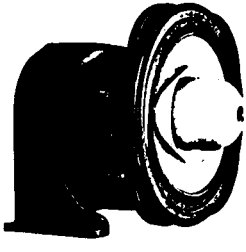
**VALVE**
PO BOX 2786
Poulsbo, WA 98370

# *Lowther Club of Canada*

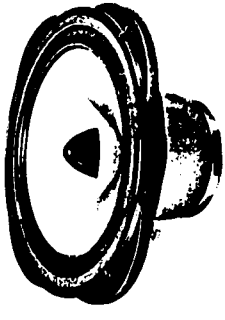
## LOWTHER AND THE LOWTHER CLUB CONCEPT

Acclaimed as one of the best sounds at the recent Paris and Montréal Hi-Fi shows, **Lowther** loudspeakers, coupled with a good quality single-ended triode amplifier, offers superior sound that must be heard to be believed! As with S.E. triodes, **Lowther** loudspeaker technology has been consistently top-of-the-line since the 1920s. **Lowther** is refined technology at its best — surpassing in quality the highest priced audio equipment in every way.



Esoteric loudspeakers can cost as much as $50,000 — and more. In making their specialist drivers available through a series of **clubs** around the world, **Lowther** is able to offer their products at an affordable price, and foster a network of **club members** who share similar interests and ideas. Building your own cabinets — or purchasing from your **club** — plus **Lowther** drivers, **will cost for less** than one tenth of the competition's $50,000 price tag.

Single drivers range in price from about $300 to upwards of $1,500 Canadian. Selected full-scale plans are available for a number of suitable cabinets at a modest fee from most **Lowther Clubs**. Some **clubs** make 11"x17" copies available for the cost of postage and handling ($5 in Canada).



Typical Specs: 30 HZ—22 KHZ, more than 105 db. No crossover or phase distortion — two or three watts is all the power needed — and all from a single driver!

Contact your local **Lowther Club** for prices and details.

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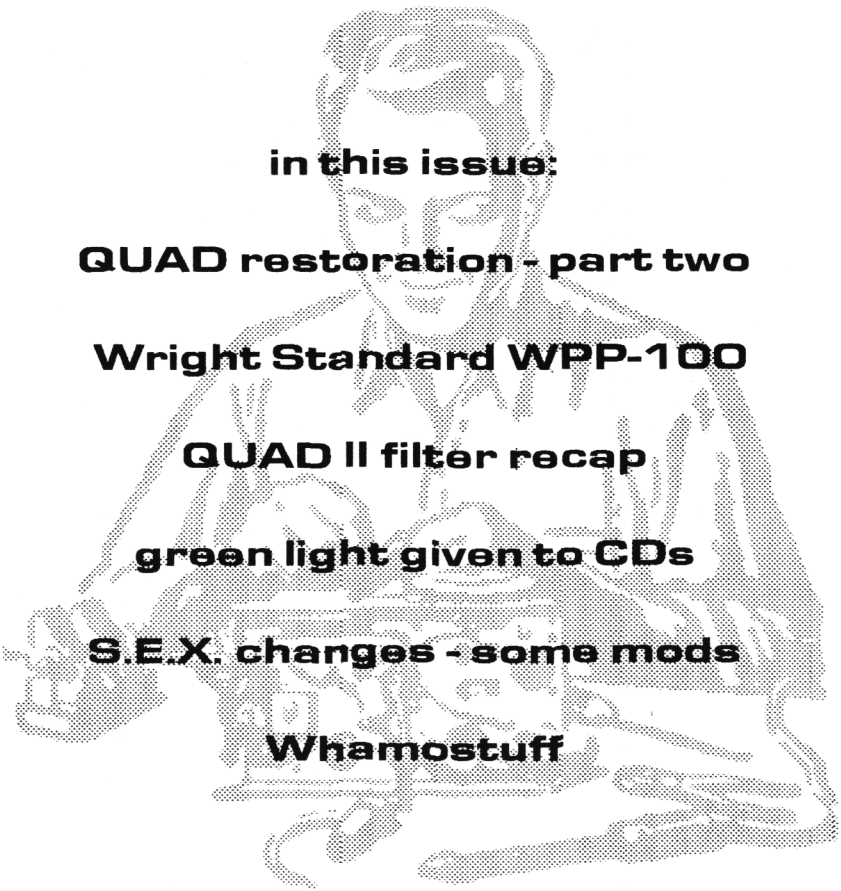
VINTAGE AUDIO LISTENERS AND VALVE ENTHUSIASTS



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Wright Standard WPP-100

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S.E.X. changes - some mods

Whamostuff

volume 3, number 7 July 1996

# VALVE

*is the newsletter of*
Vintage Audio Listeners and
Valve Enthusiasts

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Rates:
*Membership/Subscriptions:*
$ 25.00 a year (12 issues)
*Foreign Subscriptions:*
$ 35.00 a year (12 issues)
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## editor's thing

Time to take a break from sermonizing ('You vill haf fun, and you vill like it!')and say thanks to those of you who are out there having S.E.X., building Superwhamodynes, and generally upsetting the status quo.

Thank you all for taking the risk of trusting my judgment, which is at least as suspect as every other hack audio writer's, and trying some radical breaks from this month's latest 'accepted standard'.

Thanks in particular to Tony Glynn, who is out there preaching the VALVE gospel with a certain fury, and soliciting S.E.X. on a daily basis, getting us new members by the PO Box full.

Thanks also to Papa Joe Roberts for giving us so much help in the pages of Sound Practices lately.

Thanks to Dave, Doug, Paul and Eric and all of you contributorsfor faithfully coming up with truly worthwhile information to publish in these pages on a regular basis.

Thanks to you guys who have brought stuff to hear at the meetings, and double thanks to those of you who have let us into your homes for a glimpse of your idea of audio heaven.

To see the club we invented (thirteen original members, 130 worldwide as of last week) to share tube audio ideas become one of the hottest, hippest joints on the audio scene in the last five years has been a gas.

We have truly gained credibility. We were receiving new member/ subscribers at rate of about 10 per month, and that has recently jumped to more like ten per week.

We also have many new advertisers, most with ads for products you won't see anywhere else. Along with these

ads will come more pages, to comply with the requests I've been getting lately for more 'stuff'.

To those of you who find that we are not dealing with a particular subject as much as you'd like, I have a suggestion: send us a letter to stimulate discussion of the topic. VALVE was conceived as a platform for sharing ideas and designs, give a little to get a lot!

Here, I'll start a fire myself.

I received a pair of 8Ω Lowther PM6Cs from Maestro Glynn a while back. Now you guys know that my pride in the sound of the Whamos makes all other speakers take second place. I hardly listen to the Maggies anymore, Eric's QUADs generally languish, and his A7s are going back to fill up his basement.

Well, John Carey loaned me his recently completed Acousta cabinets for to break in the PM6Cs. Listening to them with the 'cotton' mod and a 'swamper' resistor across the terminals produced a sweet mellow sound you could listen to all day, however they seemed a bit distant for my personal taste.

I brought out the HP signal analyzer, as I usually do when my atomic brain fails me, and started running some impedance curves.

Fairly smooth curve, save for a few standing wave hiccups at the bottom end, due to the hard, angular horn mouth, and the usual cone driver rising impedance at the top end.

Well the swamper across the speaker leads helps the bottom end stuff. I used 50 ohms.

Then I remembered the old idea of using series resistance on the positive lead to extend rolled off tweeters. Since the efficiency is high, I figured I could get away with about 16 Ω in series, after the 50 Ω (nom. impedance is now 16Ω).

Now they make the exciting sound I love- present, yet super smooth. They are closer to the Whamo sound. Lowther owners, TRY THIS MOD!

DAN

## Quad ESL Restoration (Part 2)

by Doug Grove

Last month I preached ESL theory and rectifier block updating. This time around I'll discuss Quad speaker disassembly and panel replacement.

Figure 1 shows the basic Quad layout. Work on any one of the panels means speaker disassembly, starting with rear grilles. The ESL must be unplugged from both power and amplifier sources for two hours to insure safety in handling. Work can proceed with legs on or off. Remove the 20+ screws and ground strap from underneath. Pull the back grill off. Now remove the front grilles (this requires a little more work). Unscrew and remove the wood side rails, marking left and right. Unscrew the 9+ screws from the front grill bottom. Unscrew and remove the ground strap. Carefully pry up and remove the staples holding the grille sides in place. The front grille can now be carefully pivoted up and unhooked from the slot at the rear of the rounded top section. Be careful not to bend the grille.

I did not replace any panels, but because of holes, rips and too-tight overwraps, I decided to rewrap them. I also decided to replace any questionable wire and resolder all connections. Note that red wire is connected to high voltage bias and the panel diaphragms. All bass panel wiring is of special high voltage type (with thick insulation). To remove bass panels first unsolder the white (rear stator), red (high voltage bias) and black (front stator) wires from the bass panel terminal blocks. Treble panels are wired into the audio transformer, so the four screws holding the unit down to the speaker base must be removed first. Provide support for the transformer unit to prevent ripping the wires out. Refer to Figure 2 for audio transformer connections. Remove the two pairs of treble panel blue and

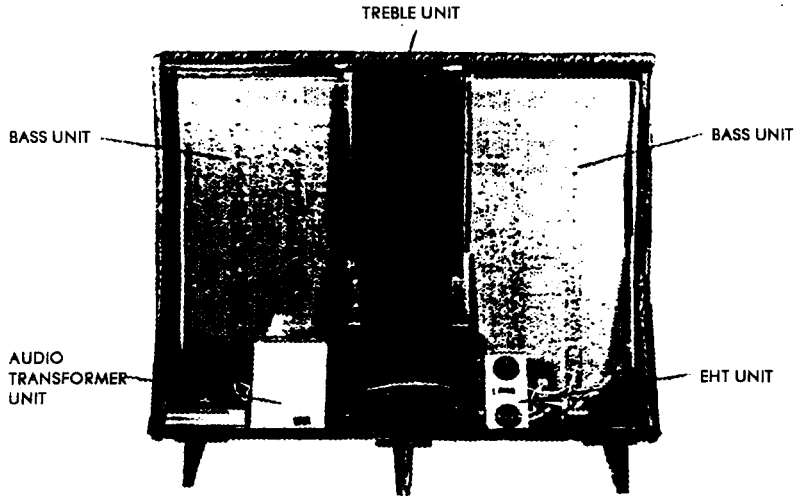



FIGURE 1
QUAD ESL REAR VIEW

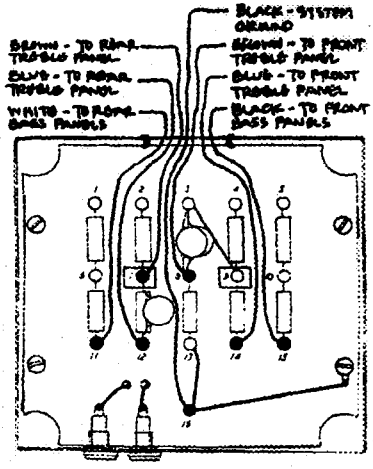


FIGURE 2
AUDIO TRANSFORMER CONNECTIONS

brown stator panel wires from the audio transformer, and the red bias voltage wire from the EHT unit. All panels should now be disconnected.

Working from the speaker front, remove the two screws holding each top and bottom aluminum center bracket in place. The bass panels can now be angled outward so they can slide out towards the center and away from the outer retainer clips. Remove the foam spacer strip from each in-board bass panel side, and save it for reinstallation later. The treble panel and felt damping can be pulled forward away from the frame. This is a good opportunity to thoroughly vacuum clean the speaker interior. Note the 4 small pins on the uprights behind the treble panel - these are used to locate and hold the panel in place.

Torn panel wraps should be replaced. The best aftermarket wrapping material is a 3M window insulator kit. Obtain the indoor 3' x 5' window kit, as the plastic supplied is the thinnest, which is best for sound transmission. The kits include plastic sheets and double-stick tape. The advantages of these kits are low cost, low static attraction, easy assembly, good sound transmission, and the ability to control panel tension through applied heat (the old shrink wrap principle). You will also need a roll of 3M clear packaging tape and, depending on the number of panels you recover, an extra roll of double-stick tape.

Treble panels are easiest to recover. Once the panel is out of its frame, the thick felt damping assembly must be removed. Then, remove the 4 small bolts and felt washers located in the middle of the panel. If using a knife, take care not to cut into panel edges or fronts. Separate the front and rear wood frames, clean and set them aside. Remove as much of the old plastic covering, glue, tape, etc. as possible. If the blue, brown and red lead wires are intact, you're ready to recover the panel. If a panel wire solder connection is weak or breaks, make the repair, but exercise great caution. The solder lugs are riveted to plastic, making their connection to conductive paint inside the panel. Solder only at low heat and use a heat sink, otherwise the hot rivet will lose contact and melt away from the plastic, so you might as well kiss the panel good-bye!

Recovering must be done in a very clean environment. Begin by locating and holding the wood frames in place, using a few spots of clear tape wrapped around the panel edge and each wood frame face. Note frame alignment follows the convex panel shape. Be sure to feed the channels on the wires through the notches in the wood frames. Working one face at a time, apply the double stick tape to the wood frame. Cut a piece of plastic oversized enough to trim later. Take the panel to an adjacent clean area and vacuum the panel face to remove any accumulated dust. Now place the plastic sheet on the face, working out

major ripples and folds, but not too tight! Keep it flat, but a little floppy. Trim the edges flush with the wood frame. Repeat the tape, vacuum, plastic procedure for the opposite side. With a steady hand, use a soldering iron to melt small holes (no larger than 1/8") on each panel face where the felt washers and bolts will be reinstalled. Note that for this thin plastic, melting produces a self-edging hole, whereas cold piercing will usually turn into a rip. Install the felt and bolts, hand-tight. The overwrap is completed by applying a continuous line of clear tape on one wood face, around the panel edge, and on the other wood face. Heat tensioning and bolt adjustment will be done after the panel is installed. Refit the thick felt damping assembly to the panel rear using staples.

Bass panels are recovered using the same process, but require special attention at the rear terminal block connection. Before removing the old covering, make a wire location sketch and unsolder the 3 white panel leads from the terminal. The terminal is bolted to the rear wood frame. Remove the terminal block and tighten terminal posts which may have loosened up over the years. Before taping the frames in place be sure to position the flat head terminal mounting screws from behind. Work in a clean environment, and vacuum out any dust. After cutting the rear plastic sheet position a 3" length of 2" wide clear tape in the location where the 3 lead wires will penetrate the cover. Holding the terminal block behind as a template, use a soldering iron to burn 3 small holes through the tape-reinforced area for the leads. Feed the leads through and press the plastic sheet in place on double stick tape over the wood frame, working out ripples and folds, but not too tight. Refit the terminal block and resolder the 3 white leads, protecting adjacent plastic from heat or solder splatter. Trim and wrap the bass panel using the same method used on treble panels. Again, heat tensioning will be done after the panel is installed.

Panel reinstallation is pretty much the reversal of panel removal. Locate the treble panel on the pins and press into place, slide the bass panels in, and secure the upper and lower center brackets. Bass panel to frame coupling can be improved by stuffing weatherstrip material in the front horizontal gaps above and below the panels. Refeed all lead wires, and resolder them to the audio transformer per the wiring diagram in Figure 2. Be sure to identify front and rear treble leads as there are two blue and two brown leads. Carefully solder bass panel leads to avoid damaging the plastic. In the event the plastic is pierced, a small piece of clear tape makes a good repair.

With the panels in place, a hair dryer works well for heat tensioning. Tension only enough to remove major wrinkles and really floppy panels. The plastic should look fairly smooth, with the lowest possible resonance when tapped. If the plastic is too tight, less sound will be transmitted! Start with rear bass panels, followed by front bass panels. The treble rear should be okay (plus it's now covered by that felt). Tension the front only enough to remove major wrinkles. Recheck and lightly hand-tighten the 4 screws and felt washers in the treble panels.

Make sure all connections are correct, refit the audio transformer and power them up! A brief amount of faint crackling is normal at first, followed by silence. When testing, listen for buzzes, rattles and balance between treble panels in each speaker. Most bass rattles can be remedied by wedging a small piece of foam in the frame contact point

where the rattle is detected. If one treble panel seems less sensitive and not quite as loud, try reversing amp, using a mono source, and/or switching speaker locations. If the same panel still plays at a lower level, you can try "tuning" the panel, a technique requiring a "feel" for how far to go. Proceed with caution if you try this. Disconnect the speaker with the lower volume and let it discharge. Tighten the 4 screws and felt washers on the treble panel. This can be very tricky, as the goal is to bring the stators slightly closer together to increase sensitivity and output without causing arcing between the plates and diaphragm.

After replacement, it's worth the time to listen to Quads without the grilles. Do not attempt this if family members (including pets) can gain access to the exposed panels - they could receive quite a shock! The sound can only be appreciated in your listening room!

When you feel like refitting the grilles, installation is essentially the reverse of removal. Reinstall the thick foam spacers on the bass panels, using double stick tape if necessary. It takes a little practice to coax the front grille top into the rear slot. Staple the sides only where required, making sure the metal is flat as possible so the wood side rails will fit flush. Remember to reconnect the ground straps to front and rear grilles.

Next time, in the last of this series, I'll cover care and feeding of Quad ESL's.

# HEY!

With the huge increase in subscriptions lately, I gotta ask, "where's all the new letters and articles?"

Folks, my letters file is getting pretty skimpy, and I don't have any full articles past Doug's third QUAD installment.

Here I am trying to expand the number of pages in each issue, as you guys have requested, and none of you are putting your experiments or experiences to paper!

Now, I know of subscribers who are building big transmitting tube amps, horn systems that don't honk, cables from all sorts of wire (even 14K gold), transformer coupled drive stages, SEX amps, Whamos, and Lowther cabinets. Then there's the guys who are restoring vintage amps, speakers, and preamps, and the guys who are just designing their dreams on paper.

Come on! This rag is supposed to be by bottleheads, for bottleheads! Nobody else has any more time to write than you do, nobody writes better than you, and nobody is building anything more interesting than you. What, you say you're a novice? Perfect, we seldom get the viewpoint of someone who isn't yet corrupt! If you just built someone else's design, that's great, we want to know how it went. If you just heard single ended for the first time, write your impressions.

If you think tube guys are full of shit, tell us why. (I know some who are...)

The point is, start sending in stuff, or VALVE will have to become a big ad for my own joint, and I will get bored with that way faster than anybody else.

Do your duty bottleheads, or face the consequences!

## june

A good sized group compared the following phono preamps: Conrad Johnson PV-3, Conrad Johnson PV-12, Precision Fidelity C7, VTL Maximal, and the Wright Standard WPP-100.

Here's the order of finish:

1) Wright Standard - super fast attack and super low noise, thanks to the frame grid tubes, great tonal balance thanks to the passive RIAA EQ. The unanimous winner. George's thirty+ years of design experience pays off. This is a production version of the pre-amp detailed in the Nov. '95 issue. My only beef with the original was a wee bit of edge, but that is gone in this production version (Serial # 001). Super transparent and clean. I have an Audioquest 404 ($!) that is superdetailed, but I never liked because it was a bit harsh with other pres. Now the AQ is my cartridge of choice over the softer, more resonant Denon DL-103, since the speed of the Wright makes the ticks and midrange distortion from groove wear go away.

2) C-J PV-12. For $2500 this better sound good. A bit more stout sounding than the Wright, almost as quiet, but a bit soft and tubey. Still, an excellent pre-amp. Not so warm as a PV-10, more neutral, but not quite as neutral and transparent as the Wright.

3) PF C-7. Not bad at all. I decided to keep this as my backup preamp.

4) PV-3. For an old kit preamp, a very nice, balanced, warm pre. Great sound for such a simple design. A "PAS beater".

5) VTL.Will guess that this preamp was not up to snuff. A distant dead last. Thin, mushy, harsh, veiled. Bad tubes?

Equipment:

FRONT END: Denon DP-6000 turntable, DA-305/DL-103 & Grace 747/AQ 404 arms/cartridges.

AMPS: S.E.X. amps on towers, World Audio 6080 SE on subs

SPEAKS: Superwhamodynes!

# It's Here! The Wright Sound Phono Preamp

Yes, this is the same preamp featured in this month's **VALVE** - the same one that beat the Conrad Johnson PV12.

In their comparison of past and current phono preamps, **VALVE** members unanimously rated the **Wright Standard Model WPP100** best sounding overall. Because of it's accurate tonal qualities and fast transient response, the Wright sounded truer throughout the entire audio range. The way it presented voices and horns with unusual clarity, without edginess, and with extremely low background noise, made the Wright the favorite.

*Here's what some of our customers have to say -*

**" I'VE BEEN LISTENING TO RECORDS SINCE I WAS FOURTEEN AND I'M HEARING THINGS FROM MY RECORDS THAT I'VE NEVER HEARD BEFORE!"**

*Mark Chalecki*
*Recording Engineer*
*Capitol Records*

**" FROM THE FIRST MOMENT I LISTENED TO A RECORD THROUGH YOUR PREAMP I KNEW SOMETHING SPECIAL WAS TAKING PLACE... BECAUSE I HAD TO SCRAPE MY JAW OFF THE FLOOR!"**

*Jay Hammermeister*
*Seattle, WA*

The **Wright Standard Model WPP100** combines frame grid tube technology and passive RIAA equalization with level pots and a line stage, through a direct coupled cathode follower. It is at its best driving loads of 10K ohms and above, making it able to drive any line input on your line amp, preamp, or even directly into your power amps, with gain to spare, and can even drive loads as low as 600 ohms. The input is a standard 47,000 ohms with a 100 pf shunt capacitor. It follows the RIAA curve precisely, and has extremely low noise. The Wright preamp is not warm and fuzzy, not harsh and etched - it's clean and accurate, making it one of the most neutral sounding phono preamps you will ever find.

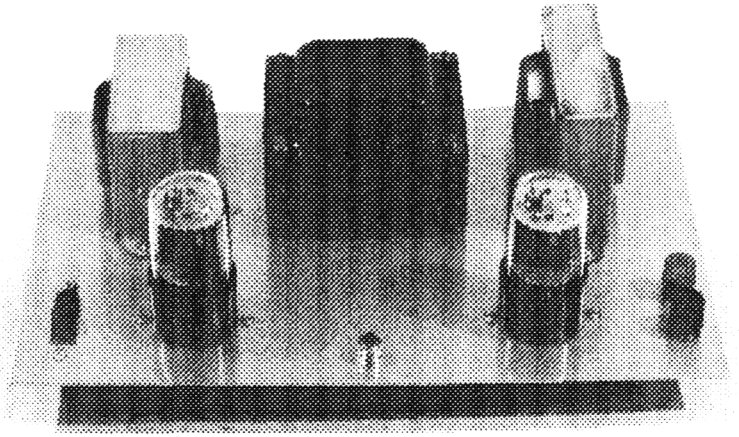
The **Wright Standard Model WPP100** is available in limited quantities, starting at just $300 for the preamp that beat the PV12! There are other models of Wright Sound equipment in development - but you don't have to "wait and see". As new products become available, we will offer a 'trade up' allowance for your Wright Standard Phono Preamp.

To order inside the continental U.S., send a check or money order for $300.00 plus $17.50 shipping and handling (WA residents add 8.2% sales tax) to:

**Wright's Electronics**
**3516 S. 262nd St.**
**Kent, WA 98032**

for more information, leave a message at (206) 859-3592

# safe S.E.X.*



## Single ended amps and speakers for $275!

(Special offer to **VALVE** subscribers, ends August 31, 1996. Regular price will be $350)

Before you take the plunge, spending big bucks to learn if single ended amps are for you, only to find you need to spend even more money on efficient speakers, you can try a whole single ended system on your talented ears for $275 (*plus shipping, WA residents incl. 8.1% sales tax. Sorry, no credit cards*).

The **S**ingle **E**nded e**X**perimentation kit contains the basic parts and instructions to build a pair of great sounding parallel single ended 2 watt monoblock amplifiers and a pair of efficient, full range one way speakers. The builder need only supply lumber for baffles, bases for the precision laser cut chassis top plates, and their favorite flavor of wire and solder.

Future issues of **VALVE** will encourage experimentation with the basic kit, publishing lots of modification ideas, from simple capacitor bypasses to high performance output transformer upgrades and detailed circuit mods

You already have efficient speakers? (the S.E.X. amps work *great* with Lowthers) That's fine, we'll sell you a basic "amps only" kit for $245 *(plus shipping and WA resident sales tax - will be $320 as of Sept. 1, 1996)*

So make sure your first experience with S.E.X.* is a low risk one. Get a S.E.X. kit! Call 360-697-1936.

*The S.E.X. kit of parts includes the following:*

*-Basic parts for two parallel single ended monoblock amplifiers, using two 6DN7 dual triodes per channel, with power supplies. Includes two laser cut 10" x 6" chassis top plates with cutouts for mounting transformers, tube sockets and other hardware.*

*- Four 5" aluminum cone full range drivers, two for each channel*

*- Manual, including plans for speaker baffles, suggestions for chassis bases, and simple "by the numbers" amplifier construction directions.*

ELECTRONIC TONALITIES

P.O. Box 2786, Poulsbo, WA 98370

*** S**ingle **E**nded e**X**perimentation

4% surcharge for

# S.E.X. Encounters

" The S.E.X. amps went together easily, even for a novice. The directions are superb! It is hard to believe something that cost so little and was so easy to build could sound so good! Less money than some boom boxes!"

*Ray Kuehlthau, Indianapolis, Indiana*

" Yesterday, I fired up these units. Honestly, I was amazed at the sound from a cold start. Nothing had been run in before hand... still, I was amazed at the quality...

" Overall, this thing is a great achievement and would be an ideal unit for the beginner to build or even the long term experienced user. The price is certainly right and the sound is better than many commercial products that I have heard at $2000-3000."

*Tony Glynn, Lowther Club of America*

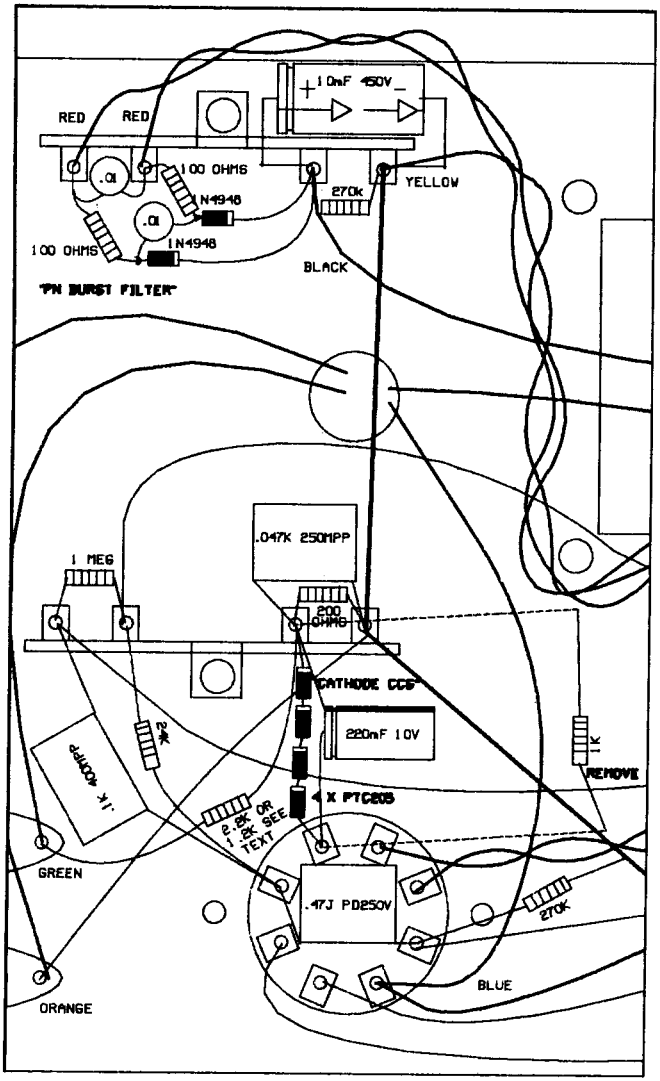
"Since I came up with this thing, we have S.E.X. in the workshop and S.E.X. in the office all the time. We're even thinking about having S.E.X. in the bedroom, maybe even the kitchen!

"And you should see what's coming! We've been trying S.E.X. with the soon to be available "Ultimate Pleasure" output transformer upgrade, by Magnequest's Mike LeFevre. WOW, it isn't often that you find something *better than regular S.E.X.!*"

*Dr. Bottlehead & Eileen*

*Who's getting S.E.X..?*
*Tony Glynn - Lowther Club of America*
*Mike LeFevre - Magnequest*
*Jennifer Crock - Jena Labs*
*Barry Falcon - Falcon Audio Electronics Ltd.*
*and an orgy of talented audiophiles!*

# S.E.X.tistics




Here's a drawing of parts location of the two mods for the S.E.X. amp. .01mfd caps may be ceramic, should be rated 600v or better. 100Ω resistors should be 1/2W or better. Also, make sure banded end of PTC205 rectifier diodes point toward ground.

What's happening with SEX kits these days?

Here's the scoop.

SEX orders are flyin' outa here, that is, when I can keep all those little pieces in stock. To those of you who have achieved supercool status by ordering a kit, thanks for your patience while we catch up on backorders. Here's some tweaks I've tried:

**sex changes**

This first mod is suggested in the SEX manual.

I put four PTC 205 diode rectifiers in series, which has a total forward voltage drop of about 2.8 VDC (.7 per diode). This assemblage replaces the 1KΩ cathode resistor on the bottom half of the Mu follower in the SEX amp, creating a constant cathode current source to go with the constant plate current source of top half of the mu follower.

An A/B shows the modded amp sounding faster, smoother, cleaner and more real. Feedback seems unaffected. Note that I left the 200Ω resistor in place, replacing only the 1KΩ resistor with the diodes.

The slightly rough edges on horns that I thought was in the Whamos goes away, the midrange punch of the big horns comes up where it should be, it seems like the amps play a bit louder more gracefully. Soundstage seems a bit wider too, and the slight overemphasis of cymbals seems to tone down.

Another fin well spent.

Next I incorporated the 'simple RC filter' circuit demonstrated by John Camille in *Sound Practices* issue 7, which supposedly cuts down the solid state rectifier 'pn burst' noise. This consists of two .01μF caps across, and two 100Ω resistors in series with (between the caps), the power trannie secondary, just ahead of the rectifiers. A bit more smoothing yet.

These are very subtle improvements, but the combined effect is an audible one. We'll probably come up with an upgrade 'kit' for you SEX owners real soon.

By the way, I also tried bypassing the 220 mfd and 100 mfd cathode bypass capacitors with .1 mfd polypropylenes. While I didn't hear any change, I measured a slight *decrease* in top end response. Don't ask me why. Suspect the .1 across the 220 mfd cap worked in series with the .047 bypass in the feedback loop and changed the low pass cutoff frequency. Took 'em out.

Here's some data for you data eaters who want to use other drivers besides the 16Ω SEX speakers:

*stock SEX amp*

| | 8Ω load | 16Ω load | |
|---|---|---|---|
| **gain** | 10.58 dB | 12.48 dB | (10dB neg feedback) |
| **top end droop(-3dB)** | 9kHz | 15kHz | |
| **bottom end droop (-1dB)** | 22.3 Hz | less than 20Hz | |
| **THD at 1kHz** | | | |
| 1W | 3.38% | 1.67% | |
| 2W | 11.16% | 2.6% | |
| 3W | | 5.55% | |
| 4W | | 37% | |

So, on paper, it looks like the output trannie gives only a 16Ω, 2-3W output, although Tony Glynn says his works fine into his 8+ Ω silver PM6As.

Now if we strap two amps together watch what happens:

*Strapped SEX amps (amps in bondage)*

| | 8Ω | |
|---|---|---|
| **gain** | 10.98dB | (10 dB neg feedback) |
| **top end droop(-3dB)** | 16.4kHz | |
| **bottom end droop (-1dB)** | less than 20Hz | |

**THD at 1kHz**

| | |
|---|---|
| 1W | 1.3% |
| 2W | 1.98% |
| 3W | 2.5% |
| 4W | 3.33% |
| 5W | 6.25% |
| 6W | 12.05% |

Now we have an 8Ω compatible system that has about 4-5W output, better HF response, and lower distortion than the single 16Ω amp.

Tony has decided to go with a pair of strapped SEX amps for his system.

HOT scoop. Am working with Magnequest's Mike LeFevre to come up with a reasonably priced, tapped output trannie upgrade to the SEX kit. Trannie specs? Let's just say that this would be the most correct replacement currently produced for the blown trannie in your WE 91!

Here's some preliminary data:

*SEX with "ultimate pleasure OPT"*

| | 8Ω tap | 16Ω tap | |
|---|---|---|---|
| **gain** | 17.68 dB | 21dB | (2.5db neg feedback) |
| **top end droop(-1dB)** | 24.5 kHz | 25.4 kHz | |
| **bottom end droop (-1dB)** | 24.5 Hz | 24.5Hz | |
| **THD at 1kHz** | | | |
| 1W | 2.08% | 1.96% | |
| 2W | 3.06% | 2.83% | |
| 3W | 3.84% | 3.61% | |
| 4W | 4.59% | 4.06% | |
| 5W | 7.56% | 5.7% | |
| 6W | | 12.9% | |

So now we see way more gain, bitchin' HF response, and power and distortion figures similar to the strapped SEX amps, all in a single amp, with less NFB. Sound is a bit different than strapped amps, softer bass on 8Ω tap, but gets very similar using the 4Ω tap, more lower midrange, a bit laid back in the upper mid/lower treble, *very* clean top end. Will give price/availability info in the future.

## whamostuff

Last month I noted the hump in the impedance curve of the Superwhamodynes! of about 15Ω at 5.6 kHz. This is caused by the gap I created in the crossover, which contributed to the Whamo's smooth vocal reproduction, compensating for the forward upper midrange/lower treble you get when running some poor little flea power amp too hard.

The new Magnequest trannies I am trying with the SEX amp smooth out this harshness I found around 4-6K (in all the other amps I used), so I lowered the tweeter crossover to a 4.5 mfd cap, with the .36 mH choke on the mids remaining unchanged. This removes the "distance" the Whamos exhibit in voices, saxophone and piano.

I also tried to bring up the mids as well as bringing down the tweet, by using a .22 mH choke on the mids with 3.5 mfd on the tweet. This sounded a bit more 'big tone', but the mids get honky when pushed past the beaming frequency of around 4kHz.

With the first combo the impedance peak goes down to around 9Ω, at 3.55 kHz, making the ultra smooth impedance curve even smoother.

Still playing with stuffing the back chamber of the subwoofer too. 1 lb. of fiberfill, instead of the 1/2 lb. I mentioned last month, may tighten and even out the bass response even more, particularly with zero feedback amps. Compared to some horn loaded cabinets sitting in the shop right now, the Whamo subs are like lightning, even with 1/2 lb of fiberfill. Gill Loring, who was the originator of the slow bass beef, pronounced bass speed fixed with the last mod.

By the way, yes, the Whamo woofer baffle sits sideways in the box, and the woofer fires sideways, into the vented chamber. It's mounted toward the back of the cabinet. I did this with the idea of cutting down the high frequencies escaping through the port.

## letters

### fisher king on QUAD

Dan -

In light of the current QUAD electrostatic articles, I thought I might share a trick for replacement of filter capacitors on the QUAD II amp.

Because the QUAD II is a very compact design, there is little in the way of unused space under the chassis. This can create some problems when rebuilding.

The QUAD II uses a two section 16 mfd capacitor that is attached to the side of the amp chassis using screws. The capacitor is a gray box with three screw terminals. It kind of resembles an oil capacitor, but this is not the case. There is no cosmetically equivalent replacement.

At some point, someone (I can't remember who) mentioned to me that the box can be opened to allow replacement of the capacitor, maintaining the original look under the chassis after completion of the work.

Here is how it is done:

1) Remove the capacitor "can" by unscrewing the connections and the mounting screws (this will also remove the plastic QUAD logo from the outside of the amp.

2) Using a soldering iron and a solder "sucker", unsolder the three terminals.

3) Using a SHARP utility knife, carefully cut through the solder joint around the perimeter of the box. This isn't too hard, if you are careful you won't mess up the paint or bend up the sheet metal box.

4) Remove the top of the box. This exposes the capacitor inside the box, which, lo and behold, is atwo section aluminum can type capacitor about the size of the "twistlok" capacitors commonly seen on American equipment.

5) The capacitor is glued into the box with either black potting compound or beeswax. So, put the box in your oven at 150 degrees for about ten or fifteen minutes. This will loosen the capacitor enough to allow its removal. Remove the can from the oven using your acoustically corrected oven mitt and pull the capacitor out using pliers.

6) Now that you have an empty box, wire up a couple of capacitors of your choice to replace the original two section capacitor and solder them to the terminals on the cover. You should have plenty of room in the box. I did find that fancy polypropylene caps were too big.

7) Slide the cover/capacitor assembly back into the box flush with the top edge of the can.

8) Using a healthy soldering iron (i.e. gun, the tool of choice on the editor's bench) carefully solder the cover back on the can.

9) Reinstall the rebuilt can back in the amp. When you are done the repair

should be almost unnoticable.

Good Luck,

Eric L.

(whacked out neurotic obsessive compulsive vintage audio component collector -- I hear the first step is to admit you have a problem -- my only problem is I can't find an SA-1000!)

**brainiac - sensitive or efficient?**

Dan-

Just a note before I go on vacation -

there seems to be some confusion in your Whamodyne article (great article, by the way - well written and clear, no nonsense) about sensitivity, efficiency, and series parallel wiring. The same confusion shows up every year or two in the Speaker Builder letters column.

The basic problem is that speakers are rated two ways - dB per watt and dB per volt (actually, it's usually 2.83 volts, which would be one watt if the speaker were actually 8 ohms). Efficiency is dB/watt, sensitivity is dB/2.83 volt - all at 1 meter anechoic of course.

Most often speakers are measured at 2.83 volts but quoted as dB/watt, which gives low impedance designs an edge in the ads.

Here's a table for Whamo/S.E.X. drivers:

| | | | |
|---|---|---|---|
| **1 driver** | | | |
| | 8Ω | 90dB/w | 90dB/2.83V |
| **2 drivers** | | | |
| series | 16Ω | 93 dB/w | 90 dB/2.83V |
| parallel | 4Ω | 93 dB/w | 96 dB/2.83V |
| **4 drivers** | | | |
| series | 32Ω | 96 dB/w | 90 dB/2.83V |
| ser/par | 8Ω | 96 dB/w | 96 dB/2.83V |
| parallel | 2Ω | 96 dB/w | 102 dB/2.83V |

As you can see, the observed 96dB/w sensitivity/efficiency of the Superwhamodynes is exactly what theory predicts. When I claimed 96 dB for my "Lumberjack" 2 driver speakers, that's sensitivity at 4Ω - efficiency is actually 93 dB/w ( to be honest, it's more like 92 dB/w - those pioneer drivers aren't as hot as they advertised!)

Paul Joppa

*OK bub, I get your message. I mean efficiency when I talk about this stuff, because I always adjust the drive voltage to equal one watt at the given driver impedance. $P = V^2/R$, so for the Whamo towers only (8Ω), I measured 96+ dB at 2.83V into 8Ω, or 1 watt. For the whole system, at about 4Ω, I use 2V, and for the 16Ω S.E.X. drivers I use 4V. Why?*

*Because for a given input voltage (volume setting), the output voltage of my amps seems to settle to roughly the same output power for drivers of different impedances, as long as the amp can easily push the current required to run the speaker. If you hook up a 16Ω S.E.X speaker on one side, and an 8Ω Whamo tower on the other side, on the same output taps, you will hear about the same level coming out of each speaker.*

*Now as for the part about no nonsense, listen here:*

*I put a little nonsense into everything I do,*

*without a little nonsense,*

*writing smells like week old stew,*

*so don't tell me that no nonsense is the bestest way I write ,*

*or I'll lay my pen upon the desk and raise my fists to fight!*

*Dr. B.*

**Russian 7199's**

I have checked out 36 x 7199's from Sovtek. Installing them in ST-70's and checking out the scene shows a lousy nulling waveform when checking THD

@ 1 kHz. You can only get up to about 15-25 watts for a half decent sine wave out. Either they're bad 7199's or not 7199's - pity. Heater - cathode hum is also quite prevalent.

Cheers for now,
Barry Falcon
Falcon Audio
Electronics

**full waves and monovalves**

I think that I've developed this kinky attraction to full-wave bridges... seriously, you need to try out a full wave bridge of 6X5's with a low DCR choke filter. Perhaps I'm losing it, but this is the best sounding set-up I've heard! A few candidates for use in a single triode SE amp:

| | **WE 437-A** | **8108/ EC157** |
|---|---|---|
| Fil voltage/current | 6.3/0.45 | 6.3/0.735 |
| plate voltage/cur. | 160/36.5 | 180/30 |
| grid voltage | R(k)=262 | -2.8 |
| plate resistance | 980Ω | 1200Ω |
| transconductance | 46k | 18k |
| amp factor | 41 | 43 |
| grid-plate capac. | 3.8 | 1.4 |
| SE Class A output | 1.1W | 1.1W |
| plate dissipation | 7W | 12.5W |

Both should work fine with the standard 2.5K to 3.5K SE primaries that everyone sems to offer. Arthur Loesch was telling me the French are nuts about using a single WE 437-A amp with Altecs. Plate dissipation figures for the 8108 are less than half of the rated maximums (this is straight out of the GE book); you might be able to squeeze two whole watts out of this sucker!

Jim Dowdy

## dinkin' around

*Okie doke, here's a tweak that may be a crock theoretically, but seemed to produce subtle improvements in my system - you be the judge...*

*(infra)red light, green light*

Stopped by Nuts About HiFi to return the C-J PV12 they kindly loaned for comparison with George's killer preamp.

Gill and I were listening to the big Krell CD player (KPS 20i) when I remembered to look inside and count the LED's.

You see, Krell does their own version of the green paint on the edge of the disc tweak, by putting a row of ten green LED's on each side of the compartment the disc sits in.

Lightbulb over my head (well, of course, my head always looks like it has a lightbulb over it).

I hies me down to Raydeau Shaque and gets me two of the giant economy size industrial strength green LED's. Their combined output should be about the same as the combined output of the twenty rectangular LEDs in the KPS-20i.

In series they need about 5VDC. How convenient.

I mount one on each side of the transport tray in my middling cheap Onkyo DX-1400 with tube output, beefed power supply, shielded digital chips, and lots 'o' damping (plumber's putty), so that they point at the edge of the disc when it's sitting on the spindle. I wire them in series, then I run wire to the 5VDC regulator.

Hey, things are smoother... Subtle, but that slight "aliasing" sound, like a cheap computer sound board makes, seems gone on the vocal passages where it used to occassionally crop up. Apparently the green light mixes with the reflected infrared of the laser, that bounces around in the plastic of the disc, somehow making it less apt to trigger errors in the reading of the infrared reflecting off the 'pits'. My guess is it masks the low brightness reflected infrared by creating a green 'noise floor'.

Shall incorporate this into the CD mod I'm developing for publication later this year, once I feel like it's 'right' (having a little trouble with grid overload in the high gain mu follower I'm using). For a fin this mod is worth trying.

Gill came by a couple weeks later with two identically pressed CDs. One had been treated with Victor Tiscareno's Audioprism CD Stoplight, the green paint you put on the edge of CDs, which is supposed to *absorb* the reflected infrared.

Gill said that he had tried the two discs on several different CD players, and the cheaper the player, the greater the improvement produced by the disc treated with CD Stoplight.

We tried the two discs in the greened Onkyo and got a surprise. A definite difference, but the green painted CD was harsher!

Gill reported later that there was almost no difference between the two CDs in the greened Krell.

Soooo, adding green LEDs to your CD player may not be the thing to do if you have already invested in a CD Stoplight pen.

Those of you who are shy of getting into your CD player might want to try the green pen. But if you read VALVE, you're no girly man, and some weeny little black box CD player should have you running for your screwdriver, your soldering iron, some green lights, and a six pack!

I know, I know, you wish I had put a switch in so I could turn the lights off, A/B the mod with and without the green painted disc, and tell you the absolute best combination.

Well, you'll have to do that when you mod *your* CD player, and then you should write to VALVE and tell everyone your findings!

Dr. B.

## it just figures

Been getting lots of phone calls from youse guys letting me know that the tweeter recommended for the Superwhamodynes is not listed in the current (#37) MCM Electronics catalog.

Not to worry. I called Melody at MCM and was assured that there are several hundred distributed between Ohio and California.

The deal is that MCM carries 80,000 items, and occasionally an item gets bumped from the catalog to make room for new products.

So there should be plenty around for those of you who are going to build yourself a pair of Whamos.

Just for the heck of it I ordered a similar tweeter, number 53-410, to try as a substitute. I had been toying with subbing this tweet anyway, as the diffraction lens may smooth the slight zing that the 53-325 has. It appears to use the same magnet and dome/voice coil. Hopefully the 1 dB less sensitivity will not be too noticeable.

Will let you know if I hear any difference, if and when I get time to try it....

Bottlehead

P.S. When you call Melody, be sure to congratulate her, as she's just back from her honeymoon!

### late breaking news -

Just found out the the Pacific NW Audio Society is talking about having an under $100 homebrew speaker contest. They're considering dividing into two groups to compete.

Why don't we offer to compete as another group and show those tire kickers how it's done? I will call PAS president Ron Jandrasi and throw down the gauntlet. Oh Melody.....

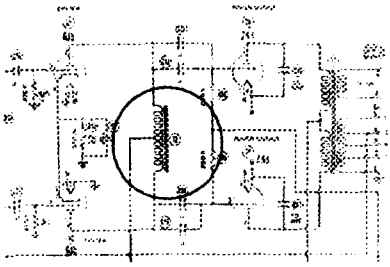
## phone calls to Philly

Mike Lefevre tells me he lusts after the Marantz T-1, which he heard recently at the Stereophile show.

He also tells me that the latest fetish in Philly is the Altec output amp that used 813s. Dug through the Altec schematics that Crazy Eric gave us, but didn't find it. Will dig further.

Here's the real cool dirt - Remember the meeting at Classic Audio where we listened a bunch of homebrew triode amps, and were then blown away by the sound of Radio Steve's Brook 12?

A bunch of us turned the amp over afterward and were dismayed to find that we couldn't copy the design, due to an unobtainable center tapped choke which loads the plates of the driver tubes in the circuit. (see the April '95 issue)



Guess what! Mike can make these! He says he'll send us a pair with the agreement that we design, build, and publish a good application for them, so get designing.

Mike also has a neat line driver design with the following specs:

20k, center tapped primary

20 ma max current

inductance - single ended, 50V in - 80H!

push pull, 5V - 750H!

push pull, 10V - 870H!

Sent Mike a pair of 71As to try with these. This could be the line stage output trannie you've been dreaming about.

## cravings

I can't believe nobody wants my MkIII's particularly in light of Eric Barbour's SV811 amp article! Maybe I'll just keep 'em. C'mon, call me and talk me out of them for $300 plus shipping.

Triophoni - My PP 6CK4 monoblock amps are for sale. Beautiful finish, with cages, beautiful sound, 15 wpc. $600, with spare tubes, plus shipping.

Pair Newcomb P60 amps. PPP 6L6GC's, 60 wpc monoblocks. All triode (6J5) input. Brown. Missing covers. Look ugly, sound good. $150 plus shipping.

**I WILL PAY $3.00 EACH FOR GOOD 6DN7, $1.50 FOR GOOD 6ER5 TUBES!**

Dan, 360-697-1936.

**Wanted:** manual/schematic for Scott LK150 and a copy of Eico HF30 manual; still wanted - Lafeyette KT-400

**Free:** Electrovoice Aristocrat cabinets - you haul

Ed, 360-678-7414

**For Sale:** Pair Heathkit W3s in restored working condition, $400. Need a pre-amp? I have the super sleeper Heathkit SP2 to go with them.

Crazy Eric, 360-871-5921

**I buy and sell tubes: transmitting, industrial, all kinds.**

Steve Harrell

1179 Boylston St. #30

Boston, MA 02215

voice 617-247-0672

fax 617-730-8449

## july

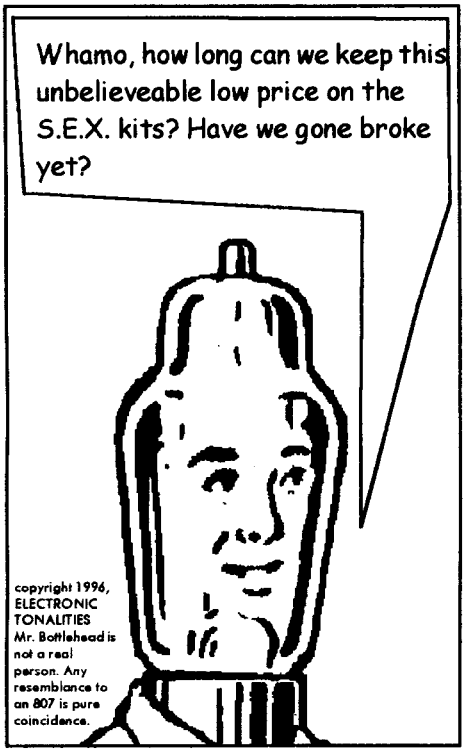
We'll meet at Electronic Tonalities, Sunday July 14, 12 noon (come earlier, if you like).

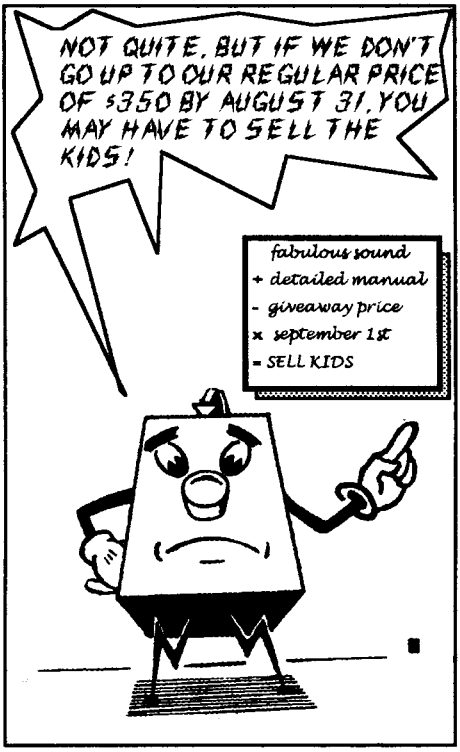
I will demo the cool Lowther tweak I've devised, with my PM6Cs running in John Carey's cool looking Acousta cabinets.We'll discuss plans for a tapered pipe enclosure we're cooking up for the Lowther drivers too. Also, a new crossover for the Whamos, as well as the awesome Magnequest "Ultimate Pleasure" output transformer upgrade for the S.E.X. kit. John Carey may bring up his improved Baby O's as well, sporting a recent conversion to mu follower and constant current cathodes.

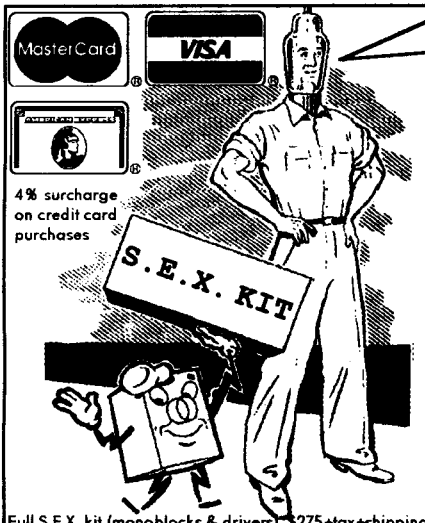
Please bring anything else you might like to show off, and some good (new and different!) software.

We also need some ideas for future meetings. Come with an idea of what month you could host a meeting, and what you need to get ready, and we'll try to organize some sort of calendar for the rest of the year.

How about a 'concours d'elegance' for restored vintage gear? Would youse guys like to have a show off of your best toys? Maybe we could borrow Nuts about HiFi for an evening, or a Sunday.




Please folks, I implore you! Get your S.E.X. kits soon, or I'll have to charge you more in order to keep from losing my children! We've sold most of our first production run, and we can't afford to sell many more at these prices. Order by August 31, 1996 to get the special prices of $275 for the full kit with drivers, or $245 for the 'amps alone kit. In September prices will go to $350 and $320 respectively

"I can't believe how good this sounds, more so when you factor in cost. What a great kit for a beginner to SE. I compared to a famous $3600 commercial product and could not tell the difference."
*Tony Glynn, Lowther Club of America*

Full S.E.X. kit (monoblocks & drivers), $275+tax+shipping&handling - "Amps alone" kit, $245+tax+shipping&handling (These are special *Subscriber Prices*) Assembly manual available separately for $10, refundable with purchase of either kit. Call Electronic Tonalities, 360-697-1936 to order, or for more info. See page 10 for more info.