

What is High Fidelity?

J. GORDON HOLT*

All hitherto published explanations of high fidelity have been written for the specific purpose of confusing the novice hi-fi enthusiast and frightening away the would-be hi-fi enthusiast. Here at last is the hi-fi primer to end all hi-fi primers, written in the simplest of terms and sugar-coated for the person who likes to daydream while reading.

THERE IS REALLY NOTHING at all confusing about high fidelity, once it is thoroughly understood. It is sometimes difficult to understand, but not very.

High fidelity is fidelity that is higher than low fidelity. It is concerned with the pluperfect electro-mechanical reproduction of the molecular disturbances set up in the air by vibrating bodies. These are generally musical bodies rather than other types, although they can be nonmusical too, which is why all knowledgeable high fidelity enthusiasts play noise records instead of music.

The novice need not be concerned with the lack of a sharp line of demarcation between hi-fi and low-fi, except inasmuch as this proves that there is really no such thing as high fidelity. There are three degrees of fidelity, one of which is not fidelity at all, and none of which can be distinguished from the others. The latter two are called high fidelity and medium fidelity, but medium fidelity is in reality nothing more than high fidelity for low incomes. This must not be confused with low fidelity for high incomes, which is grounds for certain types of legal action in some states.

Components

A high-fidelity system may be visualized as a chain with a phonograph pickup at one end and a listener at the other end, with sausage-like links, called components, in the middle.

Pickups

The first component or link is known as the pickup, because it picks up the bends in a record groove and converts them into various forms of distortion and frequency response. The turntable is sometimes considered an integral part of the pickup, but it isn't really because they may be purchased separately as well as together. Pickup arms may be purchased separately too, except when the turntable is a record changer.

Turntables

The turntable is a circular table which turns, or rotates, the record in the same direction at all times. It is essential that the turntable not change direction while playing a record, or disc, for this will cause wow, which is unpleasant to musical ears as well as to the people who have the musical ears. Wow that is too fast to be called slow-speed wow is called high-speed wow, or flutter, while mechanical vibrations cause grumbling noises and sometimes profanity.

Every turntable has a motor, futuristic styling, and lower rumble than all competing brands tested by an Independent Consumer Investigations Laboratory.

Styli

All pickups have styli, which are either changeable by the user or are not, depending upon several factors which are most exceedingly important and should be borne in mind whenever shopping for a pickup.

Most styli wear out with use, although non-wearing osmium styli are supplied with all department-store console phonographs.

Amplifiers

The next sausage (or link) in the high-fidelity chain is the amplifier. This converts the tiny electrical impulses from Debussy's *Clair de Lune* into watts of horsepower such as Bach's *Tocatta and Fugue in D Minor*. Either 1 or 100 watts of power is entirely adequate for home listening, so the wise buyer will choose an amplifier of that power and will not allow himself to be misled by conflicting expert opinions.

Some amplifiers have a built-in pre-amplifier and some do not, just as some of them have Fletcher-Munson curves¹ and others have transistors.² It isn't

¹The Fletcher-Munson curve was named after Messrs. Fletcher and Munson, who wrote a technical paper proving once and for all that equally loud sounds aren't necessarily equally loud.

²Transistors are not named after anybody, because some of these are much louder than others, regardless of frequency.

necessary for the novice hi-fi enthusiast to worry about the difference unless he is the kind of person who *likes* to worry about differences.

One difference between amplifiers is known as distortion, and it is by far the most important characteristic of an amplifier because it affects the way it sounds. Frequency response is even more important than distortion, except to those bigots who consider distortion more important than frequency response. These people have golden ears and attend orchestra concerts and make a point of always selecting records with blemishes, that are sometimes known as clicks and pops. Clicks and pops are the most important characteristics of phonograph records, just as hiss is the most important characteristic of magnetic tape. Tape hiss, however, is of less significance to people who own phonographs and not tape decks. Some of these contain playback equalizers and some of them have RIAA.

RIAA'S

The RIAA is a curve, like a frequency response. The ideal frequency response curve is not a curve at all; it is a straight line. This is called uniform frequency response, and it is desirable except when it is complementary to another curve which is not a straight line and is therefore called an equalization curve.

Equalization is less important today than it used to be, because all record manufacturers add a certain amount of bass attenuation and decibels to their discs, whereas several years ago they did the same thing only differently, depending upon whim and supported by Good Engineering Practice. It used to be very confusing, but it isn't any more, thanks to the discovery of RIAA.

Loudspeakers

After the RIAA comes the loudspeaker, which is the most important link in the high-fidelity chain because it is the worst. Some loudspeakers have horns, but high fidelity enthusiasts living in the Manhattan area are not allowed to use horns so they use direct radiators.

(Continued on page 98)

* *Golf View & Rose Valley Eds.*
Wallingford, Pa.

WHAT IS HI FI

(from page 45)

Direct radiators are either electrostatics or cones, although neither type will warm a room as efficiently as will a 50-watt amplifier.

Electrostatics utilize the same force that causes shocks when shuffling across carpets in dry winters, but listeners who prefer to sit while listening will find it convenient to use a power supply with their electrostatic tweeters.

There are three different kinds of loudspeaker: woofers, middle-range speakers, and tweeters. Woofers are preferred by people who do not like treble tones, such as women, although many knowledgeable hi-fi enthusiasts prefer to use woofers and tweeters together. Middle-range loudspeakers reproduce the middle range, which is not high fidelity at all because everybody knows high fidelity means reproduction of all the highs and all the lows.

In a two-way system the tweeter carries the middle range, except when the middle range is carried by the woofer. This is termed the crossover frequency, and it is exceedingly important that phase shift be avoided in order to prevent low fidelity. Four-way loudspeakers are notable mainly for having one more speaker than three-way loudspeakers. Most of the speakers in a four-way system are middle-range speakers, and although woofers and tweeters are still important, they are not nearly as much so as you might be led to believe.

The Listening Room

The final link in the high-fidelity sausage is the listening room. The room

itself does not listen, but is called a listening room because it contains a listener.

The listener is the heart of the high-fidelity system, and is noted for having high distortion, poor frequency response, marginal stability, and arbitrarily variable performance characteristics. Listener instability is the most common form of defect in a high-fidelity system, which is why manufacturers recommend that the ears be checked periodically by a qualified service agency to ensure that they are meeting their specifications. Defective ears may be cleaned with anti-static spray or a mild washday detergent containing a wetting agent, or may be replaced by a microphone and an oscilloscope or, in cases where there is a little interest in music, by a camera and a well-equipped dark-room.

Recessional

An educated guess as to the future of high fidelity and stereo can lead to practically anything, including tremendous strides, many of them forward. It is anticipated that the multi-million-dollar high fidelity industry will increase in economic status with increasing national inflation, and may conceivably survive a devaluation of the Yankee dollar and a general broadening of the world's economic barriers