

*I*n 1949, Frank H. McIntosh and his small team of dedicated and talented engineers created the first McIntosh Audio Power Amplifier, the Model 50W1. This was "The First", High Fidelity audio amplifier. It could produce 50 watts output from 20 cycles to 20,000 cycles with less than 1% distortion - unthinkable at the time! The new McIntosh power amplifier could reproduce music with a degree of realism and sonic accuracy that had never before been possible.

In 1952, High Fidelity was new and little understood by the public. Mr. McIntosh and his team decided to increase the awareness and understanding of High Fidelity by publishing a small booklet called "Lost Instruments". The easy to understand text and humorous cartoons were immediately successful in spreading the word that High Fidelity, and McIntosh amplifiers specifically, could indeed provide the finest and most accurate music reproduction.

45 years later, McIntosh Laboratory is still producing stereo equipment dedicated to the same basic philosophy: the finest possible reproduction of music. Through adherence to our founding principles, McIntosh has continued to grow and prosper, and many new products have been added for both Stereo and Home Theater use. A McIntosh Automotive audio product line also has been successfully launched.

The McIntosh reputation for Quality, and Excellence in music reproduction is recognized world wide.

LOST INSTRUMENTS



The Picture Story of High Fidelity Sound by McIntosh

THE HEART OF HIGH FIDELITY

Just as your *heart* sends life-giving blood surging through your body, so the amplifier acts as the *heart* of your sound system. The best loudspeaker system can only reproduce the quality of signal sent into it from the amplifier. The finest program can become distorted or partially lost within an amplifier. An imperfect signal produces impure tones, mixed sounds, or lost instruments. Therefore, perfect amplification is the goal in order to achieve the ultimate in faithful reproduction of sound.

The McIntosh patented circuit produces amplification very near to perfection. (All but 0.000016 of power output is a perfect reproduction of input signal at full power, 20-20,000 cycles.) The result is the purest amplification possible.

The McIntosh Laboratory stands ready to help you to laboratory-standard performance. Our original aim still controls: to create the finest amplification in existence, per dollar invested in listening pleasure.

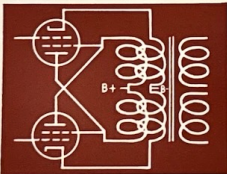
Frank H. McIntosh.

THE Patented McINTOSH CIRCUIT

The world-renowned McIntosh Bifilar Circuit with Unity Coupling is fundamentally different, and not available on any other amplifier. Wave form distortion, causing listening irritation due to switching transients between each half of the class "B" amplifier, is eliminated at all frequencies.

To date, McIntosh Amplifiers *alone* are able to deliver less than 1/3% harmonic distortion, and less than 1/2% intermodulation distortion at 20 to 20,000 cycles per second, even at full power output.

* McIntosh Laboratory, Inc. introduced Unity Coupling to High Fidelity in 1949, in U. S. Patent 2,477,074; also 2,545,788; 2,646,467; 2,654,058.



"Lost Instruments"
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McINTOSH LABORATORY, INC.

2 CHAMBERS STREET • BINGHAMTON, NEW YORK

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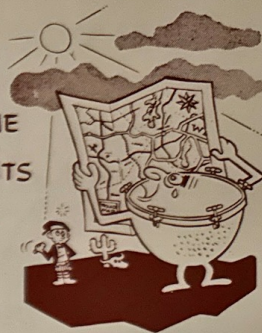
WHEN YOU LISTEN TO MUSIC

is every instrument of the orchestra
right there in your living room?



OR....

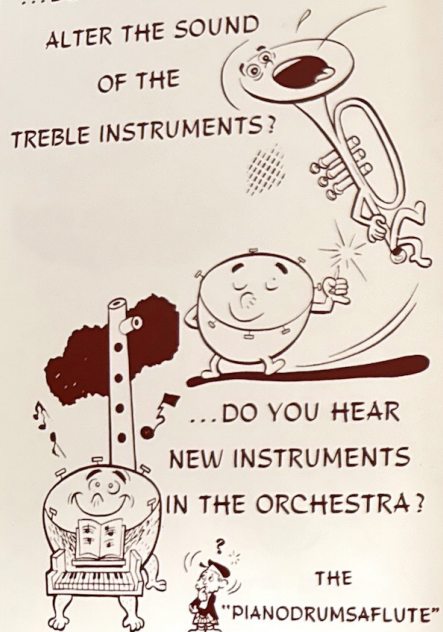
...ARE SOME
INSTRUMENTS
LOST...



...ARE SOME
INSTRUMENTS
DISTORTED...



...DO THE BASS INSTRUMENTS
ALTER THE SOUND
OF THE
TREBLE INSTRUMENTS?



...DO YOU HEAR
NEW INSTRUMENTS
IN THE ORCHESTRA?

THE
"PIANODRUMSAFLUTE"

DO YOU HEAR DULL,
LIFELESS INSTRUMENTS?



IF, in your present system, instruments are lost
or distorted—

IF you hear changing tones or "hybrid"
instruments—

THEN YOU MAY HAVE
LISTENER FATIGUE!



LISTENER FATIGUE is due to one or more of these
imperfections that perhaps arise right in the sound system
you are now using.

We would like to tell you how to choose a sound repro-
ducing system which eliminates listener fatigue. Our task
here is to relate engineering measurements to actual sound
system performance.

In considering any sound system, what we are finally
interested in is the way it reproduces the many charac-
teristics of sound waves. To make it easy to talk about
sound, let's see what it is and what it is made of.

Any SOUND
is a MESSAGE—whether it is



If you hear a sound, you FEEL

PLEASURE



ALARM

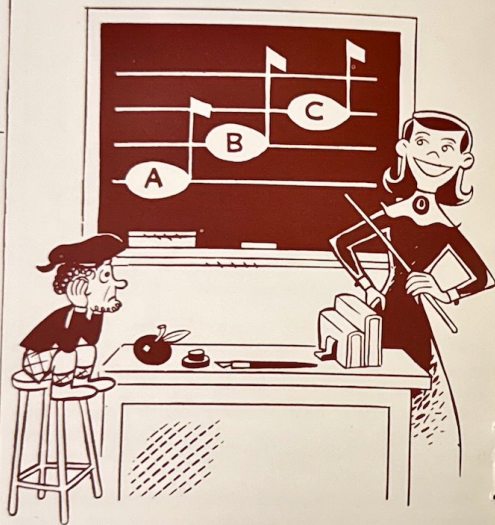


DISCOMFORT



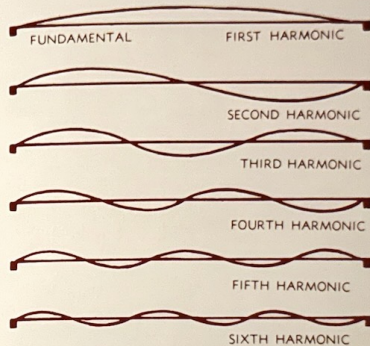
For this message to have meaning, it must be made of many characters—just as is a written message.

THE "ALPHABET" of sound is different tones.



A tone is a vibration of at least a fundamental rate, called the first harmonic.

Most tones consist of a first harmonic and additional vibrations at rates which are twice, three times, four times the first harmonic and so on.



TONES DIFFER in many ways,

- By PITCH—VIBRATO—LOUDNESS
- By the number of harmonics
- By the duration of the harmonics
- By the relative loudness of the harmonics
- By the rate of growth of the harmonics
- By the rate of decay of the harmonics
- By the time starting sequence of the harmonics.



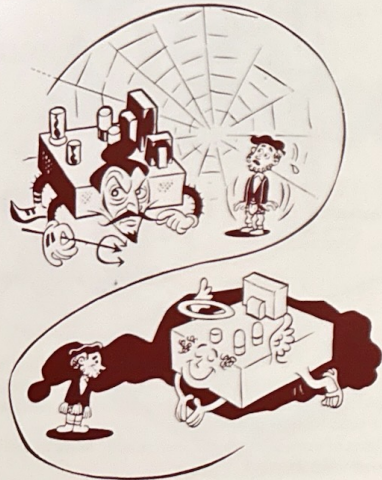
tone CHARACTER is obtained by using these variables in innumerable combinations. Tone character is responsible for the different sound of the same note played on a tuba or on a bass viol.

Tones of various character are combined to make different sounds.

SOUNDS DIFFER in many ways,

- By the character of the tones
- By the relative loudness of the tones
- By the rate of growth of loudness of tones
- By the rate of decay of loudness of tones
- By the sequence of the tones.

A **SOUND SYSTEM** is a machine entrusted with the job of conveying the many variables in sounds. All sound machines are not the same.



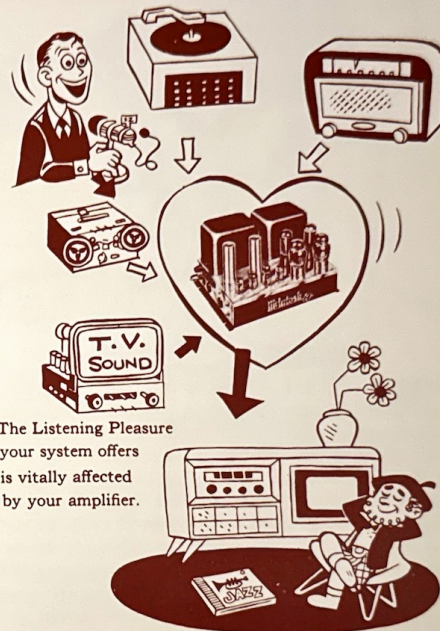
SOME SOUND SYSTEMS ARE SLIGHTLY VICIOUS

- They can Subtract some tones
- Add new discordant tones
- Change tone character
- Change some tones to noise.

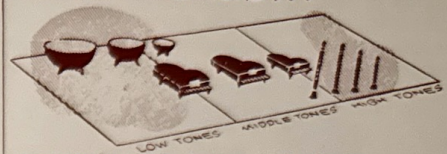


A system is perfect only if it adds nothing to or subtracts nothing from the message it conveys to us.

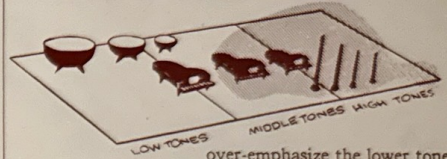
THE HEART OF YOUR SOUND SYSTEM IS THE POWER AMPLIFIER



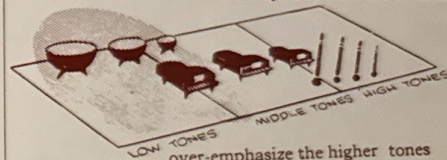
SOME AMPLIFIERS . . .



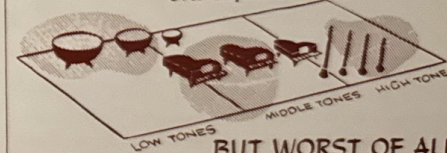
can reproduce only a narrow band of tones



over-emphasize the lower tones



over-emphasize the higher tones



BUT WORST OF ALL
—some amplifiers emphasize tones *unevenly*

WHEN AN AMPLIFIER cannot bring you the "full band width", not only do you lose tones, but frequently false tones are generated when notes above and below the amplifier range try to crowd in.



A **McINTOSH AMPLIFIER** is capable of bringing you ALL the first harmonic or fundamental tones—plus ALL the other harmonics with absolutely no false emphasis. This quality is called "Adequate band width" and is the ability of the amplifier to reproduce sounds at full power from 20 to 20,000 cycles per second—the tonal limits which the human ear can perceive. Less than 20 to 20,000 cycle response at full power is responsible for "lost instruments". Actually, the amplifier must be capable of reproducing tones far above and below this audible portion of the sound spectrum, in order to reproduce the audible portion without distortion.

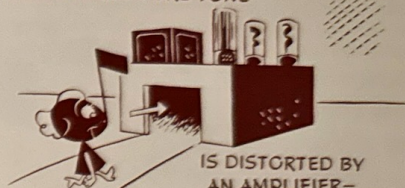


DISTORTION OCCURS when the amplifier cannot bring you an exact reproduction of the original sound.

"Distortion" may be divided into 2 types—harmonic and intermodulation—both of which can be accurately measured.

The amount of harmonic distortion present is determined by measuring the new harmonics which are added by a distorting amplifier to a single pure tone.

WHEN A SINGLE PURE TONE



IS DISTORTED BY AN AMPLIFIER—

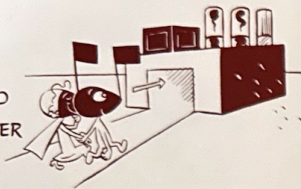


— NEW HARMONICS ARE ADDED.

HARMONIC DISTORTION is not a direct measure of the listening dissatisfaction that will be produced, but it can be a useful and convenient indication.

The amount of intermodulation distortion present is determined by measuring the effect one tone has upon another. In this case, TWO pure tones are fed into the amplifier, and the new tones generated are measured.

WHEN TWO PURE TONES ARE DISTORTED BY AN AMPLIFIER



NOT ONLY ARE NEW HARMONICS ADDED— BUT—

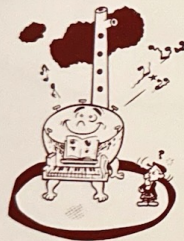
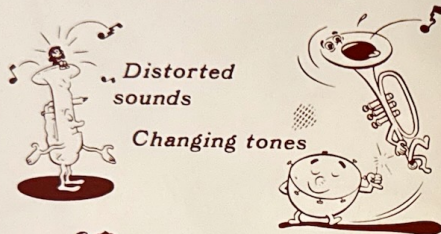


THEY ARE ALSO DISCORDANT TONES!

INTERMODULATION DISTORTION is very nearly a direct measure of listener dissatisfaction. *It is generally 3 to 4 times as great as harmonic distortion when harmonic distortion is over 1%.*

WHEN HARMONIC DISTORTION is less than 1% at full power over the entire 20 to 20,000 cycle tone range, then the intermodulation distortion in an amplifier is also less than 1% over the same tone and power range.

Intermodulation distortion which produces discordant tones is responsible for:



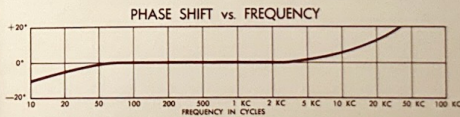
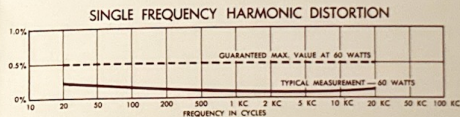
Unnatural sounding instruments



Listener Fatigue

AMPLIFIERS can produce discordant tones in the bass portion of the spectrum, or the middle of the spectrum or the treble portion. For example, when amplifier distortion is over 1% at the bass end or the treble end, then discordant tones are produced between bass and treble instruments.

A McINTOSH AMPLIFIER measures less than 1/2% harmonic or intermodulation distortion at full power from 20 to 20,000 cycles—from the lowest bass note to the highest treble harmonic. *This engineering measurement insures the complete absence of discordant tones from McIntosh amplifiers.*

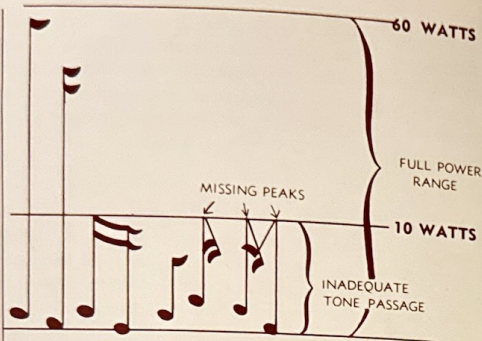
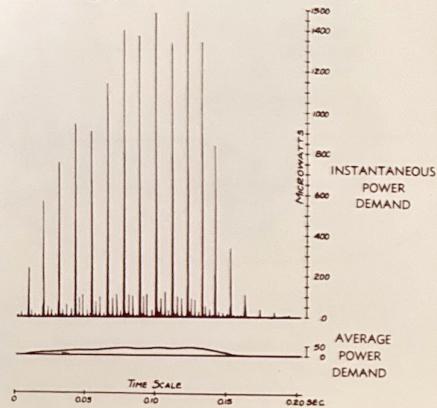


But to reproduce music and speech with complete realism, it is also necessary for the power amplifier to have enough reserve power capacity. While a sound-reproducing amplifier is seldom if ever called upon to produce full power for any long period, nevertheless, it is in the *nature* of sounds to demand full power for many short intervals per second.



IT'S ALWAYS NICE TO HAVE RESERVE POWER

FOR EXAMPLE: consider this graph of the power demand from an amplifier during the time that a man pronounces the word "quite". The total time is 1/5 second. The average power demand shown below is less than 1/30th the maximum power demand. Musical sounds have an even greater ratio between average and maximum power demands—200 to 1 or more. Since it is necessary that these short interval power spikes be reproduced with low distortion, it means that the average power produced by the amplifier is less than 1/200th of its maximum low distortion rating. A 60 watt amplifier, for example, produces 1/4th of a watt average power. A 10 watt amplifier produces only 1/20th of a watt average power.



HOW MUCH "AVERAGE POWER" do you need? Most probably, 1/4th of a watt is necessary for distortion-free reproduction of music. Since most good loudspeakers have an energy efficiency of only 2% maximum over the whole sound range, the 1/4th of a watt average power becomes only 5/1000ths of a watt average power in the air in front of the loudspeaker or roughly the loudness of conversational speech.

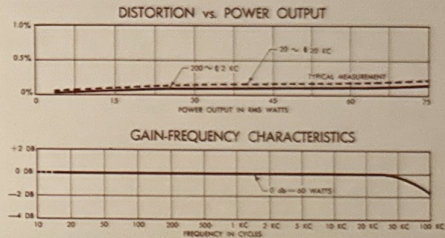
If more than the average power capacity is demanded of an amplifier, then the power spikes are clipped, distortion is produced and sound character is lost.

Cymbal crashes, for example, are dull and lifeless.



McIntosh MC-60 Power Amplifiers are the only power amplifiers which will produce:

60 watts of power at less than 1/2% harmonic or intermodulation distortion from 20 cycles to 20,000 cycles per second.

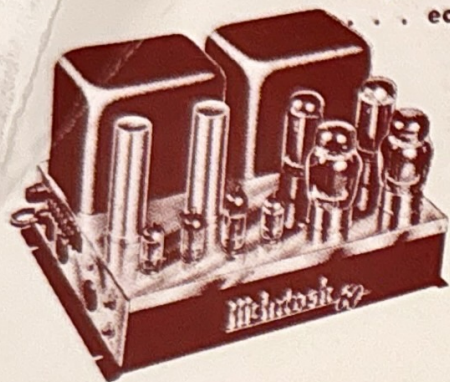


This performance graph to which every MC-60 McIntosh amplifier is tested is your guarantee of freedom from listening fatigue—of more listening pleasure, of full dynamic range and of complete realism in reproduced music.

MORE PLUS VALUES with McINTOSH AMPLIFIERS

Never before in High Fidelity history has distortion so low been guaranteed with power so great! McIntosh amplifiers are made with highest quality components . . . each unit is tested and guaranteed to perform

as advertised . . . highest efficiency means longer life, less wear on every component part . . . built for lifetime pleasure and satisfaction.



McINTOSH 60-watt AMPLIFIER MC-60

60 watts of the purest audio power yet available! Unsurpassed for performance and quality. Exceptional reserve power handling capacity provides amazingly clean reproduction and abundant realism. Harmonic distortion: $\frac{1}{3}\%$, Intermodulation distortion; $\frac{1}{2}\%$ at 60 watts output, 20-20,000 cycles. Highest efficiency. Hum level 90 db below full output. \$198.50.



McINTOSH 30-watt AMPLIFIER MC-30

30 watts power (60 watts peak). Harmonic distortion: (20-20,000 cycles) $\frac{1}{3}\%$ at 30 watts, 0.1% at 15 watts! Intermodulation distortion: Guaranteed below $\frac{1}{2}\%$ at full 60 watts peak output. Hum level inaudible: 90 db below rated output. Two inputs: 0.5 volts 500 K with gain control and 2.5 volts. Damping factor: 12 or better for 4, 8 and 16 ohm output. The outstanding performance of the MC-30 assures new listening enjoyment without fatigue. \$143.50.



McINTOSH Professional AUDIO COMPENSATOR C-8

Extremely flexible and complete control unit for your entire system. Five bass and five treble compensation switches; aural compensator; rumble filter; separate bass and treble controls; five-program-source selector, for tuner, tape recorder, microphone, and two phonograph cartridges. C-8 (without cabinet) \$88.50; C-8M (with cabinet) \$96.50—for use with McIntosh Amplifiers. Self powered model for use with any amplifier—C-8P (without cabinet) \$99.50; C-8PM (with cabinet) \$107.50.

Write for Complete Specifications: McINTOSH LABORATORY, INC., 2 Chambers St., Binghamton, N. Y.
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