

# L.A. AUDIO FILE

FEBRUARY 1988 NO. 29

BULLETIN FOR THE LOS ANGELES AUDIO COMMUNITY

L.A. AUDIO FILE is published monthly to keep audiophiles and other music lovers abreast of live music broadcasts, free acoustic concerts, seminars, and programs of interest in the Greater Los Angeles area. In addition, this bulletin serves as a forum for people to report on products, recordings, and other matters of particular interest to the audiophile-music lover community.

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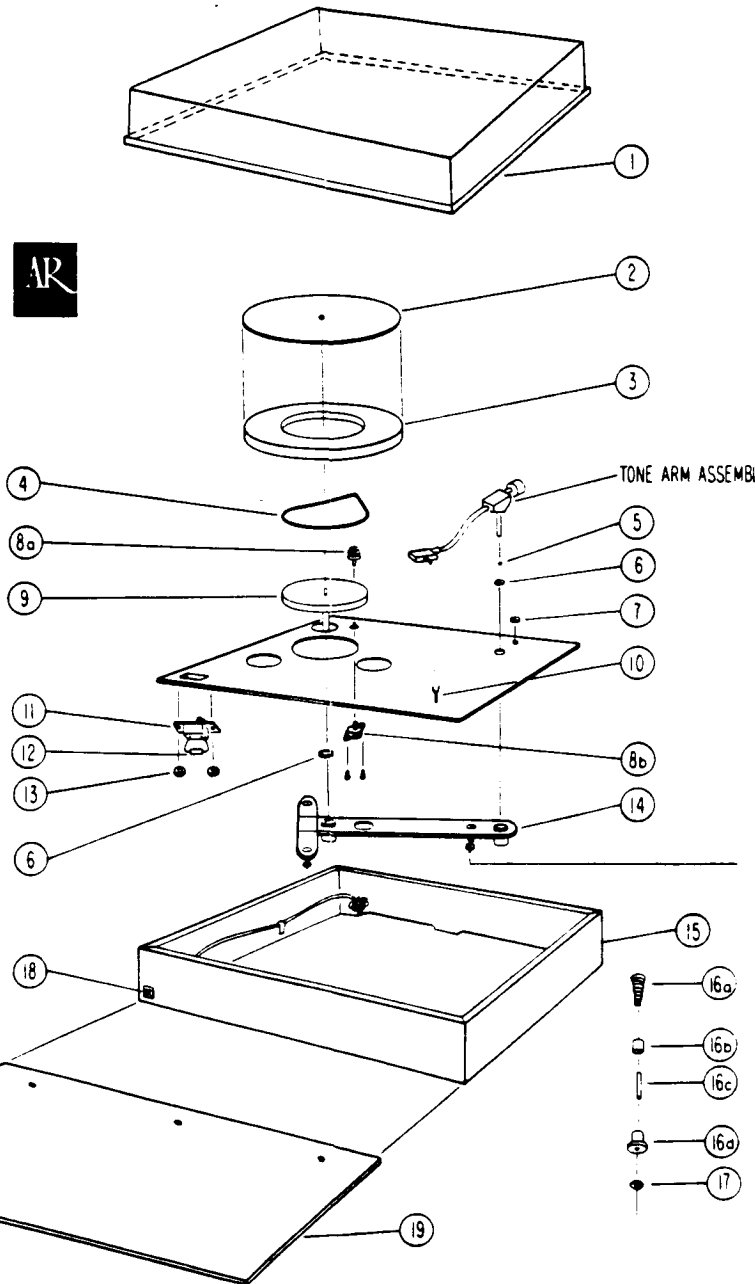
In this issue of L.A. AUDIO FILE, Contributing Editor R.W. Clifford presents the second part of his AR turntable article. This time around, he focuses on modifying the record player. Contributing Editor Thomas Nakaiye provides a reference guide of publications and articles for understanding vacuum tube electronics. IN FIDELITY Producer Peter Sutheim explains why FM radio announcers often sound like their voices are coming out of a barrel. Finally, LAAF staffers provide some local impressions of the 1988 Las Vegas International Consumer Electronics Show held last month.

## MODIFYING THE AR RECORD PLAYER

by R.W. Clifford

In my original article (LAAF, Issue No. 26, December 1987). I discussed the purchasing and refurbishing of the AR XA record player. In this companion article, I will discuss the modification of the table - which will enable the user to install other audiophile-quality tone arms on it. This requires that the subchassis be modified by removing

(continued on page 2)



### PARTS LIST

Item	Description	Part No.	Item	Description	Part No.
1	Dust Cover	1154	10	Tone Arm Rest w/nut	907
2	Record Mat	922	11	Switch	923
3	Outer Platter	976	12	Capacitor	1130
4	Drive Belt	978	13	Nut	946
5	Ball Bearing	996	14	"T" Bar Assembly w/items 16A - D	XA101
6	Nylon Disc Bearing	1092	15	Base	931
7	Grommet	904	16A	Suspension Spring	908
8A	Pulley 60 cycle	1125	B	Suspension Damping Disc	956
B	Motor	1159	C	Spring Bushing	917
9	Inner Platter	975	D	Damping Tube	1046
			17	Nut	1095
			18	Emblem	926
			19	Bottom Cover	1186

removing the original tone arm spindle well and installing a tone arm mounting plate in its place. I might inject here that according to Peter Mitchell of Audio magazine, there were over "a third of a million AR tables" produced. So, there should be more than enough available for would-be modifiers.

Many audiophiles have modified their own ARs over the years, and a few of them have gone into business modifying them for others as well. The three names that come to mind are Russell Coco, Michael Lier and George Merrill. I have not been able to contact the first two modifiers at their original addresses, so I assume they are no longer in business. This does not surprise me, since George Merrill has pretty much preempted the field by developing his own AR subchassis with a built-in tone arm mounting board and a complete line of accessories to go with it. He will sell you his own AR subchassis with a built-in tone arm mounting board and a complete line of accessories to go with it. He will sell you his new acrylic subchassis and an improved platter spindle for \$135 - you still have to cut out the top plate opening for the tone arm mounting boss yourself - or he'll do the complete job for you for about \$190. But, be forewarned. He has a whole line of further improvements and parts that could run your bill to over \$400. If you spring for them (I haven't heard or seen his mod), he encloses several favorable magazine reviews in his informational packet.

Two audiophile magazines, Stereophile and Amateur Audio, have published "how to" articles on modifying the AR turntable. I have not seen the Amateur Audio article, but I have read the Stereophile one on installing the Mayware Formula 4 tone arm. You may find it helpful if you intend to install that arm on your AR.

I do, however, have several reservations about their instructions. I found their directions for preparing templates to drill the top plate somewhat confusing, and their suggestion to cut up the Mayware phono lead seems like unnecessary overkill. Most table manufacturers suggest a simple loop and cable clamp under the chassis. Also, the table they modified was evidently a very early AR that had a removeable tone arm spindle well, which is not representative of the later models that most audiophiles will be modifying.

## THE TONE ARM

The preferred tone arm for the AR mod is one that mounts via a threaded pillar with a locking nut. Both the Mayware Formula 4 and Grace 707 Mark II meet this requirement. Unfortunately, my classic favorite, the SME 3009 Mark II Improved, does not.

The springs on the I-bar subchassis are carefully spaced equidistance from its center of gravity. So, ideally, the replacement arm should be the same weight as the original. I found that the original tone arm and its spindle well (after removal) come to about 7 oz. Ideally, the replacement arm and its mounting plate should come close to that figure. Another important specification is tone arm length - the original arm has a 9" stylus to pivot length, and is 11 5/8" overall. You should, of course, be sure the counterweight of the replacement arm will clear the corner of the dust cover. I chose to install the Grace 707 Mark II arm on my AR. The rest of this article will be devoted to that installation. If you recall, the original Linn Sondek sported the Grace arm. It seems to meet all the above requirements.

My mod required: an electric drill and jig saw, a hack saw, several files, a good eye, and a steady hand. The subchassis casting is a relatively soft metal. So if you're used to working with the above hand tools, you should have no problem. Actually, the cutting of the top plate hole is the most critical (non-repeatable) operation, and concerns the cosmetic appearance of the table rather than its actual operation.

If you haven't already obtained my first article on the AR record player, you should get a copy. It contains further information that you will need in modifying and refurbishing the unit.

## REMOVING THE SUBCHASSIS

First, remove the outer platter. Then, remove the inner platter by gently rotating and lifting it. There's a nylon thrust washer at the bottom of the platter spindle well that you don't want to lose. If the original tone arm is in good shape and its cable is not broken, don't trash it - it could be worth \$20 to someone who needs it. Remove the bottom fiberboard cover by unscrewing its retaining screws and sliding it out. Carefully unsolder the tone arm cable from its terminal strip, and withdraw it through the top plate grommet. Now, lift the arm from its well and store it - together with the phono lead - in a box by itself. Someday, someone will be glad to buy it from you.

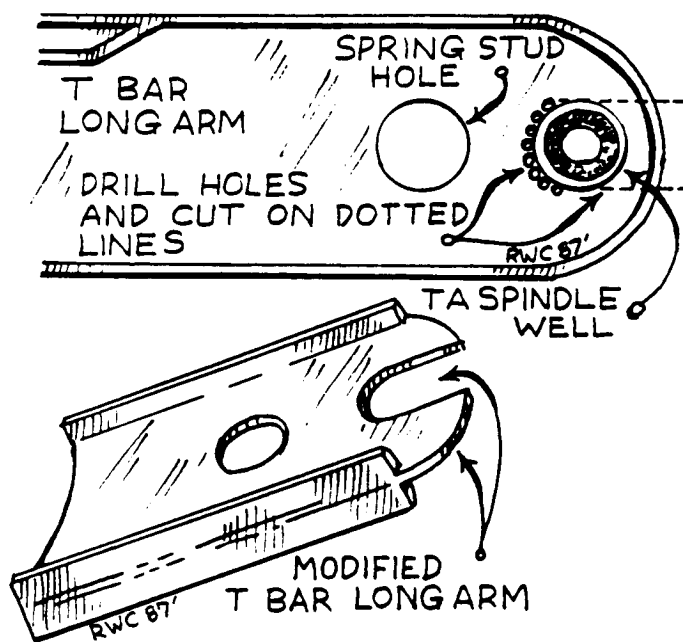
Now, you can remove the three suspension nuts (you might have to use acetone if they're sealed).

and then the dampening spacers and springs. If the spacers droop over their locknuts, refer to my first article. Now, withdraw the I-bar subchassis and place it on your work bench. You might want to put a piece of tape over the platter spindle well.

The following subchassis modification has three steps: (1) the removal of the tone arm spindle well; (2) the fabrication of the tone arm mounting plate; and (3) the cutting of the new top plate tone arm hole.

#### SPINDLE WELL REMOVAL

A vise will come in handy here, or you can clamp the I-bar to your work bench with its long arm hanging over the edge. Drill a series of small holes around the inner semi-circle of the tone arm well - these should be as close together as possible. Now, make two hack saw cuts through the rim of the I-bar - on each side of the tone arm spindle well, and as close to the casting as possible. These should link up to your first holes drilled on the inner side of the tone arm spindle well. This is easier to illustrate than to explain, so check the illustration carefully - you'll get the idea. What we want to end up with here is a slot in the end of the long arm (where the tone arm spindle used to be) about 3/4 of an inch wide and not much deeper than the original tone arm spindle well casting.



If you have drilled the inner holes close enough together, you should now be able to bend the tone arm spindle well up and down (with

a large pair of pliers) a couple of times until it breaks off. Take a large round file, and file between the jagged small holes until you have a nice, smooth semi-circle at the end of the slot. Likewise, clean up the stright hack saw cuts on either side of the slot. Do not remove anymore casting than is necessary. Using your hack saw again, remove the large semi-circle rim - both top and bottom - on either side of the new tone arm slot. Now, using a large, flat file, carefully file across the top and bottom of the tone arm slot until it is smooth and all the cutting burrs are removed. The new tone arm plate will be sitting on this casting all the way up to the wedge (on its top side), so be sure this surface is level and smooth. This completes the subchassis modification.

#### STONE ARM PLATE FABRICATION

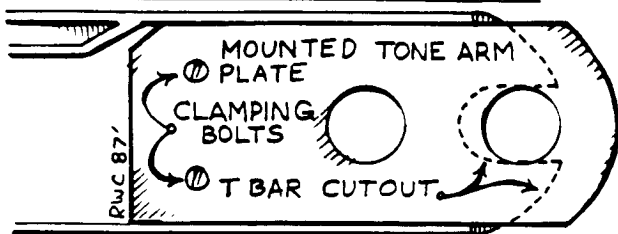
If we were mounting a Formula 4 tone arm, it would not be necessary to slot the subchassis or fabricate a tone arm plate - since its working distance is exactly the same as the original tone arm. However, since the Grace 707 Mark II is slightly longer and would be mounted very close to the end of the new tone arm slot, I feel an additional tone arm plate would make a better installation. It's also adjustable in length, so that longer arms can be acomodated.

What we're lookinn for here is a 1/8-inch thick piece of rigid, light alloy metal that we can cut down to about 2" x 5" for our tone arm plate. Mine was cut from a large piece of electronic chassis that I purchased from a local surplus scrap yard for \$5. I would think that Apex Electronics in Sun Valley would be an excellent source. It is important that it be light alloy so we don't add anymore weight to the subchassis than is necessary.

The tone arm plate should be cut to just fit inside the top rims of the I-bar long arm - about five inches in length. Remember that it must lie flat against the I-bar casting. You'll want to round its outer end in a semi-circle and file the right corner of its inner end to match the wedge casting on the I-bar. Four holes will have to be drilled in it - i.e.. two 3/4-inch holes for the tone arm pillar and suspension spring stud, and two small holes for the inner clamping bolts.

Once you have fabricated the tone arm plate and filed its edges smooth, set it on the I-bar long arm and slide it about 1/4 inch out from the wedge casting. Now, clamp it down and drill two small holes through it and the long arm casting (as illustrated on the next page). Temporarily install the bolts, and you are then ready to figure the position of the tone arm pillar and spring stud holes.

## MODIFIED T BAR SUBCHASSIS



The tone arm pillar hole should be drilled 8 5/8 inches from the platter spindle well (center to center). If you have your Grace 707 tone arm mounting template, you can use it. Now you can turn the whole T-bar over and circle the spring stud hole through the long bar casting hole. Once you have drilled these two remaining holes the tone arm plate fabrication is complete.

### TOP PLATE HOLE

You probably have guessed by now that we will not end up with the conventional square, or rectangular, tone arm mounting board which appears on most AR modifications and quality turntables in general. There are reasons for this, i.e., 1) part of the AR design dictates that the tone arm be mounted intimately with the subchassis, and this "clamp-on" design continues that philosophy, 2) cutting a large rectangular opening in the corner of the top plate compromises the structural integrity of the unit, and 3) two excellent, large lightweight mounting washers are supplied with the Grace 707 tone arm. One of these washers serves as a clamping washer, under the T-bar, and the other serves as a top plate clamping washer and cosmetic base which sits flush with the top plate.

Having first given you the good news, I will now give you the bad news.

The alignment and cutting of the top plate hole is the most critical operation of the entire modification. It will determine whether your mod job works as designed and appears to be a commercial product or a chop job by "Hack-saw Harry." So take your time and think out each step carefully. In retrospect this is perhaps why Stereophile spends so much time in giving you all those complicated instructions on drilling their top plate. The top plate hole serves two functions; it allows the tone arm pillar to pass through the top plate - without touching its edges during turntable operation - and hides the subchassis parts beneath it. As there is the possibility of subchassis movement during operation, and each

unit - remember we're dealing with used parts here - varies somewhat I've devised a simulation technique for plotting the position of the new top plate tone arm hole.

The main function of the top plate hole is to emit the tone arm pillar and keep it free from contacting the top plate during the operation of the turntable.

Take the finished T-bar assembly which now has the completed tone arm plate attached to it with the two small clamping bolts. Place a piece of masking tape over the tone arm pillar hole and mark its center with cross lines. Now take the chassis and tape most of its upper right corner with one or two layers of masking tape. This will protect its surface while cutting and provide a place for you to mark your new tone arm hole guidelines. Carefully cut the tape out over the old tone arm spindle hole with a razor blade. Reinstall the T-bar assembly under the chassis. What we want to do here is simulate the working position of the tone arm pillar mounting hole in order to get a reference center point for marking the top plate hole. Now install the inner platter, and stretch a new drive belt around it and the motor pulley. Then install the outer platter - in an upside down position. You will notice that the top platter is lopsided and not sitting level because there is no tone arm weight on the end of the T-bar long arm.

Now apply some weight - silver dollars, gold coins or whatever - to the edge of the platter opposite the tone arm hole until the subchassis floats level, and there is the same clearance between the bottom of the platter and the top chassis plate all the way around its circumference. You should now have a simulation of the T-bar subchassis in its working position when the tone arm is installed. You can slightly bounce the platter to be sure it is floating freely and will return to the same position. Now look down through the tone arm hole for the cross lines you marked on the tone arm plate. They should be somewhere within the hole or close to it. What you want to do is find that center point and transfer it with cross lines to the masking tape on the top plate. When you have done this you have a center reference point for marking your top plate hole. As a double check you can carefully remove the weighted outer platter and the springs will bring the tonearm plate up against the bottom of the top plate. Do this several times to observe it it alters your center point - as it moves up - from its working, floating position.

Once you have established the correct center point on the top plate you can draw your hole with a compass and cut it out with a hole saw or freehand with an electric jig saw - as I did. Then using a round file carefully clean up the edges and any slight circle irregularities. Now you have a decision to

make on the size of the hole. The large washers that come with the Grace are about 2 inches in diameter. A 3/8 inch clearance all around should provide ample room if the subchassis moves a little in operation. A small clearance is more cosmetically attractive, but a larger clearance leaves more room for error in calculations and operation. The decision is up to you! My unit happily turned out just right.

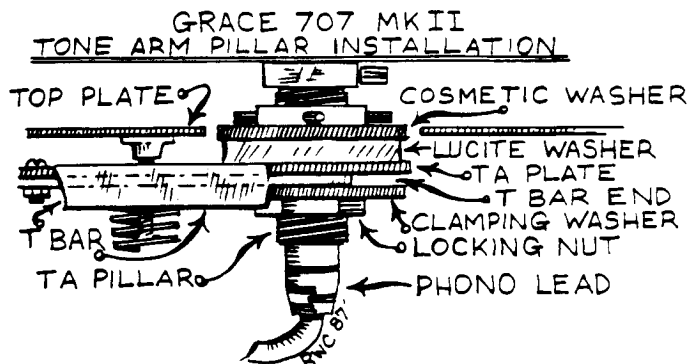
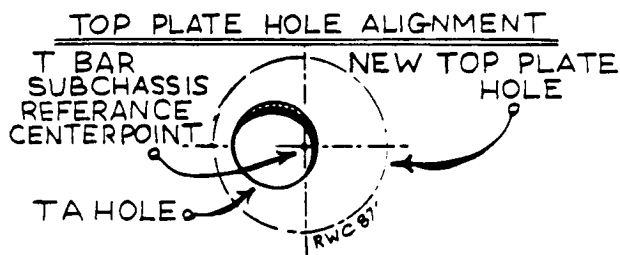
One more fabrication and we're ready to mount the tone arm: I found it necessary to make an additional washer in order to bring the black cosmetic base washer up to the level of the top plate. Most of the large washers at my local hardware store were too heavy and their holes were too small. So I cut mine out of a piece of 1/4 inch lucite. It's relatively easy to cut but a little tricky to drill as it softens and clogs the bit. However, you can clean it up with a file and, in use, it's lightweight and out of sight.

You will now want to paint the tone arm plate and lucite washer black before installing the Grace arm as per the instructions packed with it. Two washers will go above the tone arm plate, i.e., one black one, and one lucite one, the other washer goes under it with the locking nut. The phono lead-in cable should be positioned in a wide circle - so as not to load the subchassis - and clamped to the side of the wooden base. Install the Grace arm rest in the original AR tone arm rest hole. It will slope down slightly to right, but you'll get use to it. Now screw the three suspension nuts up - or down - until there is a clearance of 1/8 inch between the bottom of the platter and the surface of the top plate.

If you have the latter 2 1/2 inch clearance dust cover you are in luck and it will easily clear the Grace arm. If you have the earlier shorter dust cover you will have to install 1/4 inch shims on its shoulder corners to raise it up. The small plastic floor protectors supplied with Hirsch metal shelving work perfectly. Just glue them in the corners of your AR dust cover with a little epoxy glue. Now install the cartridge of your choice and your AR modification is completed.

If all went well you should now have a near state-of-the-art turntable that would have cost you hundreds of dollars more if purchased. And best of all, you accomplished this through your own efforts and skill. To use a trite cliché: "This is what being an audiophile is all about."

-RWC



#### INFORMATION AND PARTS SOURCES

- STEREOPHILE, 1107 Early Street, Santa Fe, NM 87501
- ACOUSTIC RESEARCH, 330 Turnpike Street, Canton, MA 02021
- APEX ELECTRONICS, 8909 San Fernando Road, Sun Valley, CA
- THE AUDIO AMATEUR, P. O. Box 176, Peterborough, NH 03458
- Merrill AR mods: UNDERGROUND SOUND, 2125 Central Avenue, Memphis, TN 38104

#### SOME LOCAL IMPRESSIONS OF THE 1988 WINTER C.E.S. IN LAS VEGAS

Covering the Consumer Electronics Show in Las Vegas is quite a task when considering all of the different locations and products available. This year I tried not to see everything and enjoy the show. Instead of giving a blow by blow report, I would like to make a few general comments regarding the show.

A quick tour of the main convention floor can be a lot of fun with the right frame of mind ("Let's check out the gadgets") but is generally thought of as a zoo or circus while the high end audio room in the Riviera have the reputation of offering more civilized conditions.

Well, this is not entirely true. After making my way over to the Riviera and figuring out how to

get up to the demonstration rooms I was ready to enjoy what the high end manufacturers had to offer. After inspecting about half the rooms, I was asked (accosted) by a representative of a manufacturer standing in the hallway to "come in and check out the sound of the equipment because it's fantastic."

Is this really necessary? I felt like I was in New York City walking down Broadway (does the term "barker" mean anything to you?). Of course I tried not to let this interfere with my impressions of the company, and, as it turned out, the room had equipment worth auditioning. Hopefully, this will not become a common occurrence.

It was also disappointing that only a few manufacturers had the sensitivity to keep the volume down. Without a doubt, systems being played at relatively low volume levels made a much better first impression with the audiophile (File) press and consumer.

A couple of weeks after the show, a report was given calling a certain system in the Riviera one of the worst sounding, when I thought just the opposite. So why this great discrepancy? It's difficult at best to make a fair judgement on the equipment in the hotel rooms, because of the many variables listeners have to deal with such as short listening periods, overcrowded rooms, unfamiliar and poor source material and equipment that has been improperly set up. The staff of LAAF fell into this trap - making on the spot conclusions about equipment. Our only excuse is that it's so very easy to do! Any reports, including ours, should be taken with a grain of salt and not be used to either totally condemn or praise any product.

A couple of new digital audio products that are now available to the consumer are as follows:

Sony introduced several CD models (as they seem to do at each CES), two of which are the CDP-707ESD and CDP-507ESD. The units include an 8x oversampling digital filter and 18-bit linear digital to analog conversion. Both players also include a feature which enables the user to "mark" and locate any desired point on a disc. The CDP-707ESD will retail for \$1800. Also shown was a small lightweight portable consumer DAT machine, Model TCD-10, which looked like it was modeled after the very popular TCD-5M cassette portable. Suggested retail should be around \$1800.

Pioneer, which has been trying to reach audiophiles with their "elite" line, introduced the PD-91 compact disc player with 8x oversampling filter and 18 bit D/A converter. The unit will retail for \$1300.

Technics was showing their model SV-ND1 portable DAT unit. They achieve a very compact size (smaller than the Sony) by using a rotating head which is half the size of a standard head. Newly developed low-power LSI's are used in the design. Retail price should be around \$2,300.

- RMS

This year's International Winter Consumer Electronics Show was held in Las Vegas from January 7th through January 10th.

The mainstream electronics were on display at the Convention Center. Striking was the great number of exhibitors displaying DAT recorders (Denon, JVC, Sony just to name a few). It appears as though DAT will be a major item in audio in 1988. Sony was handing out free CD singles, which may be another big item in 1988. In February, Sony is scheduled to release an adaptor for \$2.99 for those CD players not configured to play singles.

The high-end audio equipment was on exhibition in guest rooms at the Riviera Hotel. Some of the exhibitors with the best sound: Beveridge (Meitner amps driving Beveridge speakers), Meitner (Meitner amps, Acoustat 2+2 speakers), Monster Cable (Primare amps, Martin Logan CLS speakers), True Image (True Image amps, Apogee speakers). A new speaker company, Now Hear This (NHT), exhibited surprisingly good-sounding, affordable speakers. For tube fanatics, Vacuum Tube Logic (VTL) displayed a comprehensive line of tube amps and tube preamps, including a 50-watt Class A triode amp with 845 transmitting tubes. Note: if any of the readers attend a future CES, it should be noted that a few of the exhibitors had the door to their suite closed. Don't be too shy about pushing these doors open, as some of the best sounds at this CES was behind them.

- TN

Here are a few of my observations and conclusions from the weekend in Las Vegas:

Most Impressive Demonstration - Hoover Dam. I'm not kidding around here. It's the perfect compliment to the hustle and bustle of the show and the city. The drive is a scenic and serene 40 minutes. I would recommend going on Sunday morning. Since the dam divides Nevada and Arizona, the tour actually takes you into another state. And, of course, nothing in the high-end exhibit can match the 1,344,800 kilowatts generated by Hoover Dam's 17 massive power generators.

The Show's Best Kept Secret - yellow badges. That's right. Yellow badges mean you're part of the editorial press, and exhibitors tend to pay attention to yellow badges. One of the benefits of becoming a contributing editor of LAAF is that you get an editor

press badge for the Las Vegas CES, which also gets you into the press lounge. Some staffers wanted to avoid the attention, however, ("What's an L.A. AUDIO FILE?") and wore other colors instead.

The Show's Second Best Kept Secret - the Stereophile party at the Penthouse Suite in Caesar's Palace. However, only two of our staffers made it there this year. Maybe next year we'll try an L.A. AUDIO FILE banquet at the CES.

- RN

Note: Readers interested in obtaining the address or telephone number of any obscure audio company can try writing us. We'll look it up in the CES Directory.

#### THE REVIEWERS IN REVIEW

L.A. AUDIO FILE comments on noteworthy features and articles in current audio periodicals to aid readers who may be interested in purchasing them. Most of these periodicals are available at the larger magazine stores and stands, Tower Records stores (classical section), and at selected audio stores throughout the Southland. In addition, we comment on articles of interest that have appeared in recent audio newsletters from various regions. These newsletters are not available at local stores. Consult the November 1987 (no. 26) bulletin for more information about the newsletters.

Audio Amateur (Issue 4, 1987). Vytenis Babrauskas discusses group delay problems in CD players. John Buschmann outlines a modification for the Magnavox 2040SL CD player for improved sound quality. Fernando Garcia Viesca discusses the use of inductors in solid state power supplies. David Hafler shows how to build a test box which allows one to listen to the differential output between an amplifier's output (attenuated, of course) and its input, the differential output being the amplifier's distortion. Rod Rees discusses mathematical modeling of sound waves and the physiology of the human hearing system.

- TN

Hi-Fi News & Record Review (12:87). Ken Kessler interviews David Wilson of WAMM fame. Martin Colloms on Yamaha's special order CD-X 10000 ("world-class sound quality...only beaten (marginally) by the early 1987 production CAL Tempest and the late 1987 production Cambridge Audio CD1"). Colloms on the Magneplanar MG-2.5 ("bass was rich, with a 'soft' effect, while the mid appeared rather gentle...The treble also

seemed rather bright and jangly. Stereo soundstages were very large, while specific images were rather wide").

Hi-Fi News & Record Review (1:88). Ken Kessler on the Wilson Audio Tiny Tot loudspeaker ("one of the four or five finest systems I've heard"). Martin Colloms chooses his £1500 system, singling out the Linn Sondek LP-12, Pink Triangle PI-100 or Roksan Xerxes for the front end, the Rogers LS7t for speakers, and the Musical Fidelity B200, Audiolab 8000A or Mission Cyrus 2 for the amplification.

Southeastern Michigan Woofer and Tweeter Marching Society LC (1:88). An essay on tape squeal and cassette shell lubrication. A satire on having telephone transduction devices in a high fidelity listening room.

Stereophile (1:88). Dick Olsher on the Wheaton Triplanar II tonearm ("a mandatory recommendation to all aficionados of soundstaging and imaging"). J. Gordon Holt on the Ortofon MC-3000 cartridge ("Class A"). Lewis Lipnick on the CAL Aria CD player ("the openness of presentation, neutral spectral balance, dynamic capabilities, harmonic integrity, and musical honesty set new standards for this listener"). J. Gordon Holt on the Octave Research ("unquestionably an excellent power amplifier").

The Absolute Sound (Early Winter 1987). A rather exceptional issue. Dream systems picked by John Nork (Monster Genesis, Linn/Mod Squad or Goldmund, CAL Aria, Mac MR-80/Marantz 10B, Nakamichi Dragon, ARC, Cochran Delta Mode, WAIT/Entec or IRS V/WAMM, etc.), Robert Greene (Lees/Crosby-modified Quad ESL-63, Entecs, Nova/Spectral, Morch DP-6, VDH MC-10, etc.), Jack English (Infinity, ARC, Goldmund, Koetsu, CAL, Magnum, etc.), Robert Reina (Goldmund, Koetsu, ARC, Infinity, Brisson), and Fred Kaplan (Goldmund?, Well-Tempered?, VPI?, Martin-Logan?, Thiel?, etc.). Steven Stone is back, with an essay on H.H. Scott. Frank Doris on finding used records. HP on the Martin-Logan CLS ("transparency incarnate") and ARC SP-11 Mark II ("the closest thing I have heard to the absolute sound"). Lots of music reviews.

- RN

The Audio Critic (Issue 10, Fall/Year-End 1987... or Vol. 2, No. 4 under the old numbering system). Equipment reviewed: Audio Research M300 power ("To the critical ear, however, the sound was definitely on the rough and sibilant side, slightly spitty one might even say, and not really pleasant overall") and SP-11 preamp ("seems to be a square-shooting, not particularly temperamental piece of equipment with excellent mainstream performance", although Aczel found a reconditioned stock Citation I to be superior

in sound quality to the SP-11), Boulder 500 power amp ("With the right program material and speakers designed to be driven from a voltage source, the sound is a new experience in transparency and detail") and modified MESA/Baron M180 power amp ("simply the best-sounding vacuum-tube power amplifier in our experience, with the possible exception of the utterly impractical NYAL Futterman OTL-1 at close to ten times the price."). Editor's Note: NYAL is now defunct. Aczel writes about his "perceptions of today's audio scene." Aczel's original lateral tracking geometry article is updated. Aczel discusses Bob Carver and his "transfer-function duplication" and publishes the famous 1983 article about the Carver M-1.5 and Levinson ML-2, which previously saw print only as a "reprint" by the Carver Corporation.

NOTE -- This issue is the first issue of the reincarnated The Audio Critic. Old subscribers who are due issues and wish to receive them should write to: Peter Aczel, THE AUDIO CRITIC, Box 392, Broxville, NY 10708. Notify him of your current address.

- TN

The Reference - Newsletter of the Inland Empire Audio Society (Oct.-Dec. 1987). Steven Lefkowitz on his "ten best" of 1987, and on the delights of record shopping and other pastimes. Frank Manrique on the Ron Reznick Audio Laboratories 1201S/Trapagon speaker system. Iden Rogers on the Magnum Dynalab FI-101 tuner (after purchasing the unit and living with it, Rogers decided to go back to his Nikko Gamma 20). Judy Davidson on handling the large record collection. Don Prock on building an isobarik subwoofer enclosure.

- RN

#### FOR YOUR INFORMATION

##### L.A. AUDIO FILE BASEBALL CAPS

We just had some very nice-looking baseball caps made for us by California Classics. The caps are polyester mesh/foam-backed navy blue, with "L.A. AUDIO FILE" on the front in the familiar logo. The screening is done with white puff ink, which looks like embroidery but has greater detail and resolution capability. The caps are adjustable, and are available for \$10 (plus \$2.50 postage and handling). Interested readers should send checks to the FILE at our address.

#### LAAF RECEIVES DONATIONS

The staff of L.A. AUDIO FILE gratefully acknowledges the donations received by Noel Bell of Santa Monica and Robert Burton of AUDIO RENTS in Hollywood. Thank you.

#### DIALOG

##### WHY FM ANNOUNCERS' VOICES SOUND LIKE THEY'RE COMING OUT OF A BARREL

Dear folks:

I thought you might be interested in the following bit of correspondence on a perennial topic, taken from an actual letter. I've condensed the query letter and offer it to you along with my reply, to publish if you wish.

Peter Sutheim  
Producer, IN FIDELITY, KPFC Radio

Why do FM announcers' voices sound like they're coming out of a barrel? I like the sound of my system otherwise (Thorens TD-125 with Shure V-15 Type IV cartridge, NAD 3150 amp, Design Acoustics D6 speakers). Can you suggest some speakers that would do well on classical music, organ, opera, etc., without this annoying effect? I wrote to the designer of the D6, and he said the effect was related to the type of microphone used, and the way it was used.

--A.E.G. Bates, Sun City, CA

PS responds:

Your D6 designer is right in nailing announcers' mics and techniques for the boomy, barrelly voice. Most studio mics are directional, usually cardioid, and as such are at least in part pressure-gradient responsive. For reasons you can find in any good book on microphones, but which are too long to go into here, all such mics boost low frequencies when the source is nearby (typically, closer than about 3 ft). Most announcers work within 1 ft of the switch-selectable low-frequency rolloff to compensate for this at least partially, but not every user uses it (choice or ignorance?). Add to this the fact that most stations have their announcers' voices at best only 5 - 6 dB below the loudest music levels, and your complaint (widely shared) is not so surprising.

Possibly compounding the problem is that voices are very familiar to us in their overall spectral balance, since we tend to hear them constantly. When that balance is drastically altered, as in this case with announcers, it's immediately noticeable. Most listeners don't have nearly such a tight handle

on musical balance, unless they hear live, unamplified music often, and are thus more likely to tolerate (or even prefer) music with exaggerated bass, excess highs, etc.

Finally, a loudspeaker's low-frequency performance is profoundly affected by its position in the room. Corner locations, or locations near two intersecting surfaces (e.g., wall and floor), emphasize low frequencies. Some companies have made a specialty of designing speakers expressly to be used against a wall or in corners; in general, otherwise, most speakers produce their best spectral balance and smoothest bass up off the floor and out away from walls by at least 2 or 3 feet.

It is possible that your D6's, combined with their placement in your room, are conspiring to produce a response peak or hump between 100 and 200 Hz (roughly), and are thus emphasizing the fundamentals of male speaking voices. Moving them may help, but may lighten the balance for music contrary to your taste. Also, if you are in the habit of listening with the loudness compensation switch on your amplifier switched on, that would aggravate the problem.

In short, I believe the problem is primarily in the FM program source, and any speakers with significant output below 150 Hz or so, which obviously includes anything you'd want to have in your system, would show it up to some extent.

#### REFERENCE MATERIAL FOR VACUUM TUBE CIRCUITS

Dear Editors:

What are good books on audio circuit design (preamp, amp) using tubes?

--N.N. Kinhluan, Diamond Bar, CA

TN responds:

The following is a list of reference material for learning about tube circuits. A basic understanding of electrical theory (mainly Ohm's law) is the only prerequisite.

#### BOOKS

These are good basic texts:

Understanding Hi-Fi Circuits; Crowhurst, Norman D.; copyright 1957, Gernsback Library, Inc.; Library of Congress Catalog Card No. 57-9005; 224 pages.

High-Fidelity Circuit Design; Crowhurst, Norman D. and Cooper, Fletcher George; copyright 1956, Gernsback Library, Inc.; third printing, April 1959; Library of Congress Catalog Card No. 55-11190; 303 pages.

Audio Design Handbook; Hartley, M. A.; copyright 1958, Gernsback Library, Inc.; Library of Congress Catalog Card No. 57-9007; 224 pages.

The following are reference handbooks:

Radiootron Designer's Handbook, 4th edition (1948); Langford-Smith, F., editor; Radio Corporation of America; 1498 pages. Outstanding source of reference material on tube circuits and hi-fi in general.

Very comprehensive. Various editions were published from 1934 to the early 1960's.

The Radio Amateur's Handbook, 55th edition (1978), copyright 1977, American Radio Relay League; Library of Congress Catalog Card No. 41-3345. Mainly for ham radio operators. Contains excellent section on power supplies. The 1978 edition is the last edition to contain a reference section on tubes.

#### PERIODICALS

McIntyre, Robert, "Vacuum Tube Fundamentals," The Audio Amateur, May 1986. A discussion of the basic principles of the vacuum tube. Contains bibliography.

Crowhurst, Norman H., "Designing Your Own Amplifier," Audiocraft Magazine, March, April, May, July, September, October 1956; February and March 1957. Uses design examples to explain tube amplifier design.

Marshall, Joseph, "Practical Audio Design," Audiocraft Magazine, January (?), February, March 1956. Discusses power supplies.

#### TUBE MANUALS

- these manuals list the operating characteristics of receiving tubes

RCA Receiving Tube Manual RC-30. copyright 1975, Radio Corporation of America. The last tube manual published by RCA. Contains primer section on electronics and tubes.

GE Essential Characteristics, 14th edition, copyright 1973, General Electric Corporation. The last tube manual published by GE.

(Note: the above 2 tube manuals are available as new old stock from Antique Electronic Supply, 688 West First Street, Tempe, AZ 85281 (602) 894-9503.

The RCA manual is part no. B-378 and lists for \$7 and the GE manual is part no. B-377 for \$3.50. Shipping and handling is about \$4.50.)

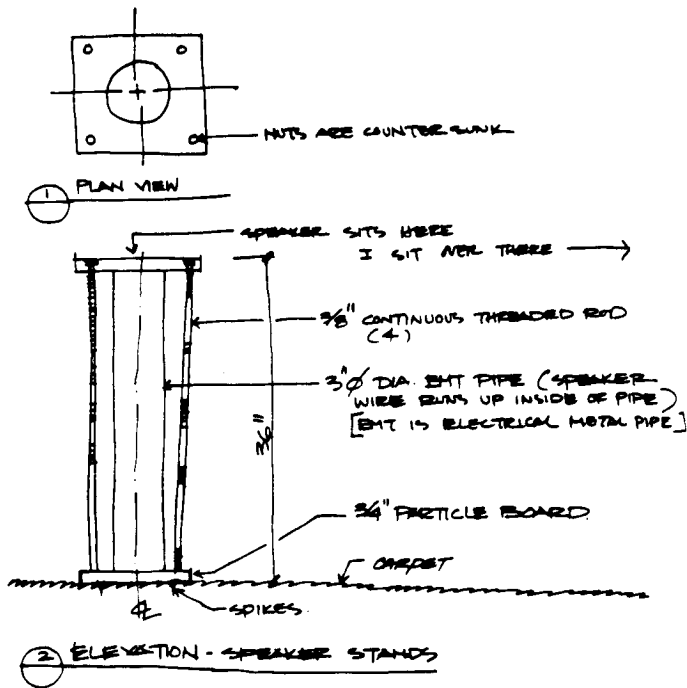
Sylvania Technical Manual, copyright 1982, third printing 1984. May still be available at electronics stores which carry Sylvania tubes.

#### HOLLOW SPEAKER STANDS

Dear Editors:

Will hollow metal pipe cause sound distortions? If so, what should I do to prevent this from happening? Oh, if you are wondering what the drawing is, it's my speaker stands I plan to make. Industrial hi-tech. Let-the-connectors,-nuts,-and-bolts-show kind of look...

--G.T, Daly City, CA



RN responds:

The easiest way to find out if the stands will affect the sound is to tap the tube. If the tube rings, chances are that it will affect the sound to a degree. The most sure-fire cure is to fill the tube with a deadening material - like lead shot. Of course, this may cause some other problems - like a broken stand or, worse yet, a broken floor. Some manufacturers have had success with sand. A less drastic (albeit less effective) measure would be to line the inside of the tube with mortite or duct seal. The latter can be purchased at your local hardware store.

FEBRUARY - MARCH CALENDAR

(All events are free, unless otherwise noted.)

- FEB 6 - 8 p.m. Cal Tech Student Chamber concert. Cal Tech Dabney Lounge. 800-423-8849 or 818-356-4652 for info.
- FEB 7 - 11 a.m. The Best of 1987, Prog. II - SUN Interview with amplifier designer Steve Wingate on AUDIOPHILE AUDITION, KVCR-FM 91.9 (San Bernardino).
- 12 noon. IN FIDELITY, hosted by Peter Sutheim and Will Hammond. KPFK-FM 90.7.
- 7-9 p.m. Jazz at the Wadsworth Theater, located in West Los Angeles just west of the 405 Freeway (on grounds of the Veteran's Administration). The second hour of the concert is broadcast live over KKG0 105.1 FM. 213-478-7578.

- FEB 7 - 7 p.m. "Sunday at Seven" series of chamber SUN music concerts presented by the City of Los Angeles Cultural Affairs Dept., at the Barnsdall Art Park, Gallery Theatre, 4800 Hollywood Blvd. Percussionist Deborah Schwartz, with bassonist John Steinmetz perform music by Landini, Lully, and Schumann, with new works by Dan Written and Erwin Chandler. 213-485-2437.
- FEB 11 - 7:30 p.m. Acoustical Society of America THURS meeting, with Russell Dupree - discussing proposed revisions to California's noise insulation standards. Meeting held at UC Irvine Medical Sciences Bldg. I, Room F-108.
- FEB 12 - 8 p.m. Pomona College Centennial Symposium - FRI "Music in Post-Modern America: Celebrating Contradiction and Diversity," with faculty, students, and guest artists performing. For reservations, call 714-621-8155. Concert 1 at Bridges Hall, with works by Douglas Leedy and Darius Melhaud.
- 10 p.m. "Audiophile Audition" (repeat of Feb 7 program), KXLU-FM 88.9.
- FEB 13 - 2 p.m. Pomona College Centennial Symposium SAT (see Feb 12 listing). Concert 2 at Bridges Hall with works by Gene Carl, Morris Haigh, Franz Schubert, Daniel Kingman, and Susan Blaustein.
- 8 p.m. Concert 3 at Bridges Hall with works by John Rah, John Cage, Luca Marenzio, and David Chaitkin.
- FEB 14 - 8:30 a.m. Pomona College Centennial Symposium SUN (see Feb 12 listing). Mini-concert at Lyman Hall: J. S. Bach, Three Leipzig Chorale Preludes Praeludium at Fuga in C Major.
- 4 p.m. Concert 4 at Bridges Hall with works by J. S. Bach, David Noon, and I. Stravinsky.
- 11 a.m. Works for narrator and orchestra - talk by Marvin Camras, pioneer of magnetic recording on "Audiophile Audition" (see Feb 7 listing).
- 12 noon. IN FIDELITY on KPFK-FM 90.7.
- 2 p.m. Simulcast of Don Giovanni in Salzburg starring Samuel Ramey and Kathleen Battle, KUSC 91.5 FM and KCET Channel 28.
- 3:30 p.m. Cal Tech's Dabney Lounge Chamber Concerts present Paul Sweetnam, piano. Call (800)423-8849 or (818)356-4652.
- time to be announced. Young Musician Foundation Debut Orchestra performing works by Brahms, Haydn, and Mussorgsky-Ravel at UCLA's Royce Hall. (213)825-9261.
- 7 p.m. "Sunday at Seven" series (see Feb 7 listing). "Liebesfreud Und Liebesleid" - violinist, Peter Marsh plays romantic music for Valentine's Day.

- FEB 19 - 10 p.m. AUDIOPHILE AUDITION (repeat FRI of Feb 14 program), KXLU-FM 88.9.
- FEB 21 - 11 a.m. Original instruments - interview with Nicholas McGegan, conductor of the Philharmonia Baroque Orchestra on AUDIOPHILE AUDITION (see Feb 7 listing).
- 12 noon. IN FIDELITY with Sutheim and Hammond on KPFK-FM 90.7.
  - 7 p.m. "Sundays at Seven" series (see Feb 7 listing). Violinist Yukiko Kamei with pianist Paulina Drake perform Mozart's Sonata K. 305 and Schubert's Sonata in D Major, Op. 137 No. 1.
- FEB 23 - 7:45 p.m. Audio Engineering Society TUES plans a tour of the new facilities at Disney Studios. Meetings held at Sportmen's Lodge Restaurant, 12833 Ventura Blvd. with parking in the back. For information, (818)357-1289.
- FEB 26 - 10 p.m. AUDIOPHILE AUDITION (repeat FRI of Feb 21 program), KXLU-FM 88.9.
- FEB 28 - 11 a.m. Music for large spaces - interview with Kenneth James, curator of the Royal Albert Hall on AUDIOPHILE AUDITION (see Feb 7 listing).
- 12 noon. IN FIDELITY on KPFK 90.7.
  - 7 p.m. "Sundays at Seven" series (see Feb 7 listing). Young Musicians Foundation: Scholarship Recital.
- MAR 6 - 7-9 p.m. "Jazz at the Wadsworth," with SUN Jack Elliott and the New America Orchestra, with live broadcast on KKG0-FM 105.1 from 8 to 9 p.m.
- MAR 13 - 8 p.m. Mehli Mehta and the American SUN Youth Symphony perform Brahms' Symphony No. 3 and Beethoven's Triple Concerto. Royce Hall, UCLA.

- SM

**C L A S S I F I E D S**

Classified ads are \$1.00 for private parties and \$10.00 for businesses (no word limit). Checks should be made payable to "L.A. AUDIO FILE" and sent to L.A. AUDIO FILE, Classified Section, P. O. Box 3038, Gardena, CA 90247.

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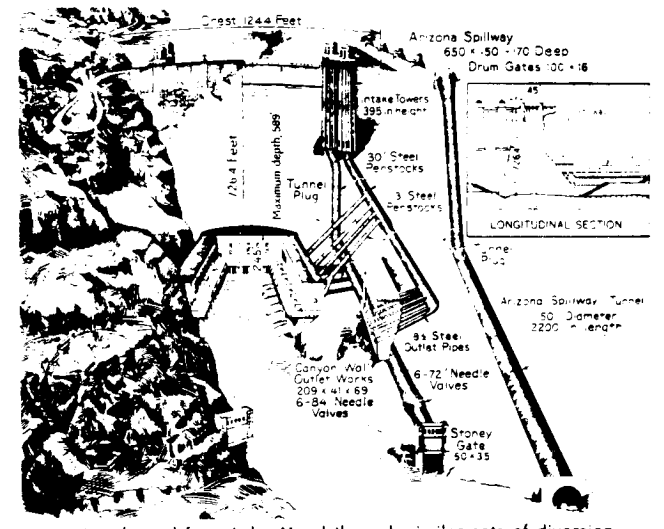
Call Steve for information (213) 828-1305.

Are you interested in esoteric tube amplifiers? I have two vintage FUTTERMAN H3AA power amplifiers for sale. These amplifiers are in excellent condition. They are being offered for \$1500, however I will consider reasonable offers.

Please contact me by phone or in writing with offers: Phillip J. Keller, 129 Ishi Circle, Sacramento, CA 95833 (916) 922-5369.

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Water is released from Lake Mead through similar sets of diversion works in both walls of Black Canyon. The water, drawn through the intake towers, flows through pipes called penstocks to the powerplants. The penstocks also can be used to discharge water directly from the reservoir to the river below the dam. The spillways were tested in 1941 and not used again until the record high flows of 1983.