

VALVE

VINTAGE AUDIO LISTENERS AND VALVE ENTHUSIASTS

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VALVE

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at potentially lethal voltages.
Always treat it with respect.*

editor's thing

Well, back to my usual cheering and whining this month. But first an update-Dave French, a.k.a. Dave Bishop, a.k.a. the Crossover Doctor, was last heard from on the Internet, trying to sell the stuff he stole from Classic Audio while hiding out in a Sacramento hotel room. All I can say at this point is, if you run into the guy, do it with a truck.

We got a nice plug from Joe Roberts in Sound Practices this issue. It sat right next to the story about the re-issue of WE 300B's, quite a place of honor. The calls have been coming in, so we should have some new membership soon. Thanks again, Joe.

Speaking of publications, Glass Audio notified me that our ad will now cost \$50 to \$75 per issue to run as is, with the alternative being a free listing of club name, address, phone, and contact person only. I didn't figure you guys wanted me to raise membership and subscription rates by \$10.00 just to cover this, so we'll go the cheap route.

Folks, we're at a critical point with this club as we enter our second year. We could stay just the way we are, a local folksy group who probably don't need a newsletter or even a club to keep in touch, just sort of meandering along, or we could use our newfound fame in the larger, worldwide audio community to really do some cool stuff.

I volunteered to give this club a kick start last year, and you guys got it in gear. Now it's time for some of you to take on new responsibilities to keep our momentum up.

We need people to set up swaps and shows, give talks and classes, conduct interviews, build equipment, write columns and historical articles, maintain our mountain of vintage publications, and generally come up with new ideas.

HELPI

DAN

letters from fred

picking tubes

As to protecting equipment, a good idea would be to have a 3000 volt oil capacitor, about 4 mfd, fully charged and "worth \$100.00" on the display bench. Then when some idiot tries to steal it he may get a slight shock!

Have been running some square wave tests thru the MagneQuest outputs, amazingly good performance. More later.

A point to pass on to all, do not trust tube data as published, the values are average and the actual values of μ , G_m and R_p can vary greatly. When the machines build the tubes, the wire size varies, the tension varies, the dies and jigs vary, and age and temperature enter into the manufacturing variables. The quoted values are averages, and for accurate work the tube must be measured. Do not feel that is a Sylvania one seems better, that the next one will be good. Many tubes were made by one manufacturer and rebranded to cover other sources. Thus the 6AS6, essentially a 6AK5 with slightly modified structure and the suppressor brought out separately, almost all were made by one company and they supplied different brands to others.

Military types with JAN-1A brands are probably not as closely controlled as commercial or industrial types. The Military JAN-1A specs were determined by asking all the manufacturers building that type to give the military the specs they tested to, and they were combined. thus the range of limits was very wide!

In voltage amplifiers one uses G_m , μ , and R_p as design factors. For simplified analysis one can use $G_m = I_p / E_g$, $\mu = E_p / E_g$ and $R_p = E_p / I_p$, one must remember that these actually are dynamic figures and in reality are the change of one pa-

rameter relative to another variable. Thus when you work a tube at very low plate current you will not have the same G_m or R_p as the data shows. Make a setup and measure things. You will be surprised.

Best regards to all



Fred is right on with this line of thinking. Look closely at different brands of the same tube type. Quite often identical structures will be seen in two different brands. That's the big giveaway. If you're swapping for best sound, try tubes with different internal structures.

We sure need some expertise applied by a club member concerning these matters. There have been articles in Glass Audio on building tube testing gear. Since no one in the club has a Tektronix 570 tube curve tracer (\$\$\$!), could someone volunteer to develop some gear for member use? A compilation of test data on our favorite tube types would be a fabulous resource for everyone. As usual, I'd like to do it, but there ain't no way with newsletters, speaker designing, and the usual repair work (read, making a living) chomping up my time.

I have some good info on testing and interpreting the results, so somebody call me and let's see what we can come up with.

- dan

I'm tentatively planning an audition of several commercial tube amps for the April meeting. We'll try to get a pair of 80 watt Altec 1569's, a pair of Langevin amps, and the mighty Mac MI 200's. At last, a demo that will crank up the Magnepans! If you've got cool commercial equipment, let me know - dan

restoration seminar

Please don't forget that March 3rd is the date by which I need your reservation for the resto seminar. I will change the first session to Sunday, March 12, 11 a.m.-3p.m. so that we can all get to the ham swap meet in Puyallup Saturday, March 11. When you call, tell me what you'll be bringing for restoration so that we can figure out where to get schematics. Cost is \$35.00 for members, \$50.00 for subscribers, and \$75.00 for non-members. The first session, March 12, will be devoted to mapping out the restoration and working up a parts order. The second session, Saturday March 25, will be the 'cut and replace' session. The final debug and audition session will be Saturday, April 1. I have a few pieces available for sale that might make good resto candidates. Call me

what's brewin'?

Dave's putting together a portable mixing console to use in recording radio shows for one of the many clubs he belongs to. It will be a suitcase affair, with transformer input mic preamps.

I will be putting together the pair of speakers for the March meeting. Don't know how they'll sound, or if they will fit in my car. Hope to be fairly efficient full range towers.

Eric got a pair of Langevin amps working this month as well as an Altec 1568 and 1569. The stuff came out of an old Muzak installation. We may hear them in April.

Roger is doing the Welborne Labs mod to his Stereo 70. It will be cased in solid walnut and brass. We'll be smoke testing soon. Should be gorgeous.

I'm toying with converting my MkIII's to SE 50 operation. A guy named Rich Curtis called about the club, and we got talking SE, and he told me how he knocked apart a set of Stereo 70 transformers and rearranged the plates so they could be air gapped. If Stereo 70 transformers sound good, how great would redone MkIII iron be, with 4.6 watts going through it, huh?

swap talk

I've gotten two mildly enthused phone calls from members concerning setting up a swap meet/show/convention. Does anybody have the sand to really take over and put this together? No, not me. I will offer my knowledge and phone list, but I already write this rag, set up monthly meetings, handle membership and PR, and generally hold hands. We need somebody to make phone calls, find a location, place ads, contact other clubs, etc. How about someone who has a normal job and can make evening calls, or someone who is changing careers and could use some exposure to magazine editors, manufacturers, and other potential employers? Don't call me and ask what to do. Call me and tell me how it should be done. This kind of thing could hook a guy into the audio biz in a big way. Heck, one of you gonzo collectors could hook into all sorts of cool stuff doing this. Come on you whimps, this could be HOT. I won't ask again. - dan

dinkin'around

tech tips and other unsolicited advice

star grounds

Got a couple of questions about star grounding this month, along the lines of 'what's a star ground?'

OK, here's a description that the more technical among you can shred at your convenience.

The basic concept of star grounding is to bring all components needing to be grounded, or brought to the lowest magnitude of electric potential, together at one point inside the shield of the chassis. The reason for this is to avoid a current being setup across chassis or ground buss (a buss is just a long piece of wire routed through the chassis to which all components needing grounding are connected) which may be spaced apart enough that there is a small resistance through the ground material. More than one of these current paths can be created, resulting in a ground loop, which induces AC hum from external sources in the circuit, much as happens when a shielded cable connects two pieces of equipment and the shield is connected to the equipment at both ends. Yes, your typical audio cable makes groundloops all over the place. But that's another topic worthy of discussion at a future date.

Anyway, the point here is that by connecting every grounded component to a single point, ground loops are avoided, and the equipment is nice and quiet.

The cheap and easy way to ground things is by connecting them to the chassis right where they sit. Then you have all sorts of slight differences in potential between these grounds which are begging for a current to run between them, and all sorts of separate points where EMI can be induced on the circuit.

The hard way of grounding stuff is a star ground scheme. You do this by connect-

ing a piece of wire to every component needing to be grounded and running these wires to the ground point, which can sort of kinda resemble a star pattern on a schematic of you close one eye and poke yourself in the other.

Now this is great in theory, but once you start snaking ground wires around a chassis, you find out that you can't get everything where you need it to go, and soldering 20 wires to a single point takes an arc welder.

As a compromise, I usually create a short buss wire by soldering a piece of 12 gauge bare wire to a terminal strip. That makes a long enough thing to connect all the ground wires to. I solder ONE end of the buss wire right to the chassis. The ideal location for this connection is near the input jack. Connect grounds from the low level circuits to the end of the buss wire that's soldered to the chassis, and put the power supply grounds toward the other end of the buss wire. This keeps the most hum sensitive paths the shortest, increasing their immunity to hum from the power supply ground buss. To totally avoid loops remember to insulate the input jack ground from the hole it goes through, and put any filter cans on insulators, instead of directly twisting the mounting tabs into the chassis mounting holes. This means trimming out the holes in the chassis so the tabs don't touch anymore.

Of course if you have a classic piece and it doesn't pick up hum, don't hack it. The last cool touch is to use shielded audio cable for the wire running from the input jack positive lead to the input of the first grid. Ground the shield to the star ground at one end only. This shields the lowest level signal that exists under the chassis.

I've used these techniques on the last three amps I've built and they don't pick up hum, period. Try it.

dan

tuners ad infinitum

February's meeting was really well attended. It would seem that the shootout format, even as unscientific as we are in our approach, is a favorite type of event.

I prepared for this shootout by getting my antenna system in fairly strong shape. I have a Radio Shack outdoor FM only antenna on a 20 ft. mast (actually it's an old piece of 1 1/4" galvanized pipe left over from hooking up to my neighbor's water system 10 years ago). Lead in is about 35 ft. of 300 ohm twin lead, which will pick up more noise than 75 ohm coax, but has less loss when connected to the 300 ohm antenna than would coax connected through a matching transformer. I'm in the semi-boonies, so noise isn't too bad.

To soup things up for the comparison, I made a few additions.

I wanted to be able to hook four tuners' audio outs to a homebrew attenuated switch box, made from a Radio Shack switch box with four inputs with the addition of a 100Kohm dual pot.

I didn't want to have to switch the antenna inputs, so I put an old Radio Shack preamp I found at a thrift store at the end of the twin lead, and ran coax from the preamp to a four way splitter. This seemed to give me about the same gain as the unamped antenna to one tuner. And noise on weak signals, due to the cheap design of the RF preamp.

With this setup we could connect four tuners at a time, warm them up, tune them to the same station, match output levels, and compare by throwing one switch.

Tuners brought to listen to were:

- my HK Citation III, w/ new filter cap and Vitamin Q caps in the mpx/audio stages
- my Fisher FM 200-B, in near mint, unused for several years, condition

- my Kenwood L-07T, a solid state analog tuner from the late 70's

- Rick's Fisher FM-1000, recapped with polypropylene and polystyrene caps in the mpx/audio stages, new filters, and HEXFRED's for B+ rectifiers

- Dave's H.H. Scott 350D, one, if not the, last of Scott's tube FM tuners

- Myron's Technic's ---- tuner, very similar in age and design to the Kenwood

- Mike's Mint McIntosh MR67, the shiniest of all the tuners

- Jerry's Revox --- tuner preamp, a digital tuner with a readout that tuned to the .01MHz (!?)

I'll start by saying that with a good antenna these tuners were all very close. We tried three different types of signals. For a strong, rock solid signal we listened to KPLU's jazz.

For a strong signal plagued with multipath we used Classic KING. The signal was so bad that I turned the antenna (by hand, my thrift store rotator died after five minutes) perpendicular to the direction of the station for the best reception! For a weak signal we used KBCS, broadcasting folk music, which I've been told is about 400watts.

By the way these stations are maybe 15-20 miles distant.

All the tuners sounded great on KPLU, with the FM-1000 yielding the warmest, least phasey presentation, the Citation the brightest sound. These two had a hair better separation than the other tuners as well, which seems to support an argument for improving audio stage caps in any tuner.

The most neutral tuners were the Kenwood and the Technics. While not having the tube euphony, they sounded really nice, with very clean bass. They may have been a bit on the dry side. The Revox was similar, but I felt it quite a bit drier, perhaps a bit bass shy.

The FM 200-B hummed at first, so pulled it out of the test. Later I tried again, and the filter seemed to have warmed up

and reformed a bit. Presentation was very similar to the FM-1000, lacking only the last bit of clarity given by the poly caps in the 1000's audio stages.

The Scott sounded similar to the other tube tuners, however I continue to find the Scott multiplexer a little less clean sounding than the Fisher, and a bit less warm.

The Mac had a nice clean sound, very neutral like most Mac equipment, but separation and tuning seemed a tiny bit out of alignment to me. Mike said he's had the tuner aligned, so I'm probably imagining things.

The dirty classical signal put the high frequency and IF bandwidth compensation circuits through their paces. The winners here were the FM-1000, with its super smooth high end, and the solid state tuners because of their narrow IF bandwidth circuits. All tuners had some sort of noise reducing filter, and the Scott's seemed to roll off highs a bit more than the others. This gave it a seemingly less noisy presentation as well.

Weak station performance showed two types of differences among the tuners, RF gain and High frequency filtration. All stations pulled the weak station in pretty well, but the Citation tended to sound noisy because of its slightly bright and detailed presentation.

The gain of the FM-1000 seemed to be a bit greater than the other tuners at times, causing me to trim its output level occasionally while tuned to a single station. Whether this was a function or a malfunction of the AGC circuit is unknown to me.

The Revox seemed to have a cleaner output than the other tuners on the weak station. When I nicked its volume up a bit the same noise was in the background, but it was a hair quieter.

I realize now that I should have switched off the antenna preamp for this test. It probably would have been a much truer test of each tuner's weak signal pulling

ability, and we may have gotten a better idea of quieting performance without the additional RF noise introduced by the transistor antenna preamp. I will be doing a little more experimentation along these lines, and shall report any significant results.

So which tuner was best? Depends on what you want to listen to. The recap of the audio stages produced the two best sounding tuners, but the stock FM 200-B seemed very close to the recapped 1000. As a matter of fact a past comparison of one of Rick's stock FM 200-B's was a bit closer than Eric's stock 1000! The best performing tuners in terms of multipath distortion seemed to be the solid state tuners and the Fishers. The best weak signal tuner was the Revox.

But the differences were very small. I might avoid the Revox for its solid state sound, but the Kenwood and the Technics were pretty smooth for solid state, with the Technics getting a slightly better mark for bass quality.

The Citation has marvelous clean highs and great separation, but doesn't do quite so well on dirty or weak signals, due to it's enhancement of high frequency hash.

The Mac was very sensitive and very neutral, but a tiny bit weak on separation that may have been due to a slight misalignment.

The Scott is plenty sensitive, but the multiplexer leaves a bit to be desired audio quality-wise. Heluva tuner in mono though.

So what would I pick of all these?

My FM 200B is not for sale or trade. Not even for an FM 1000. However, if you have a 10B or a Sequerra FM-1...

P.S. just read a review of the Sequerra Reference Tuner, a more recent offering than the FM-1. Uses a generic Japanese packaged front end! Totally overloaded at .02V of signal! Only \$4800.

Living Stereo reissues - Is CD or Vinyl Better?

By Steven Schneider

I recently purchased the CD version of the RCA High Fidelity Living Stereo reissue of Richard Strauss' "Also Sprach Zarathustra, Op. 30" (09026-61494-2) and wanted to compare it with my brand new Classic Records (a mail order firm) LP reissue (LSC1806) of the same 1955 recording session. The performance features Fritz Reiner directing the Chicago Symphony. The equipment used for this review were a Revox B226 CD player, a DUAL 5000 turntable, Signet AM30s cartridge, Eico ST84 preamplifier, a custom built MacIntosh MI 200AB triode stereo amplifier using 8005 output tubes, and a pair of custom built three way JBL Hartsfield speakers. The test that I performed was an A-B test between the CD and the record running simultaneously. This test was only conducted on the first side of the record because it was too difficult to align side B of the record with the same place on the CD. I also switched between both sources roughly every two minutes.

The following are notes that I took during the A-B test. I started with the record, where I immediately became impressed with the string sections and how smooth and full they sounded. As I switched to the CD the field of music shrank to just in front of the speakers, yet the dynamic range of the music increased. *(This makes perfect sense. As the dynamic range increases with CD, the hall ambience is, in effect, "downward expanded" to a lower volume level, de-emphasizing the 'room presence'. Is this why we like our beloved old vinyl so much? - dan)* In comparing the two sources the midrange began to sound stretched and the bass violins immediately came to the forefront of the image. When I switched back to the record the depth of image increased and the trumpets and string instruments became the

main focus of the music. As I switched back to the CD again, I noticed that a slight rumbling sound had disappeared which had been noticeable during the time that the LP was played. This rumble came from the turntable. What I also concluded was that while the rumble was slightly annoying during lulls in the music, I tolerated it because the music had soul which vanished along with the rumble. The CD produced music where the bass violins always became prominent and the music clean of almost any pop and all rumble. During the CD's time the music was clean, clear, and almost sterile.

This may sound repetitive but I began to notice something different with each switch of the preamplifier control knob. Switching back to the record I noticed that the image returned as well as the rumble of the turntable. However, I tolerated this annoyance because it disappeared once the tempo of the music increased. As I switched back to the CD during one passage the tympani drums joined the Bass violins as the most prominent instruments in the musical image. The violins became higher and more brittle sounding as well. As I switched back to the record for the last time it became apparent that the record allowed the strings, trumpets, and wind instruments (basically the whole mid-range) to hold court in my living room. While I played the CD the tympani and the bass violins became the main instruments along with the brittle sounding violins. In my mind I imagined the musicians moving their chairs around as I switched between the two sound sources.

My roommate, who was sitting in the kitchen eating dinner, said that the music sounded better during one passage. He knew that I was performing an A-B test but was not sure which medium I was listening to at that particular moment. When I said to him that he was listening to the record he appeared a bit surprised, as he is a member of the X

generation whose music experience is mostly with CDs.

In summary the record sounded more musical. But this was an excellent record. I will not make a blanket statement that all records sound better than CDs. This A-B test and others that I have made have enabled me to make the following conclusion. Excellent LP's made with care from a relatively new stamper sound superior to the best CDs of the same music when properly maintained. Excellent CDs sound better than middle of the road LPs. Music recorded with tube electronics such as Ampex or Revox recorders, tube microphones by Neumann or Manley Electronics, and others will sound better than those made with solid state electronics. This rule holds only if the recording engineers are conscientious about their work. In this case the original master tape was made using tube electronics in 1955 and therefore both music sources were quite musical. While the CD paled when played along side the record, the record's occasional pop and the turntable rumble were viewed by me as annoyances. Although the CD had a soundstage it sounded two dimensional when compared to that of the record's obviously three dimensional sound stage. It was almost as if I was listening to two completely different concerts by the same orchestra. I almost didn't recognize them as the same performance.

Another advantage of the CD is that a second complete movement was carried on it. That movement was "Ein Heldenleben, Op. 40" which added an additional 11 1/2 minutes of music to the listening session. If I was rating the CD vs. the LPO on the more bang for the buck scale the CD would win especially since it costs \$9.95 compared to the LPs cost of \$25.00. If I was choosing the source that I would want to critically listen to, the LP would win hands down regardless of cost. Would I bother to listen to an LP when I was washing the dishes? No! For casual listening use the CD wins

hands down because there is no wear incurred from playing it as well as its ease of maintenance. However, if I'm in the mood for an 'emotional musical experience' bring on the LP. If I am having a beer and pretzel party or having a large group of people over for dinner then the CD will earn its money. The bottom line however is that both sources sound better when played on tube electronics.

To chip my usual two cents in, we've done this test a few times at meetings, and the LP always wins when dealing with reissues, the CD when comparing current issues. Different cartridges and CD players don't affect the results as much as one would think, although we still need a butt kicking reference CD player for auditions. I almost negotiated a trade a few months back for a great sounding Denon transport a modded Philips 960 DAC. The guy who had them was the guy who ripped off Classic Audio! Glad I didn't do the deal... - dan

Hey, we need some good ideas for future meetings.

Shootouts seem to be a popular format. We haven't really done a preamp shootout yet, how about that?

One brand auditions are cool too. I'm working on Eric to give us Altec and Fisher demo's. If I box up my old Ampex three way drivers, we might get Dave to demo his Ampex items.

Personally, I love homebrew demos. Let's have a homebrew party. Anybody homebrew real homebrew?

Call me and tell me your darkest tube fantasies. I'll listen.

world audio SE integrated amp

Well I got the amp kit I mentioned last month built for our meeting March 5. I picked up the SE integrated at Classic Audio last month. Jim called me and said the man who bought it decided to pass after partially assembling it, and sold it to Jim.

I bought it after checking the iron. Missing from the kit were all but four capacitors and all but two resistors. Well, I figured I could come up with what I needed from my parts pile. I love Vitamin Q's, so I grabbed the last few I had and set them aside for the project. Tastes these days are leaning back toward carbon composition resistors, and since I had quite a few 1 watters, some with cool ceramic jackets, I sorted through billions and billions of old stock pieces for a few matched pairs. Boy, tolerances in the old days were pretty loose!

The circuit is a nice simple one. A single 12AX7 works as a line stage in conjunction with a three position selector switch and a 50k ohm Alps pot. Input sensitivity is 200 mV!

The drivers are two 6922s (high voltage 6DJ8s) in cascode to get the grid swing necessary to run the 6080 output tube.

The output is a single 6080 (HD version of the 6AS7) with each triode inside running a custom made output transformer. Power supply is solid state, mounted on a PC board, with a couple 220 mfd caps and a choke. Low level stages have pi filters, in which I placed 12 mfd mylar caps instead of the stock 'lytics.

The chassis is a gorgeous seamless, powder painted beauty with rounded corners and is just big enough to hold everything. Input jacks are nice and the speaker terminals are first rate, looking like they could handle about ten times the current the little 6080 could put out.

The best part of this amp is its simplicity. There are no stupid, overly complicated

'tricks' to potentially tarnish the purity of the SE sound.

Assembly took me a couple days on and off because of the way bigger than stock parts I shoehorned in. I think an experienced builder could do a stock kit in one long night and two pots of coffee, as long as the bathroom was on the same floor as the workshop.

The one major shortcoming of the assembly is the amount of componentry which need to be hardwired to tube sockets. This is the best way to build 'em, but not a good approach for a supposed 'entry-level into single ended' kit. The instructions were written on the apparent assumption that the builder has previous construction experience. A 90% complete sketch of the component layout is helpful, but photos would really make the layout understandable, particularly in light of the fact that the components left off the sketch are the hardest ones to locate in the small chassis. The only other beef is that the directions spec out the primary wiring color code of the 220V transformer supplied with the Euro version, but not the differently coded 120V transformer supplied in the North American version. A verification with a voltmeter and a Variac confirmed my educated guess.

My rating the overall success of the assembly manual and kit layout is heavily influenced by the fact that the amp started up perfectly the first time, a condition I am seldom witness to in hacking together my own monstrosities. I guess the instructions were good enough.

Though smoke testing was uneventful, the first listen was disheartening. I put in brand new tubes, so everything was brand new except for a resistor or two. It sounded like it. Harsh, veiled, thin, and slightly distorted in one channel at the threshold of audibility. I put in a smooth plate Telefunken 12AX7 and things improved quite a bit, getting clearer and smoother.

A couple hours play broke everything in

and I was ready to really listen. I tried the Magnepans for laughs, and they actually played nicely, if not loudly. Things had really broken in, and this amp was sounding very Single Ended. Nice!

I switched to the A7s and the dynamics were great. The amp seemed to have enough treble to brighten up the dull highs, and low level detail was definitely single ended. I actually listened to those A7s for a couple days, which is something of a record for me.

I took the amp to Classic Audio the following Saturday and it performed on average efficiency speakers quite well. It's rated 4wpc and seems to give all of this. It sounded particularly good with some Mission mini monitors and some mid 80's Dahlquist towers.

After Classic Audio I went to Dave's to try the QUAD test. Once again I failed to bring enough horsepower. I will listen to Stan's pair to establish if QUADs are really that inefficient or if Dave's pair are ready for a rebuild.

Although the QUADs played real quiet, they definitely sounded real with the SE. When we switched back to the Ampex 6973 ultralinear amps I talked Dave into using with the QUADs a few months back, the dynamics came back, but some information was definitely missing at low levels.

Just last night I hauled my SE 10 amp out and did some AB work. The World Audio amp had a richer, more lush sound, a character which I presume is similar to 2A3 and 300B amps, while the 10 amp was a little more delicate and detailed. If I filter out my homebrew pride I think I would declare the comparison a draw. The slight differences may have been due in part to the fact that I have metal film caps in the 10 amp. I also have a regulated tube B+ supply. Joe Roberts called while I'm writing this and I suggested that people are using their tube of choice as a tone control to compensate for their speaker's shortcomings. He said "Sure they do". Wow,

I'm not in a vacuum, other people do think about this stuff. We did agree that if you want to 'lush up' the sound of your system, particularly with regards to using Vitamin Q caps, but also carbon comp resistors, you should do this at the amp and not the preamp, where you may lose information in the process. This applies to putting new Vit Q's vs. other types of new caps in. Either type sounds better than funky old caps you might find in your PAS or LC-21.

Anyway, after listening to six or seven different speakers, I will say that this teeny little amp is quite versatile. The original review in High-Fi World states that it is rather speaker dependent when it comes to bass performance, but I didn't notice any lack with planars, dynamics, or horns.

I did find that you have to fool around with the output taps to find the best combination of low distortion vs. loud. Unfortunately the cool giant speaker posts take up so much space on the back of the chassis that only one output impedance can be represented, so you have to open the chassis and resolder the output taps of the transformer to the posts to change output impedance. This isn't a big deal unless you try six different speakers with three different impedances.

I had the amp set up for the 16 ohm QUADS the day that I went to Classic Audio and Dave's house, but that's probably why the amp sounded plenty loud with the 8 ohm speakers at Classic. And they sounded real good.

After this experience I ran my supposedly 6 ohm Magnepans on the 8 ohm tap, instead of the four like I usually use, and the increased dynamics were appreciated, allowing me to keep the volume control down below the point where the input seemed to overload.

Worked so well I'm using the 10 SE the same way. It pays to break the rules and experiment!

-dan

march

This month's meeting will be held at Classic Audio, 7313 Greenwood, Seattle, March 5, 10 a.m.

We're going to let the vintage gear rest while we audition some triode amps built and owned by various club members.

Look for Myron's Triodified W4's, Mike's SE amps, one using Magnequest output iron, my World Audio integrated SE amp, and either or both my 10 SE or a 211 SE Frankenstein's monster.

Mike has a new French DAC he loves and a very nice NAD CD, so we'll use those for source.

I hope to have a very experimental pair of 103dB efficient speakers for the event, but if not, Jim has some Dahlquists that really sang with the World Audio amp.

Be at this meeting. I think it will be the best sounding gear we've heard yet.

cravings

For Sale:

The World Audio Single Ended Intergrated Amp reviewed in this issue. I wish I could keep this, but I've got too many amps. If I don't sell it, I won't be motivated to build my own. Hand selected carbon composition resistors, Vitamin Q coupling caps, brand new Sovtek tubes, fabulous. Kit cost about \$600 with cheaper quality parts.

Well, I guess my Citation IIIx is up for sale. I hate to part with it, but I've got too many projects needing financing. New filter, Vitamin Q's in audio stages, polystyrene in 1st RF.

Come hear both of these items at Classic Audio March 5.

I might be interested in trading some of these items for a good record cleaning machine, CD transport, or DAC.

I'm looking for some small items too:

417A tubes, 3C33 tubes, sockets and

plate and grid caps for Eimac 304TL's, plate caps for Eimac 450TH's, ceramic base 5R4GBW, Specs for Eimac tubes. Help me build the mother of all SE amps! Also, does anybody have data for 6C33 tubes? I cooking up a cool design for a cheap amp that should be awesome if the data checks out. Dan 360-697-1936

For Sale:

H.H. Scott S10 speakers - \$50

H.H. Scott 222C int.amp.- \$100

H.H. Scott 350 tuner - \$100

Bogen AP30 stereo int.amp. - \$20

Grommes 10LJ SE stereo int.amp. - \$10

Grommes 24PG stereo int.amp. - \$10

Rauland SA51A-25/70 rk. mt. amp. -\$60

Knight KF60 am/fm/mpx tuner - \$25

Eico HFT-90 fm tuner w/mpx out - \$15

Bogen DB10-1 mono int.amp. - \$20

Bogen R604 am/fm mono tun/pre -\$15

HK C100 mono int.amp. no cage - \$5

HK TA10 am/fm mono receiver - \$15

HK A310 am/fm mono tuner no cage \$5

Sherwood S1000 mono int. amp. - \$20

George Gott G30U amp w/mono pre-amp and extra chassis - \$150

Buy this stuff at these garage sale prices, build some cool single ended amps, and make me feel bad. I'll consider Fisher parts & equipment in trade.

Eric, The Fisher King 360-871-5921

For Sale:

one pair Electro Voice 15TRXB triaxial speakers in 3ftx21/2ftx21/2ft enclosures. \$150 the pair. Greg 206-683-1744.

Need manual or any other info on an early REL FM broadcast monitor. Uses loctal tubes, tunes both the old and the new FM band, has crystal controlled front end. Joe Roberts 513-339-6229.