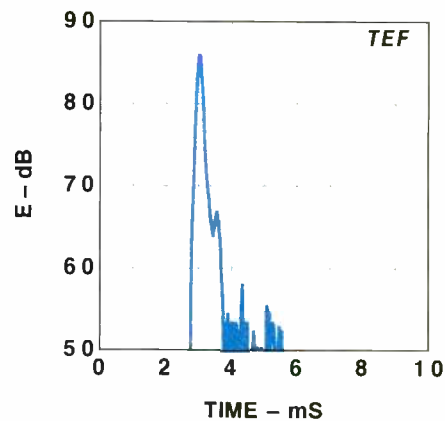


Fig. 3—Energy/time response.

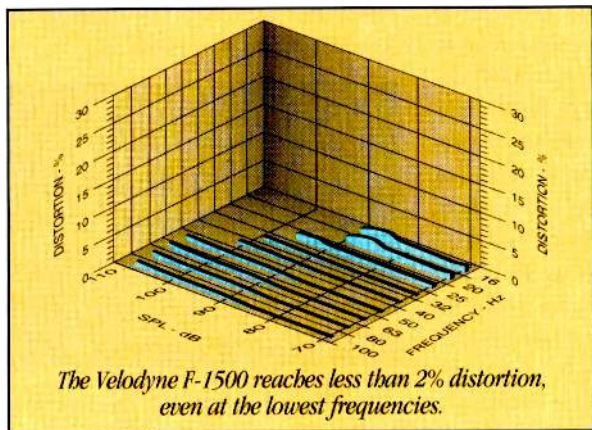
front of the grille, leaving minimal edges for reflection and refraction of sound. The Genre I owner's manual specifies that the grille should be on for all listening.

Measurements

When first received, the systems failed my test for rubbing and buzzing on sine-wave signals. With only 1.5 V rms applied

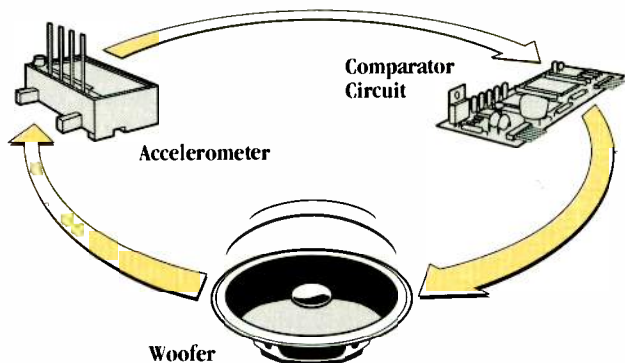
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"It is the cleanest low-frequency reproducer I've ever heard." *

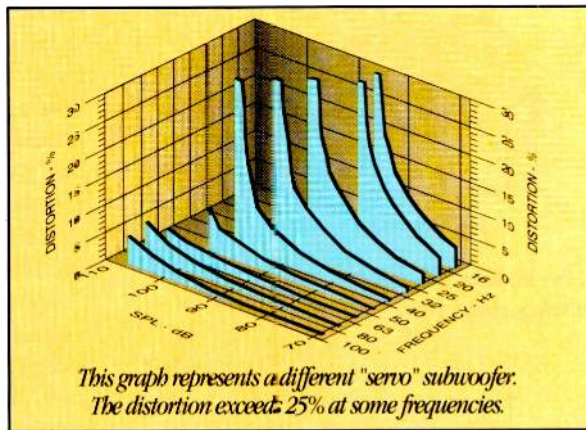
Velodyne solves the distortion problem with their patented "Motional Feedback – High Gain Servo" System. Unlike most "Servo" systems, which are based on voice coil impedance fluctuations and offer little improvement, Velodyne's system is based on a motion sensing device called an accelerometer.



This device is mounted directly to the speaker's voice coil, specifically to measure the acceleration of the speaker cone. The information is then sent to a comparator circuit, which

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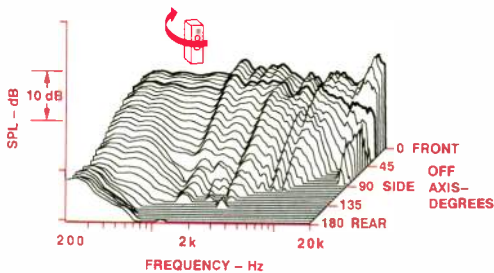


Fig. 4—Horizontal off-axis frequency responses.

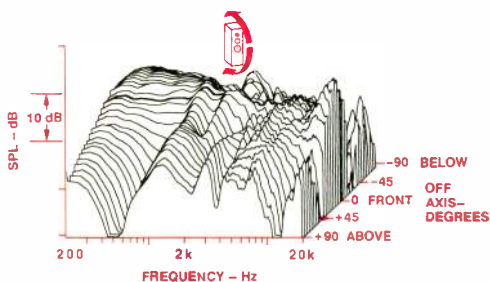


Fig. 5—Vertical off-axis frequency responses.

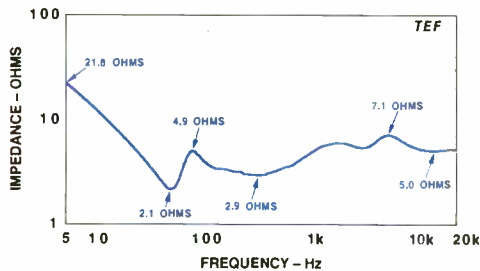


Fig. 6—Impedance.

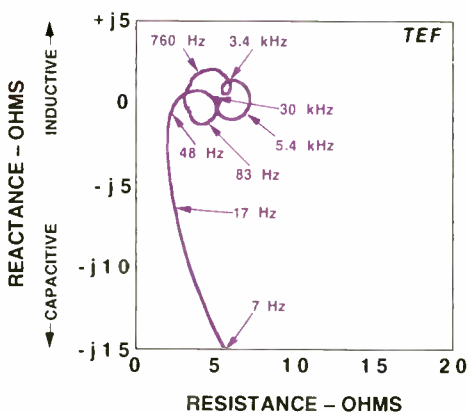


Fig. 7—Complex impedance.

to the system input (0.56 watts into 4 ohms), the tweeter generated extraneous noises above 2.5 kHz. However, as these systems had been shipped at least twice (once to *Audio's* office in New York for photos and auditioning and then to me), this could be shipping damage. [Editor's Note: They didn't buzz here. E.P.]

Once I'd installed replacement tweeters, the systems could handle in excess of 4 V rms (4 watts into 4 ohms), without making bad sounds. The Genre's planar tweeters were significantly more prone to buzzing than standard cone or dome tweeter units, which can handle in excess of 10 to 20 V rms without buzzing; but because normal program material does not contain concentrated high levels of high-frequency energy, the 4 V rms limit should be no problem.

Figure 1 displays the smoothed on-axis anechoic frequency response of the Genre I, with the grille on and off. Also shown is a grille-on response taken at 22° off axis horizontally, which corresponds to a central listening position with the system aimed straight ahead (assuming an 8-foot speaker spacing and a 10-foot listening distance), the recommended configuration. Measurements were taken at a distance of 2 meters from the tweeter, on the tweeter's axis, with 2.83 V rms of signal applied, and referenced back to 1 meter by adjusting the scale by 6 dB.

The smoothest curves were measured with the grille on. With the grille off, there are major aberrations in the range from 2 to 10 kHz. On axis, a high-frequency peak is seen at about 17.5 kHz. The smoothest high-frequency responses were exhibited at points between 20° and 25° off the horizontal axis with the grille on. These curves, although quite smooth, exhibit a gradual high-frequency roll-off above 8 kHz.

At 22° off axis, despite a slight roll-off above 10 kHz, the overall

curve fits an admirably tight tolerance of about ± 2.5 dB from 48 Hz to 10 kHz. Above 20 kHz (curve not shown), the response rapidly died out without exhibiting any out-of-band secondary peaks.

Averaged over the range from 250 Hz to 4 kHz, the sensitivity of the system measured 87.8 dB, essentially equal to Genesis's 88-dB rating. Right-left matching measured a tolerably close +2, -1 dB from 100 Hz to 20 kHz. The maximum deviations were primarily confined to the crossover region, 2 to 6 kHz, where one system was somewhat hotter than the other. Between 9 and 13 kHz, the same system was a bit lower than the other. The match at other frequencies was very good.

**IN THIS SYSTEM, THE
SMOOTHEST RESPONSES
ARE MEASURED WITH THE
GRILLE IN PLACE.**

The phase and group-delay responses of the Genre I with grille on, referenced to the tweeter's arrival time, are shown in Fig. 2. The phase curve is well behaved but lags a significant 231° between 1 and 20 kHz. This rotation is due to both the crossover design and the offset between the acoustic centers of the midrange and tweeter. The non-flat phase curve indicates that the system is not time-coherent. (The only system I have tested that really was time-coherent was the Thiel CS5 reviewed in the February 1991 *Audio*.) The group-delay curve indicates that the midrange output lags the tweeter by about 0.20 mS between 1 and 3 kHz. Peaks and dips in the group-delay curve correspond to minimum-phase undulations in the phase curve.

The 1-meter, on-axis energy/time response (ETC) is shown in Fig. 3 (input 2.83 V rms, grille on). Test parameters were chosen to accentuate the system's response from 1 to 10 kHz, which includes the upper crossover region. The main arrival, at 3 mS, is quite compact but is followed by a minor peak about 20 dB down from the main peak, delayed about 0.5 mS. All lower-level delayed responses were more than 28 dB down from the main peak.



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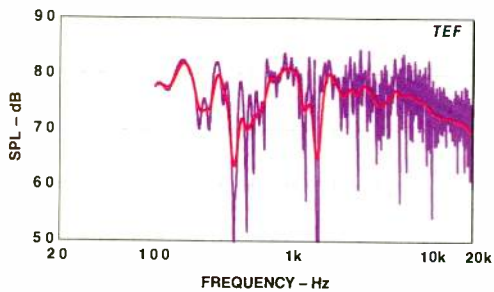


Fig. 8—Three-meter room response.

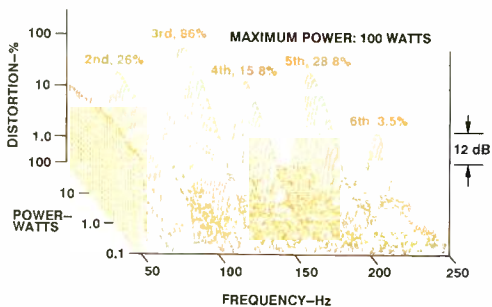


Fig. 9—Harmonic distortion for E_1 (41.2 Hz).

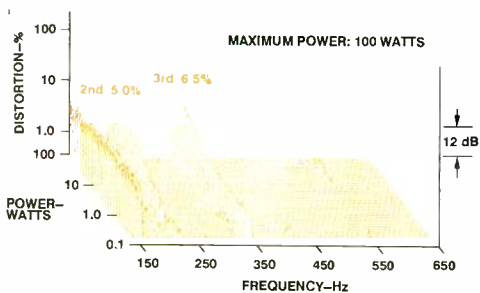


Fig. 10—Harmonic distortion for A_2 (110 Hz).

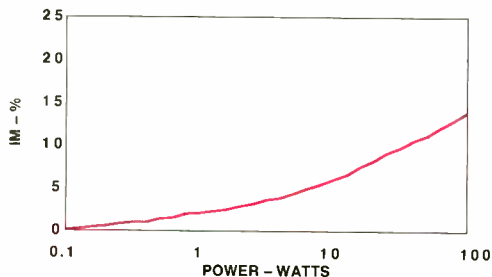


Fig. 11—IM distortion for 440 Hz (A_4) and 41.2 Hz (E_1).

Figure 4 shows the horizontal off-axis responses of the Genre I with grille on. Of the two bold curves, the one at the rear of the graph is the on-axis response, and the one further forward shows response 20° off the axis, corresponding to the position of a centered listener in a standard setup with the system aimed straight ahead. The uniformity of the curves below 14 kHz indicate excellent horizontal off-axis response and coverage.

The vertical off-axis grille-on curves are displayed in Fig. 5. The system was measured at 2 meters away from the tweeter, with the tweeter the center of rotation. The bold curve halfway back is the on-axis response. The curves in the $\pm 15^\circ$ interval reveal that in the upper crossover region, 3 to 5 kHz, the response is flattest on axis and exhibits dips in the response both above and below the axis. This indicates a minimum amount of lobing error, an ideal situation.

In contrast, at the lower crossover region, 500 Hz, the response for down angles (rear of graph) is much flatter than for up angles (front of graph). Note the sharp 500-Hz dip in the response for extreme upward angles (front of graph). This indicates a maximum amount of lobing error. Fortunately, lobing error is much less significant at lower frequencies because of the fill-in effects provided by room acoustics.

Figure 6 shows the Genre's impedance magnitude versus frequency, plotted over a wider range than usual, from 5 Hz to 20 kHz. Between 20 Hz and 20 kHz, a minimum impedance of 2.1 ohms occurs at 45 Hz, and a maximum of 7.1 ohms occurs at 4.8 kHz. The most significant feature about the curve is the rising impedance below 40 Hz. This is due to the series capacitor of the previously mentioned second-order, high-pass filter that drives the woofer. The anti-resonant tuning point of the

woofer high-pass filter occurs at the 45-Hz minimum-impedance frequency. Between 60 Hz and 20 kHz the impedance is relatively constant, only varying between about 3 and 7 ohms.

Between 20 Hz and 20 kHz, the curve has a max/min variation of about 3.4:1 ($\approx 7.1/2.1$). This variation, coupled with its low minimum impedance of 2.1 ohms, means that the Genre I will be quite sensitive to cable resistance. Cable series resistance should be limited to a maximum of about 0.035 ohm (35 milliohms) to keep cable-drop effects from causing response peaks and dips greater than 0.1 dB. For a typical run of about 10 feet, 12-gauge or larger wire should be used.

Figure 7 shows the complex impedance of the Genre I, plotted over the range of 7 Hz to 30 kHz. The large increase of negative reactance at low frequencies is caused by the previously mentioned series capacitor. Above 48 Hz, the complex impedance actually stays quite close to the 5-ohm point on the real (resistance) axis.

**HORIZONTAL OFF-AXIS
RESPONSE AND
COVERAGE BELOW 14 kHz
ARE EXCELLENT.**

The impedance phase (not shown) reached a maximum of $+26^\circ$ (inductive) at 775 Hz and a minimum angle of -72° (capacitive) at the subsonic frequency of 11 Hz. At 50 Hz and above, the phase only varied from -18° to $+26^\circ$.

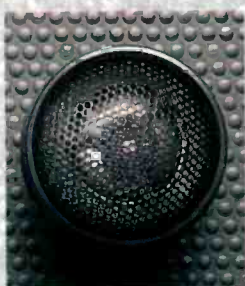
Only one significant cabinet resonance was evident when the system was subjected to a high-level, low-frequency sine-wave sweep. This consisted of a front-panel resonance, in the range from 190 to 210 Hz, caused by the woofer frame's buzzing against the front panel. Tightening the woofer screws eliminated this buzzing. The cabinet was otherwise free from vibrations.

When the signal sweeps down in frequency, the woofer's displacement reached a maximum at about 55 Hz, then decreased as frequency was lowered. Distortion did not become subjectively objectionable until levels above about 12 V rms were applied at

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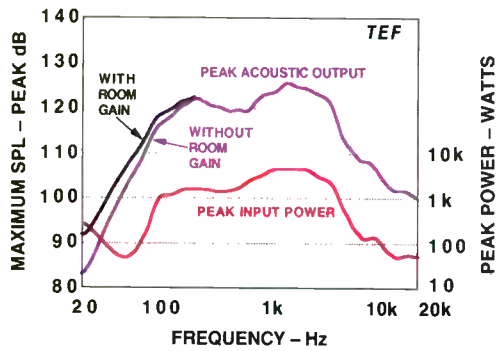


Fig. 12—Maximum peak input power and sound output.

this frequency. The woofer's maximum displacement was about 1/2 inch peak to peak before distortion became excessive. The woofer did not generate any unpleasant noises when subjected to higher input powers and also did not display any dynamic offset effects.

The power handling of the system at very low frequencies was excellent, better than any system I have tested. On sine waves, the system could handle 30 V rms at 20 Hz, 38 V rms at 16 Hz, 45 V rms at 12.5 Hz, and 60 V rms at 10 Hz! At these levels, the output was quite distorted, but the woofer was not being excessively stressed nor harmed. The built-in high-pass filter pays high dividends here!

The back-to-back zener diodes in parallel with the tweeter clipped the tweeter signal at about ± 8 V peak (5.6 V rms). This corresponded to a signal level of about 8 V rms at the input of the system (the high frequencies are attenuated by about 4 dB in the crossover).

The 3-meter room curve of the Genre I, with both raw and sixth-octave smoothed responses, is shown in Fig. 8. The system was in the right-hand stereo position, aimed straight ahead with its axis parallel to the listening room's side wall, and the test microphone was placed at ear height (36 inches), at the listener's position on the sofa. The system was driven with a swept sine-wave signal of 2.83 V rms (corresponding to 2 watts into the rated 4-ohm load). The direct sound plus 13 mS of the room's reverberation are included.

Excluding a room-effect dip at 400 Hz and a higher frequency dip at 1.5 kHz, the averaged curve fits a fairly compact 10-dB

window from 100 Hz to 20 kHz. High frequency roll-off is evident above 8 kHz, due to the straight-ahead orientation of the system.

Spectra of single-frequency harmonic distortion versus power for the musical notes of E_1 (41.2 Hz), and A_2 (110 Hz) are shown in Figs. 9 and 10. The power levels were computed using the rated system impedance of 8 ohms. A maximum power of 100 watts (20 V rms) was set as the upper limit.

High distortion levels are reached in the E_1 (41.2-Hz) harmonic test. The predominant distortion products are a high (86%) third harmonic, 26% second, and lower values of fourth and fifth harmonics at full power. As high as these distortion figures are, the resultant acoustic output did not sound all that bad because the sixth and higher harmonics are all low in amplitude. In this test, the actual input power is closer to 175 watts than the 100 watts indicated in the figure, due to the system's very low impedance at 41.2 Hz. The E_1 tone, coincidentally, falls very close to the maximum boost

THE PEAK ACOUSTIC OUTPUT REACHES A HEALTHY 120 dB SPL IN THE IMPORTANT REGION FROM 150 Hz TO 2.5 kHz.

frequency of the system's second-order, high-pass filter, which forces the displacement of the woofer to be higher than it would normally be.

Figure 10 shows the A_2 (110-Hz) harmonic data. The only significant distortion at this frequency consists of 5% second and 6.5% third harmonics at full power. Higher harmonics were negligible. The A_4 (440-Hz) distortion data (not shown) rose only to the low values of only 1.8% second and 1.9% third at full power; higher harmonics were also negligible.

The IM created by tones of 440 Hz (A_4) and 41.2 Hz (E_1) of equal power rises to the moderate level of 13.5% at full power (Fig.

11). The 8-inch woofer of the Genre I handles both frequencies of this IM test.

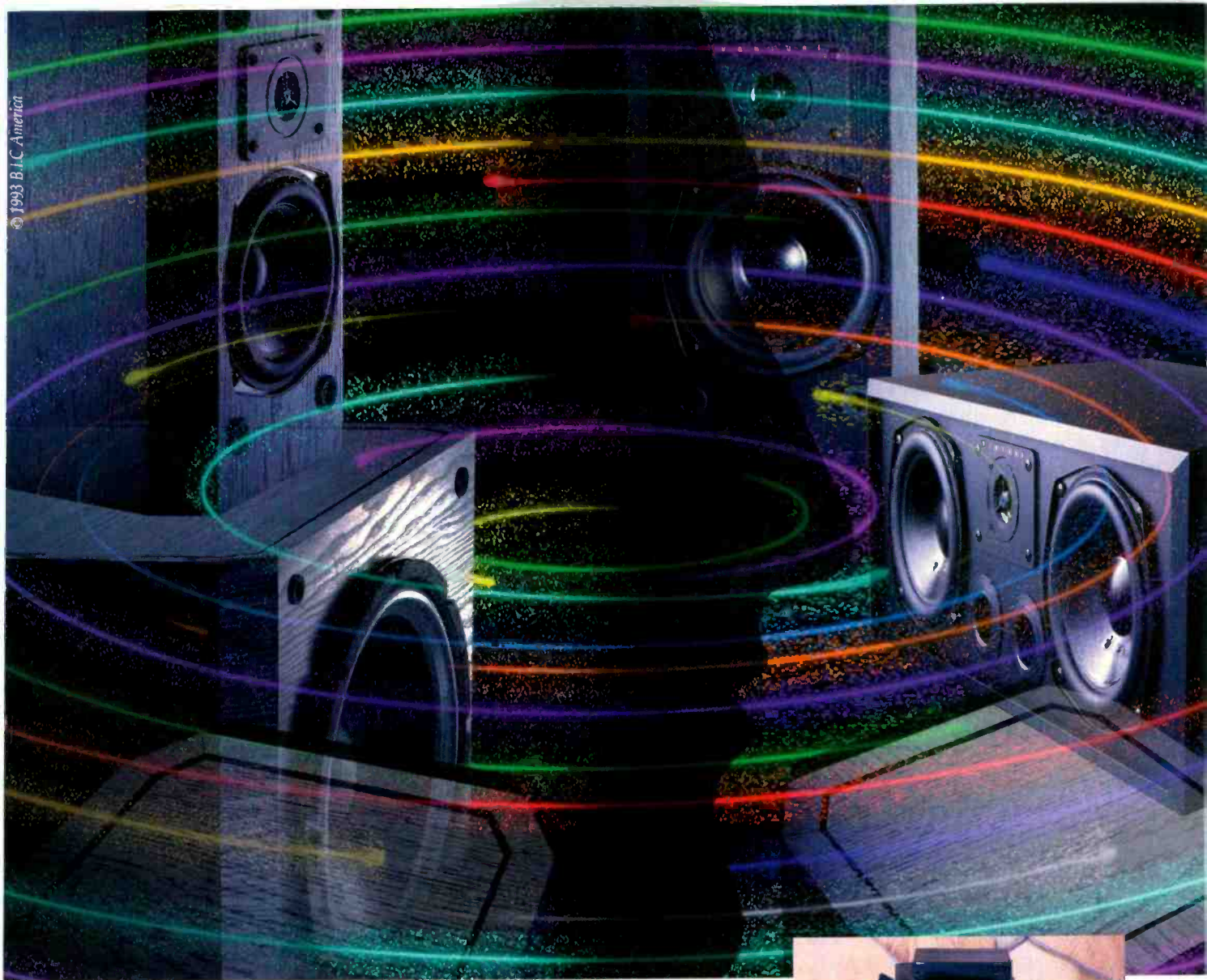
Figure 12 shows the short-term, peak power input and output capabilities of the Genre I as a function of frequency, measured using a 6.5-cycle, third-octave tone burst. The peak input power was calculated by assuming that the measured peak voltage was applied across the rated 4-ohm impedance. The most striking feature of these curves is the fact that the peak input power and peak acoustic output decrease at both low and high frequencies, forming a mountain-shaped curve. Most of the systems that I have tested reach their higher power handling and peak output SPL at the highest frequencies and normally use conventional direct-radiator dome tweeters, rather than the membrane-style units used in Genre I.

The zener-based tweeter protection circuitry of the Genre I dramatically reduces the clean high-level output capability of the system above 3 kHz. With the protection circuitry, the system can handle considerably more peak power before being damaged, but the acoustic output becomes very distorted.

Another significant feature of the input power curve is the increase in maximum input below 50 Hz. This is due to the second-order, high-pass filter on the woofer. Below 20 Hz, the peak input power capability of the system continues to increase as frequency is lowered.

The peak input power starts high at very low frequencies, falls to about 50 watts at 50 Hz, then rises rapidly to about 1,500 watts between 100 and 500 Hz, rises even farther to about 4,500 watts at 1.5 kHz, and then falls quickly to only about 50 watts at 20 kHz.

The peak acoustic output of the system reaches a healthy 120 dB SPL between about 150 Hz and 3.5 kHz in the important upper-bass through upper-midrange region. The rapid fall-off of maximum output above 3.5 kHz should not be a problem in most situations, because the spectral content of typical program material also falls at high frequencies. It is only on material such as closely miked drums, solo tambourine, synthesizer, and CD test material, that contain high levels of high-frequency energy content, that the system may get in trouble.



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Use and Listening Tests

The Genre I's large-format, 12-page owner's manual gives lots of information on many subjects, including break-in, placement, room treatment, bi-wiring, biamping (essentially like bi-wiring but using two separate amplifiers, and still using the system's internal crossover), amplifier selection, hookup, etc. The manual unfortunately is loose-leaf with a slide-in binder, without page numbers, and appears somewhat disorganized. I initially thought some of the pages were out of order, but found that I was wrong when I examined a second manual that had exactly the same page order.

The systems are supplied with spikes, but interestingly, the manual does not mention them, let alone tell how to install them or the justification for using them. The manual does stress in several places the need to operate the systems with their grilles on and the need to make sure the systems are aimed straight ahead rather than angling them in towards the listener.

My equipment line-up includes the usual Krell amplification, Onkyo and Rotel CD players, B & W 801 Matrix Series III speakers, and Straight Wire Maestro cabling. This setup includes my first CD changer, a new Rotel RCC-940AX. It's nice having several Compact Discs on line at the same time!

My review systems were supplied in rosewood, and they were quite handsome. The cabinetry and build quality are excellent. The systems even look quite good with the grilles removed. (Please remember, though, that you aren't supposed to listen to them this way.)

Listening was done with the systems placed at my usual listening positions but aimed straight ahead rather than canted in. When angled in, they were significantly hotter in the highest octave than my reference B & W systems. With the Genres aimed straight ahead, their high-frequency balance was more like the B & W's, but still slightly warm.

First listening was done using a CD of the Holly Cole Trio playing four tracks from their new album *Don't Smoke in Bed* (Alert Music Inc., Z2/4 81020). The trio consists of Holly singing, accompanied by piano and acoustic bass. I was given this CD at a press party put on by Audio Products International, where I heard the group play live.

The Genres did a particularly impressive job on this disc's acoustic bass and female

**THE GENESIS GENRE I, A
RELATIVELY LOW-PRICED,
NEAR-HIGH-END SYSTEM,
REPRESENTS GOOD VALUE
FOR THE MONEY.**

vocals. Soundstage and realism were impressive, with a crisp, lively, and dynamic sound. Some emphasis of sibilant sounds on the vocal was evident as compared to my reference speakers. The reproduction of bass was very close to that of my references, both in quality and balance. Holly's voice was solidly stationed in the center of the soundstage.

On *Jim Morris Brass Plus Montage* (Musical Archives, Musical Archives Foundation, MMF 1005), the systems also did a very credible job. They could be played quite loud and clean on the brass material and exhibited quite convincing impact and dynamics.

Some troublesome high-frequency emphasis was evident when I played other vocal material that originally was not recorded very well or cleanly (peaky microphones, etc.). This was evident on several tracks from a '70s rock compilation, *The Greatest Hits of the '70s Volumes 1 to 3* (Platinum Disc Corporation S21-57804, S21-57805, S21-57806). Tina Turner's voice on the classic "Proud Mary" (Vol. 1, cut 6), which sounded harsh on the B & Ws, sounded even more harsh (bordering on painful) on the Genre Is. On other tracks of this compilation, the Genres made a good account of themselves, with a clean, balanced sound coupled with sufficient bass to make them worthwhile on rock material.

On the pink-noise, stand-up, sit-down test, the Genres only exhibited some mild upper midrange tonal changes when I stood up. Overall, the Genres' spectral balance on pink noise was similar to that of the B & Ws' but included some high-frequency emphasis and was not as flat on an octave-to-octave basis; some tonality was evident where none should be.

On third-octave, band-limited pink noise, the system's fundamental output at 20 and 25 Hz was not loud enough to be usable. The output was not distorted, however, due to being rolled off by the internal high-pass filter. At 20 Hz, a high level that caused the B & Ws to sound somewhat distressed did not sound distressed on the Genres. The systems' effective output was better at 31.5 Hz and was much better at 40 Hz and above. The maximum clean output at the 40-, 50-, and 63-Hz bands, was somewhat limited, however, due to third-harmonic generation. The output sounded distorted, but not in a way that I found objectionable.

The systems handled the very demanding bass-drum whacks on track 1 (at 1:08, 1:10 etc.) of *Winds of War and Peace* (Wilson Audio WCD-8823) by the National Symphonic Winds quite well but did not produce the incredible body-jarring whomp that the B & W systems can generate. At least, what came out was not distorted, with no sign of the woofer stress that many other systems would show. (I'd be afraid these drum whacks would knock some systems' woofers out onto the floor!)

On more sedate symphonic material, such as Brahms Concerto No. 1 for Piano and Orchestra (Dorian DOR-90172) by Ivan Moravec and the Dallas Symphony Orchestra led by Eduardo Mata, the Genres also did a very credible job with excellent control and good dynamic contrasts on piano, with a wide and accurate symphonic soundstage.

Everything considered, the Genre I represents good value for the money, a relatively inexpensive, near high-end system. I am particularly impressed with its power handling at very low frequencies and its overall performance. Some improvements could be had, however, in reducing bass distortion and correcting a slight tendency towards high-frequency harshness on some program material. D. B. Keele, Jr.

Chronicle

Since 1976, Coustic has consistently created and manufactured some of the highest quality equipment on the car audio market.

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XM-3 Mobile Electronic
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The most popular and widely imitated electronic crossover ever created, the trend-setting XM-3 is well recognized in the industry for its unique features.

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Michael Smolen
User's Evaluation,
CAR STEREO REVIEW
Summer 1988

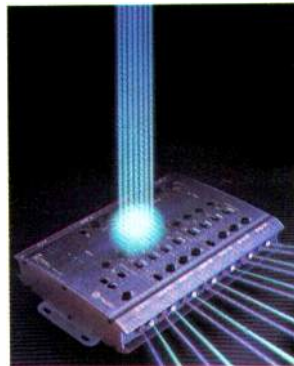


AMP-460 Power Logic
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The first of Coustic's **Power Logic** Component automotive power amplifier line, the AMP-460 was honored as "one of the most innovative consumer products of 1990" at the **Innovations '90 Design & Engineering Exhibition**.

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Ken C. Pohlmann
Test Reports,
CAR STEREO REVIEW
May/June 1990



XM-7 Multi-Function
Mobile Electronic Crossover
(Patent Pending)

The "reference standard" for electronic crossover design technology, the XM-7 was recognized as another "one of the most innovative consumer products of 1990" at the **Innovations '90** event.



RTA-33 30-Band One-Third
Octave Real Time Analyzer.
(Patent Pending)

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PIONEER DEH-M990DSP CAR CD PLAYER AND RECEIVER



Pioneer introduced their first "SuperTuner" back in the '70s, and that product set a new standard for automotive car audio equipment. The newest embodiment of that product concept (identified as SuperTuner IV) is, in fact, much, much more. The DEH-M990DSP is probably the industry's first in-dash CD tuner with built-in digital signal processing (DSP), fuzzy logic technology, Detachable Face Security, four-channel amplifier, and CD-changer control. In addition to treble and bass controls with selectable turnover frequencies, this unit offers a three-band quasi-parametric equalizer. Both the tone controls and the equalizer can be set independently for the

front and rear speakers, and the tone controls can also be set for both front and rear at once. Up to six combination tone and EQ curves can be stored in memory for instant access, with a one-day battery backup protecting these settings if the power source is cut off.

The DSP circuitry is contained in one hybrid IC module, which accounts in part for Pioneer's having been able to cram so many features into a DIN-sized head unit.

**PIONEER HAS MORE
FEATURES IN THIS
COMPACT UNIT THAN I'VE
EVER SEEN IN A
CAR STEREO.**

There are four DSP sound fields available: "Studio," "Jazz Club," concert "Hall" and "Stadium." The DSP circuitry also controls the parametric equalizer and tone controls as well as digital left/right image shifting, EQ memory protection, and the one-day memory backup.

To fully appreciate the range of these DSP features, press the "SFC" (Sound-

Field Control) button and the "SLA" (Sound-Level Adjuster) button simultaneously while the unit is turned off. This will initiate a DSP demonstration taking you through all the unit's DSP features (equalization, balance, volume adjustment, tone controls, sound fields, etc.)

The CD-player section uses a slim, three-beam laser pickup, a digital filter with eight-times oversampling, and a one-bit D/A converter. No adapter is needed for



playing 3-inch CDs. To find the track you want there is 10-S track scanning, audible fast-forward and reverse, and direct jumps to track beginnings. Other player features include last-position memory, repeat play of a track or disc, and programming for up to 32 selections.

The tuner, which covers the newly expanded AM frequency band, can store up to 18 FM and six AM stations. The six strongest local stations can be stored automatically by pressing a button. Other tuning facilities include preset scan (with automatic skip of weak preset stations), seek (with a choice of four sensitivity levels in FM and two in AM), and manual tuning.

Control Layout

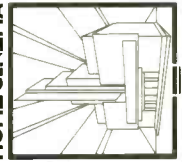
It almost goes without saying that to build in as many features as are found in this car audio receiver/CD player, Pioneer found it necessary to have nearly all of the front panel controls do double (and in some instances triple) duty. For example, the first three numbered preset buttons are also used to select which band (low, mid,



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high) you want to equalize, while the last three preset buttons are used to store tone control settings in memory. The CD slot is centrally located at the top of the front panel. The volume up/down rocker, located at the left end of the panel, beneath the CD eject button, is also used to adjust front-rear fade and left-right balance, and even to optimize the sound field for left or right listener positions. When "SLA" is pressed, the volume rocker can be used to match sound levels from the AM tuner, the internal CD section, and an optional CD changer to the sound level from FM.

A "Source" button at the upper right, above the up/down tuning rocker, switches between sources; a "Rel/Band" button selects the tuner band (FM1, FM2, FM3, or AM). Several other buttons assume different roles depending on what the program source is. Buttons to the left of the display area are used to choose the sound field

mode, the quasi-parametric equalizer mode, and the bass/treble adjustment mode. When in either of the last named modes, the up/down buttons now adjust the degree of EQ boost or cut in the currently selected band. In CD mode, the up/down tuning bar performs forward or reverse search. Pressing both ends of the bar at once toggles between track search or fast audible search within the track; in tuner mode, it toggles between manual and scan tuning.

The markings on most buttons are cryptic, but the four buttons just to the left of the station presets are identified by words on the display, approximately just above the buttons in question. The words on the display change as the buttons' functions do. For example, in the FM mode, the buttons are identified as "P. Scan" (preset scan), "Loc S" (local-station tuner scan mode), "Mono," and "BSM" (Best Station Memory); in AM mode, which does not

include stereo decoding, the "Mono" legend winks out. During CD play, the buttons become "T. Scan" (track scan), "ITP" (Instant Track Programming), "Mode" (repeat), and "Pause."

**THE BUILT-IN AMPS EASILY
BEAT SPEC, BUT WILL
BUYERS OF A UNIT LIKE
THIS ACTUALLY USE THEM?**

Much more can be said about the many multiple-function controls found on the removable front panel of this car audio receiver. I found the owner's manual a bit confusing when it came to identifying all of these controls and their many functions. A pull-out diagram at the front of the manual simply identifies each control and button by a number. Then, the user has to turn to the particular pages covering different modes of operation to determine which of the numbered buttons to use and how to use them. A better scheme, in my opinion, would have been to list the various functions of each button right at the beginning, even if those functions needed to be repeated when the booklet detailed specific modes of listening, such as CD, FM, or AM. As matters stand, I think most users, however sophisticated and experienced they may be, will take quite a long time to feel comfortable with all those buttons (especially the unmarked ones) and will probably want to pull over to the curb when making all but the most obvious adjustments or station selection.

Measurements

As is my usual practice, I measured the FM tuner section performance first. It's my belief that even when a CD player or, for that matter, a tape player is incorporated in a car audio system, most users still listen to radio most of the time. Hence the priority I assign to tuner performance.

The frequency response of the FM tuner section (not shown) was well within the published specification; it rolled off by less than 1 dB at 20 Hz and at about 16 kHz. Channel balance was just about perfect, too, even at lower-than-maximum volume

SPECS

FM Section

Usable Sensitivity: 8 dBf, mono, for 30 dB S/N.

50-dB Quieting Sensitivity: 13 dBf, mono.

S/N: 70 dB.

Distortion at 1 kHz: 0.3% in stereo with 65-dBf input.

Frequency Response: 30 Hz to 15 kHz, ± 3 dB.

Stereo Separation: 40 dB at 1 kHz with 65-dBf input.

Alternate-Channel Selectivity: 70 dB.

AM Section

Usable Sensitivity: 18 μ V.

Selectivity: 50 dB.

CD Section

Frequency Response: 5 Hz to 20 kHz, ± 1 dB.

S/N: 94 dB.

Dynamic Range: 90 dB.

Amplifier Section

Power Output: 14 watts/ch. into 4-ohm loads, 50 Hz to 15 kHz.

Rated THD: 5%.

Preamp Output Level: 500 mV.

Preamp Output Impedance: 1 kil-ohm.

Bass-Control Center Frequencies: 63, 100, or 160 Hz.

Treble-Control Center Frequencies: 6.3, 10, or 16 kHz.

Parametric Equalizer: Three bands, on third-octave centers from 20 Hz to 20 kHz.

Equalization and Tone-Control Range: ± 12 dB.

Loudness Contour at -30 dB Volume: +10 dB at 100 Hz; +6.5 dB at 10 kHz.

General Specifications

Power Source: 14.4 V d.c. (10.8 to 15.6 V allowable).

Dimensions: Chassis, 7 in. W \times 2 in. H \times 6 $\frac{1}{8}$ in. D (17.8 cm \times 5.0 cm \times 15.5 cm); nose, 6 $\frac{3}{4}$ in. W \times 1 $\frac{1}{8}$ in. H \times $\frac{5}{8}$ in. D (17.0 cm \times 4.8 cm \times 1.5 cm).

Weight: 3.7 lbs. (1.7 kg).

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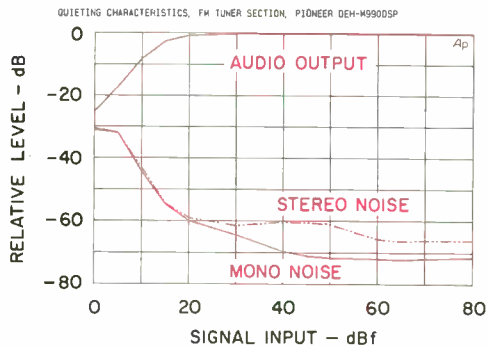


Fig. 1—FM quieting characteristics.

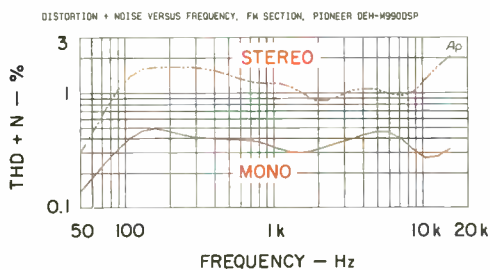


Fig. 2—FM tuner THD + N vs. frequency.

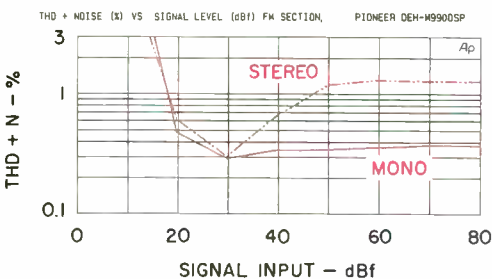


Fig. 3—THD + N vs. FM signal level.

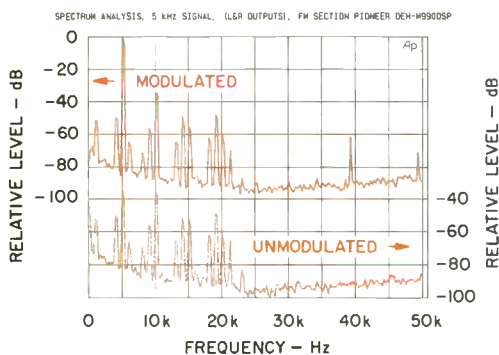


Fig. 4—Spectrum analysis of tuner output.

settings. (Volume settings are calibrated from 0 to 30 in equal steps that are shown in the display area as volume settings are changed.)

Figure 1 shows the monophonic and stereophonic quieting characteristics of the FM tuner section as a function of signal strength. In mono, 50-dB quieting is reached with an input signal level of about 13 dBf. By the time signals are strong enough to defeat the "stereo blend" feature commonly found in car audio tuners, quieting reaches 60 dB in the stereo mode. Signal-to-noise ratio in mono for 65-dBf signals measures 72 dB, while in stereo, the S/N ratio reaches 66 dB for the same input signal strength.

I was disappointed when I measured mono and stereo harmonic distortion plus noise versus frequency. As shown in Fig. 2, even under monophonic reception conditions, THD plus noise exceeds the published *stereo* THD figure slightly at 1 kHz, with a reading of 0.33%. At 100 Hz and 6 kHz, mono THD + N readings are 0.38% and 0.47% respectively. In stereo, things are worse, with a THD + N reading of 1.2% at 1 kHz and readings of 1.3% and 1.0% at 100 Hz and 6 kHz respectively. These are not the kinds of distortion figures I am accustomed to when checking out Pioneer "SuperTuners."

These rather high THD + N figures were confirmed when I plotted THD + N versus signal levels, as shown in Fig. 3. From this graph I determined the mono usable sensitivity figure, which turned out to be 15.5 dBf. Pioneer's stated usable-sensitivity figure of 8 dBf is given for a 30-dB S/N whereas, by the long-established industry standard, a usable-sensitivity specification must take into account the *combination of noise plus distortion*.

One tuner specification that was nicely met was FM stereo separation, which not only exceeded the 40 dB claim at 1 kHz but main-

tained that level of separation over most of the audio spectrum (not shown). Another commendable attribute of the stereo circuitry was its rejection of subcarrier output products, rarely matched in car stereo tuners. Figure 4 shows a spectrum analysis of both channels, with a 5-kHz modulating signal applied to one of them. Sidebands on

**PIONER MAY WELL HAVE
COME UP WITH ANOTHER
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either side of the 38-kHz suppressed carrier are more than 60 dB below reference level, and there is no evidence of the 38-kHz subcarrier itself in the output of either the modulated or the unmodulated channel. The second-harmonic component (at 10 kHz) again confirmed my earlier readings of an out-of-spec distortion level that exceeded 1%.

Turning to the AM section, I didn't make any further measurements after I got the frequency response curve shown in Fig. 5. No wonder AM broadcasters are suffering and are trying to convince receiver manufacturers to pay a bit more attention to this section of their tuners!

My spirits lifted when I began to measure the performance characteristics of the CD player section, using the familiar CBS CD-1 test disc we testers have been using for nearly a decade. At 20 kHz, frequency response (not shown) was down by no more than 0.3 dB, and there was no evidence of filter "ringing" such as is often encountered in poorly designed CD players. I should point out that all tuner and CD player measurements were made via the preamp output jacks so that the built-in power amplifier stages would have no effect on the results. (I suspect that anyone spending close to \$1,000 for this unit may well want to equip his or her system with separate power amplifiers, despite the presence of both front-channel and rear-channel amplifier stages in the DEH-M990DSP receiver.)

Figure 6 shows how harmonic distortion plus noise varies with frequency, when

1 Refined topology with no ICs in signal path. 2 Hand-matched J-FET pairs for balanced differential drive. 3 More precise drive circuit board layout. 4 Gold switches select balanced differential/unbalanced direct. 5 Temperature stable gold-tip Holco feedback resistors. 6 Roederstein Resista series metal film resistors. 7 Faster tracking, wider range DC servo circuits. 8 Higher speed premium grade DC servo ICs. 9 Silver-clad internal wiring with improved shielding. 10 Sturdier premium gold RCA jacks. 11 Improved heat sink thermal

30 IMPROVEMENTS THAT ARE MUCH EASIER TO HEAR THAN TO READ.

dissipation. 12 Lavish application of film bypass capacitors. 13 Improved 60 ampere speaker protection relays. 14 Higher quality, high speed 15 amp output transistors. 15 Separate coarse and fine bias trim adjustments. 16 Modified power supply printed circuit board. 17 Custom-designed, hand fabricated AC power cord. 18 Greater bass extension, control and pace. 19 Greater common mode rejection. 20 More liquid midrange, sweeter high-end. 21 Unconditionally stable with any load. 22 Superior crosstalk and separation to beyond 20kHz. 23 Less higher-order harmonic distortion. 24 More focused, deeper soundstage. 25 More pure Class A power available. 26 Lower noise floor and improved S/N ratio. 27 Higher continuous power output. 28 Gold bi-wire speaker terminals accept larger gauge wire. 29 Elegant new internal layout. 30 All topped off with our new look and style.



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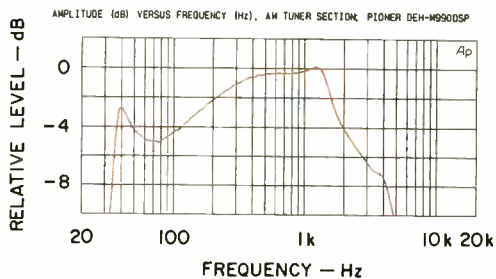


Fig. 5—AM frequency response.

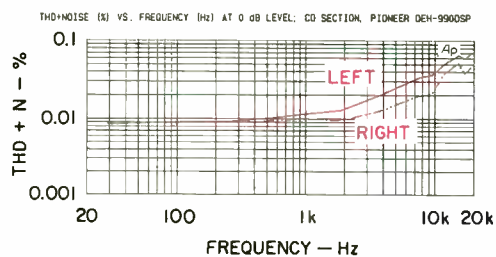


Fig. 6—THD + N vs. frequency, for CD playback.

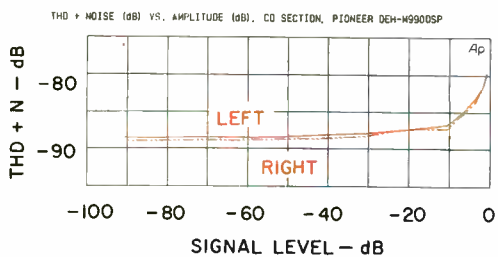


Fig. 7—THD + N vs. CD signal amplitude.

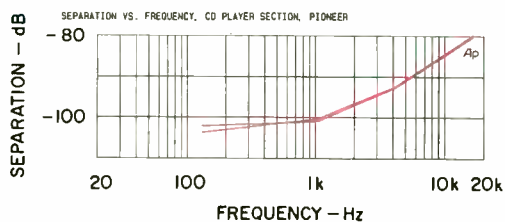


Fig. 8—Separation vs. frequency.

reproducing a 0-dB (maximum level) CD signal. At low and middle frequencies, THD + N hovers around the 0.01% level, increasing to a still-acceptable maximum of around 0.07% at 20 kHz. For signal levels of -10 dB and lower, typical of most musical recordings, THD + N is even lower, around 86 dB below maximum recorded level, equal to approximately 0.005% (Fig. 7). Separating the actual distortion components from residual noise by using the FFT facilities of my Audio Precision test system, I confirmed that the actual THD level for a 0-dB, 1-kHz reproduced signal was only about 0.007%, evidenced by a dominant third-harmonic component (not shown).

Channel separation for the CD player section measured around 100 dB at 1 kHz, decreasing to approximately 80 dB at 16 kHz, as shown in Fig. 8. Separation is virtually identical for left-to-right crosstalk and for right-to-left crosstalk.

The A-weighted signal-to-noise ratio for the CD player section measured 93.6 dB for the left channel and 93.7 dB for the right channel or close enough to the 94 dB claimed by Pioneer. A third-octave bandwidth spectrum analysis of the residual noise present at the outputs when playing the "no signal" track of my CD-1 test disc is shown in Fig. 9.

Deviation from perfect linearity, shown in Fig. 10, amounted to less than 1 dB at a playback level of -70 dB, but increased to nearly 4 dB when the signal level dropped to -80 dB. This seemed surprising in view of the fact that Pioneer is using a 1-bit D/A converter. Nevertheless, in my fade-to-noise test using dithered signals (Fig. 11), deviation from linearity was again approximately 4 dB at -80 dB. From the data obtained for this figure, I also determined that the EIA dynamic range of the CD player section was approximately 100 dB, while EIAJ dynamic range

measured 94 dB, exceeding Pioneer's published claim of 90 dB.

I hooked up the amplifier channels to 4-ohm loads simply to verify that these circuits were able to deliver the 14 watts per channel claimed at the rated distortion of 5%. In fact, at 14 watts per channel output (with two front channels driven), distortion was a bit lower than claimed at 4.2%. Increasing the output until the 5% distortion point was reached resulted in a power output level of 14.8 watts per channel.

While Technical Editor Ivan Berger will describe how this well-endowed unit performed in his test vehicle on the road, I could not resist the temptation to play with the DSP quasi-parametric equalization fa-

MASTERING ALL OF THE PIONEER'S FEATURES TAKES TIME, BUT THE BASICS ARE A SNAP.

cilities of the product. Shown in Fig. 12 is a complex response curve that I created using those facilities. Note that I was able to produce a different equalized response curve for the left channel (solid curve) and for the right channel (dashed curve). That is one of the important features of this quasi-parametric equalization circuitry. Perhaps even more importantly, different curves can be obtained for front channels and rear channels. All in all, I can state without reservation that Pioneer has managed to incorporate more digital and analog features in this compact unit than I have so far encountered in any car audio receiver. I would have liked to hook up a multi-play CD player to the unit so that I could check out the CD controller features of the DEH-M990DSP, but none was supplied with the unit. If Mr. Berger is as impressed as I was with the many features found in this product, Pioneer may well have come up with another winner in the car audio sweepstakes.

Leonard Feldman

Behind the Wheel

Time-consuming as it is to master this Pioneer's more subtle features, mastering its basics is a snap. Once I'd spent a while

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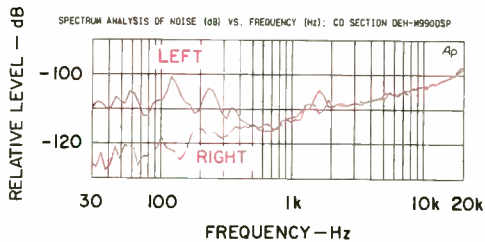


Fig. 9—Spectrum analysis of residual noise when playing no-signal CD track.

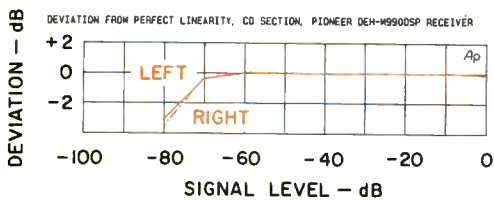


Fig. 10—Deviation from perfect linearity, using undithered signals.

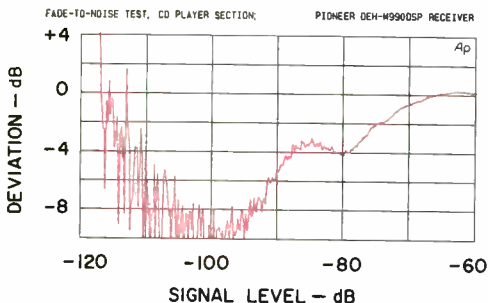


Fig. 11—Fade-to-noise CD test, using dithered signals.

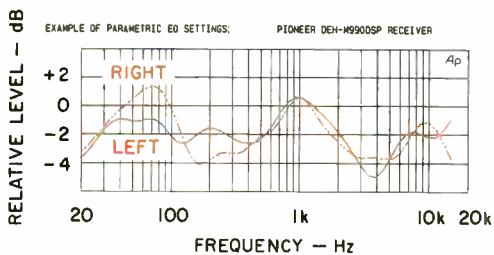


Fig. 12—Example of quasi-parametric EQ settings.

learning which of the cryptically marked controls did what, I did not need to pull over to the curb for tuning, CD operation, or even to select a sound-field setting. I did, however, need to pull over to adjust the bass and treble (quite annoying) and the equalization (tolerable, since it should be a one-time setup anyway). This is the typical trade-off when you cram a lot of features onto a car stereo's tiny front panel; the only people who appear to have licked the problem any better are the ones who've done it by having fewer features in the first place.

The problem is less with the unit than with its manual. A big fold-out diagram at the start of the manual numbers all the controls, and the text explains, by number, which control button you need for a given function. But there is no way to puzzle out what functions a given control performs except by reading the whole manual or memorizing the controls' often cryptic labels. (For example, instead of labelling the CD programming button "Prog," Pioneer calls it "ITP,P.") Other companies' manuals include legends showing, button by button, what all the available functions are. Furthermore, the text identifies most buttons only by the key numbers on the diagram, with no reference to the labels on the panel or display. We're told that, to repeat a disc, we should "Press button [15]," but we're not told that this button is marked "D.Rep."

A pity. Because the features of the unit are all well worth having. As with Pioneer's cassette-based unit with DSP (the KEX-M900, *Audio*, December 1991), the sound-field control's mildest setting, "Studio," gives a nice frontal image, filling in the soundstage as if my car had a center speaker. And unless my memory of the earlier unit plays me false, Pioneer has improved the sound fields, taming the "Jazz Club," "Hall," and "Sta-

dium" settings so they're not intolerably reverberant. The quasi-parametric equalizer and tone controls could be used to tailor the frequency balance to anyone's liking. And because you can store tone and EQ settings for instant selection, those custom settings are easy to recreate while driving.

Tuner performance on the FM band was just about equal for the Pioneer and my reference unit. On AM, the Pioneer definitely outperformed my reference, though neither was a standout. The two sounded very similar and very good, but the Pioneer had a very slight edge in crispness and clarity on FM. On CD, I noticed no differences.

The Pioneer's station preset buttons, in a row of six, were less convenient than my reference unit's two-by-three matrix arrangement. Night lighting was good, and while the green display illumination that matches my car's dash was a bit dim, the

THE SOUND-FIELD CONTROL'S "STUDIO" SETTING MAKES MY CAR SOUND AS IF IT HAD A CENTER SPEAKER.

orange illumination (selected by pressing a button) was far brighter than my reference unit's bright green dial; by day, I had to use the orange. Such niceties as two-color illumination abound; for example, the 10-S CD track scan starts 1 minute into each track, rather than at the track's beginning, to give you a better feel for what the track contains—and you can set it to start scanning earlier or later, if you like.

The chunky remote control is easy to hold and hard to lose between seat cushions. The remote can operate the unit not only from straight behind the unit but from the steering wheel, as long as you mount the remote so that its business end points sideways, towards the car's center line.

Despite the limitations of its manual, the Pioneer DEH-M990DSP is, as Mr. Feldman surmised, a winner. With a revised manual, it would be an even bigger one. It's one of those units that I initially grumble at, but grumble harder when it has to be returned.

Ivan Berger

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The dividing line between mid-fi and high-end audio is often a narrow one. When crossed, the resulting improvement in sound quality is a matter of diminishing returns, with more and more expenditure yielding smaller and smaller sonic benefits. At times, there are no audible returns at all: The audiophile pays for snob appeal, the extra

cost of import, or the higher overhead from less efficient production and small production runs.

Yet, crossing that line usually yields a real difference in musicality and pleasure, like the difference between *vin ordinaire* and a *grand cru*, or between an economy sedan and a sports car. The finer nuances of sound make all the difference in bringing the pleasure and impact of a live performance into the home. The returns may diminish with each extra dollar, but they're still worth getting.

The Harman Kardon HK6950R integrated amplifier is a good case in

point. It sells for about \$1,300 and is a mass-produced component from one of the most respected names in the business. At the same time, many of its specifications qualify it as high-end. It will deliver 170 watts into 4 or 8 ohms over a bandwidth of 10 Hz to 100 kHz, with less than 0.08% THD. Its transient intermodulation (TIM) distortion is rated as unmeasurable, and it has a high instantaneous current capacity of ± 90 amperes. Its slew rate is 280 V/ μ S and rise-time is 1.8 μ S. The preamp has a moving-coil input with a sensitivity of 120 μ V into 56 ohms and a signal-to-noise ratio of 76 dB as well as a moving-magnet input with a sensitivity of 2.5 mV into 47 kilohms and S/N of 83 dB.

Like many other Harman Kardon components, it has several high-end design features. The amplifier circuitry is discrete, very low feedback is used, switching is electronic, and circuit boards are very well laid out and well shielded. The amplifier section's high current capacity and wide bandwidth allow the HK6950R to deliver its power into a wide variety of speakers; the preamp section has switches to defeat the tone controls or bypass all preamp stages except the volume and balance controls and the selector and monitor switches, which allows the audiophile either to reduce or to minimize the amount of circuitry that affects the signal.

There are no "trick" or unnecessary features that do nothing for the

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audiophile but complicate the circuit at the cost of sound quality. At the same time, the HK6950R has all the features any audiophile is likely



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to need. It has four high-level inputs plus phono (with a front-panel "MM/MC" switch) and connections for two tape decks. The tape connections include full monitoring and dubbing facilities plus the ability to tape one source while listening to another. Its tone-shaping facilities include bass and treble controls, loudness contour, and a subsonic filter, all defeatable. And output choices include a headphone jack and a selector for two sets of speakers. The HK6950R also comes with a remote control that can operate many of the tuners, CD players, and cassette players in the Harman Kardon line.

The rear panel is well labelled and conveniently laid out. In addition to all the usual RCA jacks, it provides facilities for using the power amp separately from the preamp, two sets of speaker terminals, a switch to select between 4- and 8-ohm loads, and three a.c. outlets.

This is an impressive package of performance and features by any standard, and it is delivered at about half the cost of comparable high-end equipment. The HK6950R also provides excellent overall sound quality when it is judged by mid-fi standards, easily outperforming the conventional range of receivers, integrated amplifiers, and audio/video units that claim comparable power at 8 ohms but find it very difficult to deal with real-world speaker loads.

The Harman Kardon HK6950R provides more dynamics and more bass power and control than virtually all mid-fi competition. It has an energetic and slightly forward sound with a great deal of upper mid-

range information. It will do an excellent job of pairing off with virtually any really good mid-fi speaker that has moderate or slightly soft highs, and phono buffs looking for affordable electronics will find it an excellent match for Grado, Sumiko Blue Point, and Shure cartridges. The V-15 from Shure is a particularly good match.

What happens, however, if we make unfair comparisons between the sound quality of the HK6950R and that of high-end units costing twice as much or more? What do we really sacrifice relative to the sound of the best competition in this elevated price range?

The HK6950R does not exaggerate any aspects of timbre, but it does mix a slightly warm, uncontrolled mid-bass with an apparent increase in upper midrange energy. This is typical of most well-designed transistor mid-fi electronics.

This unit does not have the deep-bass energy, dynamics, or control of far more expensive high-end basic power amplifiers. Its mid-bass is also slightly warm and relatively lacking in definition and control. Much, however, depends on the speaker. The HK6950R can perform very well with speakers having extended bass or with smaller bookshelf or monitor speakers

**FOR A MID-FI PRICE, THE
HK6950R HAS MANY
HIGH-END DESIGN TRAITS
AND PLENTY OF FEATURES.**

whose response does not rise just above their bass cutoff point, which are relatively reasonable loads and which do not need a lot of control from the amplifier. It works well with speakers having simple to moderately complex crossovers and impedances above about 4 ohms.

One of the things high-end buyers most willingly pay a premium for is a combination of upper midrange sweetness and natural musical detail. Mid-fi electronics tend to sacrifice these for "apparent" upper midrange detail. The HK6950R is no exception, although it performs better in this regard than most of the equipment in its price range. As with the upper midrange,

the treble is just a bit hard but in no sense aggressive.

The HK6950R does lack some of the transient detail and transparency of its high-end competition, and this is only slightly affected by the tone-defeat and preamplifier-bypass controls. The importance of this loss will depend a great deal on the quality of your program material, signal sources, and speaker, but this is an area where you do get something worthwhile for spending twice as much. This is particularly true with soft or very complex passages, massed strings, and choral music. As might be expected from this, the HK6950R does not have the same ability to resolve the finer nuances of musical harmonics as the best high-end components do. This shows up with solo violin, guitar, piano, and harpsichord.



This character seems to lie primarily in the preamp section, however. If you are upgrading and on a budget, you can start with the HK6950R as is, then substitute another preamp later while continuing to take advantage of the amplifier section's relatively superior performance.

At the same time, the HK6950R does not exhibit the lack of overall musical coherence common in mid-fi equipment and some high-end equipment. A Steinway consistently sounds like a Steinway. Complex percussion music, strings, woodwinds, and voices are equally coherent. I find this consistency far more satisfactory than the kind of sound reviewers praise by having to say that a unit is "interesting" or "performs very well" with one kind of voice or recording but not another.

The HK6950R presents a good wide soundstage, but with only moderate depth, and the apparent listening position is moved a bit forward. This does not always suit classical music, particularly if it is close-miked, but it can be very involving and enjoyable with popular music and rock. Left-to-right imaging is very good, al-

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though location sometimes seems a bit over-defined or fixed in place. The amplifier's ability to place instruments and voices in layers of depth from front-to-back location is moderate.

If you pay any attention to speaker compatibility, the HK6950R is capable of very life-like musical dynamics, outperforming in this regard a number of moderate-power high-end amplifiers that cost far more than the Harman Kardon.

The HK6950R sounds very quiet, particularly when used with its line and moving-

magnet inputs. It is better than a number of high-end preamp and amplifier combinations in this respect. It does not, however, have the same musicality in very soft musical passages as its high-end competition, nor does it provide the same soundstage detail. The lack of apparent noise does not always translate into increased musical pleasure.

I would not advise the use of a low-output moving-coil cartridge with the preamp in the HK6950R. The moving-coil gain stage sounds harder and more aggres-

sive than the moving-magnet stage, and most low-output moving-coil cartridges in a price range compatible with this unit already have resonance problems in the upper midrange.

I do suggest mating this amp with a CD player, phono unit, and speaker with soft or slightly rolled-off upper octaves. Component matching, of course, is critical to getting good sound even with far more expensive high-end equipment, and choosing the right mix of components to provide musical enjoyment is the whole point of being a high-end audiophile.

In comparing the Harman Kardon HK6950R to very expensive high-end sound, we must not miss the point and focus on the unit's weaknesses instead of its strengths. So let me emphasize two things: First, the HK6950R is extremely competi-

**THE HK6950R DELIVERS
THE SAME OVERALL
SOUND QUALITY AS
MANY HIGH-END AMPS DID
A FEW YEARS AGO.**

tive within its price range. Second, comparisons with electronics costing twice as much or more are only part of the story in terms of value. I auditioned the HK6950R on a range of speakers that cost two to six times as much as any audiophile buying this unit is likely to spend, and with phono and CD units that each cost as much as an entire mid-fi system. The fact that the HK6950R performed as well as it did under these conditions is an endorsement of the product, not a criticism. There are few mid-fi products I would use in making such a comparison, and many of the nuances I have discussed will have limited relevance to audiophiles who cannot afford an entire high-end system. Most important, the HK6950R delivers the same overall sound quality as many expensive transistor high-end preamps and amplifiers did only a few years ago. You can have a lot of fun with music if you make the HK6950R the center of a well-balanced system.

Anthony H. Cordesman

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CLASSICAL RECORDINGS

MOZART

MASS IN C MINOR



These two CDs illustrate the complexities the audio art must face to make such a work live.

Mozart Mass in C Minor; Church Sonatas, K. 67 and K. 329
Soloists; Boston Early Music Festival Orchestra;
Handel & Haydn Society Chorus;
Andrew Parrott
DENON 81757 9573 2, CD; 57:51

Mozart: Mass in C Minor; Meistermusik
Soloists; La Chapelle Royale and Collegium Vocale;
Champs Elysées, Orchestra
Philippe Herreweghe
HARMONIA MUNDI
MNC 901393, CD; 60:19

Two unlike recordings of one of the great musical torsos of Western art, never completed by Mozart, left to us in enormously perplexing fragments—yet even so, compelling in almost any form in which it is presented. This Mass makes a pair with the much better known Mozart Requiem, also unfinished. Could any two recordings such as these better illustrate the complexities that the audio art must face before such a work may live again successfully in an audio format?

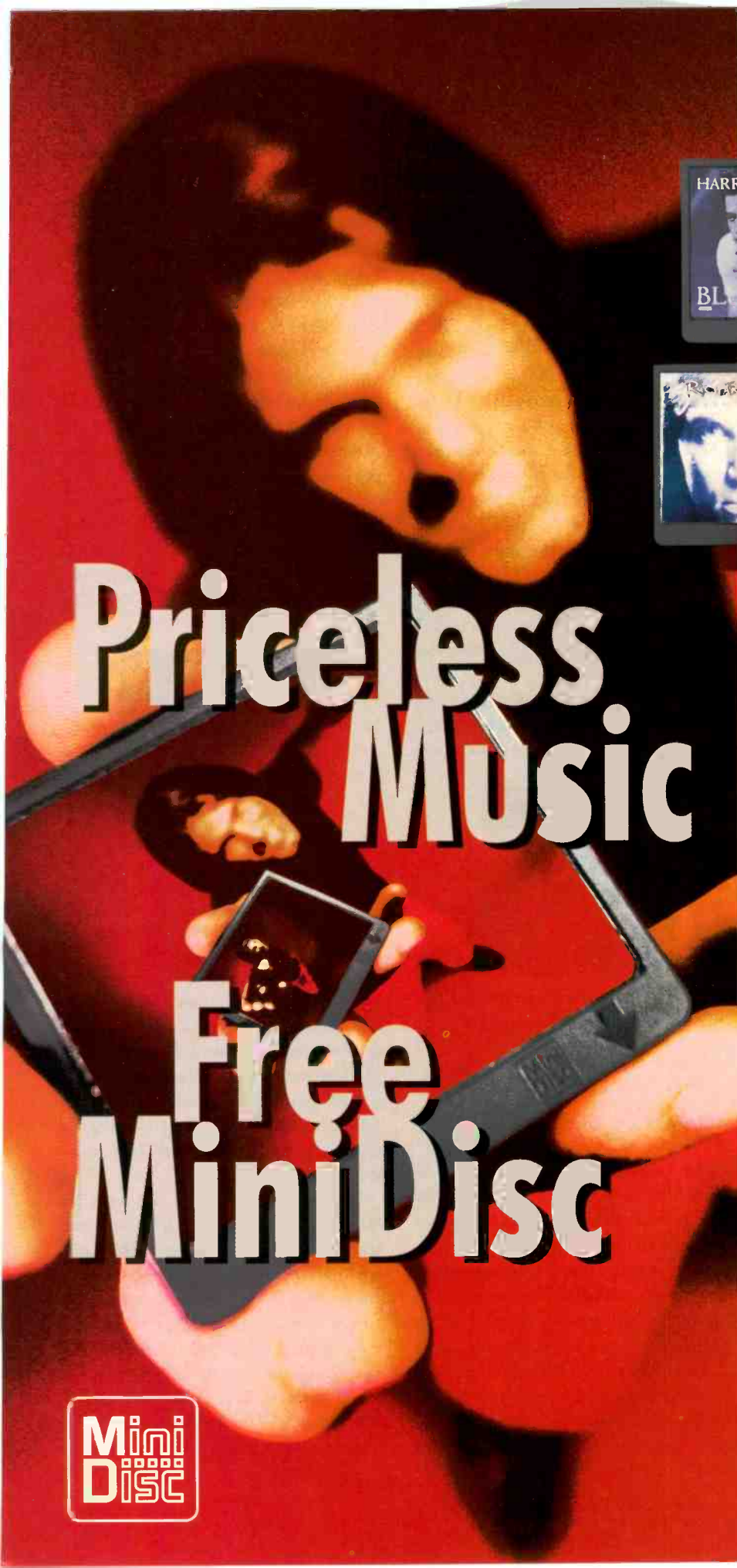
On several grounds, the Boston-based Early Music Festival recording is technically ahead of the French version. First, it is musicologically up-to-date, omitting segments that seem to have been later substitutes or fleshed out by later editors to make the music practical in performance. Considerable portions of the Mass text, therefore, are sung in Gregorian chant as a replacement. The instruments, of course, are all “period”—this was a convention of specialists in the scholarly and performing field of early music. Second, from the audio viewpoint the sonic ambience is well-recorded, the musical elements clean. There are, however, big problems both musical and audio.

The live audience, and a hall with a somewhat persistent background sound, do not help the recorded effect. More important, though the orchestra is well and rightly miked, the chorus, perhaps on the usual risers behind the orchestra (good for public performance) is subdued where it should be powerful. Much worse is the miking of the solo voices—hideously close-up for the very “un-period” singers, who blast out the high notes in a way inconceivable for the Mozart original. (They are good voices and musical; in a better balance, at a reasonable stage distance, they surely would be acceptable and more.)

The French recording is remarkably different. The overall ambience is “flat” and generally blurred, a “cathedral” sound. And yet the music is beautifully projected and audible in every detail. Most important, the solo voices are strikingly well balanced, in the right proportion to the much larger forces that surround them. What a difference!

The French performance is pleasantly old-fashioned, more or less the standard “concert version” that has been used unquestioningly for a century or so. True, the edgy sound of the strings might indicate “period” instruments—I did not even bother to check. What matters is

Illustration: Neil Shigley



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that this reading of Mozart instantly conveys the grandeur of an astonishing work, such as few of us would imagine in the Mozart output. It can leave one shaken, in spite of repairs and fillings-out.

The Boston Early Music Orchestra, needless to say, is immensely competent, easily matching (and surpassing) most symphony orchestras that use “modern” instruments exclusively. The chorus is youthful

**THE BOSTON GROUP
IS IMMENSELY ABLE;
THE FRENCH, NICELY
OLD-FASHIONED.**

sounding and accurate, if too subdued in the microphoning. But what one hears in the overall is not good. A hard, dogmatic, mechanical beat, rigid, even cold, in music that is of awesome expressiveness—this most notably in the solo numbers where the singers are figuratively dragged along gasping for breath. A common phenomenon in this day of instrumentally trained conductors who never seem to learn how to let a singer, or a chorus, *breathe* the music naturally. The slower movements are the best, where the beat is more relaxed. Here, Boston’s Mozart comes to life.

To fill out time, the Boston performance adds two wispy, tiny “church sonatas” only moments long, an improbable music for a sacred service as we hear it now. Charming, graceful, and not really in step (for us) with the big Mass. For the same purpose the French recording prefaces the Mass itself with an equally solemn and profound short work with men’s chorus from the composer’s remarkable Masonic music. In the same C minor, this introduction is an ideal opening for the Mass itself that follows, and it is wisely chosen.

Edward Tatnall Canby

Mozart: Horn Concertos

Jacob Slagter, French horn; Amsterdam Mozart Players; Jürgen Kussmaul
CANAL GRANDE CG 9211

Do we need another recording of these four concerti? We have Dennis Brain’s superlative mono version, Alan Civil with two entries, and Barry Tuckwell with three. Well, make way for this new effort under the auspices of the Channel Classics label that bests the competition in several areas.

Soloist Jacob Slagter studied with Tuckwell but boasts a smoother, less brassy sound than his teacher’s. Where many other horn players go “Blat!” in the clutches, Slagter eases through with a rich round tone that is always pleasing. The downsized chamber orchestra is advised in matters musicological by the noted Dutch composer Marius Flothuis. One result is the Concerto in D appearing as only a single movement, and what usually is played as its second movement is here called the Rondo in D.

For some really breathtaking playing, try the first movement cadenza of the opening Concerto in E Flat.

John Sunier



Orff: Carmina Burana (Canciones Profanae)

Lynne Dawson, soprano; John Daniecki, tenor; Kevin McMillan, baritone;
San Francisco Symphony and Chorus,
Herbert Blomstedt
LONDON 430 509-2, CD; DDD; 59:07

The 13th-century *Carmina Burana* manuscript consists of contributions by goliards from all over Europe, of whom conductor and scholar René Clemencic has written: “It seems they were all clergymen on the loose—unstable, they lived close to the edge of life: Drinking, gaming, lazing, indulging in orgies and prostitution. . . . [W]e find in *Carmina burana* graceful love songs, songs of spring, some based on inner emotions, alongside others which are definitely immoral.” Two years after Hitler came to power in 1933, Bavaria’s Carl Orff,

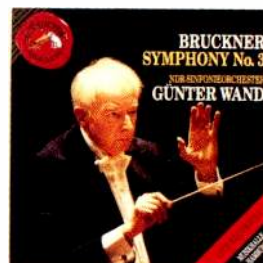
in “inner immigration” in Munich, composed this lusty, entrancing work, which after World War II quickly conquered the world.

My own collection proves my affection for *Carmina Burana*: I own versions by Eichhorn, Jochum, Muti, Previn, Thomas, Sawallisch, and Shaw, but this full-blooded realization tops them all by a long shot. It richly deserves the Grammy it won for best choral recording.

Singers and orchestra sound richly resonant, downright superb, and for once the soloists sing their ancient languages in a manner indicating they also *understand* every word and nuance.

If this captivating recording hooks you as it should, I urge you to look into Harmonia Mundi’s three-disc set, HMA 190336.38, to hear that old manuscript’s original melodies.

Paul Moor



Bruckner: Symphony No. 3

NDR Symphony Orchestra, Günter Wand
RCA RED SEAL 09026-61374-2

Although originally emulating Richard Wagner, in its final version the Third is the first of Anton Bruckner’s symphonies to evidence the composer’s characteristic organ-like orchestral writing. The unprecedented (until then) scale of this piece calls for great skill in both conducting and recording, and Wand and RCA come through on both points.

The definitive version of this work has long been Herbert von Karajan’s on Deutsche Grammophon. No longer. This Third has more excitement, power, greater dynamic range (watch out!), and more detail. Günter Wand has favored the live recording approach, which this is, and its spacious ambience surpasses even Karajan’s in this department. Both use Nowak’s edition, which at about 12 minutes shorter than the original version, is still long enough for most listeners.

John Sunier

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American Caesar

Iggy Pop

VIRGIN 0777 7 39002 2 9,

CD; 71:55

Sound: C+, Performance: B

ROCK ~ POP RECORDINGS

AMERICAN CAESAR IGGY POP

Decadence, debauchery, macrobiotic diets, and Stairmasters—life in the nutshell for your typical 40-something rock 'n' roll survivor. But if you're Iggy Pop, rock's original wild child, it's so much more; you're credited with being the first punk, you're a demigod from Tokyo to Tompkins Square Park (your Lower East Side backyard), and with 14 albums to your credit you really don't care about MTV. You love your garden, your dog and cat, your wife, and you simply want to "make better records, live life in peace, and then die."

Iggy, with refreshing candor, assessed his standing in rock 'n' roll via a song on his 1990 album *Brick by Brick*. In proclaiming "You and I are not huge mainstream stars/But unlike them we're really what we are," he very nearly relinquished any rock star aspirations and the accompanying responsibilities of attending to fair-weather fans and record label bean counters. Using the same song ("Main Street Eyes"), he lashes out against "phony rock 'n' roll" and those same bean counters who expect him to sell out ("I don't want to dip myself in trash/I don't want to give myself for cash).

For all of Iggy's intransigence, *Brick* approached main street sensibility like no other Iggy Pop album, but the irony stops there. Iggy tempered the album's over-the-top melodicism with his signature caustic wit, scathing satire, and raucous guitar energy, proving that even at his most "main street," he refuses to play the game.

And so much the better when he delivers unto his faithful *American Caesar*, the antithesis to *Brick* and an anti-pop exercise that takes his music in a necessary "other" direction, even if that "other" direction consists of murky ambience that doesn't

always work. Producer Malcolm Burn, a protégé of Daniel Lanois (who is an Eno protégé of sorts), often puts Iggy under a strange blue fresnel, mixing reverberless vocals centerstage with atmospheric noise and keyboard texture to support. When he's being less ambitious, Burn documents Iggy's hard rock tunes with clarity and sophistication.

Don't be shocked to learn that *American Caesar*, like most Iggy albums, excels in the hard-rock department with songs like "Wild America," "Sickness," and "Plastic & Concrete" holding things together. But (the inevitable "but") the vibe gets lost on a handful of somber, meandering songs ("Jealousy" and

**IGGY TAKES HIS
MUSIC IN A
NECESSARY "OTHER"
DIRECTION.**

"Hate" to name but two) which drag the party down. On the upswing is the charming "It's our Love," and the Iggy Pop equivalent to a road song, "Highway Song." A cover of "Louie Louie" and the potential single "Beside You" give the biggest lifts to an album that comes dangerously close to being a downer. But despite its handful of gems, *American Caesar*



Photograph: Chris Cuffaro

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delivers one message as loudly as Iggy's usual rants and disses; there are album tracks and there are *bad* album tracks. You'll be needing your remote control.

Michael Bieber



Saturation
Urge Overkill
Geffen GEFD 24529

Saturation is the most ambitious record yet from this Chicago trio. It brings the band's hook-laden melodicism sharply into focus as they confidently walk a fine line between pure pop ("Bottle of Fur" and "Nite and Grey") and raucous rock ("Crackbabies" and "Erica Kane"). Mid-tempo tracks such as "Sister Havana" and "Tequila Sundae" allow guitarist Nash Kato to cut loose with crunchy riffs while rhythm section Blackie O and "Eddie" King Roeser keep the songs on course. Urge Overkill's sense of humor remains intact but not at the expense of the songs, most of which you'll be humming for days.

Gerald McCarthy

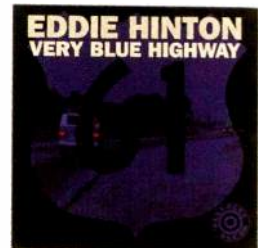


Siamese Dream
Smashing Pumpkins
Virgin 0777 7 88267 2 9

Listening to *Siamese Dream* is like sailing through an unpredictable storm: On the edge (i.e., the beginning), it's loud and turbulent, but in the eye of the storm (the middle and latter part), it's mesmerizing, dreamy, and calm. It's a little long (over an hour), and on one song, "Spaceboy," they veer perilously close to Pink Floyd/Moody

Blues territory. But the string arrangements on "Disarm" and the pretty "Luna" are well done and help flesh out the material. By striking a balance between rocking out and spacing out, producer Butch Vig and Smashing Pumpkins have created quite an engaging album.

Gerald McCarthy



Very Blue Highway
Eddie Hinton
Bullseye Blues CD BB 9528

Eddie Hinton is a master at making demos—they're so impressive that they often get released as albums. With *Very Blue Highway*, he went in with the intention of making a record, but none of the demo spirit is diminished. The result is the same rough-edged country soul with a touch of producer Terry Manning's polish. It's hardly high-gloss (Hinton's vocals occasionally falter), but it's highly listenable and potent R&B in the purest sense.

Jon & Sally Tiven



FAST TRACKS

Kamakiriad: Donald Fagen (Reprise 9 45320-2). Fagen's songs seem to settle into their grooves but go nowhere. As a big Steely Dan fan, I am quite disappointed in how uninvolved this album feels. **M.T.**

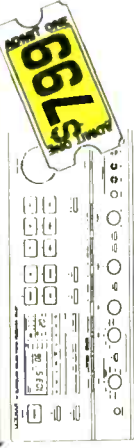
Everybody Else Is Doing It, So Why Can't We?: The Cranberries (Island 314-514 156-2). The Cranberries make shimmering pop music of deceptive substance. Their songs are more haunting and memorable than you might suspect at first. They are subversively seductive. **M.T.**

Little Love Letters: Carlene Carter (Giant 9 24499-2). Smart and sassy, this terrific record risks appearing too rocking for country folk and too far in the hills for rockers. Double wrong. Both camps should embrace this good stuff. **M.T.**

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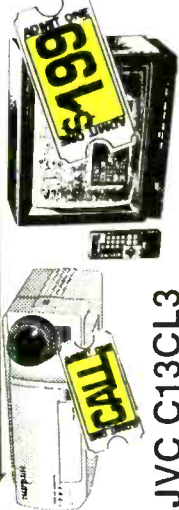
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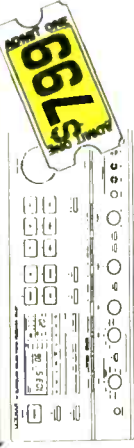
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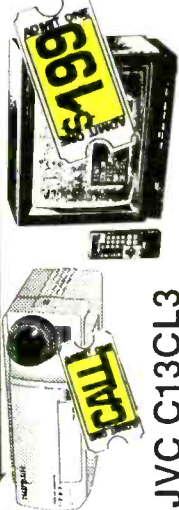
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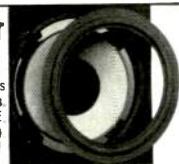
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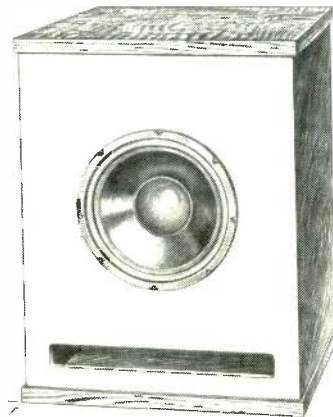
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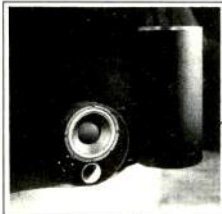
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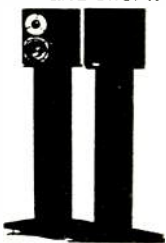


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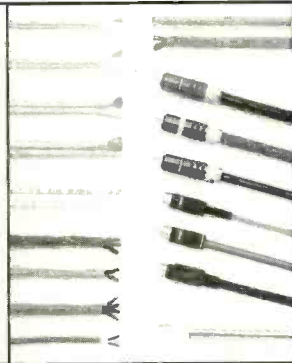
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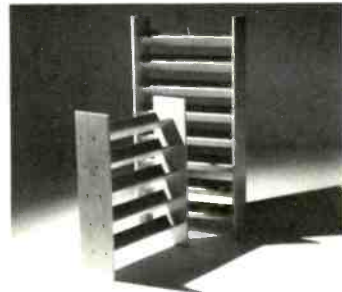
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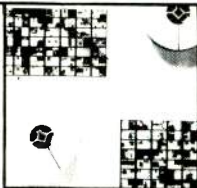
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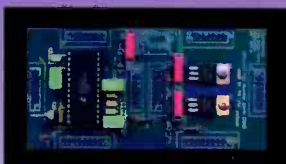
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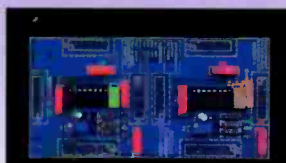
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