

# VALVE

**in this issue:**

**parallel feed:**

**- it just gets better**

**- para feed line stage!**

**C.W. Horn divided by two**

**Svetlana meets Brooklyn**



*John Ott's beautifully crafted version of "Triodino II"  
from Costriure Hi Fi*

**volume 4, number 5**

**May 1997**

# VALVE

the monthly magazine  
for tube audio eXperimenters

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We believe electrons flow from minus to plus, and that they can kill you along the way if you're not careful. Vacuum tube audio equipment operates at potentially lethal voltages. Always treat it with respect.

Many ideas published in this magazine are untried, and involve the use of potentially dangerous parts and tools. In attempting any idea or project published herein, you assume total responsibility for your actions and any harm caused to yourself or others.

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## editor's thing

Yo, bottleheads.

As you can see from the inside cover, we have hung our cojones out the window, signed our lives away, and laid out some serious money to get the first Vacuum State of the Art Conference and Show rolling.

As of this writing, we have reserved the hotel, and received a firm commitment from the Direct Healing group for a Sakuma Concert Sunday night.

Susumu Sakuma has also requested an exhibit room in which he will demo the Sakuma system throughout the show, and we will also have the good fortune to have Sun Audio present as an exhibitor.

We are in the process of sending out exhibitor registration packages to anyone who would like to participate. If you haven't yet received one and would like to show and sell your cool gear, give us a call and we'll send you the application. We think you will find the rates pretty reasonable compared to CES or the Stereophile show.

For you guys who are planning on flying in to see the show, here's the scoop:

You fly in to Seattle-Tacoma Airport. From there you can take the Bremerton-Kitsap Airporter, which costs \$18 each way. You don't need a reservation to get to the hotel, but you'll need a reservation to return to the airport. Make one by calling 360-876-1737. For hotel reservations, call 360-698-1000. Single occupancy rooms are \$78 per night, and doubles are \$88. When you call be certain to tell the hotel folks you will be there for the conference. That way you get a room in the middle of the action, and we get some nice eXtras from the hotel if enough of you bottleheads take a sleeping room.

Badges will be the order of the day for attendees. To get a badge, you send us \$20 by July 31. This gets you in, and gives you access to the exhibit rooms, seminars (there will be a sign up for seminars at the registration desk), the Sakuma Concert, entry in the homebrew equipment competition, etc.

You can get a badge when you arrive at the conference instead, but it will cost you \$25. For youse locals, you will be able to get single day badges, \$12 for Saturday, and \$16 for Sunday (Sakuma Concert admission included).

Thanks to those of you who helped us out last month by placing an advance order for an

Afterglow kit. We ran over our intended limit and sold twelve kits at the special price (I'm such a pushover). We can't do any more at that price, but we can certainly take advance orders at the regular price of \$849. This might be worth doing, as I have already had to call and increase our new power transformer order once to accommodate orders for retrofit kits, Afterglow kits, and the new Enhanced S.E.X. kit, which will replace the current kit and include the fancy new power trans (see page 8). We can only sell a few more of the current version of the S.E.X. kit, as our supply of the original power transformers is nearly exhausted, so if you've been holding off on getting S.E.X. in its original form, get crackin' and give us an order before there ain't no more.

The new MCM catalog has the driver I requested they build a while back. PN 55-1870 is a 5" aluminum cone driver with a magnet twice as big as the 55-1290, 15.6oz. Frequency response is rated at 30 Hz-17kHz. Price is \$10.95 for 1-9.

One thing that was included in this model before I put in my two cents worth is a rubber surround. My concern was that top end performance would be hurt. Apparently that is not a problem, but the sensitivity is disheartening: 87 dB@1W@1M. How this happened with a bigger magnet is beyond me.

I have ordered a pair to fool with, hoping that the sensitivity measurement was off (although MCM's measurements seem very good).

Hmmm, maybe a vertical array of eight drivers, wired for 16 ohms? Here's the specs for those who like to crunch cabinet volume figures:

Fs 34 Hz

Qt .401

Qes .511

Vas .35 cu ft

eff piston area Sd .0075 m2

DCR 6.7 ohms

Xmax 2 mm

Zo max 31.2 ohms

compliance Cms .00126m/N

BL 5.56

moving mass 6.99g

piston dia 98mm

I get a vented box of about .35 to .4 cu ft, getting down to about 54 Hz, with very little deviation.

Also fooling with the original style 8" aluminum driver, but that's a little secret project you'll hear about later, Doc B.

## did you just tune in? here's what's happened so far...

### Back Issues

#### Volume 1 - 1994 issues - \$20

a Williamson amp; Dyna Stereo 70 mod bake-off; converting the Stereo 70 to 6GH's; a QUAD system; triode input Dyna MkII; MkII vertical testing; smoothing impedance curves; Altec A7; Ampex Nagras and ribbon mikes; Triophoni, a 6CK4 amp; audio at the 1939 World's Fair; books for collectors and builders; V.T. vs. R.M.A. cross reference; FM tuner tube substitutions; Big Mac attack - the MK200; 6L6 shootout; a vintage "audessey"; more FM tuner mods; vintage radio mods; Heathkit rectifiers; PAS heater mod.

#### Volume 2 - 1995 issues - \$20

Rectifier shootout, tube vs. solid; FM 1000 recap and meters; single ended 10 amp; triode output W-4; Optimus 980 - speaker for SE2; star grounds; tuner shootout; Living Stereo, vinyl or CD?; World Audio SE integrated; firm' up - smoke checking; Brook 12A schematic; 6C33 vs. 3C33; Heathkit power transformers; 6B4's + Magnequest = SEcstasy; W5 mods; triode operating points; Dyna restorations; Marantz 7,8 and Scott LK150 impressions; hackable vintage gear; Quasimodo - PP 805 amp; restoring a Scott 340 in 75 minutes; a dream system for 7B's; cartridges and styli for 7B's; Restoring a Lowther, Part 1&2; easy tube CD output hack; 6ER5 phono preamp; 304TL & 450TH SE operating points; hypothetical DC ESL amps.

#### Volume 3 - 1996 (\$25):

Single Watt, Single Tube, Single Ended, an amp for Lowthers; the Vintage Speaker Shootout of 1996, QUAD vs. Lowther, vs. A7; the Voigt Loudspeaker, the Single Ended experimenter's kit; cathode coupled SE 6AS7 amp; how to build the Superwhamodyne; re-foaming AR woofers; mesh plate tubes; re-building QUADS; QUAD amp filter surgery; single gain stage amps; the Brooklet, and Brookson, choke loaded PP 6080 amps; transformer coupled PP 6DN7 amp; the Iron Maiden; Building the Lowther Club Medallion; the TQWT, a tapered pipe enclosure; FT 300B amp.

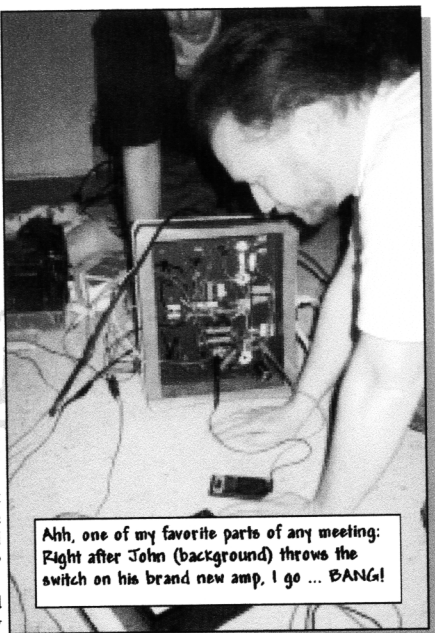
**what you miss when you don't show at a meeting ...**

Tom Vetromile was kind enough to take some photos of one of our "agendaless" meetings, which always turn out to be the best ones. The photos show the spread of tasty amps we sampled in April.

Gary Dahl was in town, so he brought his latest iteration of the amp he described in Dec '96 VALVE, replete with 6V30 output tubes and Magnquest output trannies. He will be giving us an update on this project in a future issue.

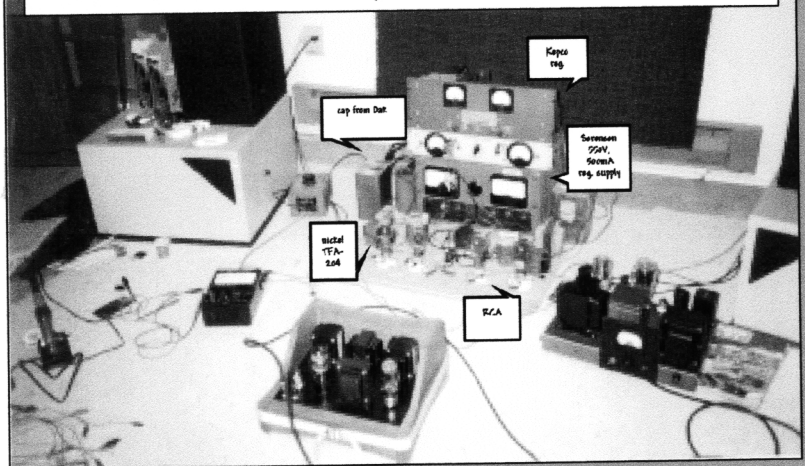
John Ott brought the amp featured on the cover, which he had just finished the night before, hadn't even been fired up yet. Started right up the first time, a credit to John's meticulous work. Look for the stunning, sensual cabinet work on this amp to be tough competition in the craftsmanship category at VSAC '97.

And I unveiled the raw beauty of my latest breadboard project - last month's Double Nickel. Note the immaculate wire dress and tiny power supply. Thanks to Stan Webb for the extra beef of that Sorenson supply. Trust me, the sound of this amp is good enough to build a real fancy chassis for - Hey John, can I borrow your table saw? I was just kiddin' about that BANG stuff. Honest...



Ahh, one of my favorite parts of any meeting: Right after John (background) throws the switch on his brand new amp, I go ... BANG!

A trio of premium glowboxes at the Tonalties Listening Room from Hell: front, John Ott's 6201/519B stereo amp; right, one of Gary Dahl's 417A/NCL18/6V30/FS030 monoblocks; rear, the oh too beautiful Double Nickel. Note the premium fake wood grain particle board chassis.





SEE US AT VSAC '97

Lowther

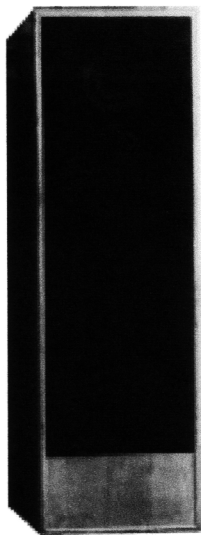
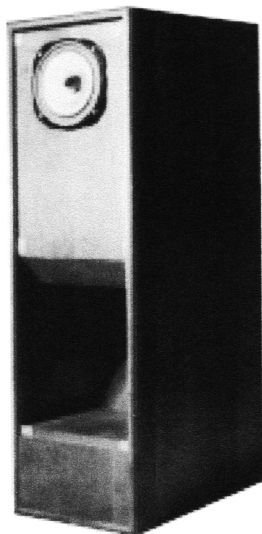
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*Works nicely with the budget C series drivers too.*

*Comes complete with matching grills- a precut, easily assembled kit.*

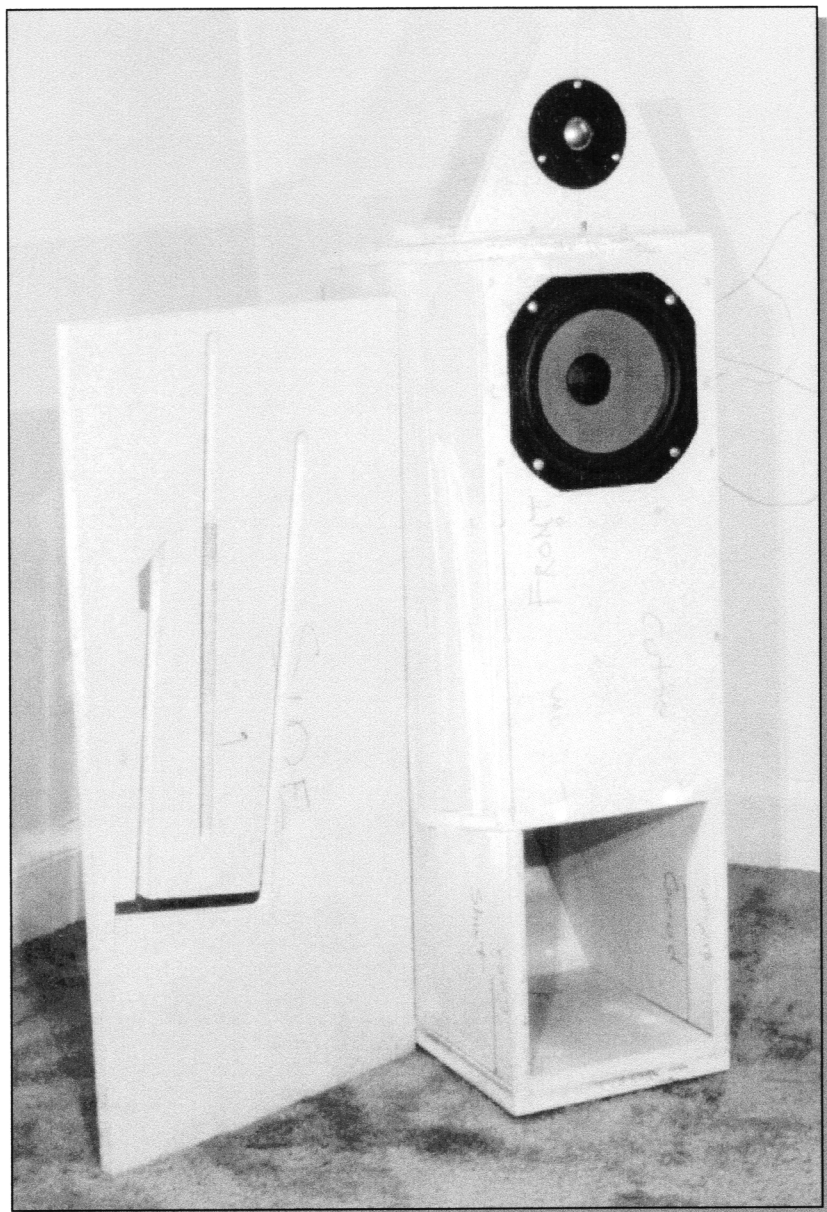
*Now available-  
the new DX2 rare earth magnet driver*



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360-697-1936

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Assembly manual available for \$15



# CW Horn II

by Wireman Wells

I've always been fascinated with horns - especially the Lowthers, which offer a single sound source and crossoverless operation.

But one problem, they don't do deep bass.

Enter one very interesting 8" Focal driver, #8V412DB, which I just happened to have on the shelf.

When I came upon the "C.W. Horn", by D.P. Carlton, in *Audio*, November 1955 (this article is available in the *Audio Anthology Number Four* reprints, from *Old Colony Sound Lab - B.*) I decided to build one, with a few mods.

One intriguing point of this design: it appears that Carlton was ahead of his time in designing a high pressure throat. The Mauhorn IV's throat is 1-1/2" versus the C.W.'s 1-3/4".

I redesigned the pressure chamber, then I made a one piece speaker mounting baffle, and narrowed the cabinet to 10" outside to compliment the single woofer.

I came up with an interesting way to assemble the cabinet. I cut slots all the way through the sides to hold the internal baffles, and glued the baffles to the sides from the outside. This is much faster to build and much stronger than using blocks and butt joints. I used 3/4" particle board and filled the voids with sand.

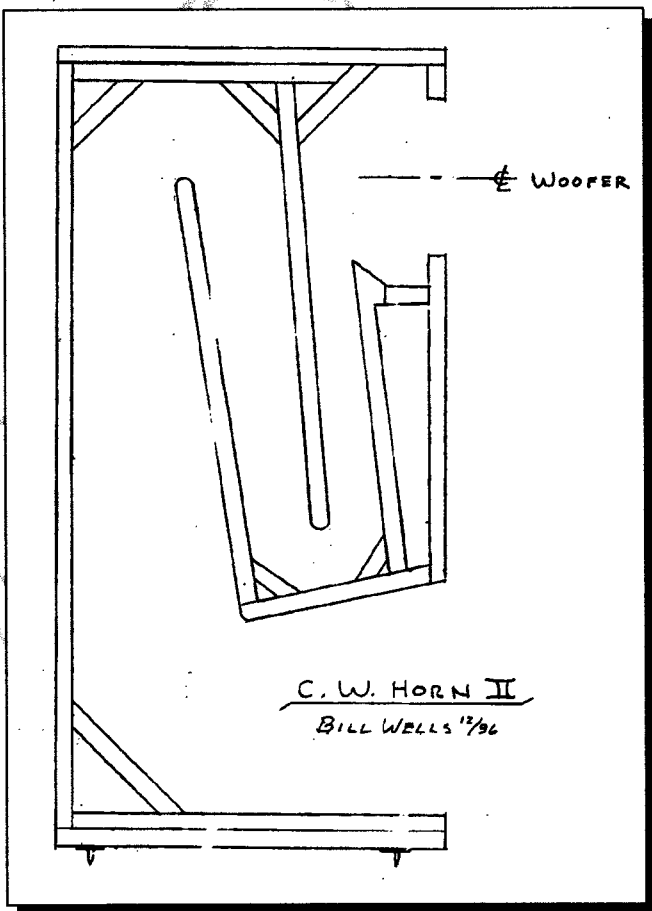
I run the Focal driver crossoverless, with 20 gauge solid core wire. the tweeter is Doc B.'s

MCM 53-325 with the ferrofluid removed, 24 gauge wire, and a capless crossover. The efficiency is approximately 97 dB.

At a cost of less than \$300 the pair, small size, simple natural sound and excellent bass, you're going to have a hard time beating the C.W. II.

When I get the tweeter mounting right, I'll do an update and will offer full size plans.

(I try to avoid contradiction with other people's work when I publish it, but I'd suggest trying the 53-325 with the ferrofluid in, before taking it out. I found the 53-325 rather resonant and harsh without the fluid - Doc B)





**Andy Bartha Audio**  
**954-583-7866 EST**

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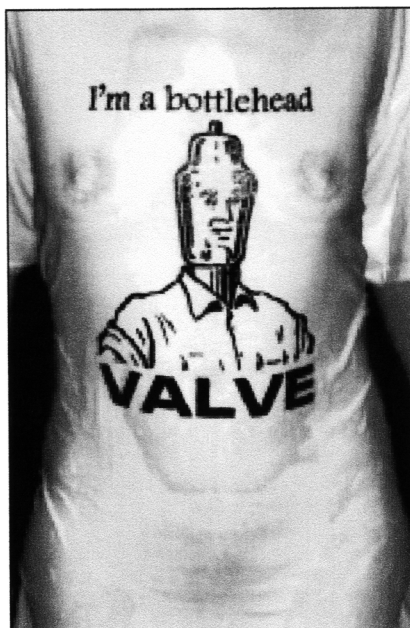
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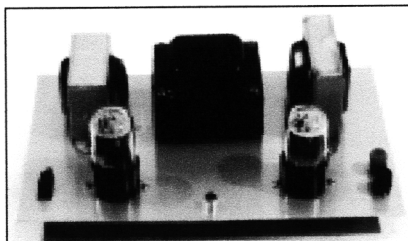
**Bottlehead T-shirts are back in stock.**

**\$16 each, plus shipping.**

**One size (XL) fits both, I mean, all.**

**ELECTRONIC TONALITIES**

**360-697-1936**



The last of the original S.E.X. kits will be sold out soon.

Once these are gone, we will offer the Enhanced S.E.X. kit, with new custom power transformers that will allow experimentation with 2A3 and 300B circuits.

The price for this new version will be \$399 w/o drivers, \$430 with drivers, plus shipping.

**ELECTRONIC TONALITIES**

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# rare bird

## Crazy Eric's Fisher 60-A

Ron Bales e-mailed me asking if I knew anybody who might be interested in this odd Fisher amp he found. He swore it had push-pull parallel 6A3s on it.

I naturally forward the e-mail slim boy Crazy Eric the Fisher King (Crazy has lost 40 lbs! Congrats man, you make me feel like Santa Claus), and I swear, he calls 2 minutes later to tell me he called and asked Ron to pick it up.

This is a rare bird all right.

Came out of a Fisher Custom Sixty console, sometime in the early 50's.

The amp is rated for, you guessed it, sixty watts. Power supply on a separate chassis designated the 60-AP.

A 60-R AM/FM mono tuner accompanied this amp originally, but wasn't with the amp when Ron found it.

The tube complement came in two flavors.

One version sported two 5U4s and a 5Y3 (for the bias supply) on the power supply, and four 12AU7s and four 6B4s. This version is the alternate, with four 6A3s instead of the 6B4s.

The amp has pots for hum balance, bias, and phase inverter balance. Pretty slick.

An optional Fisher Dynamic Range Expander could be added to the console, plugging into the tuner chassis.

I hope to get over to Crazy Eric's pretty soon to check this baby out, and to beg Eric to bring it and some of his other choice Fisher gear to the vintage audio display at VSAC 97.

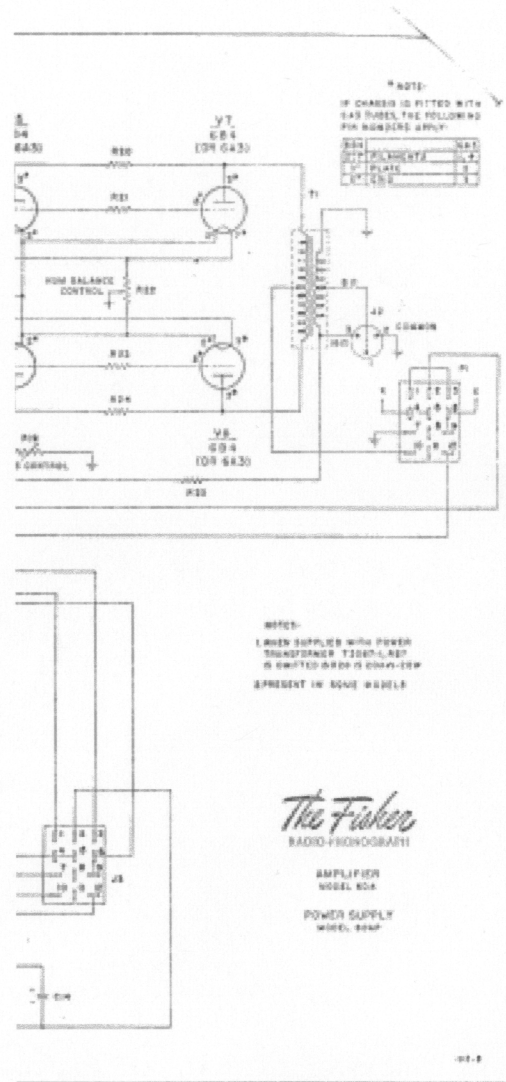
A rare bird indeed.

Doc B.





The astute individual will notice the center tapped choke, and guess that the Brooklyn B27 might be a good output transformer for a class A version of this circuit.  
 Hmmm, substitute 5965s for the 12AU7s, 2A3s for the 6A3s, 83s for the 5U4s, lose the feedback, and this might make a very interesting design for those needing some power.



AMPLIFIER, MODEL 60-A  
 POWER SUPPLY, MODEL 60-AP

Symbol	DESCRIPTION	Part No.
C1	Capacitor, Molded Tubular: 1 mfd; 400 V	C-102
C2	Capacitor, Electrolytic: 100 mfd; 6 V	C-1022
C3	Capacitor, Mira: 518 mmfd; 500 V	C-1791
C4	Capacitor, Electrolytic: 40 mfd; 450 V	C-1798
C5	Capacitor, Moulded Tubular: .047 mfd; 450 V	C-2044
C6	Capacitor, Moulded Tubular: .047 mfd; 400 V	C-2044
C7	Capacitor, Moulded Tubular: .1 mfd; 400 V	C-1102
C8	Capacitor, Moulded Tubular: .3 mfd; 400 V	C-1102
C9	Capacitor, Electrolytic: 40 mfd; 450 V	C-1798
C10	Capacitor, Electrolytic: 40 mfd; 450 V	C-1798
C11	Capacitor, Electrolytic: 40 mfd; 450 V	C-1798
C12	Capacitor, Electrolytic: 40 mfd; 450 V	C-1798
C13	Capacitor, Electrolytic: 40 mfd; 450 V	C-1798
C14	Capacitor, Electrolytic: 150 mfd; 200 V	C-3157
R1	Resistor, Composition: 1 megohm; 1/2 W	R-1720
R2	Resistor, Composition: 216 ohms; 1/2 W	R-1727
R3	Resistor, Composition: 21 ohms; 1/2 W	R-2124
R4	Resistor, Composition: 100,000 ohms; 1/2 W	R-1853
R5	Resistor, Composition: 470,000 ohms; 1/2 W	R-1856
R6	Resistor, Composition: 2200 ohms; 1/2 W	R-1725
R7	Resistor, Composition: 47,000 ohms; 1/2 W	R-1850
R8	Resistor, Composition: 20,000 ohms; 1/2 W	R-1820
R9	Potentiometer, Composition: 20,000 ohms	R-2100
R10	Resistor, Composition: 1 megohm; 1/2 W	R-1720
R11	Resistor, Composition: 1 megohm; 1/2 W	R-1720
R12	Resistor, Composition: 100,000 ohms; 1/2 W	R-1853
R13	Resistor, Composition: 100,000 ohms; 1/2 W	R-1853
R14	Resistor, Composition: 2000 ohms; 1/2 W	R-1725
R15	Resistor, Composition: 470,000 ohms; 1/2 W	R-1856
R16	Resistor, Composition: 470,000 ohms; 1/2 W	R-1856
R17	Resistor, Wirewound: 2000 ohms; 5 W	R-2000
R18	Resistor, Wirewound: 2000 ohms; 5 W	R-2000
R19	Potentiometer, Wirewound: 1500 ohms	R-2000
R20	Resistor, Composition: 100 ohms; 1/2 W	R-2400
R21	Resistor, Composition: 10 ohms; 1/2 W	R-1607
R22	Potentiometer, Wirewound: 50 ohms	R-2000
R23	Resistor, Composition: 10 ohms; 1/2 W	R-1607
R24	Resistor, Composition: 100 ohms; 1/2 W	R-1603
R25	Resistor, Composition: 175 ohms; 1/2 W	R-1740
R26	Resistor, Wirewound: 10 ohms; 5 W	R-2000
R27	Resistor, Wirewound: 100 ohms; 10 W	R-2119
R28	Resistor, Wirewound: 20,000 ohms; 20 W or 10,000 ohms; 25 W (see note on amplifier schematic)	R-2002
R29	Resistor, Wirewound: 15,000 ohms; 10 W	R-2115
J1	Jack, Phono: 1 Female Contact	J-3000
J2	Jack: 3 Female Contacts	J-1400
J3	Jack: 12 Female Contacts	J-1265
J4	Jack, Line: 3 Female Contacts	J-1262
L1	Choke, Audio	L-2084
L2	Choke, Swinging	L-2084
L3	Choke, Filter	L-2084
P1	Pin: 12 Male Contacts	P-1264
T1	Transformer: Output	T-2088
T2	Transformer: Power	T-2087 or T-2087-1

*R-117*

## letters

So you want bass from your Lowthers, huh?

Dear Dan,

When you reviewed the Medallion kit, one of the rhetorical questions was, "Okay B, but what about Lowthers having no bass?" Well, as you noticed, in my room the bass response seemed to be better (*quite a bit better - B.*) - I think that is a room variation between us. Then I added a second pair of speakers (*facing rearward*) behind the first - this too helps fill out the low end. But "I want more bass, B. What do I do?" Okay, here is the answer. Write, call or fax Jerry Raskin, the Needle Doctor and order the Shure V-15 Mark whatever. Carefully install and interface with George Wright's preamp/ phono stage, and STAND WAY BACK! This combination becomes the "under \$200 sub-woofer" fix to any perceived lack of bass in the Lowther system. Dan you gotta hear this one. Undoubtedly there are other cartridges out there that would have the same effect. But it was a revelation to me. I always knew the old Audio Technica cartridge was a little light in the loafers. I didn't realize how much until I made the change.

Tony Glynn  
Lowther Cub of America

*I should point out here that my PM2As have undergone a painfully slow breakin. At one point a couple months ago, I put a well broken in PMGC into one Medallion a cabinet, and bass was much improved.*

*This led to some other experiments, most notably a really nice sound produced by turning the Medallions around and firing them into the corner. After a lot of chiddling, I settled on placing the front corners of the cabinet about 4" away from the walls, a sort of poor man's Kipschorn.*

*Wow. Talk about deep bass. This really works. While imaging suffers, the overall presentation is relaxed and "filling". It seems to ease the midrange peak without totally killing the highs. Bass dynamics are arresting.*

*If you have any of the "small mouth" Lowther enclosures, give this a try. A very inexpensive, easily reversed mod - Doc B.*

Tweaking the Wright Line Stage

Dan,

I have done several simple things to the wonderful WLA10 line stage. I was rather reluc-

tant to do anything as I very much liked the unit as it was. But once I got in there, I just sort of kept going.

First I made up a little bridge rectifier out of fast/soft recovery diodes to replace the original bridge. I used some nice Harris hyperfast soft recovery rectifiers (note that Harris has other rectifiers like the ultrafast which are not soft recovery). This, a bit to my surprise, actually did make a difference.

Second I noticed that the existing signal path wire was pretty thin. I decided to build on my experimentation with thicker interconnect wire. As I mentioned on the phone, inspired by your article on air insulated interconnects, I tried the same thing but went one step further and also tried #14 wire. I stripped the teflon off and wrapped the wire very loosely with paper so essentially I had air insulation. I read that paper was the next best thing to air and significantly better than teflon. What do I know? I just tried it. For these two foot runs the results were noticeably better than the comparable #20 they replaced.

In the preamp I tried some of the DH Labs silver coated stranded wire, but #20 for these short lengths. I replaced the signal path wire to and from the output and input RCAs as well as wire past the pots and 5963s.

The first modification made things much more relaxed and easy to listen to..... well worth it. The second opens things up and provides more foundation and solidity. It sounds less constricted in comparison. The combination of the two adds fine detail and overall nuance or "atmosphere".

Next I replaced the power cord with DH Labs #14 speaker wire, as I have done on all my equipment. I did this after talking to a shop about the 1.5 dB improvement in signal strength from their CD players when this was done. He couldn't explain it, and he also couldn't argue with his own measurements.

I know there is some controversy about solid versus stranded wire as well as the relative merits of silver plating, particularly with stranded wire. Darren at DH Labs says that the silver oxide is actually a bit better conductor than new silver during the early stages of oxidation and then it becomes only minimally less conductive once it looks all nasty. He has carefully listened to both and his overall personal preference is stranded, which is why he makes it that way.

I love this little line stage, and I am recommending it to everyone!

Gordon Burkhart-Schultz

*Andy Bartha has done some mods to one of George's phono/line preamps. Here's his*

recipe:

- Rectifiers in filament supply replaced with soft start diodes
- Filter caps in the filament supply replaced with Nichicon.
- 22 mfd HV supply filter caps changed to 220 mfd Cerafine
- 10 mfd caps changed to 47 mfd Cerafines
- 22 mfd HV caps at each stage replaced with 22 mfd Black Gate
- .22 cathode bypass shunt caps replaced with Infincaps
- coupling caps replaced with Audio Note copper foil in oil

And here's some of my own tweaks, performed on the prototype of the WPL10V:

- 5963s replaced with 5965s
- shielded internal wire replaced with 35ga. magnet wire
- phono stage coupling caps replaced with Siderial caps.

Andy says his mods take an already great preamp to the next level.

My mods have eliminated a slightly dull presentation my Koetsu was giving, revealing much better speed and sparkle. However, edgy high output MC cartridges like my AQ40M or Blue Point Special really show their weaknesses now.

### speaking of phones...

I seem to have tweaked my old Denon turntable to a point where everyone who gives it a listen is quite enamored.

I started by removing the Grace 747 I had purchased new 12 years ago in a fit of post-divorce self indulgence.

I spent a few weeks looking for an Alphason Lyric, Synax, or the "big black Sumiko arm", to no avail. A Linn Basik was offered to me, and after comparing its general structure to Smoothplate's Ekos, I decided it was worth fooling with.

The Denon has two removable armboards. The stock DA-305, which had housed my DL-103 before I bought the preowned Koetsu Black, remains on the back armboard. The front arm board that I had made to hold the Grace arm was turned 180 degrees and given a new mounting hole, calculated from overhang formulas given in a neat article in an older Audio (call me for the reference, don't have it at hand).

The sucker just clears that sloping base that surrounds the Denon platter.

I had to tweak the cartridge in the headshell approximately one degree to hit the proper

minimum tracking error points as printed on a paper template supplied with the Audio article. The angled pivot of the Basik seems to be a great idea, countering the usual rolling of the stylus created when the arm pivot is perpendicular to the arm tube. My slight twisting negates this to some small degree, but I doubt it creates too much additional error.

Next step was to slide 1/2" shrink tubing over the arm tube and shrink it down. This makes a poor man's version of that arm wrap stuff Sumiko sells.

This works great, damps and tensions the arm and really cleans up midrange and bass while adding a bit of mass, which seems to aid the typical MC cartridge.

Next I started rapping on the plinth with the stylus resting on a stationary LP and heard some real boom-boom.

Two steps were taken to damp this kind of energy transfer.

First, I put Andy Bartha's medium size RCDs on all the corners, and put four small ones on the armboard.

Then I chucked the stock rubber platter mat. I cut a circle of the 3/8" carpet felt I've been raving about, and put this on the platter. One of Andy's big RCD record clamps goes on top of the LP. The thunk factor was greatly reduced.

Of course you have to really jack the tonearm base up when you do this. I watched the tonearm bob up and down on some slightly warped vinyl, and judged the proper height as the point where the bobbing of the arm was evenly above and below an eyeballed horizontal plane cutting through the pivot.

The end result is quite pleasing. Gobs of tight bass, the incredible midrange of the Koetsu, sweet, sweet strings and sopranos, and a truly striking depth of image.

Combine that with some great used vinyl I've been finding lately (Sketches of Spain, RCA original cast recording of Porgy and Bess, Living Presence of Scherezade, etc. etc.), and I a happy boy.

Doc B.

speaker musings

Dear Dr. Bottlehead,

- 1 I have been listening more and more in mono, and I am liking it more and more - stereo is beginning to sound unnecessary, and in fact distracting (I wonder if this is a passing fancy or if I am joining the "fringe"- however, I am not buying a pair of black Nikes!) How would you wire the phono and CD out to get the

(Continued on page 14)

- best mono signal?
- 2 I am finding that the tapered pipes with the full array of drivers, while having better upper bass and a warmer sound, also sounds veiled. I hadn't noticed this until I listened to the QUADs and the Lowthers.
  - 3 I stacked the two pipes on top of one another, so that one vent was about one foot off the floor and the other one foot away from the ceiling. the bottom tweeter was at about ear level. I drove this with one S.E.X. amp driving the tweeters and one driving the mid-woofers. The sound was extremely dynamic and exciting with really good bass- I didn't feel the need to use the subwoofer. the balance of bass to mids to highs was off somehow, however, a super-Superwhamodynel of eight mid woofers and tweeter(s) might be a killer if the design could be properly worked out.
  - 4 I raised one Lowther (in the Acousta 115 cabinet) about 14"-15" off the floor and slanted the speaker down so that the driver was aimed appropriately at the listening position. The sound was the best that I have ever heard with any Lowthers. In fact, I like it better than the QUADs, which is saying a lot for the kind of music I usually listen to- voice, small groups, solo instruments, this speaker now sounds ideal. I think I am beginning to see the appeal of the Lowther driver. By the way, the S.E.X. amp is considerably better than the Kit One with the Lowther.
  - 5 S.E.X. amps have a more refined sound than the Kit One with the s-w-dynes. There is more detail and better bass. What the Kit One does better is in the rhythm of the music, the bloom, and the "bigness" of the sound. I think that this might have to do with the power of the Kit One and a slightly bloated upper bass region. I prefer the Lowthers with the S.E.X. amps and the s-w-dynes with the Kit One.

regards,

Allan Rosenthal

- 1 *The best bet for eXperimenting with mono would be a summing switch, maybe at the input of the preamp. There sure are a lot of people going mono these days, Bruce Nilsson being a major cham-*

*pion of the cause, and Tom Landowski being the local torch carrier. I just sold half a S.E.X. kit to Leo Mack, in New Jersey, for his mono Klipschorn system. I enjoy the old mono LPs myself, but I find some of the current stereo recordings loose some tonal balance when summed to mono. But you sure save on equipment costs....*

- 2 *I suspect the veiling might be cured by some fooling with stuffing. You may just be hearing the now fuller, flatter response in the lower midrange and upper bass, which tends to sound recessed to an ear used to the typical "presence peak" of a Lowther, QUAD, or original Superwhamodynel tower; or you may be getting some midrange coming out of the port with some delay, which would muddle the mids bit.*
- 3 *One amp on the tweeters and one amp on the mid woofs is a real bitch to balance. The tweets tend to dominate unmercifully. You would need to put an attenuator in the tweeter amp input.*
- 4 *I think you just reinvented the Lowther Medallion*
- 5 *I will agree that a more powerful amp (8-12W) shows some real advantages over 2-3 watt amps with the Whamos. We should have a 300B conversion for the S.E.X. kit in a few months, and this way and up being the trick combo.*

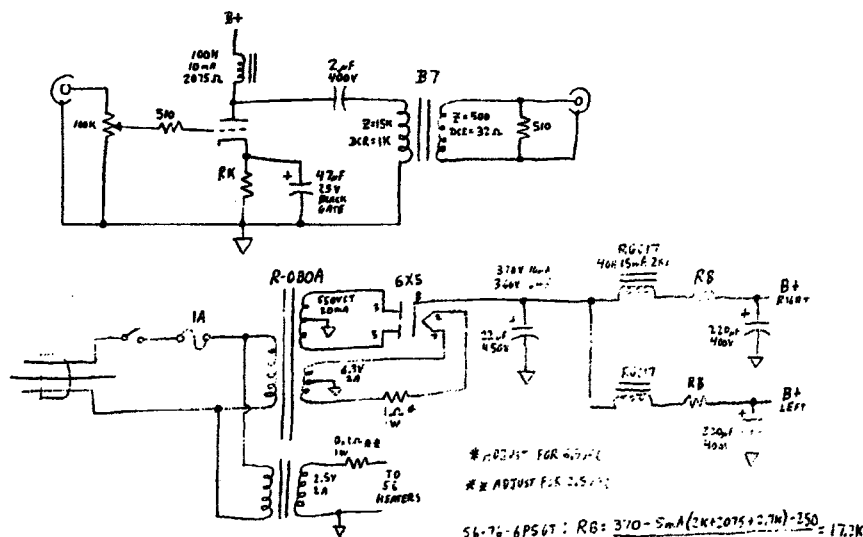
## **VSAC on da' web**

The Vacuum State of the Art website will give you the poop on VSAC '97.

It tells about the hotel, gives you links to info about the Balmain system, will post the schedule for seminars, and tells which exhibitors are coming. It also gives the rundown on the amp builder's class, to be held for three days after the show. We only have four spots left for the class, so call soon!  
<http://research.uh-west1.utoledo.edu/VSAC/index.html>

## para feed line stage

Mike Lefevre sent this design by Bill Petrowski. It uses the Brooklyn B7 15K:500 ohm transformer. This design is a gift to the amateur from Bill, and may not be used for commercial purposes. That means you may construct one copy for yourself, homes.



# R2075 FOR 2075  
 # R ADJUST FOR 2075

$$56-76-6P5G7: R_B = \frac{370 - 5mA(2K + 2075 + 2.7K) - 250}{5mA} = 17.2K \Omega$$

$$6L5G: R_B = \frac{370 - 8mA(2K + 2075 + 1.1K) - 250}{8mA} = 8.6K \Omega$$

56 TUBE  $\mu = 13.8$   $\mu p = 9500$   $g_m = 1450$   
 $2.5V @ 1A$   $C_{gp} = 3.2pF$   $C_{GK} = 3.2pF$   $C_{PK} = 2.2pF$   $V_{PK} = 250V_{MAX}$   $P_D = 1.3W_{MAX}$

76 TUBE  
 $6.3V @ 0.3A$   $C_{gp} = 2.5pF$   $C_{GK} = 3.5pF$   $C_{PK} = 2.5pF$   $V_{PK} = 250V_{MAX}$   $P_D = 1.4W_{MAX}$

6P5G7  
 $6.3V @ 0.3A$   $C_{gp} = 2.6pF$   $C_{GK} = 3.4pF$   $C_{PK} = 5.5pF$   $V_{PK} = 250V_{MAX}$   $P_D = 1.25W_{MAX}$

6L5G  $\mu = 17$   $\mu p = 9200$   $g_m = 1100$   
 $6.3V @ 0.15A$   $C_{gp} = 2.7pF$   $C_{GK} = 3.0pF$   $C_{PK} = 5.0pF$   $V_{PK} = 250V_{MAX}$   $P_D = 2W_{MAX}$

56-76-6P5G7  
 $V_{PK} = 250$   $I_P = 5mA$   $V_{GK} = -13.5V$   $R_K = \frac{13.5}{.005} = 2.7K$   $A_V = 13.8 \frac{15K}{15K + 9.5K} = 8.45 = 18.5dB$   
 $C_{MIXER} = (0.45 + j)(3.2pF + 1.8pF) + 3.5pF + j1.8pF = 53pF$ ;  $\frac{1}{2\pi(1500)(53 \times 10^{-12})} = 120KHZ$ ;  $\frac{1}{2\pi \frac{200}{4500}} = 15.1HZ$

6L5G  
 $V_{PK} = 250$   $I_P = 8mA$   $V_{GK} = -9V$   $R_K = \frac{9}{.008} = 1.13K$   $A_V = 17 \frac{15K}{15K + 9K} = 10.6 = 20.5dB$   
 $C_{MIXER} = (0.611)(2.7pF + 1.8pF) + 3pF + 1.8pF = 57pF$ ;  $\frac{1}{2\pi(1500)(57 \times 10^{-12})} = 112KHZ$ ;  $\frac{1}{2\pi \frac{200}{4500}} = 14.3HZ$

## Svetlana meets Brooklyn

Mike Lefevre and Eric Barbour had a phone call a couple of months ago.

Mike was discussing a list of tube types to go with each model of Brooklyn output transformer.

His list goes something like this:

Eric sent Mike a list of applications for Svetlana tubes a few days later:

Seems like these would be very cost effective combinations, with seriously good bandwidth. Check out the application of push-pull 3CX300A1s into a B27. Now that would draw some attention at VSAC!

Here is Eric's list:

B14 (12000 ohms, 10 watts)	PP 6K6, 6ARS, 7BS Class A	B14	PP SV811-3, SV572-3, SV811-10, SV572-10 in AB1 or AB2 (plate supply 400V max) OR PP 6BM8 pentodes in AB1 self-bias, common cathode resistor, 400 ohms
B15 (10000 ohms, 20 watts)	PP 6F6 AB2 PP 6V6, 6AQ5, 7C5 AB1 PP 6L6 or 5881 triode PP KT66 Class A triode	B15	PP SV811-3 or SV572-3 in AB1 (plate supply 500V max) OR PP 6BM8 pentodes in AB1 self-bias, common cathode resistor 400 ohms
B17 (9000 ohms, 30 watts)	PP 6L6 AB2 self bias	B17	PP SV811-3 OR SV572-3 in AB1 (plate supply 575V max)
B18 (8000 ohms, 15 watts)	PP 6V6, 6AQ5, 7C5 AB1	B18	PP SV572-3 in AB1 (plate supply 400V max)
B20 (6600 ohms, 30 watts)	PP 6L6 fixed bias AB1	B23	PP parallel SV811-3 OR SV572-3 in AB1 (plate supply voltage 500V max)
B21 (5000 ohms, 20 watts)	PP 6L6 Class A PP 2A3, 6A5G, 6B4G Self Bias PP parallel 6V6 AB1 PP EL34 triode AB1	B27	PP 3CX300A1 in AB1 (plate voltage 450V max) OR PP EL509 in AB1 (plate voltage 350V max, screen voltage 150V) OR PP 6AS7 single tube in AB1 (plate voltage 250V max)
B23 (4000 ohms, 50 watts)	PP parallel 6L6 AB1 self bias PP 6L6 AB2 fixed bias PP 807 AB2 PP 300B, 2A3 PP EL34, KT88, 6550 AB1		
B24 (3000 ohms, 15 watts)	PP 6A5G, 6B4G, 2A3 fixed bias		
B27 (1500 ohms, 30 watts)	PP parallel 2A3, 6A5G PP parallel fixed bias 6B4G, 300B AB1 PP parallel 6L6 Class A		

# Introducing Brooklyn.

## Push-pull transformers that sound single-ended.

PART #	PRIMARY IMPEDANCE	POWER LEVEL	MAX. PRIMARY DCMA PER SIDE	DCMA UNBAL	RETAIL EACH
B14	12,000 CT	10W	40	4	\$100
B15	10,000 CT	20W	50	5	\$125
B17	9,000 CT	30W	50	5	\$140
B18	8,000 CT	15W	45	5	\$120
B20	6,600 CT	30W	70	7	\$140
B21	5,000 CT	20W	80	8	\$120
B23	4,000 CT	50W	100	10	\$150
B24	3,000 CT	15W	75	7.5	\$125
B27	1,500 CT	30W	150	15	\$135

Note: Above units available with Ultralinear taps for an additional \$6.00 per unit. Secondary impedances for all units are 2,4,8,12 & 16 ohms. Guaranteed minimum frequency response is +/- 1 dB, 30Hz to 20 kHz. All units supplied with vertical bell end caps. All prices herein are special introductory prices subject to change without notice.

**NEW - power supply filter chokes, and plate loading chokes that work great for parallel feed projects:**

**SEE US AT VSAC '97**

### CHOKES

PART #	RATED CURRENT DCMA	INDUCTANCE HENRIES	DC RESISTANCE OHMS	RETAIL EACH
BCR17	15	40	1170	\$40
BGP4	50	20	315	\$45
BCM8	75	12	215	\$50
BCM1 1	100	12	145	\$60
BGP8	150	10	128	\$65
BCM1	200	10	109	\$70

### PARALLEL FEED AUDIO CHOKES

BGP16	1	425	4400	\$40
BGP14	10	100	2075	\$45
BGP15	50	40	550	\$50



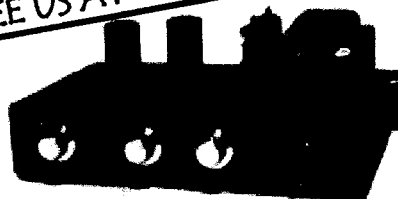
Brooklyn, P.O. Box 967  
Cherryville, PA 18033  
(215) 288-4816

**Where Push-Pull meets Single-Ended**



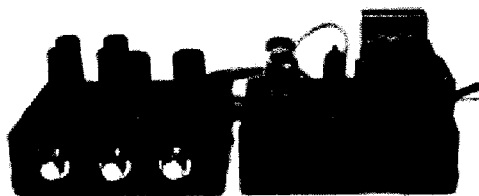
# WRIGHT Sound Company

SEE US AT VSAC '97



The **WLA10 line amp** with 4 inputs for those who don't need the phono section. Dubbed by those that have listened, as the best sounding line amp they have ever heard, tube or solid state. All this for \$365.00 plus \$17.50 shipping and handling in the continental U.S., WA res. please add 8.2% sales tax.

The **WPP100A phono preamp**, the most natural sounding unit on the market today, is available at \$529 plus \$17.50 shipping and handling in the continental U.S., WA residents please add 8.2% sales tax. The WPP100A has gold RCA connectors, and a new WPS02 power supply with a power switch and plate and filament indicators. The performance is better than the original version, which beat all the competition in listening tests by members of **VE** and other audiophiles who have had the pleasure of reviewing this product.



Now available to **ALVE** members, and those who have tried S.E.X. amps, the **WPL10V complete line amp/ phono stage** component. This basic model has the quality of the WPP100A, with the additions of a selector switch with phono plus three other line inputs and volume controls to

make this the center of that great new S.E.Xy sound system. No longer do you need to wait for a great sounding addition to have great S.E.X., and at just \$649 U.S. funds plus \$17.50 shipping and handling, you can get this fully assembled preamp/line amp delivered to your door in the continental U.S., WA residents add 8.2%. The WPL10V is designed to be a cost effective basic chassis type, constructed with all the great stuff that goes into the WPP100A. We made it especially for you S.E.X. owners and **VALVE** members who want the most out of your system for the least out of your pocket. I must add that this product will work with almost any power amp you now have or may purchase, so with or without S.E.X. this is a great addition to the WRIGHT line. Stay tuned for future models.

Please send your order and payment to:

**WRIGHT Sound Company**

3516 So. 262nd, Kent WA 98032-7047

For further information, please leave a message at (206) 859-3592

*Please note: These items are individually hand built, and current high demand can*

# para feed- it just gets better

by Doc B.

Since last month I've done a bunch of fooling with the parallel feed amp I described last month.

First, Pat Currie was kind enough to loan a pair of Simon Shilton's gorgeous 5K:5K inter-stage transformers.

Replacement of the tough dog 5K grid resistors of the parallel 50s with this transformer gave a sweeter and more quiet presentation.

THD dropped a bit more, with 3rd order down another 10 to 15 dB. At 5 watts, 3rd order was down a whopping 60 dB!

The IT champions have been quick to say I told you so, but all they will get from me for now is that an IT seems the best way to use a 417A/3842 as a driver, particularly into a tough load like the 50's grid. I'll have to try IT vs. direct coupled with a few different tubes before I will offer any more general comment.

I had used chokes to load the plates of the 3842s before going to a wirewound resistor (because the choke was too low in inductance and rolled off the bottom), and I think I got the same sonic improvement as I did with the IT, so choke loading the plate of a direct coupled driver might be a way to very good sound too. Now that the drive stage seemed happy, with the IT and the 6AAs LED on the cathode, I measured its response.

I got -1dB at 14.9Hz and somewhere beyond the 51 kHz limit of the HP analyzer, with a .33 dB peak around 31kHz. I think Simon claims the top end goes beyond 80 kHz.

Overall response of the amp was now -1dB at 28Hz and 20.1 kHz.

The next mod I will discuss is coming out of order, as it is actually the most recent.

After some sessions playing with a bunch of different output tubes (more in a minute), I began to suspect that the 30H filter chokes I had been using were more detrimental to the bottom end response than even some of the severe output impedance mismatches I had been fooling with.

A 50 usually wants to see about 4800 ohms, so I had been using two in parallel, thinking this would help the bottom end.

But Mike had sent some very pretty 50H audio chokes in brass channel frames (EXO 03) rated for 60 mA.

I decided to try these with a single 50 running at 450V, 55 mA, and see how the bottom measured.

I low about -1dB at 201Hz and 20.1 kHz, with a mismatch of 3K ohms vs. the desired 4.8K ohms? Not bad!

Sonics were much nicer too, again, sweeter and quieter, with a noticeable improvement in the top end of my vinyl setup, which had seemed lacking up to then.

A couple weeks ago John Tucker came by with a pair of Vaic VV30s (now replaced by the KR Enterprises VV32) from Ron Welborne. We pulled the parallel 50s and plugged one VV30 into each channel of the amp circuit and adjusted all the parameters necessary to run them right.

Gods, these are the finest tubes ever! The combination of the jump and extension of the nickel OT and the superb control of the VV30s created the most articulate SE bass I had ever heard. And this was with the crummy 30H chokes!

The overall impression was of a very natural sounding tightening of pace and proportion of the instruments and voices, the good of 50s are kind of resonant and mellow by comparison. I'm excited to try some again with Mike's 50H chokes. This will be a total killer amp.

We fiddled with several operating points, and 350V at about 70 mA or a bit less sounded best (about 10W output), with the recommended 300V and 70 mA almost as good, and the alternately recommended 420V 120mA point loosing some life as the 30H chokes collapsed at 10mA over their rated current. I will try 350V at 60mA with Mike's chokes next time.

I hope to also have a pair of Mike's RIT-5 interstage transformers to review in the next month or so.

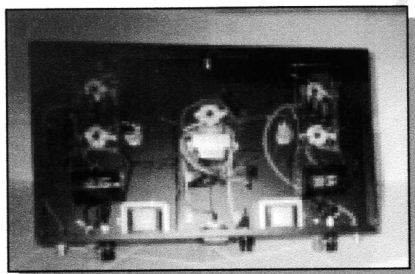
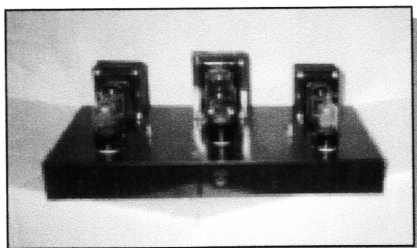
Oh yeah, I tried some other tubes at pretty bad mismatches and got some very nice results.

A Svetlana SV572-10 running at 600V, 90 mA, into the 30H chokes and 3K TFA-2004 was good for 4 watts, and sounded quite close to the VV30 in terms of bass control. The bottom end was lacking (down 1dB at 44 Hz) due to the choke and OT mismatch, but the same focus and punch is there. With a proper value OT and choke this tube should make a marvelous SE amp.

The next trial was an 801 at 600V and about 30 mA. Again, a bit rolled off on bottom, but a nice sound, if you can live with 1 watt! I would like to try Class A2 with this tube and Mike's choke/OT combo, but I will need to get a positive grid supply up and running first.

And of course I tried the good of 2A3. A perfect match to OT and choke, great frequency response, and all the other goods, with as much or more of the same lush, mellow

## cravings



For sale  
Stereo 6BX7 amplifier

- All triode zero feedback
- 5V4 vacuum tube rectifier, dual mono, choke loaded power supply
- all Solen polypropylene caps in power supply and signal path.

\$450 plus shipping

Chadd Moore, 419-394-7828.

Wanted:

Eico HF-60 pair in good original condition. Willing to pay good price for excellent condition. Send asking prices via e-mail to Ed Fausto@colpal.com or fax (0632) 671-7530.

For Sale:

Pair Acrosound TO-330 output transformers. \$250.

Wireman Wells, 502-895-7749.

Will the person who had the Eico HF30 please call me! About one year ago I promised to buy your Eico, but I lost your name and phone number. I think you live near Olympia? Ed 360-678-7414.

sound as the 50. Several folks have asked if we will release a parallel feed version of the Afterglow kit. We may in the future, but please bear in mind that the nickel transformer and plate loading choke is a far more expensive way to get sound, and any nickel parallel feed setup we sell will cost a whole lot more than Afterglow. Also, you won't be able to fit all that iron onto the Afterglow chassis.

Because of all this and my own preference for the VV30, we will be working on developing a VV300 or VV32 based parallel feed amp in the next few months.

If you want to experiment with parallel feed at a reasonable cost, we can set you up with either a 2.5K (for 2A3) or 5K (for 45) primary impedance nickel para feed only output transformer with a single secondary of your specification, mounted in a cool brass channel frame for \$135 each, and plate loading chokes to go with them for \$50 for 45s (40H @ 50mA) or \$65 for 2A3s (50H @ 60mA).

If you want to go all out with 45s, a special version of the 45 OT is available with teflon coated primary wire and silver secondary wire for \$325 each.

These parafeed setups should easily adapt to any traditional RC or IT coupled circuit.

## yo, collectors

I plan on having a room dedicated to vintage audio at VSAC '97.

This means we need to hear from you guys with mint vintage gear, the older the better, who would be willing to display your best stuff and spend a little time during the show showing it off to attendees and answering questions.

If you would like to bring something (I'm thinking EH Scott, WE, Brociner, you know, really cool rare stuff) please give me a call, so we can arrange getting it to the show.

If you want to put a price tag on any piece you bring, you are welcome to. I ain't against a guy makin' a buck now and then.