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A Guide to the
1976 DETROIT HI-FI SHOW
and Super Disco
February 13-15 · Cobo Hall, Detroit



AN INTRODUCTION TO THE SHOW: How to find your way among the myriad exhibits, the disco, multimedia presentations and free electronic testing. Also some background on this year's event. Page 5.

SHOW MAP AND LIST OF EXHIBITORS: Page 7.

A CONSUMER'S GUIDE TO STEREO SURVIVAL: How to survive the component jungle and come out on top. Page 11.

SMOKEY BEARS AND THE CITIZEN'S BAND: An expert reports on the latest electronic craze. Page 13.

A GLOSSARY OF HIGH-FIDELITY TERMINOLOGY: To help guide you through reams of technical jargon. Page 17.

HOW TO TELL YOUR CONNECTIONS TO HISS OFF: Silencing hum. Plus some basic tips on setting up your system. Page 19.

Audioland

Today a good hi fi system is a necessity. Only a great one is a luxury.

Talk to anyone who owns a good hi fi system and you'll be talking to a believer. Someone who'd give up the TV, the toothpaste, the morning oatmeal before giving up his hi fi. That's not just the guy with four walls and a mattress. That's just the way it is when you let the good vibes entertain you, life you, expand you. It beckons the imagination into visuals TV can never hope to achieve. It rocks the socks off of rockers, unfurls the brow of progressives, reveals the soul of Brahms, Beethoven and Bach. Without it the movie theatre would die. With it, your money's buying a better slice of living.

When to buy Hi Fi

In general the people who buy hi fi fall into four categories. (1) Those who buy it just to have it. Like keeping up with the Jones's. (2) Those who dig electronics, the why and wherefores, the mechanics, the tinkering, the dynamics of its advancement, the capability hi fi affords in the controlling great magnitudes of range, tonality and texture. (3) Those who like music, and (4) Those who are a combination of 3 and 1 and 3 and 2. The common denominator: liking music.

But most of us will admit to liking music, at least a certain kind of music. You must like your music so much that you really want to experience it. You want it to fill your mind as if the music was being performed in your head. When that's your like of music, that's when to buy hi fi. There's no need to wait for sales or what you think is a right price. At shops like Audioland, the price is always right.

When not to buy it? When you just want a nice piece of furniture that fills in with background music.

How to buy

If you're just getting into hi fi, this may be the first major leisure purchase of your life. Be thorough. Talk to the right people. Don't get ripped off. Understand going in that there isn't much difference in prices of relative products from one store to another. Think twice about offerings of discount, because in hi fi the price a dealer sells for is the price, the going price. Any higher price from which a discount is claimed is dreamed-up phoney balony. It doesn't exist. Also realize this: Great sound can take you over like everlasting Spring fever. Liking it turns to loving it. So maybe you should buy to allow for upgrading your system. Figure how much you want to spend now and deal with someone who has the necessary equipment selection and desire to satisfy your wants.

What to buy

A component system generally consists of a pair of speakers (four for quad), a receiver, and a turntable with a stereo cartridge. What you buy should depend on how much you want to spend on the whole system and the sound you'd like to get for your money. The worst you can do is to end up with a mismatched system. Better to start with a dealer franchised to sell a great variety of quality components such as Audioland. Below are some of the brand names we carry:

Electronics

Akai, Ampzilla, Burwin*, Pioneer, Marantz*, Sony, Sansui, Kenwood, Sherwood, Spectro Accoustics*, Phase Linier, Meteor*, Crown*, Concord, Infinity*, Sound Craftsman, Accuphase*, DBX, JVC, Superscope, Dynasco, BSR, Sequarra*, and others.

Speakers

Akai, Pioneer, Marantz, Sony*, Meteor*, Infinity*, Superscope, RTR*, Micro Accoustics, Accoustiphase*, BIC Venturi, Fisher, Crown*, Design Accoustic*, EPI, Ultralinier, Genesis*, Utah, CTS, Tannoy*, KLH*, Electrovoice, Dynaco, and others.

The speaker is the thing

The component that makes the biggest difference in the sound is the loudspeaker. It also makes a difference in how much you spend for your system. How many times have people been dissatisfied with the sound of their system, because they didn't consider the speakers first! After the fact, they come in to Audioland for help only to find that the sound they really want is from speakers requiring more power than their electronics can deliver. It happens time and time again. And the reverse is true, too: Getting the sound you want but paying for electronics that are far more powerful and expensive than the speakers can ever use. Speakers must be compared, two at a time, never three, because hearing has no memory. Listen in a sound room to the speakers first and you're sure to get your money's worth in an entire system. One speaker you won't want to miss is Infinity.

Infinity speakers are made in California. The first speaker built by Infinity was the Servostatic 1 and cost \$2000. Fantastic, wonderful speaker. But \$2000? Please Infinity put your genius into something affordable, we pleaded. And they did. Now they offer speakers from \$100 to \$450 as well as a new Servostatic 1A. In every price range, a super speaker for the money. An exceptional value: The New Infinity 3000J. A very high efficiency, 12" 3-way system, it requires relatively small amp power, but will also handle 125 watts RMS with no problem.



Bill Bendler, unknown author, poet, radio, TV and screen personality and friend of Audioland describes the hi fi experience:

"Think of the universe. From earth all the heavens appear as a continuous splattering of stars within touching distance of each other. Low fidelity music reproduction masses notes and instrumental qualities in the same non-spacial manner. The music, like the stars, is "out there" removed with no movement between you and it. Hi fidelity, however, as an astronaut hurtling at the speed of thought, places you among the notes and beats and your awareness of distance between them is something like feeling free.

Turntables

Garrard, Dual, BIC, Tannoy*, Sony, Pioneer, Marantz, Kenwood, Sansui, BSR, Lenco*, Stanton, Miracord, Thorens, and others.

Tape decks

Téac, Dokorder, Revos, Crown, Tanberg, Sansui, JVC, Kenwood, Pioneer, Marantz, Sony, Tascam, Akai, and others.

Cartridges - Over 100 different kinds

Car Stereo and tape units—A wide selection in all price ranges.

*exclusive or semi-exclusive

What's best?

How can there be agreement on what's best, when what's best is that which is right for you? All manufacturers are trying to build the best—for the money. You have to judge the compromises, the cost, and with a little help from a friend (Audioland, we hope) you'll have the best. Accuphase electronics, for instance. Stereo Review and other hi fi publications rate Accuphase tops. It not only looks and feels like pure "state of the art," but it outperforms most test equipment. We can find no corners cut and you know it because of a 5-year unconditional guarantee. Expensive but extraordinary.

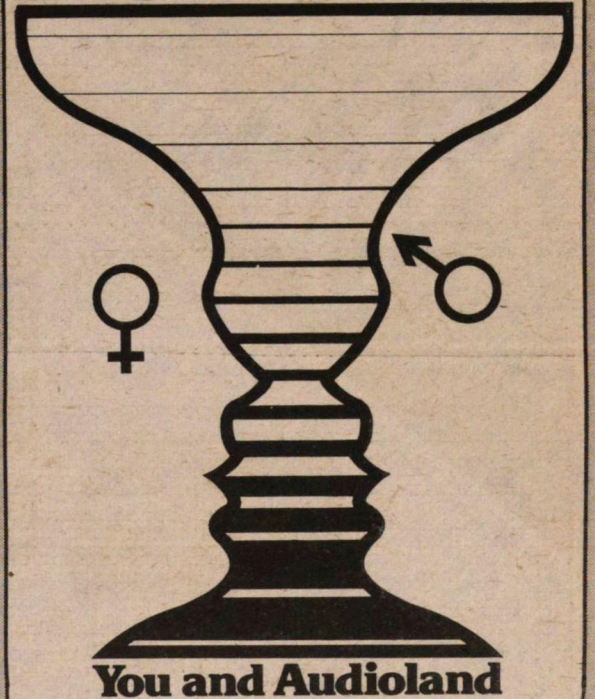
\$300, \$3000 or somewhere in between?

What price to pay usually depends on how much one can afford. But even if you were King Midas himself there's no point spending more than it takes to satisfy yourself. Toward this end, manufacturers have been progressing at a fast pace building good sound into lower priced components. Up until a couple of years ago, it took \$800 to match a good system. Under that, musical parameters weren't perfect. Today, a good system can cost a lot less—even at \$300, the system on the opposite page is not bad, not bad at all. There are significant improvements in the better systems between \$550 and \$900, such as increased power handling capacity and spatial relations. Just remember—whether your bracket is around \$300 or \$3000, you'll get your money's worth for every dollar you spend at Audioland.

CB — Alive and well

You might say, the country's gone CB crazy. In December of '75 alone, over 400,000 people applied for CB Citizen's Band radio operators licenses. And that number can't be half of the actual number who bought CB units for their cars and homes! If you're next, you might want to know that Audioland has sold and serviced CB rigs for 10 years. And at the Detroit Hi Fi Show you'll find the largest display of CB equipment ever assembled for public consideration. Mercy. Mercy. Audioland's got the goods, ready to go. Up. Up. And away.

IT TAKES TWO TO STEREO



Audioland Matched Detroit Hi Fi Show System Specials

A matched system is the key to a good value. In arriving at the three matched systems here, each component was included for its relative values and reliability records. All things considered, it is likely one of these will lie in your price range and turn it on for you. You'll only know if you listen.



\$300

Kenwood KR 1400 Stereo Receiver. Selected for its outstanding FM performance and reliability and it's a few dollars less than other receivers with like capability.

Garrard 440M Automatic Changer. This is a new economy model from the British. Manual or automatic cycling. Includes base, cover, Shure cartridge.

Accoustiphase Micro Speakers. You may not have heard of this speaker yet, but you will. There is no other speaker near its price that comes close to its performance.



\$600

Kenwood 3400 Stereo Receiver. This is the "best buy" receiver. Not only does it offer features and power of higher priced models, it looks great.

BIC 940 Belt-driven Changer. Our largest-selling record playing device. Outstanding and includes base, cover, AT125 cartridge.

Infinity 3000J Speakers. An exceptional value. A very high efficiency 12" 3-way system requiring small amp power, but will also handle 125 watts RMS with no problem.



\$1000

Pioneer SX838 Stereo Receiver. A true power house receiver. Some of the best FM performances we've seen in a receiver.

BIC 940 Belt-driven Changer. No wonder it's our largest selling changer. It goes with anything to do everything a great changer should.

Infinity Columns. At Audioland, we believe these to be the very best speaker for most people. Not usually found in a system of this price, a bargain indeed.

What's an Audioland?

It's a place that's in many places. It's a belief that for you to get the most for your hi fi money, you must have service and a vast product selection. It's a concern that you will never pay more than the lowest going price. It's knowing that anything less than quality or product is that much less satisfaction for you. Audioland is a hi fi shop that began as

one, on Gratiot near the Metro Parkway and now is six going on seven. Audioland is employees most of whom came into Audioland as customers. Audioland is hi fi, home or car, stereo or quad, CB radios, PA systems, and music. Which brings us back to where we began. If you really like music, isn't it time you looked into hi fi at Audioland?

audioland

North Woodward: 4725 Woodward at 14 Mile. 576-1770
Port Huron: 314 Huron St., downtown. 985-7191
Eastside: 36633 Gratiot south of 16 Mile. 791-1400

Ann Arbor: Briarwood Mall. 761-6150
Livonia: 33919 Plymouth Rd. west of Farmington Rd.
Northwest: 8 Mile Rd. at Grand River





Evergreen Electronics

HI-FI STEREO CENTERS

PROFESSIONAL AUTOMATIC TURNTABLES



	REG.	HI-FI SHOW SPECIAL
Dual 1225	139.95	89.88
Dual 1226	169.95	103.88
Dual 1228	199.95	128.88
Dual 1249	279.95	181.88

Come in for our special prices on Base-Cover Cartridge Packages



When you record ordinary things, use an ordinary tape. But when you record music, record on **the music tape**™ BY CAPITOL

BUY 1 GET ONE AT 1/2 PRICE

SUPER QUALITY... SUPER DEAL



\$3.99

- Pick up one of these blank 90 minute 8 track cartridges now, at the regular price... get a second at half price!
- The Music Tape™ by Capitol is high output/low noise formulation for virtually perfect recordings everytime.
- There's no limit while the supply lasts, so hurry in. Now!

BUY 2... GET ONE FREE

Sound Gatherer... Music Giver. 90 Minute Recording Cassette



\$5.99

- Pick up two of these outstanding C-90 cassettes now, and get the third one FREE.
- Extra high output/low noise formulation.
- No limit per customer while the supply lasts... hurry in today!
- Also special Bonus offer on unique cassette storage system.

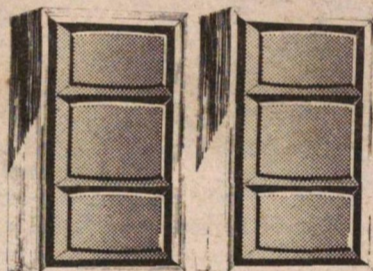
FISHER

- 8-inch woofer
- 2-inch tweeter
- Sculptured grille
- Dimensions--21" H X 11 1/2" W X 9" D

SPEAKER SALE
2 for 1

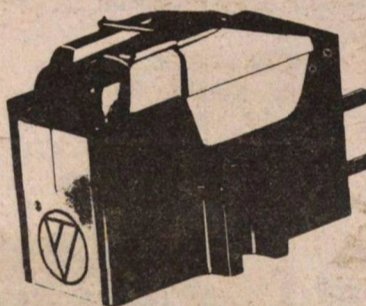
Reg. \$69.95 ea
Limited Supply

2 for \$69.95



audio-technica

Dual-Magnet Phonograph Cartridges



SPECIFICATIONS	AT13E	AT11E
Tracking Force (grams)	1 to 2	2 to 3
Frequency Response (Hz)	10-45,000	15-28,000
Stylus Tip (mils)	.2 x .7 Nude elliptical	.4 x .7 elliptical
Stylus Tube	small-diameter cylindrical	cylindrical
Output at 5 cm/sec (mV)	3.5	4.8
Channel Separation (at 1 kHz)	25	20
Channel Balance (dB)	2.0	2.0
Vertical Tracking Angle	15°	15°
Stylus Guard	Flip-Guard	Slip-On
Stylus Assembly Color	Orange	Green
Price	\$64.95	\$44.95

Hi-Fi Show Prices

\$27.88 \$18.88

Bring your own music.

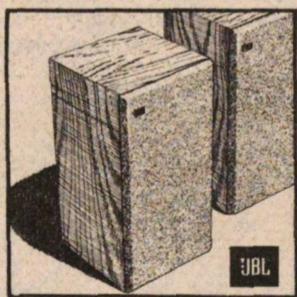


If you're thinking about buying a loudspeaker, think about this: Bring your own music. A favorite record or tape—something you know by heart. There's no quicker, simpler way to tell the difference between speakers. If you've been listening in black and white, you'll know it when you hear Technicolor.

Another thing: AM and FM music are not adequate tests of high fidelity sound. Neither has any really high highs or low lows. They're clipped off both ends during the broadcasting process.

Here's something else to think about: Major recording studios like Warner Brothers, Elektra, MGM, and Capitol use JBL loudspeakers to mix, master, and play back their music. You know why?

Now you're thinking.

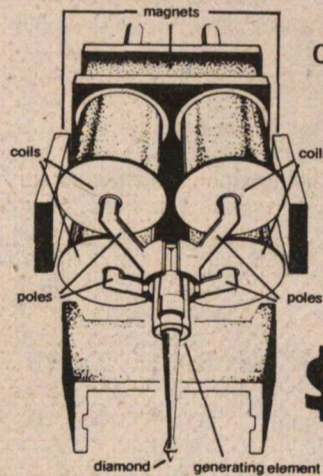


JBL's new Decade 26. Some people at JBL think that this loudspeaker is one of the best two-way systems they make. Three grille colors. Natural oak cabinet. Except for the price, it sounds expensive.

\$156. each

EMPIRE

STEREO CARTRIDGE SALE

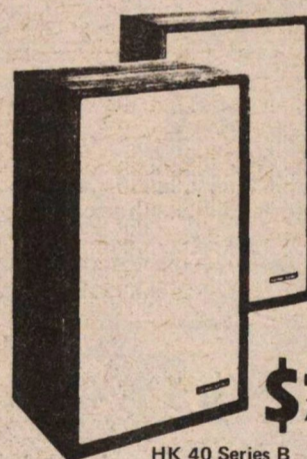


Reg. \$70.00 List

\$19.76

Every Empire long playing cartridge is fully shielded. With four poles, four coils and three magnets (more than any other brand), they produce better balance and hum rejection. In Empire's system, the stylus lever floats free of its magnets imposing much less weight on the record surface than in ordinary magnetic cartridges. This means less record wear and lower distortion. Hi Fi Sound Magazine summed it up very well by calling the Empire Cartridge "a real hi fi masterpiece... A remarkable cartridge unlikely to wear out discs any more rapidly than a feather held lightly against the groove." Covered by one or more of the following U.S. patent nos. 2875282, 3441688. Other patents pending.

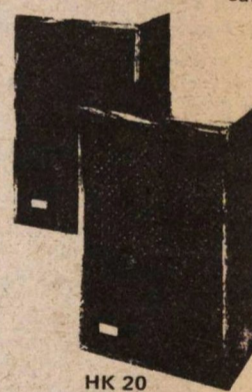
Harman/Kardon High Performance Speaker Systems



HK 40 Series B

The new HK 40 Series B speaker system is perhaps the most linear two-way system ever designed. Neither sweet or deep-throated it has none of the characteristics which, in competitive systems, intrude on the music by adding qualities of their own. The sound it delivers can best be described as "natural." It is a superb system for classical or contemporary music. The HK 40 includes two uniquely constructed drivers mounted in a beautifully finished, rugged air suspension cabinet. The 10" woofer incorporates a magnet weighing one pound and activates an unusually large volume of air. The special tweeter is housed within its own enclosure to eliminate undesirable interaction with the woofer.

Reg. \$60.00
Hi-Fi Show Special **\$38.88** ea.



HK 20

The HK 20 remains one of the most widely purchased speaker systems... and for good reason. Modestly priced, this bookshelf system compares favorably with many large and more expensive units now on the market. When you listen to the dramatically realistic performance of the HK 20, you'll be amazed by the big, spacious sound... the perfectly smooth highs and the full, clean bass. The HK 20 is designed with the identical quality and features of the HK 40—but with a view to saving space. Its 8" high compliance woofer incorporates a heavy magnet structure and its 3" curvilinear tweeter is housed in its own acoustical chamber.

20124 Plymouth
1 Blk. W. of Evergreen
Detroit 272-0450

15651 Grand River
1 Blk. W. of Greenfield
Detroit 837-8380

31606 Grand River
1 Blk. W. of Orchard Lake
Farmington 478-0070

26250 Gratiot
Eastgate Shopping Center
Roseville 775-8860

★ **INTRODUCING THE** ★

1976 DETROIT HI-FI SHOW

Starting Friday, February 13, the third floor of Cobo Hall will begin vibrating to three days of music emanating from a half-mile strip of exhibits at the **1976 Detroit High Fidelity Music Show**.

Sounds will rise from hundreds of component systems and from the Audioland/WDRQ Disco Room, where there'll be over \$50,000 worth of equipment to guide you in a new dance step called "**The Detroit Feeling**."

During your stroll through the show you're likely to run across a five-screen multi-media presentation on the history of recording, as well as opportunities to win free component systems; check out the Citizen's Band radio craze; or have your amplifier or tuner electronically tested free of charge.

Most importantly, you'll have a unique opportunity (which comes only once every two years) to directly compare an enormous variety of "state-of-the-art" equipment in every price range imaginable. Plus, you'll be able to speak with experts, oftentimes the equipment's inventors, about plans you may have to either purchase, refurbish or expand a high-fidelity music system.

THE BASICS

Tickets, available on the main floor of Cobo Hall, are \$2 per person; two-fer tickets are available inside this issue of *The SUN* and several other publications. You can recoup far more than the admission price in the free testing service, copies of publications, and lotteries going on at the show. Children under 12 are admitted free when accompanied by an adult.

Dates and hours are as follows: Friday, February 13, from 5 to 10 p.m.; Saturday, February 14, from 11 a.m. to 10 p.m.; and Sunday, February 15, from noon to 7 p.m. The disco room only will remain open until midnight on Friday and Saturday nights.

THE DISCO

One of the new features of this year's show is the Super Disco operated by Audioland and WDRQ-FM.

A disco at a hi-fi show, you ask?

"A virtue of disco is that audio itself is the star," explains Terry Rogers, who with her husband Robert & Audioland's Chris Stromberg organizes the Detroit show and those in several other cities. "You couldn't ask for a better image-builder for hi-fi, even among those manufacturers and dealers who aren't yet directly into disco sound."

The disco craze has been hitting Detroit with building intensity, as numerous clubs convert to record-spinning hops. Records are often "broken" by the industry through discos in New York or Los Angeles. The scene is developing as a fresh alternative to the tired-out, sorry state of much of radio today.

The Hi-Fi Show's Disco will feature a virtual wall of amplifiers and speakers, an elaborate light show, and disco demonstrations by the Jack Barnes Dance Schools. A new dance step has been created especially for the show, entitled "**The Detroit Feeling**." It will be demonstrated by dancers to a new tune of the same name, written, produced, and recorded by Detroit people and featuring Darius Brubeck.

On-air staffers from WDRQ-FM will MC the disco, and a high point will be a disco dance contest every day of the show, with final competition and prizes awarded to winners on Sunday. The value of the grand prize is \$1,000. The disco is open to midnight on Friday and Saturday, and to 5 p.m. on Sunday. Friday's contest is at 7 p.m., Saturday at 3 and Sunday at 3.

A HISTORY OF AUDIO

The progress of music reproduction from Edison's crude cylinder to the present will be demonstrated on five screens, with slides and sound. The presentation spans 90 years and was devised by Pioneer High Fidelity.

Besides Edison and his machine, viewers will see and hear the big bands of the roaring twenties and swinging thirties, including Benny Goodman, Duke Ellington and New Or-

leans jazz bands. The story progresses to Elvis, the Beatles, the Allmans, and Blood, Sweat and Tears, among others.

The presentation ends with a thrilling example of "state-of-the-art" quadrophonic music, which is well worth hearing.

FINDING AUDIO BUGS

Stereo buffs who wish to find out how well their equipment works can do so free of charge at the show, where ABL Electronic Service of Madison Heights will provide a special laboratory and audio clinic.

ABL specialists will be on hand with fully-equipped devices to provide you with a free audio analysis graph of amplifiers and receivers, and repair advice. They can tell you if your equipment is on the blink, or on its way. This service is generally much more expensive than the price of admission.

EXHIBITORS

The majority of exhibitors at the Hi-Fi show are manufacturers and their representatives. There are several retailers who will be on hand. They are Absolute Sound, Audioland, Radio Shack, ABL Electronics, and Crazy Jack's.

Audioland's display will include the introduction of a new line of Sony video equipment, including a color video cassette recorder with 2 tuners and self-enclosed TV for \$2500, and a super video projection unit which represents a technical advance on previous models. Audioland will also have 50 Infinity high-powered speakers stacked in their room, which should be enough to blow anybody away. Audioland's Chris Stromberg, who is also one of the show's organizers, will have on hand his unique bi-centennial table.

Radio Shack and Crazy Jack's will include in their displays an opportunity to look over and use Citizens' Band radio equipment, the latest and fastest-growing electronic

craze. Due largely to the introduction of the 55 m.p.h. speed limit, retailers have not been able to keep up with the demand for Citizens' Band. (See the article on CB in this section). Crazy Jack's will have over 1,000 CB units on hand.

Absolute Sound of Detroit's East Side is something of an alternative in hi-fi stores, specializing in the upper end of the audio product spectrum. Absolute has brought to Michigan such lines as KMAL, Linn Sondek, Gale, Ampzilla and others not previously available in the state. Their displays will include this out-of-the-ordinary equipment, and a number of distinguished hi-fi engineers and designers. Stopping by their booth will be Saul Marantz of the famous line of components, currently president of Dahlquist Speaker Corp.; Jim Winey, chief designer of the Magnaplaner speakers, and Jacob Turner of Koss Electrostatic Speaker Corp.

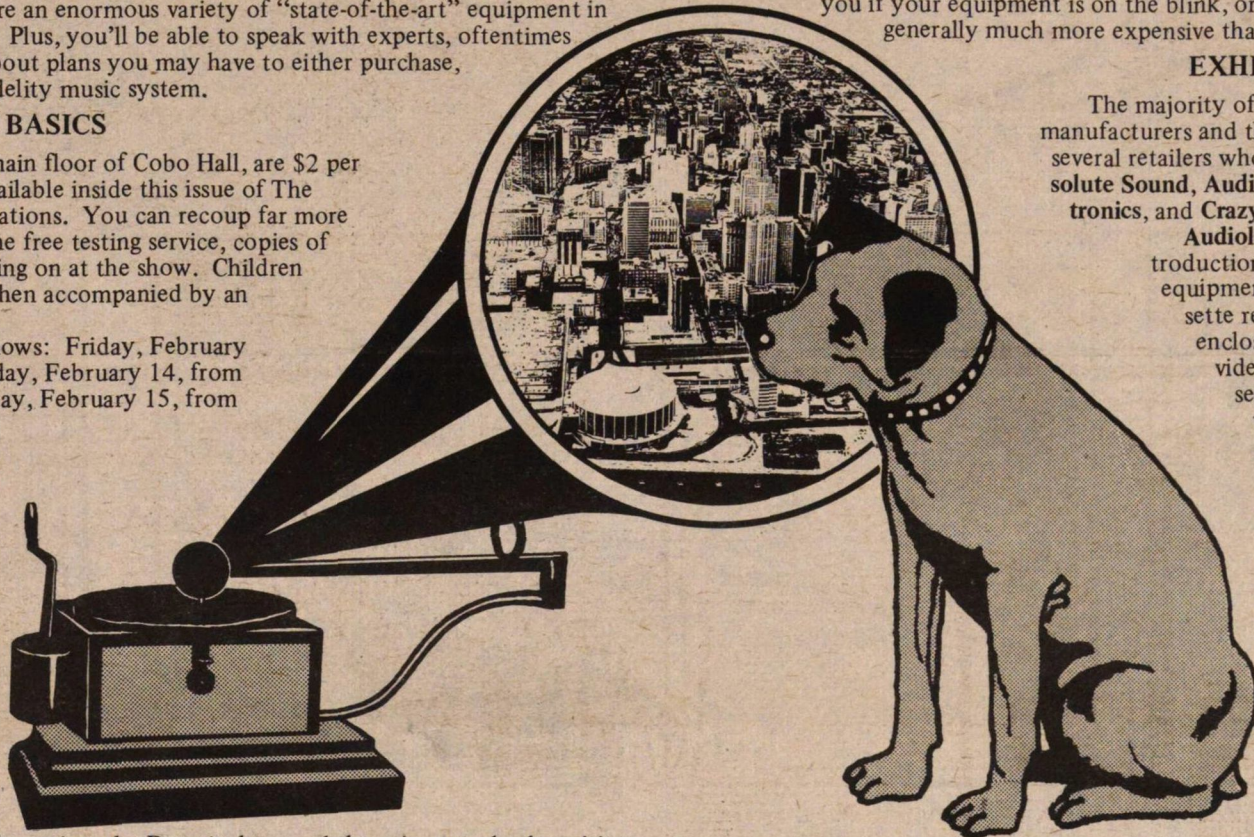
In all, the national brand names represented will include: Akai, Altec, Avid BASF, BIC, Bose, Bozak, BSR, Cerwin-Vega, Dahlquist, Dokorder, Editall, Fairfax, Garrard, Jensen, Kenwood, Koss, Maxell, Panasonic, Pickering, Pioneer, Sanyo, Shure, Sony, Super X, Tandberg, Teac, Technics, Thorens, Venturi, Watts, Wollensak and Yamaha. (For a guide, see page 7).

THE ACOUSTICAL CONNECTION

The third floor of Cobo Hall has been chosen for the show site after careful acoustic considerations. Exhibitors will strive to recreate a living-room environment—which, of course, will be next to impossible, in a true sense.

Despite precautionary efforts, there's bound to be some sound leakage between

continued on page 27



«That Detroit Feeling» DISCO

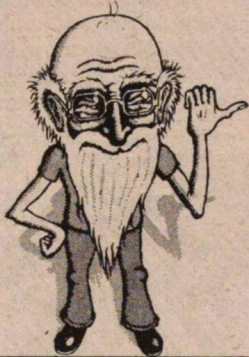
The Detroit Feeling: a new dance created for the Hi-Fi Show by the Jack Barnes Dance Studio. The dance will be demonstrated in the Audioland/WDRQ Disco Room at 7pm Friday, 7pm Saturday and 3pm Sunday. At those times there will be a dance contest, with a grand prize of \$1,000 for the finalists.

1. Stand with feet together — flex knees 4 times.
2. Move left — feet apart — flex 4 times continued.
3. Close right to left on last count.
4. Turn ¼ to the left. Step in place 4 times.
5. Kick right in front — cross right behind — then right left close in original direction.

Disco photos by Leni Sinclair were taken at "The Scene" on Channel 62, WGPR-TV.



You say you don't subscribe to the SUN? Here's what you've been missing!



(Vol. 3 No. 19) Who's behind metropolitan government and what it would mean for Detroit... Ken Kelley interviews Mrs. Hortensia Allende on the coup in Chile... Ann Arbor Mayor Al Wheeler's fight for human services programs... A preview of WGPR-TV, the country's first black-owned television station... Lowman's Westside Club, and the Showcase Theatre.



(No. 20) L. Brooks Patterson, Oakland County's "crusading" prosecutor, exposed... The Langston Hughes Theatre, Detroit playwright Ron Milner, and "Season's Reasons"... The scandals behind Pontiac Stadium... WABX crosses black music off its playlist... New jazz releases from the avant-garde... Detroit's war on HUD's abandoned housing.



(No. 21) A comprehensive look at the Motor City's first two years of black government, including the first part of a three-part exclusive interview with Mayor Young... Assassination and conspiracy experts assemble for a historic teach-in in Ann Arbor... How racism spoils the current efforts to hype Detroit.



(No. 22) Alongside our continuing in-depth coverage of the 10th Precinct Conspiracy Trial, a hard look at the relationships between police, heroin pushers, and the media... A rap with the Isley Brothers... Stadium rock and its impact on the local music business.



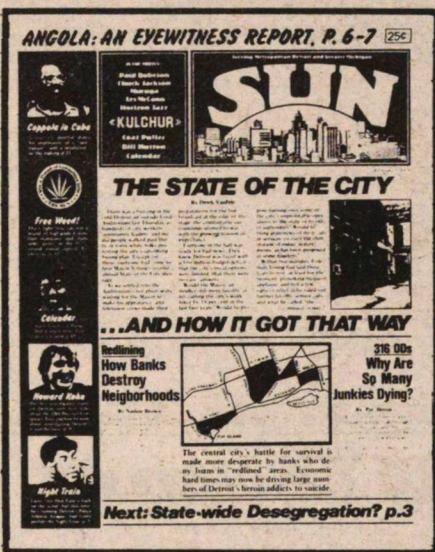
(No. 23) An exhaustive analysis of New York City's fiscal crisis and its portent for Detroit and other major cities... With our interview with Jimmy Cliff, a portrait of the Motor City's Caribbean community... Hanky-panky in the state budget, and how Wayne and the U of M are feeling it... A report on the Bob Dylan "Rolling Thunder" revue.



(No. 24) Part I of our exclusive interview with UAW President Leonard Woodcock on the progressive possibilities in the Democratic Party in '76... The Kulchur staff picks its candidates for "New Stars of '76" from the cream of local talent... The return of Kim Weston... Gamble and Huff, black music's hottest producing team.



(Vol. 4, No. 1) A special report on the SLA and the government agencies behind it... Incompetence in the 10th Precinct prosecution... Farewell to Hound Dog Taylor... Michigan's recording studio in the woods.



(No. 2) The Mayor's State of the City address... Interview with investigative reporter Howard Kohn... Godfather producer Coppola's observations on Cuba's culture... Ex-Lions star Dick "Night Train" Lane is back.

PLUS: The Sun's regular features—Ify the Dopester's "Inside Dope"; "The Coatpuller's" roundup of Kulchural happenings all over town; "Hot Spots," bringing you the breaking news nationwide and worldwide with a straight-ahead perspective; "Vortex," our critics' choice of the latest in records, films, books, art, and concerts; Bill Hutton's mind-blowing "History of America" short subjects; and last, but far from least, Michigan's most unique and exciting Calendar of Kulchural events.

Can you afford to miss another issue? If you've had it with the dailies' lame news coverage, all-white cultural outlook, and tired perspective, the SUN is what you've been waiting for. Get in on the ground floor and start picking up on our probing news analysis, challenging investigative reportage, and exciting Kulchur coverage right away!

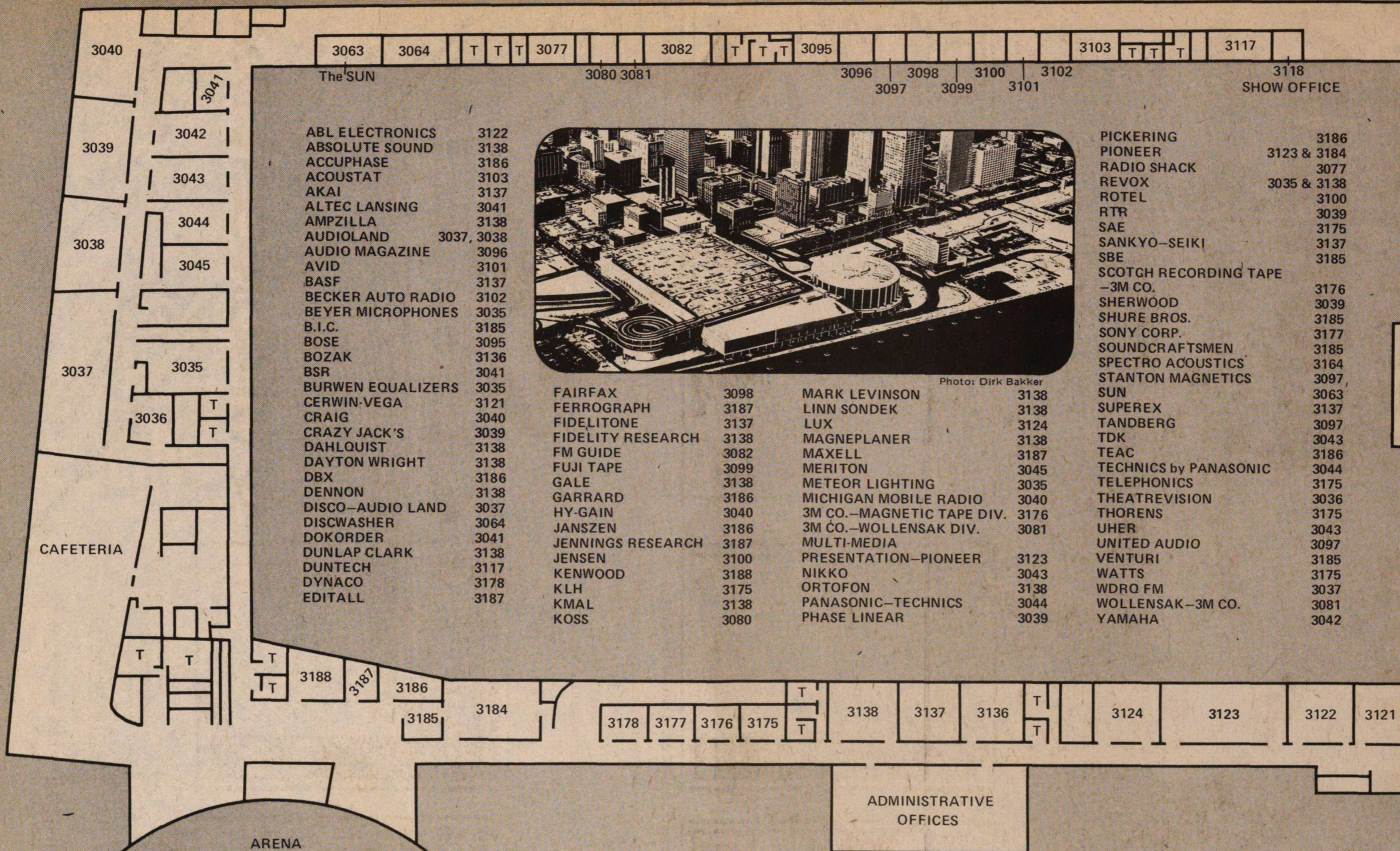
How can you lose?

- Yes! Give me 24 issues of The SUN. Enclosed is \$5.50, for second class mail service (5 days after publication).
- Yes! Send me The SUN for two years at the second class rate. Enclosed is \$10.00.
- Yes! I want my SUN the day after publication. Enclosed is \$14.00 for 24 issues.

Name _____ Address _____
 City _____ Apt. No. _____
 Zip _____ State _____

Send check payable to the SUN, P.O. Box 7217, North End Station, Detroit, Michigan 48202.

WIN A POUND OF COLOMBIAN! See the back cover of this issue of The SUN, now on sale all over town.



- ABL ELECTRONICS 3122
- ABSOLUTE SOUND 3138
- ACCUPHASE 3186
- ACOUSTAT 3103
- AKAI 3137
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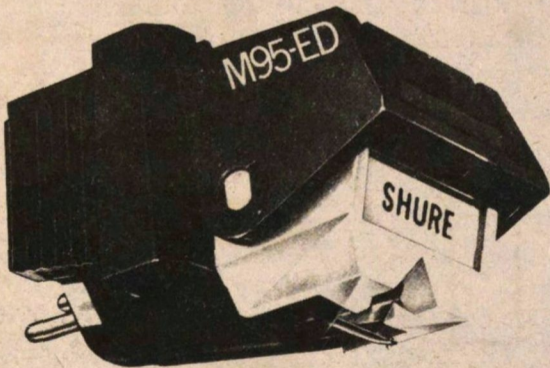
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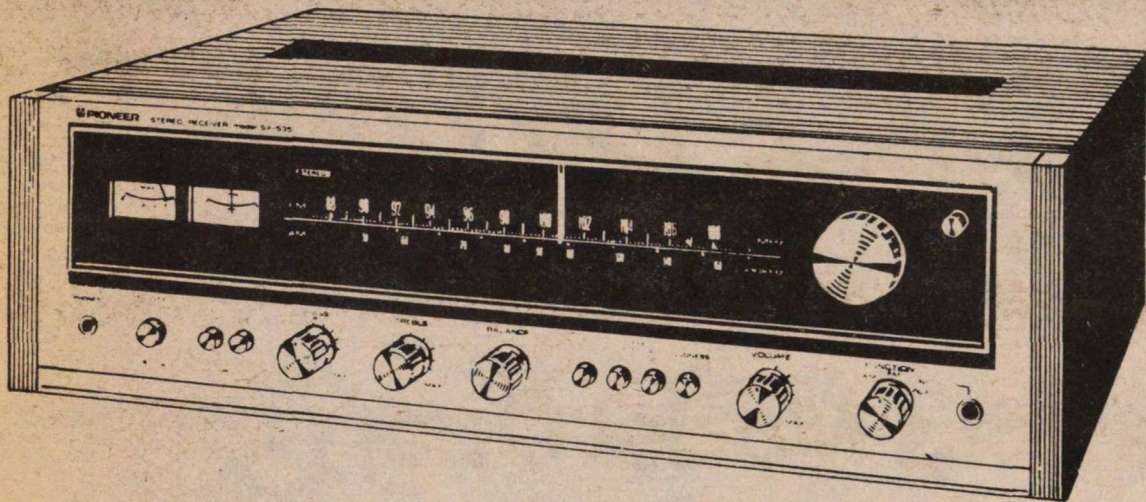
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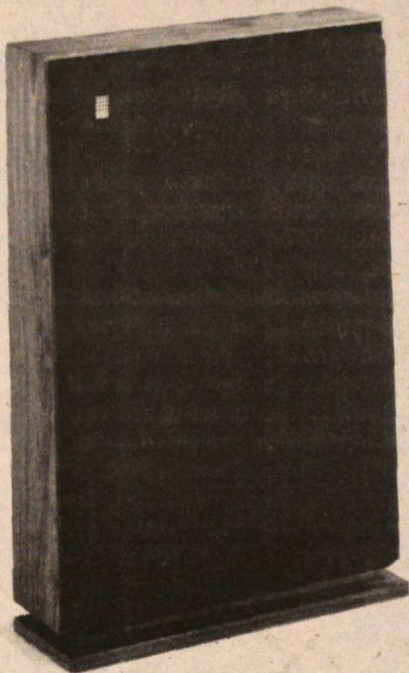
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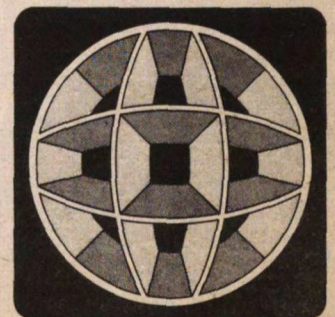
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Buying a system takes patience: understanding that will save you a lot of grief and maybe a lot of money. Your system is one of the most expensive and long-lasting items you will ever put in your home, so the time spent shopping is well worth it.

A Consumer's Guide to STEREO SURVIVAL

The beauty of the hi-fi show is that it enables those in the market for an audio system to "shop" from a wider selection of products than is generally available in any one store, and all under one roof. Comparing the various systems at the show will arm you with more information than most people generally have upon entering a hi-fi store.

Hi-fi equipment is largely a matter of taste. Beyond some basic technical knowledge, the trick is to be a smart customer. If you aren't careful, you can walk out of a hi-fi store with your components in one hand and bloody chunks of your ego in the other.

Buying a system takes patience: understanding that will save you a lot of grief and maybe a lot of money. Your system is one of the most expensive and long-lasting items you will ever put in your home, so the time spent shopping is well worth it.

Because taste changes with experience, practically nobody is satisfied with his or her first hi-fi system and most people go on later to improve it. But if you try and cultivate your taste in audio before buying anything but records, you probably won't become dissatisfied as early; you'll also stand a better chance of getting a good system the first time around.

Your first purchase should be records. Buy several new ones of the sort you enjoy and are most familiar with. These will be useful beyond their musical worth—they are the "test equipment" with which you'll pick a phonograph, amplifier and speakers.

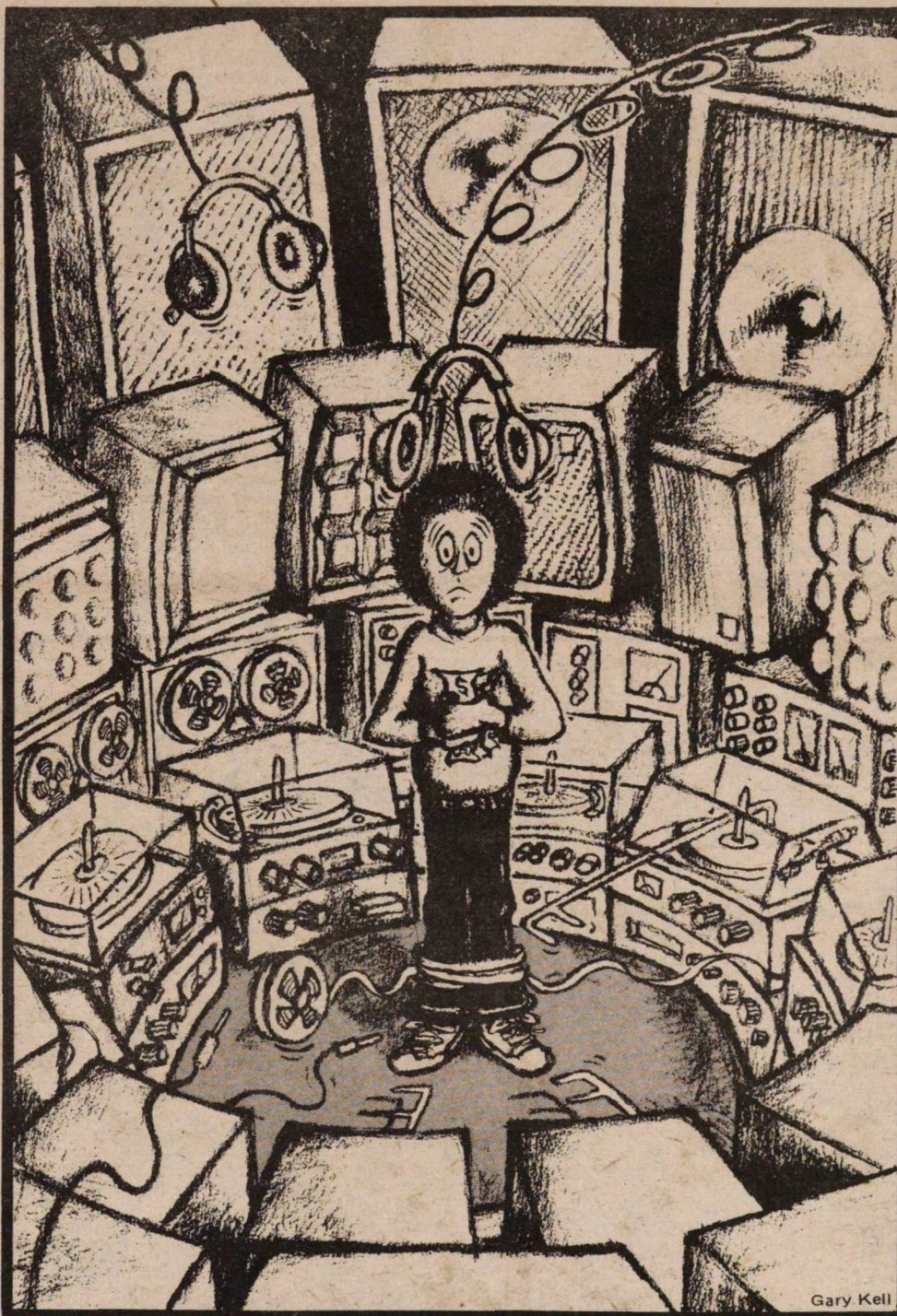
Don't buy "demonstration records" or "sonic spectaculars." These are usually worthless, so stick to decently recorded performances of works you enjoy.

Next, listen to your records on your friends' systems to get a feel for the sort of sound you can get in the home. Don't be surprised if the same components sound different in a hi-fi store—everything does, and besides, that's not where you'll be making your final decision.

After you have narrowed down your friends' systems to the one or two you like best, note the brands of the components in each. While you won't limit your choice to these brands, such a list will give you some reference points in what can be a confusing array of available brands.

Simultaneously, read up on components in the major hi-fi magazines. Again, this is mostly to familiarize yourself with the manufacturers. Make note of those that get good equipment reviews. While you can trust these reviews only as a general guide to what's decent, you will find that some brands consistently fare better than others. Take these brands seriously in your selection process.

Why all this fuss about brands? It's simple. Retailers stock and sell (hard) what are called "house brands" (especially speakers). With some exceptions, house-brand speakers are built so cheaply that



Gary Kell

they can appear to be discounted tremendously. Putting house brands on your equipment list enables retailers to quote what seems to be a very low price. They, in fact, are making a pile.

After you have some feel for what a decent system sounds like in the home, and after you have figured out which brands are least likely to disappoint you, put some records under your arm and start touring the hi-fi salons, listening to your records and their equipment.

Your first trips will help you evaluate the stores, which ones you feel the most comfortable in, which ones have the most helpful salespeople. This does vary from store to store. Needless to say, as with any other business, there are some deal-

ers who rely on abusive sales techniques. I watched one poor guy get called everything from "asshole" on when he attempted to buy an AR speaker system in Boston. (AR's, which are discounted considerably, don't bring stores the highest profits.) The salesman hounded him until he bought a unit with lots more profit for the salesman and lots less performance for the user.

Once you've found the stores you're most comfortable in, and which stock the equipment that appears to be the best buy, you can set a price on the system you want. You do this using "Mitchell's Law", after the "Shop Talk" Mitchell. Fix a sum—say \$500—as your spending limit. Now allocate 20 per cent of this

for the turntable and cartridge, 50 per cent for the electronics, and 30 per cent for the speakers. You can't go far wrong if you follow these figures within five per cent or so.

Note that these refer to list prices and that discounts run from 12 per cent to more than 25 per cent at many stores, so your \$500 is really the equivalent of about \$600. Use the higher figure when drawing up your lists.

You can save by buying used equipment or by buying from mail-order discount houses. As smiling audiophiles in Washington are wont to say, there is no fair trade policy in D.C. You can save by buying from the D.C. discounters.

What you can't do is gripe effectively if you get either a poor component or poor service. If every component worked beautifully when it came out of the box, there'd be less need for the local hi-fi salons, since the mass-sales hi-fi salon exists not only as a place to audition and select equipment, but as a place to which one returns inoperative hardware. This stuff can break down a lot, often apparently in the box on the way to the retailer or to your home, making it necessary for you to have somebody local who can redress grievances.

For the same reason, it's often smart to select equipment made by American manufacturers. If you zap a tweeter on a local make of speakers, you are far better off getting it fixed here than if the unit came from the West Coast, Japan or Europe. This isn't regional chauvinism, it's a survival ploy. With a few exceptions, local firms are honest in their advertising and customer relations. Happily, their products sound good too.

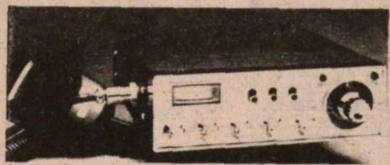
When should you buy? First, buy only when you have found a store you're comfortable with. Second, buy only if that store will let you audition each purchase at home with no strings attached. Third, buy on Friday night or Saturday.

Buying on Friday or Saturday gives you a weekend in which to try out your purchase. If you find your purchase unsatisfactory, you have time to get back Monday morning and get your money back. If your salesperson won't give it up—and they usually will—you still have time to stop payment on your check. Many stores will put your check in an envelope and let you take the stuff home for a week. Get cash—credit memos are only good at the store that has dropped it on you. Credit cards are also a good way to buy.

If all this sounds like a lot of effort, then perhaps you are ready to get into trouble. Those who are paranoid enough to see the reason behind this advice are the survivor types, and for them, some last words to live by: remember that you aren't only buying music, you're parting with your bread. Part with it carefully, and happy listening.

This article was adapted from the Boston Phoenix.

haney



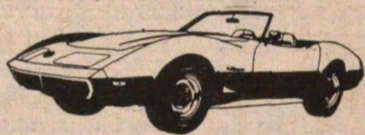
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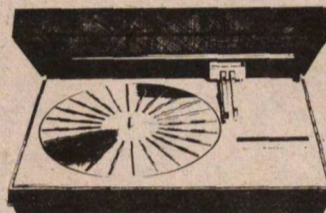
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The McIntosh quality has long been a standard for the rest of the audio industry to strive for.

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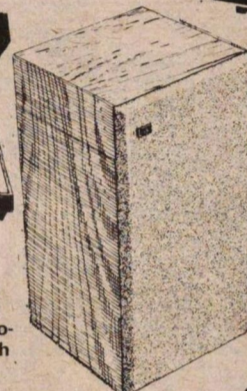
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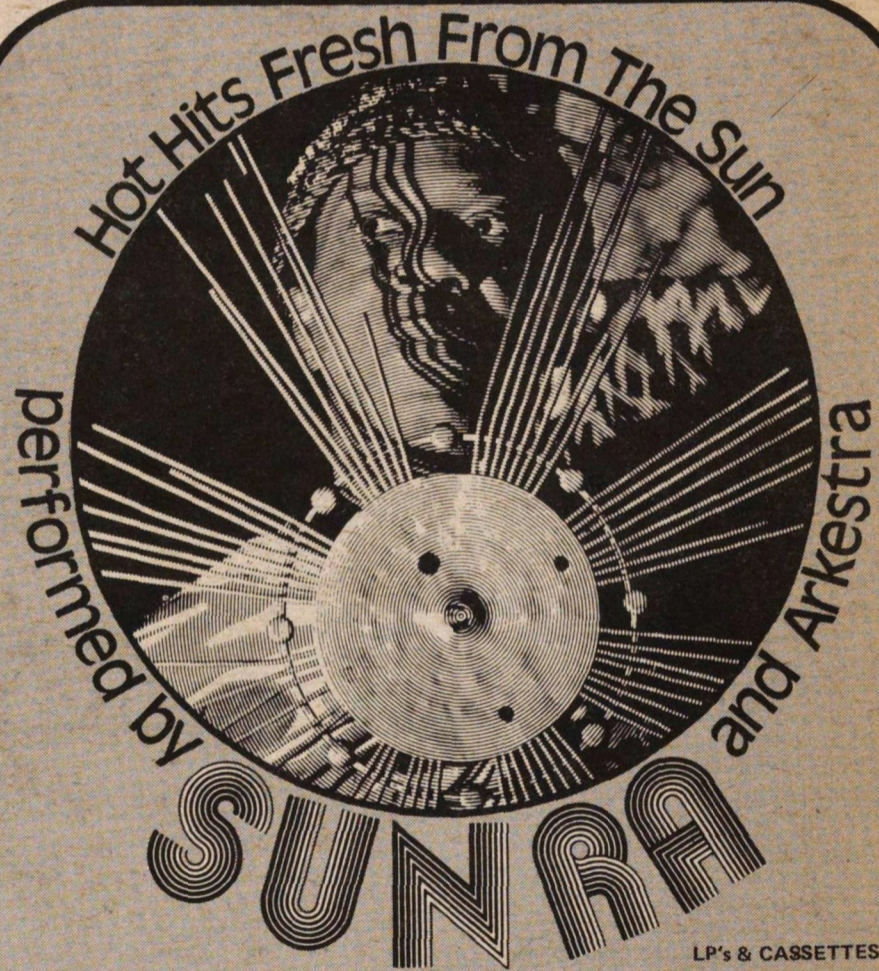
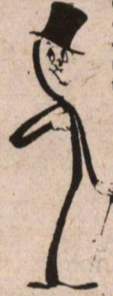
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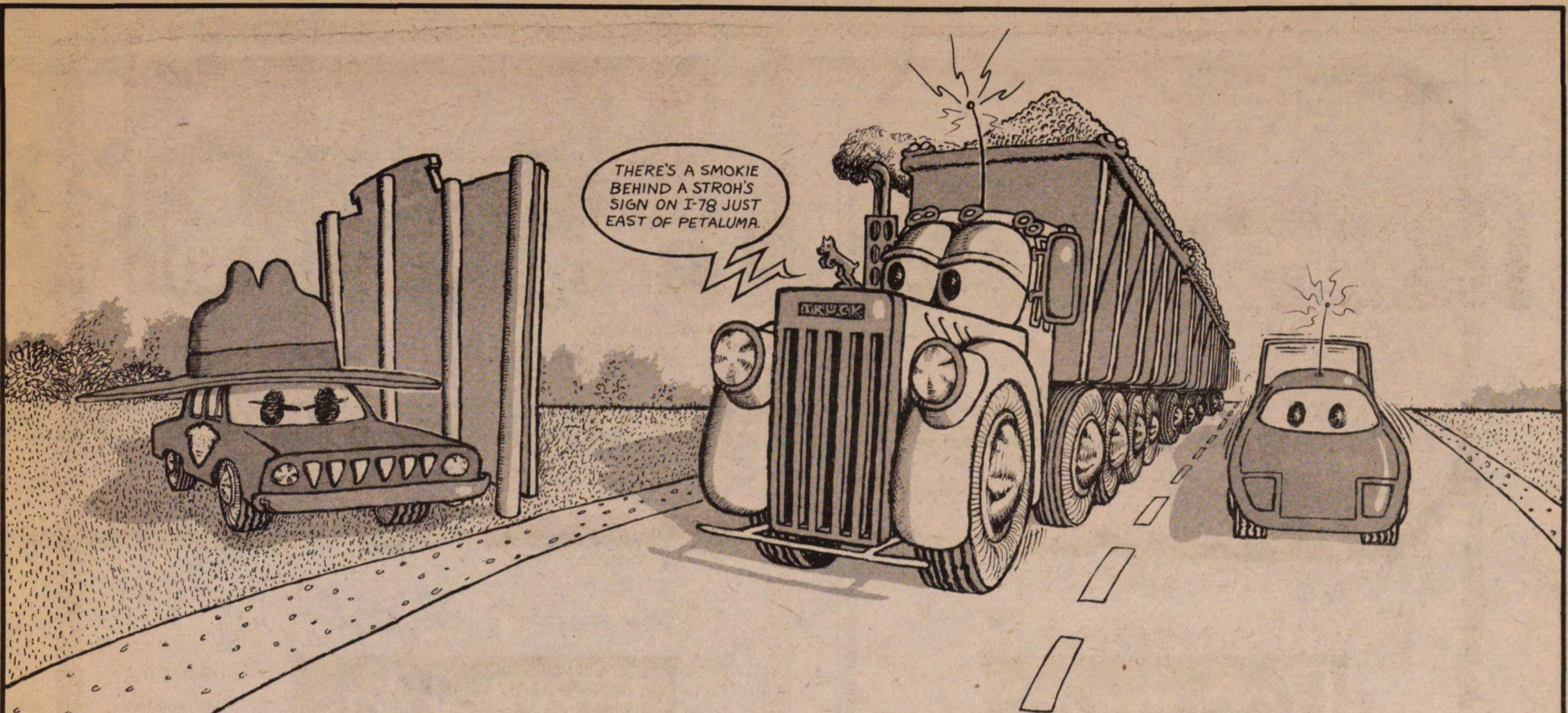
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BEARS, TRUCKERS, AND THE CITIZENS BAND

By Sanford Olshansky

To some it's a precious lifeline in the event of a road emergency. To others it's a talkative friend that helps pass the lonely hours of a long distance drive. To the real hardcore user it's an up-to-the-minute key to the whereabouts of highway patrolmen (bears) and to the wolves on the road it's used to locate female passengers. It's most devoted users have begun something of a cultural revolution based in part on contempt for highway speed limits. What is it? A little metal box about 3" X 6" X 8" called a Citizens Band Radio.

First authorized in 1958, Citizens Band is the easiest legal means of 2-way radio communication between adult American citizens having no special technical training. Its simplest form is a child's single channel walkie talkie which can be legally operated without a license. More sophisticated sets for the CB hobbyist may cost as much as \$250 to \$500 and have 69 channels and there's talk of increasing the number to 150.

To get started in Citizens Band all you need is a basic 23 channel mobile radio costing about \$100, a trunk mount or gutter mount antenna for about \$20, and a \$4 check to the Federal Communications Commission (FCC) for your license. The license allows you, your employees if any, your immediate family and friends to operate as many sets as you like for 5 years. Beyond that all you need is a "handle" or CB name. Nobody uses his real name on the air and few people use their call numbers assigned with their license. Instead they have nicknames like Preacherman, Sodbuster, Blue Light, Flying Tiger, Jumping Jack, Stardust, and Jack-the-Bear, to name just a few.

About 4 million licenses have been issued by the FCC—many at a cost of \$25. The big surge in applications began with the 55 mph speed laws and the truckers rebellion in early 1974 and reached boom proportions when the fee was lowered to \$4 in early 1975. The FCC is currently groaning under a backlog of 250,000 to 400,000 unprocessed applications, with more piling up daily. There are probably as many unlicensed sets in use as there are licensed users—perhaps as many as 10 million according to industry sources. Thus even though there are laws that require the use of call numbers, forbid the use of obscene language, etc., the CB craze has reached such epidemic proportions that it has become impossible to police.

About all that the government has been able to enforce in even a small way is the legal limit on transmitter output power (4 watts to the an-

tennas, 5 watts may be drawn by the amplifier). Most of the major highly visible dealers have stopped selling linear amplifiers which can boost the transmitter power to 100 watts or more — but thousands are still in use.

Ordinarily you can expect 5 to 10 miles car to car range from standard CB radios, 15 to 20 miles from a car to base station with an outdoor antenna, and as much as 50 miles or more between two base stations. Of course there are stories of CB conversations between Detroit and Minneapolis or Phoenix in spite of the 150 mile legal limit. The height of CB lore is CW McCall's popular song *Convoy* about a CB'er who calls himself Rubber Duck leading a 1,000 truck convoy from Los Angeles to New York and talking on the radio to his "good buddy" Pigen just passing through Omaha in the last truck of the convoy.

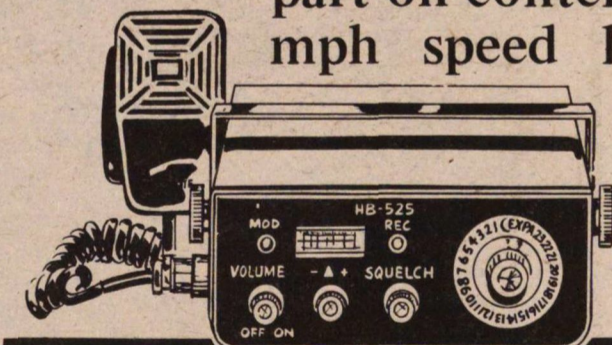
The only major problem in CB's to day is the overcrowding of some popular channels at times of peak usage. To help overcome this, CB manufacturers are now promoting a system called single side-band, which makes 46 additional channels available—one above and one below each of the 23 standard channels. A conversation can be started normally and then switched to a clear side-band channel if both parties have the required gear. Such units start at only \$250.00 and may soon sell for \$200 or less. Even with sideband, though, you can ask for

a "bear report" on a busy Sunday afternoon and get five to ten answers at the same time so that none are understood! Perhaps this can be helped if certain channels are reserved for north-south-east- and west-bound travellers.

You can get useful information on traffic and road conditions by monitoring the cross country truckers on CB channel 19 even if you don't talk to them directly. CB channel 9 is reserved nationally for road emergency calls and is monitored by thousands of police departments, service stations, and volunteer groups across the country. Channel 11 is being established as a national "hailing channel" used to start a conversation which is then continued on another channel. As for us cottonpickers in Oak Park and Southfield we mostly hang out on channel 17 so look for the old Moondoggie and we'll wish you 3's and 8's for now (that's CB talk for very best regards).

Sanford Olshansky is the marketing director for Lafayette Radio Electronics Associate Stores. His only problem with CB is keeping up with the demand for them.

The CB Radio explosion is something of a cultural revolution based in part on contempt for the 55 mph speed limit. . . The



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A Glossary of Hi-

As you weave through the multitude of show exhibits, many pieces of intricately conceived paper will come your way chock full of barely comprehensible technical specifications on components, speakers and the like. To make the job of sorting through the maze a bit more decipherable, we present here a comprehensive glossary of high-fidelity terms. Thanks to the Philadelphia Drummer for this set of definitions.

ACETATE BASE—The transparent cellulose acetate plastic film which for years formed the base for most of the audible range magnetic recording tape made. Polyester base has become the standard in magnetic tape base because it is tough, long lasting and relatively unaffected by moisture.

AMPLIFY—To strengthen a given electrical signal by increasing its amplitude, or raising its level—a sound term. The opposite of "attenuate."

ATTENUATE—To weaken a given electrical signal by reducing its level (usually by means of a volume or loudness control).

AUDIBLE TONES, also AUDIBLE FREQUENCIES—Sounds with wave frequencies which the average human can hear and which range from 30 to 16,000 Hertz.

AUTOMATIC SHUT-OFF—Special switch incorporated in some tape-recorders which automatically stops the machine when a signal indicates the end of a recording when the end of the tape is reached.

AZIMUTH ADJUSTMENT—The adjustment of the magnetic head, whereby exact alignment of the head gap with a correctly recorded magnetic pattern is achieved. Of prime importance for optimum high frequency (for short wave length) performance and recorder-to-recorder compatibility. See **HEAD ALIGNMENT**.

BACKING or BASE—The flexible material, usually polyester (or cellulose acetate) which is used as the carrier for the magnetic oxide coating of magnetic tape.

BAFFLE—The panel upon which a loudspeaker is mounted, most commonly the front panel of an enclosure.

BASS REFLEX SPEAKER ENCLOSURE—Type of extension loudspeaker cabinet frequently available as accessory item for tape recorders. Design employs a "port" or opening with relatively small cabinet.

BIAS—A signal added intentionally during recording to compensate for the inherent nonlinearity of magnetic systems. It is an alternating current of high (beyond audibility) frequency, linearly added to the signal.

BULK ERASER or DEGAUSER—A device used to erase an entire roll of magnetic tape without removing it from its reel. Generally employs a strong alternating magnetic field to which the tape is exposed in a manner which neutralizes all previously recorded magnetic patterns.

CARTRIDGE—A system of magnetic tape recording using a single-spool, endless loop configuration. Most cartridges contain two-channel, 8-track stereo program material. Q-8 cartridges have a special coding slot that indicates four-channel, 8-track stereo recordings.

CASSETTE—The compact cassette is a palm-sized unit housing a spool of magnetic tape and a take-up reel. Cassettes permit quick loading and give full mono/stereo compatibility.

CAPSTAN—The driven spindle or shaft in a tape recorder—sometimes

the motor shaft itself—which rotates against the tape, pulling it through the machine at constant speed during recording and playback modes of operation. Its rotational speed and diameter thus determine tape speed.

CERAMIC MICROPHONE—An inexpensive pressure type piezo-electric microphone supplied with many tape recorders. It employs a ceramic element to convert sound to electrical energy, is more rugged, more resistant to temperature and humidity extremes, but requires more amplifier gain than the comparable crystal types.

CHANNEL—A single, complete sound or signal path through a system.

COERCIVITY or INTRINSIC COERCIVITY—The demagnetizing force or field intensity required to reduce the induction of a piece of tape (exclusive of air induction effects) from saturation to zero. A figure merit for magnetic tape useful for comparing relative bias and erase field requirements. Usually expressed in oersteds.

CPS—Abbreviation for cycles per second. See **HERTZ**.

CROSS TALK—The unintentional mixing of signals from one channel with those of another.

CROSSOVER NETWORK—In multiple loudspeaker systems a circuit employing electrical filters of frequency discriminating paths for routing high, low, and in some elaborate systems, middle frequencies, to the particular speakers designed to handle them.

CRYSTAL MICROPHONE—An inexpensive pressure type piezoelectric microphone employing natural salt crystals as the element for converting sound to electrical energy. Characterized by high impedance and sensitivity, coupled with pronounced susceptibility to permanent damage from heat, humidity extremes, and mechanical shock. Now largely replaced by ceramic types for the same general uses.

DECIBEL—Abbreviated "db," it is a relative measure of sound intensity or "volume." It expresses the ratio of one sound intensity to another. One db is about the smallest change in sound volume that the human ear can detect. Also used to express, logarithmically, voltage and power ratios.

DISTORTION—Any difference between the original sound and that reproduced by a recording machine. Distortion takes on many forms, and although it can never be completely eliminated, it can be reduced to a minimum in a good recording and reproducing system. Tape offers the maximum potential for distortion-free recording.

DOLBY—A trade name for one type of noise-reduction system. Through a process of electronic encoding and decoding, dynamic range is increased by decreasing system and tape noise.

DOMAIN—In magnetic theory, that region of a magnetic material in which the spontaneous magnetization is all in one direction. In conventional magnetic tape coatings this corresponds to one oxide particle.

DROPOUT—During playback, the instantaneous loss of a recorded signal

Fidelity, High-Falutin' Jargon

due to imperfections in the tape.

These may take the form of nonmagnetic foreign particles imbedded in and flush with the tape's surface. However, most commonly these imperfections are high spots on the tape surface, which push the tape away from the magnetic head, thereby increasing the area affected (the "umbrella" effect). Small dropouts have less effect on low than on high frequency signals. Also, full track recordings are less sensitive to dropouts than those of narrower track widths. Good sound recording tapes are practically free of dropouts.

DUAL TRACK RECORDER—Usually a monophonic tape recorder with a recording head that covers slightly less than half the width of the tape, making it possible to record one track on the tape, and by turning the reel or cassette over, record a second track in the opposite direction. Also known as "two-track" or "half-track."

DUB—A copy of another recording. Tape recordings are easy to duplicate with a minimal loss of quality by recording from one machine to another.

DYNAMIC MICROPHONE—High quality electromagnetic-type pressure microphone which employs a moving coil in a magnetic field to convert sound pressure to electrical energy in a manner similar to that of an electric alternator or generator. Impedance and output are generally lower than those of the more common ceramic or crystal types. Low impedance permits the use of longer connecting cables.

DYNAMIC RANGE—The voltage ratio, expressed in db, between the softest and loudest sounds a tape recorder or other device can reproduce without undesirable distortion.

EDITING—The selective correction of a tape recording by physical means to eliminate or replace undesirable portions not present in the original, or otherwise rearrange the original. Magnetic tape is unsurpassed for editing purposes, since it can be easily cut and spliced.

ELECTROMAGNETIC TYPE MICROPHONES—Microphones using magnetoelectric induction to convert sound to electrical energy. Includes ribbon or "velocity" microphones, dynamic or "moving coil" type and reluctance or "moving vane" type.

EQUALIZATION—The selective amplification or attenuation of certain frequency intervals to compensate for amplitude variations in an audio system. Also refers to recognized industry standards of recording and reproducing "characteristics", the proper use of which can assure uniform reproduction of pre-recorded tapes and improvement of system signal-to-noise ratio.

ERASURE—The neutralization of the magnetic pattern on tape by placing it in a strong magnetic field, thereby removing the recorded sound from the tape. An "erase" head on a tape recorder automatically removes any sound previously recorded on the tape just before the tape reaches the "record" head.

EXTRA PLAY—Also called "long play" or "extended play"—refers to tape which gives 50% more than standard playing time on a standard reel because it employs a thinner base together with a thinner but more potent oxide coating.

FAST FORWARD—The provision on

a tape recorder permitting tape to be run rapidly through it in the play direction, usually for search or selection purposes.

FEEDBACK (also ACOUSTIC FEEDBACK)—The howling, oscillation, or regeneration of sound caused by a system's microphonic pick up of the sound output from its own speakers. Negative electrical feedback in amplifier design is a singularly effective scheme used to improve stability and reduce distortion.

FEED THROUGH—The accidental or unintentional transfer of a signal from one track to another on a multi-track tape. Also see **CROSS TALK**.

FIDELITY—A measure of the degree of exactness with which sound is duplicated or reproduced. Magnetic tape is generally accepted as the ultimate medium for high fidelity sound reproduction.

FLAT RESPONSE—A related but more definitive term than simply degree of excellence, but in order to be meaningful must be further defined in terms of db variation from absolute flatness over a specified frequency range (e.g. plus-minus 3 db from 30 to 16,000Hz). An indication of a sound system's ability to reproduce all audible frequencies supplied to it, maintaining the original balance between low, middle, and high frequencies.

FLUTTER—Very short rapid variations in tape speed causing similar variation in sound pitch and volume, not present in the original sound. A form of distortion.

FOUR-TRACK RECORDING—Also "quarter-track." The arrangement by which four different channels of sound may be recorded on adjacent tracks. These may be recorded as four separate and distinct tracks (monophonic) or two related (stereo) pairs of tracks. On open reel machines, tracks 1 and 3 are recorded in the reverse direction. On cassette machines, tracks 1 and 2, and 3 and 4 are paired for full mono/stereo compatibility in each direction. More susceptible to dropouts than two-track arrangements, four-track recording demands smooth, high quality tape from reputable manufacturers.

FREQUENCY (Also TONE)—The repetition rate of cyclic energy such as sound of alternating electrical current, expressed in Hertz (1 Hz equals 1 cycle-per-second). "Bass" frequencies in music extend from 32 Hz to about 200 Hz. "Treble" sounds are at the high frequency extreme of the sound spectrum and may extend from 2 or 3k Hz to the frequency limit of audibility (about 16kHz). "Middle" frequencies occupy the remainder of the spectrum or from 200 Hz to about 3kHz.

FREQUENCY RANGE—The range between the highest and lowest pitched sounds which a tape recorder or other sound system component can reproduce at a usable output or volume level.

FREQUENCY RESPONSE—A term closely related to, but more specific than, "Frequency Range." Calls for output vs. frequency data over specified frequency range, usually in the form of a chart for transducers like microphones and speakers. Most commonly expressed for tape recorders as given in the example for **FLAT RESPONSE**.

FULL TRACK RECORDING—Applies to quarter-inch wide (or less) tape only. Defines track width as essentially equal to tape widths.

GAIN—The voltage ratio of the output level to the input level for a system of component of a system. Usually in terms of db.

GAP—The separation between the poles of a magnetic head, measured in micro-inches or microns. Most critical with heads used for playback purposes where gaps must be short in order to resolve high frequency (short wave length) recordings. Recording heads generally have longer gaps. Dual purpose (record and play) heads have gaps governed by same principle as for playback heads.

HEAD ALIGNMENT—Includes all mechanical adjustment necessary to assure coincidence of head gap with tape or more specifically, a properly recorded tape track. (Alignment involves critical adjustments and can be performed only by qualified service personnel).

HEAD DEMAGNETIZER or DE-GAUSSER—A device used to neutralize residual or induced magnetism in heads or guides made from ferro-magnetic materials. Unless the recorder has an automatic head, demagnetizing circuit and non-magnetic guides, periodic use of a head magnetizer may be necessary to avoid addition of noise to or even partial erasure of valuable pre-recorded tapes.

HEADPHONES—A pair of small individual sound reproducers (tiny speakers) with a suitable arrangement for coupling one to each ear. Permits private binaural listening of stereo tapes and private listening of monophonic tapes.

HERTZ—A unit measuring frequency and equal to one cycle per second (abbreviated Hz).

HUM—An undesirable low pitched tone present in the output of a device and most commonly having a frequency equal to, or a multiple of, the power source frequency.

HYSTERESIS LOOP—The graphical representation of the relationship between an alternating magnetomotive force and the magnetic flux density it produces in a sample of magnetic material such as magnetic tape. Usually displayed in the form of two slightly displaced open S's joined at the ends but not crossing or in coincidence with one another.

IMPEDANCE—The resistance to the flow of alternating current in an electrical circuit, generally categorized as either "high" or "low" but sometimes given in "ohms" or millions of ohms ("megohms"). Commonly used to characterize the input or output termination of components so that proper "match" can be made when interconnecting two or more devices (like a microphone, tape recorder, and loudspeaker). Power loss or frequency discrimination can result from a "mismatch" of impedances.

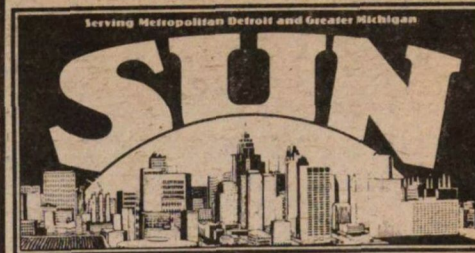
INDEX COUNTER—An odometer type of counter which indicates revolutions, usually of the stock or supply hub (not feet of tape), thereby making it possible to index selections within a tape and readily locate them later.

INPUT SIGNAL—An electrical voltage presented to the input of an amplifier, head, or other electronic component.

INPUT—The terminals, jack or receptacle provided for the injection of an electrical voltage into an amplifier or other electronic component.

continued on page 22

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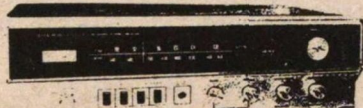
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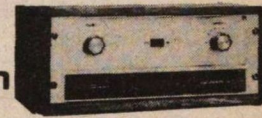
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Tips on Equipment Set Up & Record Care

If you've just bought a stereo or quad unit, you may need this advice.

The first point about setting up your system is to read the instructions. This may sound completely self-evident, but more equipment malfunctions can be traced to skipping the instructions supplied with a complex hi-fi than most other causes. Don't plug the unit in until everything is digested and then wired up.

Phase your speakers. This overly-mystified word means simply to insure that your positive and negative amplifier and speaker terminals are properly linked, i.e. positive to positive and negative to negative. Improperly phased speakers result in alternately (as opposed to simultaneously) moving woofers, giving mushy bass response. You can locate the positive terminal by either a plus sign or red dot on or near the contact point. Most wires are colored to aid in your identification of where to connect leads. Some aren't though, and instead have a ribbed insulator, i.e., one of the insulators has a raised rib which can be felt better than it can be seen.

Also when wiring, it can't be over-emphasized that you should make sure wires are touching only one terminal, and not spreading over to other parts of the chassis besides the designated spot. Otherwise you may find a blown-up amplifier after you turn it on.

Final suggestions for set-up are to save all packaging, as many stores won't accept



returns of defective items without the original cardboard. Also, check your armweight and anti-skating turntable devices according to the instructions, as these can unnecessarily shorten the life of your records, which are too expensive to be treated casually any longer.

Speaking of expensive records with a \$6.98 list and \$5.00 average sale price, you'll want to take good care of them in every possible way. Dust-covers have a purpose, despite their frequent lack of use. Throw away the plastic that comes with a record as it can contribute to warping.

There are several different record maintenance kits on the market, as it's called, and some are indeed better than others, even though they may look the same. Watts makes a comprehensive record maintenance kit. If you have already spent a few hundred or more dollars on your system already, it will be worth your while to spend a bit more to keep your records in near-perfect acoustical condition. The Watts kit includes everything you need to remove deep-down dust, dirt and static charge from the grooves. A \$25.00 price tag may seem high but it lasts a long time. If you can't come up with that much you should at least have a Watts Preener for around \$6. This cylindrical shaped felt cleaner has a moisture wick inside to keep dust and static low, and it works. Disc-Washer also makes a good set of record-maintenance supplies.

How to Tell Your Connections to Miss Off!

Silencing Hum:

Glenn Gould might hum along with Bach, but your hi-fi system shouldn't get away with it. Still, the chances are a little better than 50-50 that your system hums more than it should, despite the fact that hum is as easy to cure as any hi-fi ill. And spending a couple of bucks (at most) and maybe an hour of your time will do more to improve the sound of your hi-fi system than anything short of a hot new amp or pre-amp.

Why care about hum if you can barely hear it? Simply because even a little hum not only places an added load on your system's ability to reproduce music but also mixes with low frequencies, causing muddy bass. Remove hum and bass notes will gain a new clarity and a well-defined, spacious texture.

Ultimately, hum arises from the fact that almost all hi-fi equipment is powered from the AC line. In each component there is a power supply which converts AC to various direct-current (DC) voltages needed to run the device. This power supply can be designed to work very well (and expensively) or to operate in a so-so fashion that will allow the manufacturer to sell his product at a higher profit.

In addition to cutting corners on the power supply, some manufacturers are just careless and do things such as route the leads from the phonograph past the hum-inducing fields of the power transformer. They know what they are doing; hum is well understood and there are lots of reasons for it—but few excuses.

Fortunately, there are some things you can do at home on a rainy day that will minimize your system's hum. First, the obvious things.

Space out components. Since the phonograph cartridge will pick up hum from the magnetic field around the transformer in your components, put some distance between it and them. A few inches often make a difference, since the strength of a magnetic field (and therefore the amount of hum it can induce) drops as the square of the distance from its source. Obviously, long phono cables are not necessarily bad.

Keep power and signal lines separate. It may be neater to bundle these together as they run between components, but it greatly increases induced hum and noise.

Shorting phono plugs look like one end of a phono cable without the cable. They are for sale at most local hi-fi stores and are one of the few bargains in the business.

Shorting plugs are inserted in unused pre-amp or receiver inputs to cut noise and they work. For proof you can hear, disconnect your present phone cables, switch to this input and listen to it with and without shorting plugs in the jacks. Sometimes, shorting plugs in open phono jacks will even cut hum on other inputs.

Shorting plugs are especially useful in systems with several low-level inputs—for example, a system with two phono inputs or an additional microphone or tape-head input. If your system has more than one low-level input, short any that aren't in use.

Ground the turntable to your pre-amp. If you have just put your system together and the phono does nothing but buzz, you haven't followed directions. Run a ground wire of heavy lamp cord between your turntable's motor board and your pre-amp. If you have already done this and you still have too much hum, look for a better spot on the turntable assembly to connect to the ground.

Do this by connecting one end of the lamp cord to your pre-amp or receiver and then by touching various places on the motor board. Do this while the system is on, and, if necessary, with the bass and volume up (but be careful—not too high). You'll find the connection point that gives the least hum easy to spot.

Ground your whole system. If your home has honest three wire electrical outlets or cold-water (not gas) pipes, by all means run another heavy wire from your pre-amp or receiver to ground. There is one spot within your system that will give the most hum reduction; find it by connecting one end of the ground wire to the water pipe or screw holding the outlet cover on, and then touching the unconnected wire end to various components and to various spots on each one. Usually, the pre-amp will be the best connection point.

Even if a system ground doesn't cut hum—and in rare cases it won't—you owe it to your body to reduce any potential shock hazard. Ground your system anyway.

If you have done all this, you should have a lot less hum than you started with. There's now one final trick that will cut hum to the minimum your system can produce, and it may be the simplest step of all—flip your wall plugs.

Because each component has its own power supply, and because these supplies interact with each other, it is possible to plug units in so that hum in one component cancels hum from another.

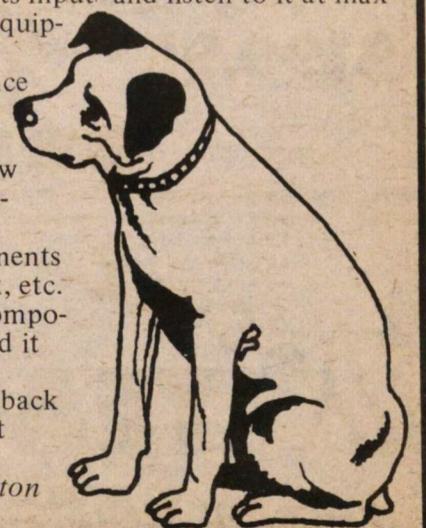
Make hum as obvious as possible during this maneuver by turning up the bass and volume controls. If you have a receiver complete with tuner, try shorting its inputs and listening to it at full volume on its phono input.

Ditto for a separate power amplifier: short its inputs and listen to it at maximum loudness. Now, quickly turn off the equipment, reverse the line cord in its socket and raise the volume again. There's a 50-50 chance that there will be less hum in the new position. If that's the case, get a piece of tape or some paint and mark the plug so you know which way works best. Obviously, if hum increases, put the plug back the way it was.

Do the same as you connect other components to the system—phonograph, tuner, tape deck, etc. There's one wall plug orientation for each component that will yield the least system hum, and it just takes a flip of the wrist to find it.

If you have done all this, you can now sit back and listen to the music—and that's the way it should be.

—Stan Perlmutter, by permission of *The Boston Phoenix*.



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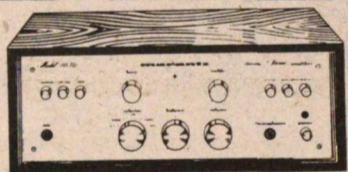
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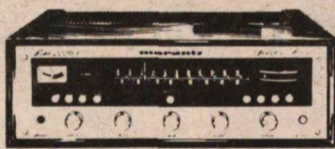
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A Glossary of Hi-Fidelity,

continued from page 17

INTERMODULATION DISTORTION—Distortion which results when two or more pure tones are non-linearly combined to produce new tones with frequencies representing the sums and differences of the original tones and their harmonies.

IPS—Abbreviation for tape speed in "inches-per-second."

JACK—Receptacle for a plug connector leading to the input or output of a tape recorder or other piece of equipment.

KHz—Abbreviation for thousands of cycles-per-second.

LEADER AND TIMING TAPE—Special tough non-magnetic tape which can be spliced to either end of a magnetic tape to prevent its damage and possible loss of recorded material. White or in color, it features a mark every 7½ inches. Used as a timing tape, therefore, it can be spliced between musical selections to provide desired pauses upon playback.

LEVEL INDICATOR—A device on a tape recorder primarily to indicate the level at which the recording is being made, and which serves as a warning against under or over-recording. It may be a neon bulb, a "magic eye," or a VU meter. See also **VU METER**.

LOUDNESS—Sound level as detected by the average human ear. The ear is more sensitive to "middle" frequencies than to low or high extremes especially at low levels.

LOW NOISE TAPE—Magnetic tape with signal-to-noise ratio three to five db better than conventional tapes, accomplished by noise reductions rather than increased low frequency output, making it possible to record sound (especially wide frequency-range music) at reduced tape speeds without objectionable background noise (hiss) and without compromising fidelity.

MAGNETIC TAPE—A high quality tape which has been precision-coated by the manufacturer with a layer of magnetized metal oxide particle. The result is a recording medium which can be erased and re-used, and which offers the highest fidelity of reproduction possible today.

MICROPHONE—A sound transducer or device for converting sound waves into electrical energy of the same frequency.

MIL—One-thousandth of an inch. Tape thickness is usually measured in mils.

MIXER—Device by which signals from two or more sources can be blended and fed simultaneously into a tape recorder at the proper level and balance.

MONAURAL RECORDER—Literally, a tape recorder intended for listening with one ear only, however, in popular usage refers to single channel recorders, as distinguished from multi-channel (stereophonic, binaural, etc.) types. More correctly, but less universally called "monophonic" recorder.

MONOPHONIC RECORDER—See **MONAURAL RECORDER**.

NAB CURVE—Standard playback equalization curve set by National Association of Broadcasters. (See **EQUALIZATION**).

NOISE—Unwanted random sound created in small amounts by electronic equipment, heads, and also by rough or non-homogeneous oxide coatings on magnetic tape. Mostly confined to the extremes of the audible frequency

spectrum where it occurs as hum and/or hiss. May be reduced to negligible levels by good machine and tape design.

NOISE WEIGHTED—The noise measured within the audio-frequency pass band using a measuring instrument

which has a frequency selective characteristic. The sensitivity is usually greatest in the frequency range where the ear is most sensitive.

OCTAVE—The interval between two frequencies of sound or electrical energy having a ratio of 2:1.

OPEN REEL—Designates reel-to-reel machines, as opposed to quick-loading types such as cassette machines.

OUTPUT—Also **MAXIMUM UNDISTORTED OUTPUT**—The useful power delivered by a recorder using a particular type of tape, usually at an arbitrar-

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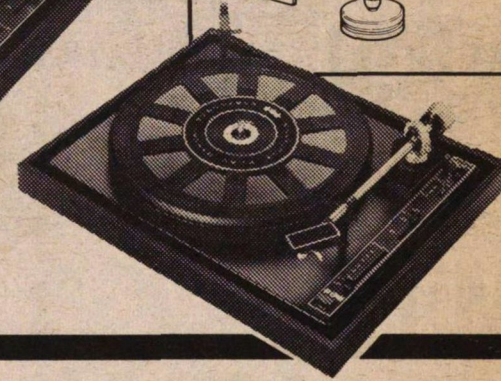
Multiple play manual turntables are a new concept pioneered by B·I·C. They are belt-drive turntables which provide six different combinations of manual or automatic operations! They are the first turntables which make it possible for a maze of mechanical linkages to be engineered out of the system, simplifying it and resulting in better performance, greater reliability, and longer life.

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High-Falutin' Jargon

ily fixed level of harmonic distortion (1% or 3%) and relative to the performance of a standard reference tape.

OXIDE—The ferro-magnetic particle which, when properly dispersed in a plastic binder and coated on a base, form the magnetic portion of magnetic

tape. Conventional oxide particles chemically known as gamma ferric oxide, are brown in color, acicular or needle-like in shape, and of micron length. All oxides used in magnetic tape are magnetically "hard", maintaining magnetism induced in them un-

til demagnetized by external magnetic fields of approximately 50 oersteds intensity or more.

PATCH CORD—Sometimes called "attachment cord." A short cord, or cable, with a plug on either end (or with a pair of clips on one end) for

conveniently connecting together two pieces of sound equipment such as a phonograph and tape recorder, an amplifier and speaker, etc.

PAUSE CONTROL—Feature on some tape recorders making it possible to stop the movement of tape temporarily without switching the machine from "play" or "record" positions. Essential for a tape recorder used for dictation and generally helpful for editing purposes.

PEAK—The maximum instantaneous volume of a quantity such as sound, but most frequently as electrical voltage or power.

PHASING—In stereo applications, the establishment of the correct relative polarity in the connection between amplifier output and loudspeakers so that one speaker tends to reinforce rather than cancel the output of the other (particularly evident at low frequencies).

PINCH ROLLER—See **PRESSURE ROLLER**.

PLAYBACK HEAD—Magnetic head used to pick up signal from a tape. Often the same head as is used for recording, but with circuitry changed by means of a switch. See also **HEAD**.

PLUG—A circuit connector which is inserted into a jack.

POLYESTER BASE—Plastic film base for magnetic tape. It provides strength and resistance to temperature and humidity change.

POST EMPHASIS—That portion of the equalization which is applied in the reproducer.

POWER AMPLIFIER—An amplifier producing sufficient power to operate a loudspeaker.

POWER CORD—Cord for connecting the tape recorder to an external power source, such as 117 volt a.c. current.

PRE-AMPLIFIER—Also **PRE-AMP**—An amplifier that raises extremely weak signal levels such as those from a microphone, magnetic playback head or a phonograph pickup to a level sufficient to drive a power amplifier. Some tape recorders combine the pre-amp and the power amplifier.

PRE-EMPHASIS—(PRE-EQUALIZATION)—That portion of the equalization which is applied during recording.

PRE-RECORDED TAPE—Tape recordings that are commercially available.

PRESSURE PAD—A device which forces tape into intimate contact with the head gap; usually by direct pressure at the head assembly. Felt or similar material occasionally protected with self-lubricating plastic is used to apply pressure uniformly and with a minimum of drag to the base-side of the tape.

PRESSURE ROLLER—Also called "pinch roller", "puck" or "capstan idler". A spring-loaded rubber-tired roller which holds the magnetic tape tightly against the capstan, permitting the latter to draw the tape off the stock reel and past the heads at a constant speed.

PRINT THROUGH—Transfer of the magnetic field from layer to layer of tape on the reel. Print through can be a problem when an over-modulated recording is stored for long periods at high room temperatures.

REMANENCE—The induction in lines of flux per unit width of tape, which

continued on page 26

in case you missed us at the show!

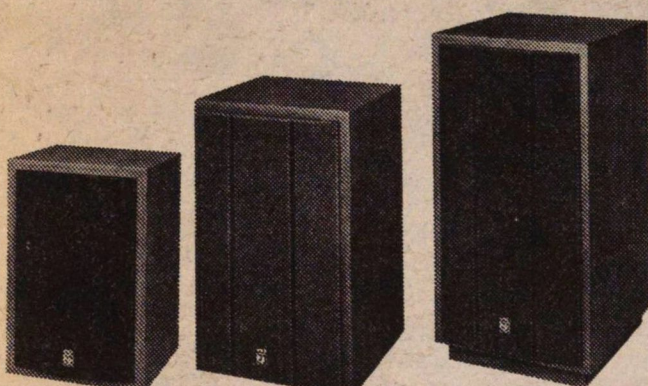
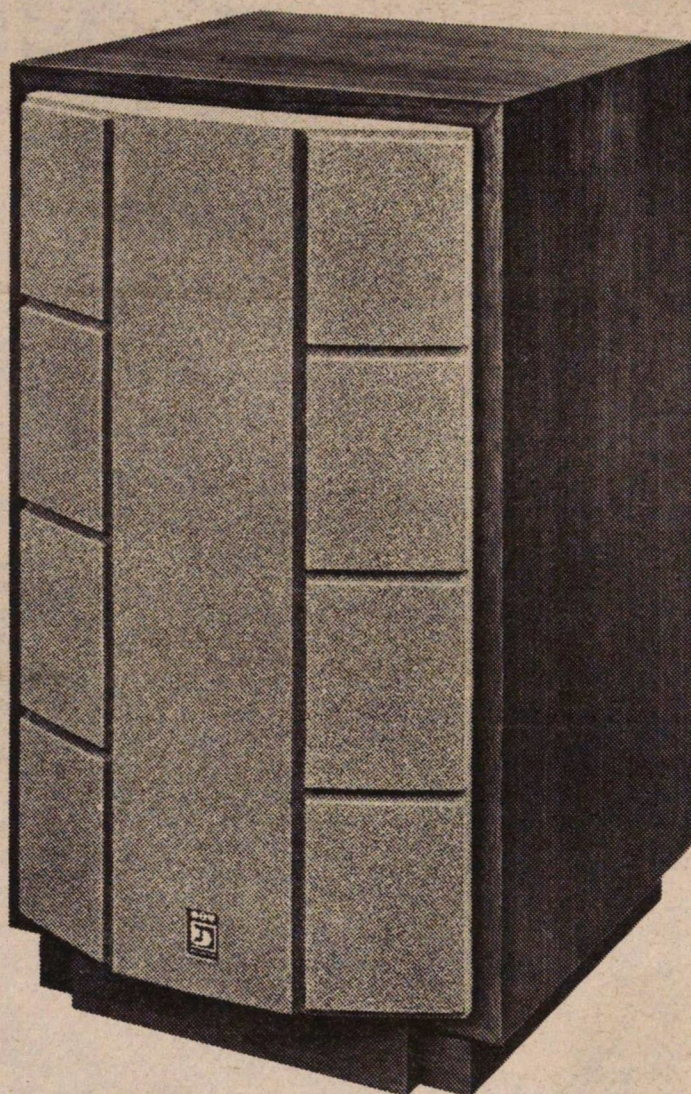
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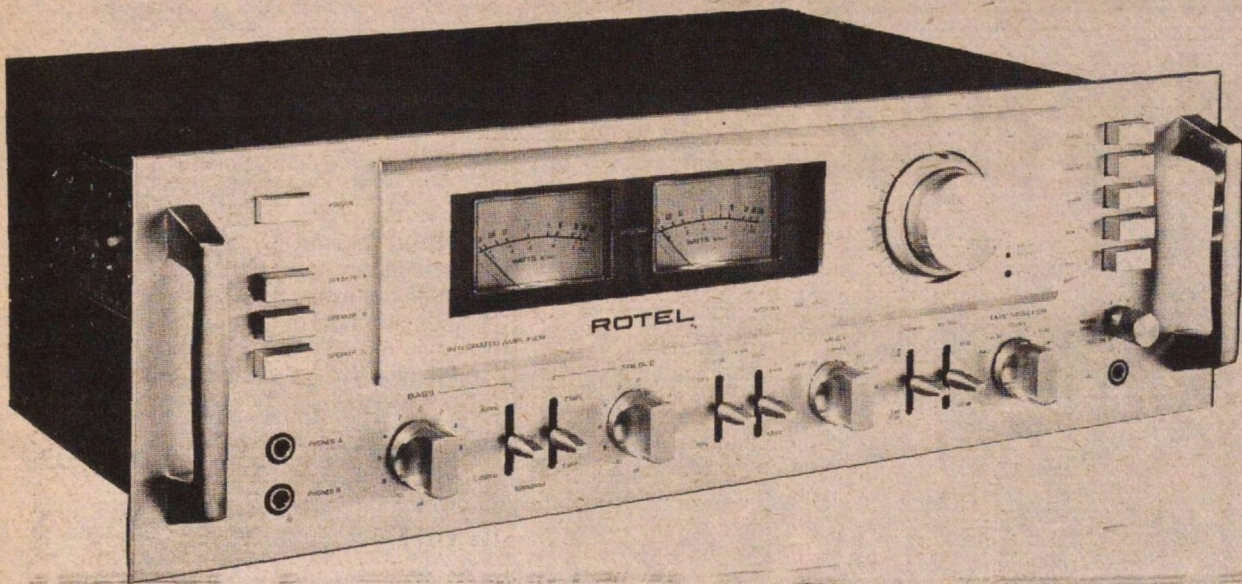
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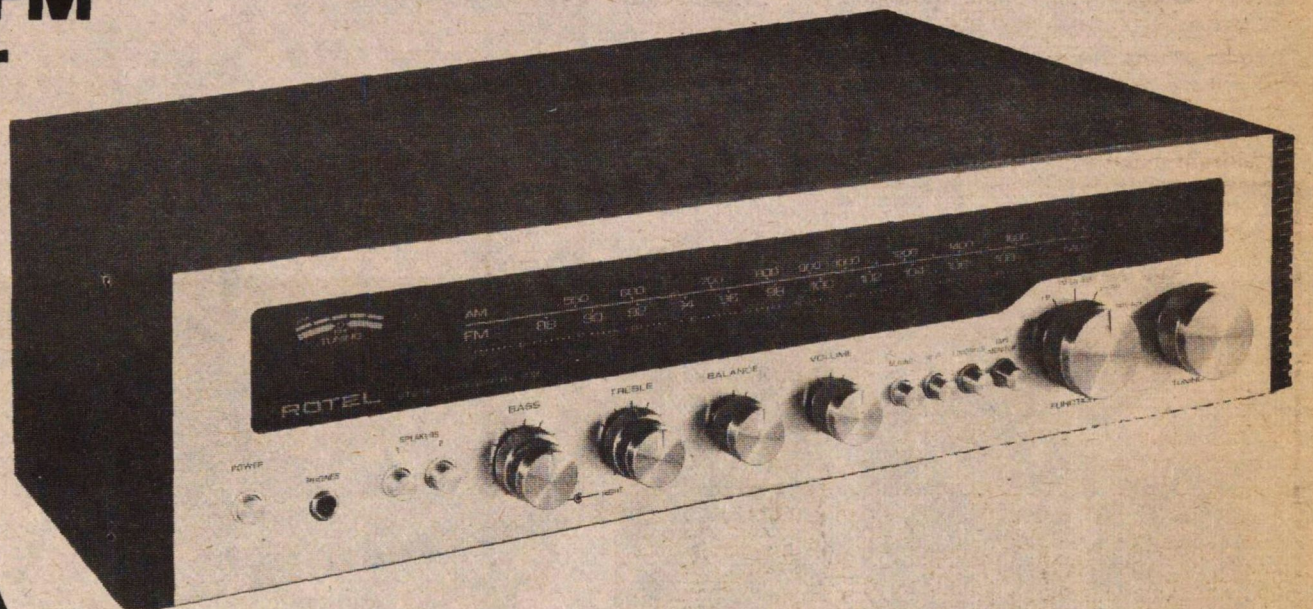
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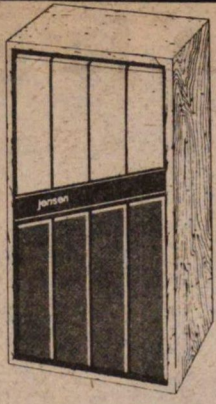
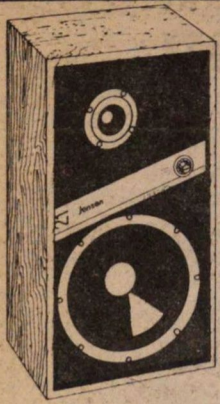


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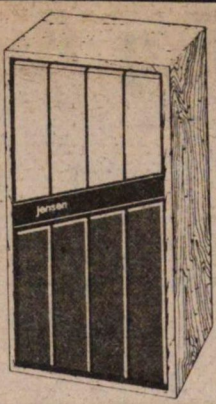
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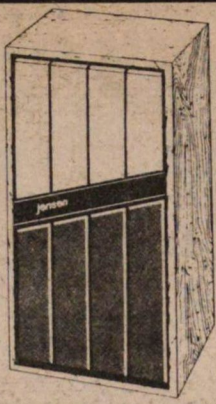
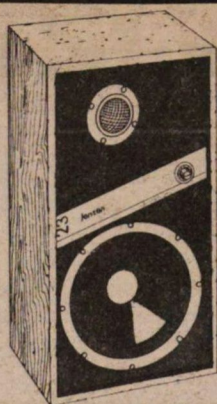
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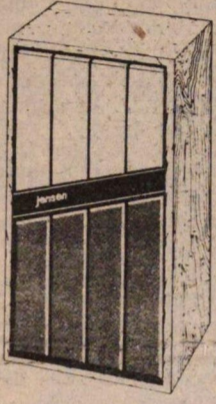
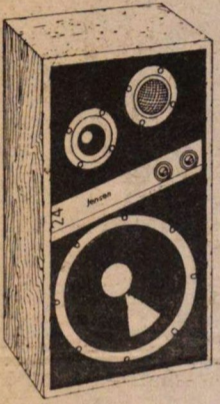
Jensen Model 22

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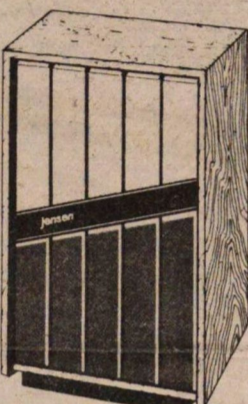
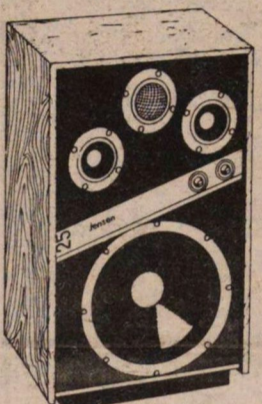
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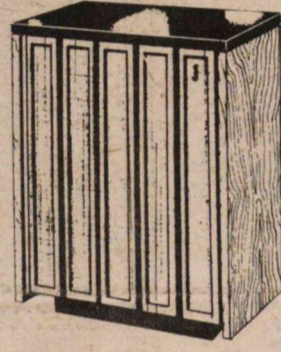
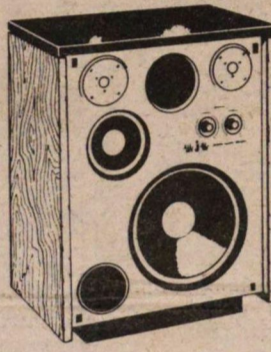
Jensen Model 24

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Jensen Model 25

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at the Detroit Hi-Fi Show, Feb. 13-15

A Glossary of Hi-Fidelity, High-Falutin' Jargon

continued from page 23

remains when the magnetizing field is reduced to zero from a level producing saturation. A figure of merit for magnetic tape indicative of relative output, distortion, and response at low frequencies (long wave lengths).

RELUCTANCE MICROPHONE—Inexpensive electro-magnetic (variable reluctance) type microphone supplied with many tape recorders which is extremely rugged and durable but generally not as high quality as crystal or ceramic types. Employs a metal "wand" which moves in a magnetic field to produce varying voltages.

RESPONSE—See **FREQUENCY RESPONSE**.

RETENTIVITY—Equivalent to **REMANENCE** except expressed in terms of flux density or flux per unit of cross sectional area. A figure of merit for coating dispersions, independent of coating thickness, and thereby useful for estimating coating sensitivity at short wave lengths.

REWIND CONTROL—Button or level for rapidly rewinding tape from the take-up reel to the stock reel.

RF—Abbreviation for radio frequency, which refers to that part of the general frequency spectrum between audible sound and infrared light (about 10k Hz to 10,000,000 M Hz).

RUMBLE—A disagreeable noise of very low pitch or frequency peculiar to the turntables and associated drive mechanisms of disc recording and player systems. Rare to non-existent in tape systems unless present in pre-recorded tapes and reproduced by the tape recorder.

SATURATION—The condition reached in magnetic tape recording where output does not increase with increased input. Useful for defining reference output levels, since it is independent of bias current.

SENSITIVITY—As used to describe the capabilities of recording tape, indicates the relative output for a given input in the linear (low) distortion portion of a tape's magnetic transfer characteristic. Sensitivity data plotted as function of frequency (or wave length) gives frequency response, usually relative to a standard reference tape.

SEPARATION—The degree to which two stereo signals are kept apart. Stereo realism is dependent on the successful prevention of their mixture before reaching the output terminals of the

power amplifier. Tape systems have separation capability inherently far superior to that of disc system.

SIGNALS-TO-NOISE RATIO—The voltage ratio, usually in db, between the loudest undistorted tone recorded and reproduced by a recorder, and the noise reproduced when the signal (but not the bias) is reduced to zero.

tape. Largely eliminated by regular cleaning of suspected surfaces or using a tape employing a built-in dry silicone lubricant.

STEREOPHONIC SOUND—"Dimensional" or "directional" sound reproduction achieved through use of two or more sound tracks, or channels, heard simultaneously through loud-

TWO TRACK RECORDING—The arrangement by which only two channels of sound may be recorded, either as a stereo pair in one direction or as separate monophonic tracks (usually in opposite directions).

UNIFORMITY—In terms of magnetic tape properties, a figure of merit relating to the tape's ability to deliver a steady and consistent output level upon being recorded with a constant input. Usually expressed in db variation from average to mid-range frequency.

VOLUME—An acoustical, rather than an electrical measurement. Refers to the pressure of sound waves in terms of dynes per square centimeter. The louder the sound, the greater the pressure. Most technicians prefer to talk in terms of decibels.

VU METER—A "volume-unit" meter which indicates audio frequency power levels in decibels relative to a fixed reference level. The meter movement differs from those of ordinary voltmeters in that it has a specified ballistic response adapted to monitoring speech and music. Used in many homes and most professional recorders to monitor recording levels and maintain them within distortion limits of the tape.

WAVE LENGTH—In tape recording and referring specifically to the tape magnetization created by pure single tone recording, the shortest physical distance between two points of the same magnetic polarity and intensity, also when expressed in mils, the ratio of tape speed (in ips) to recorded frequency (in k Hz per second).

WEIGHTING CHARACTERISTIC—The shaped response-frequency characteristic of a measuring device used to produce more realistic indications of the subjective effects than are obtained with unweighted (flat) measurements.

WOOFER—A loudspeaker designed specifically to reproduce the bass or low frequencies of the audible spectrum.

WOW—A form of distortion in sound reproducing systems caused by periodic variation in the speed of the medium (such as tape), and characterized by its effect on pitch.

WRAP—The length of the tape's path along which tape and head are in intimate physical contact. Sometimes measured as the angle of arrival and departure of the tape of respect to the head. See also **HEAD ALIGNMENT**.



SINGLE TRACK RECORDER—A tape recorder which records or plays only one track at a time on or from the tape. See also **MONAURAL RECORDER**.

SPLICING BLOCK—Metal or plastic device incorporating a groove within which ends of the tape to be spliced are held. An additional diagonal groove provides a path for a razor blade to follow in cutting the tape.

SPLICING TAPE—A special pressure-sensitive, non-magnetic tape used for splicing magnetic tape. Its "hard" adhesive will not ooze, and consequently will not gum up the recording head, or cause adjacent layers of tape to stick together.

SQUEAL—The audible noise caused by alternate sticking and release of tape. May occur at heads, pressure pads, or guides where friction develops with face or back side of magnetic

speakers arranged in the same relative positions as were the microphones during recording.

TAPE DECK—Tape recorder designed for use in a high fidelity music system. Usually consists of drive mechanism and does not include power amplifier, speaker or case.

TAPE GUIDES—Grooved pins or rollers mounted at each side of the recording tape head assembly to position the magnetic correctly on the head as it is being recorded or played.

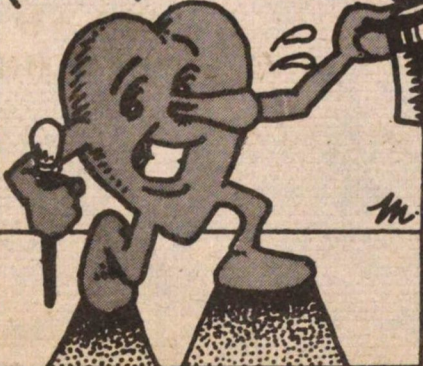
TAPE LIFTERS—A system of movable guides which automatically diverts tape from contact with the recorder's heads during fast forward or rewinding modes of operation.

TAPE PLAYER—A unit capable of playing pre-recorded tape.

TWEETER—A loudspeaker designed to reproduce only the treble or high frequencies of the audible spectrum.

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Introduction

continued from page 5

Terry Rogers, organizer of the Detroit and several other High-Fidelity Music Shows, along with her husband Robert.



Chris Stromberg of Audioland, who also helped to organize the Detroit show.

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rooms. Exhibitors, not unaware of this problem, tend to turn up the volume of the music in an attempt to mask or override sounds from adjacent rooms. Sometimes, the competition gets out of hand, and it's then that you're likely to see organizer Terry Rogers with sound level meter in hand, urging exhibitors to back off.

Sound tends to dull when exhibit rooms are filled with folks. It's a good idea to time your visit correctly. If you want more personal treatment, come at the non-peak hours. On Friday, the thinnest time is from 5 to 7 p.m. On Saturday, come early—best is the opening hour of 11 a.m. On Sunday, come early or at the closing few hours.

GETTING THE MOST OUT OF THE SHOW

The best way to see the show is to spend a few minutes in each room during your first walk through. After a first pass, return to the rooms that interest you the most for more in-depth sampling.

One of the chief delights of show-goers is to collect every piece of ad literature in sight. You'll see audiophiles leaving Cobo with shopping bags full of the stuff. The material allows you to review what you've seen in an unhurried atmosphere. The info generally includes a good deal of technical information and a minimum of superlatives. To make sorting through the jargon a bit easier, the SUN has included a glossary of technical terms in this special hi-fi show supplement. We'll also have free copies of back issues of the SUN at our exhibit room at the show. See you there!



Salespeople Wanted

The SUN, Detroit's hottest newspaper, has openings in advertising sales for aggressive, self-motivating persons. Experience preferred but not necessary. High rate of commission with guaranteed salary. Send resume to Ad Mgr., SUN, Box 7217, Detroit 48202.

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Friday 5 to 10 p.m. • Saturday 11 a.m. to 10 p.m.

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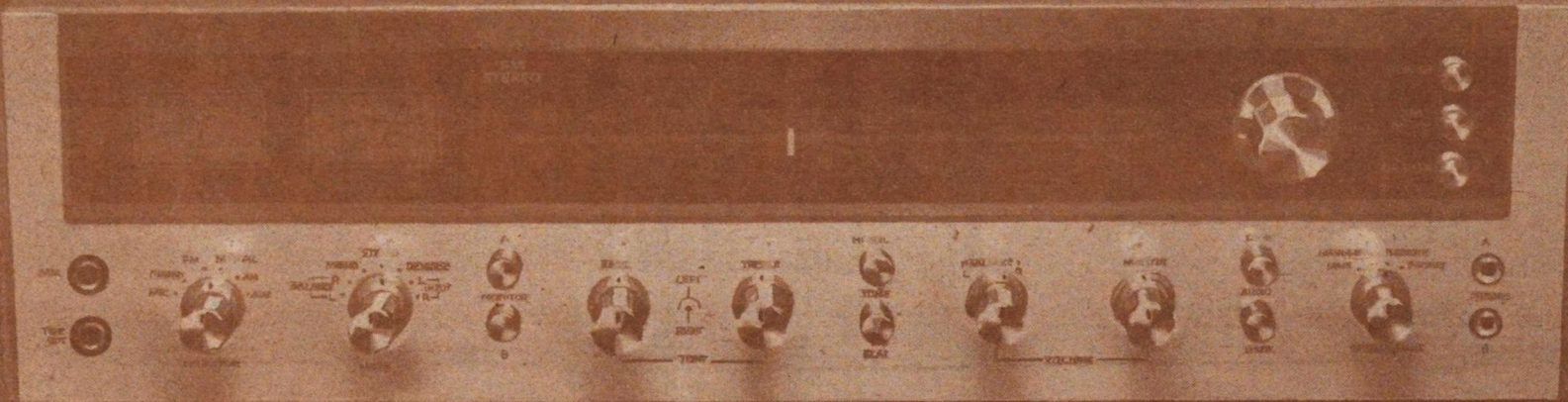
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Getting down to specifics, the LR-3500 puts out 47 Watts per channel into 8 Ohms from 20 - 20,000 Hz at no more than .5% Total Harmonic Distortion. It has two tuning meters, two tape

monitors, two stereo headphone output jacks, front panel tape output and mike inputs, FM MPX Phase Lock Loop Circuitry and loads of other features all packaged in a handsome walnut-finish wood cabinet. And topped off with our 2 year free repair or replacement limited warranty on material and workmanship.

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