

# The Geometric Progression

A VERY considerable area of our phonographic world operates in one way or another under a frightening group of mathematical relationships called geometric—where things increase not at a staid and fixed rate but in accelerating leaps, each vastly larger than the last. The Geometric Progression is the basic term for this kind of thing but it has many a close relative—the Law of Diminishing Returns, the Logarithmic Curve, the Law of Squares. Whatever the technicalities, the effects are dramatic without exception. That blithe area of reproduced music that we now call “hi-fi” is particularly rife with these patterns of acceleration—or deceleration.

The Geometric Progression is dangerous, because we ignore it. It applies to all sorts of ordinary things we do in daily life, but we go right along thinking in the simple arithmetical relationship where, so to speak, a spade is a spade, twice two pounds is four pounds, a fifty-mile trip is five



times as long and takes five times as much gasoline as a ten-mile trip. True enough, there are a million and one quite proper arithmetical relationships like that, but what of those that aren't?

The distance it takes to stop your car at a given speed, for instance. If you think that at twice the speed you'll need merely twice the distance to come to a halt, you'll not live long; the distance is *eight* times as far. So too with winter's skids; drive half again as fast on ice and you'll slide merely four times as far when you get started. The difference between forty and fifty miles an hour is decidedly not the same as that between sixty and seventy, as a few who have lived through the proof can tell you, for with each additional mile-per-hour the death factors jump upward more rapidly. Beware of the Geometrical Disguise. It won't cause you physical injury in the phonograph world but it may cost you pleasure.

Pitch, as we hear it, is geometrical in terms of vibration frequency. Middle A is 440 cycles a second; an octave higher, eight piano keys away,

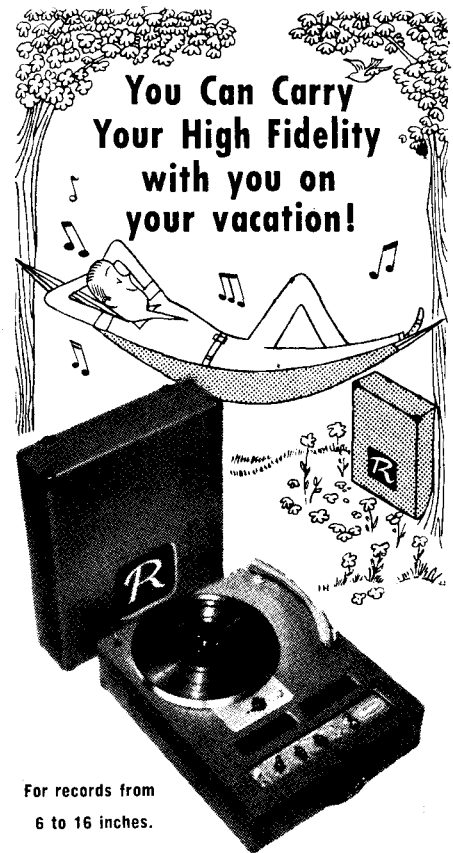
is 880. Move eight more and you have 1760. Each octave rise, sounding like the last, *doubles* the frequency—merely add four more and you are far beyond the range of hearing at a fantastic 28,160 cycles. Now consider the intensely practical hi-fi aspect of this musical law. “Flat to 15,000!” proclaims an ad. “Flat to 12,000” claims another. The experts shudder—but is there much difference? In musical terms no more than a major third, three piano keys. In the upper “hi-fi” brackets the numerical frequencies are highly misleading because we use a numerical scale for a geometrical progression. The entire range of “highs” exclusive to the better new machines and records is scarcely worth an octave of good music. Perhaps, then, the fuss we make about these tones is a bit exaggerated?

You can't pin down the increase in hi-fi quality with added expenditure in any exact way. But the incontestable fact is that for each additional rise in quality the cost is greater and grows greater at an increasing rate. Divide your cash into \$50 parcels and the first will buy you a lot more than the last. Quality does *not* double, nor anywhere near it, for double cost. The last tantalizing bit of perfection that means The Best is astronomically expensive in this painful geometry.

Nor does your music double in sound with double the watts of power. The geometrical disguise misleads almost all of us here. Did you think that a forty-watt amplifier gives twice the volume of a twenty watter? Not at all. The difference is only three decibels and the decibel is roughly the smallest difference in sound intensity that we can detect! Sound volume is another geometric function of our ears. The scale from the faintest sound to the loudest we can stand is about 90 db, a big scale—but its geometry is incredible. For every three decibels the power, in watts, must be doubled, low or high, loud or soft. Double a two-watt amplifier and at four watts you get a notch more loudness on the volume control. Double a forty watter to eighty watts and you get the same tiny increase, no more. And the worst of it is that the cost goes up geometrically in the other direction. Enough to make any phonophile gasp.

But the silver lining to all this is simple enough. Just look at it backwards. The less you spend the more you get—geometrically, too.

—EDWARD TATNALL CANBY.



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# Chicago Audio Fair

THE first venture of the Audio Fair into the mid-West in late May was successful beyond the fondest expectations of promoters and exhibitors. When the noise level at Chicago's Conrad Hilton Hotel had subsided to a normal Windy City roar of 60 decibels, audiophiles as well as exhibitors were agreed on two points: 1.) the paramount fact is that there was a fair here, and 2.) Chicago wants a better and bigger one next year.

Before the fair opened, promoters confessed they were flying blind. They hoped for 5,000 visitors, expecting less. But when registration blanks ran out a couple of hours after opening, they discovered what New York City learned at its first Audio Fair three years ago—that there is a good quantity of high fidelity devotees in Chicago right now and potentially a great one.

Fair attendance estimates varied from 8,000 to 12,000, with the latter figure submitted by hotel personnel accustomed to estimating convention crowds. Five exhibitors applied for space in next year's fair before this one ended.

The remarks of one exhibitor are typical: "The fair was an awakening, particularly for the boys who thought they were operating in an area of relative audio illiteracy. This is the Cinderella department of the electronic industry. We're in it [audio] now up to our ears. We want the fair to become a permanent fixture here. Frankly, I was flabbergasted at the response and so were most of the others."

There are two major audio equipment distributors for the low and middle income bracket buyer in Chicago. One has already doubled his audio section. The second, soon moving to larger quarters, plans an audio department six times larger than his present one.

Who came to the Audio Fair? Exhibitors noted approvingly that the crowd was top-heavy with middle to upper bracket professional people, both high fidelity fans and LP music lovers, the blue ribbon hobbyists. Many bright-eyed and big-eared, but low-budgeted, students also showed up. The Audio Fair caught many Chigoans by surprise, including editors of several leading newspapers. It won't next year. The public-service offices of the papers received too many calls for details on the exhibition. A sampling of the crowd showed that visitors came from every surrounding state

and from points as far away as Texas, Alabama, Florida, California, and Canada.

There was sound to please every taste and pocketbook and one that thrilled all. This was binaural, stereo-phonetic, or "three dimensional" reproduction to which the mid-West had not previously been exposed. WGN, a 50,000-watt clear channel station, and its FM outlet, WGNB, broadcast a full hour of audio in conjunction with the fair's opening. The broadcast was sponsored by Magnecord, Jensen, and The Radio Craftsmen. Fair visitors who heard the richness, depth, and realism of three-dimension sound for the first time, particularly those who listened on earphones from Magnecord's binaural tape, walked away mumbling to themselves.

NO single stylus, amplifier, compensator, speaker, or enclosure ran away with the fair. But a number of items stood out and drew the largest crowds. Newcomb Audio Products, of Hollywood, kept the problems of the home installer in mind when designing its new direct and remotely controlled Classic series amplifiers, exhibited here for the first time anywhere. To facilitate control mounting, Newcomb provides adjustable shafts which may be extended with a twist of a screwdriver to accommodate any panel thickness up to three-quarters of an inch.

The remote tuning units please both the hassock-minded man of the house and the little woman. Finished in beautiful brushed brass, the units work up to 100 feet from the amplifier and are connected to it by a single cable. Front end filaments are D. C. With my ear jammed in the speaker, and with gain and bass boost wide open, there was no hum at all. The ten-to-twenty-five-watt systems run from \$39.50 to \$269.50 audiophile net.

White Sound's speaker systems, also prominently on view at the Chicago fair, are remarkably free of distortion, particularly transient. The note of a thirty-two-foot organ pipe was clean. The exhibitor claimed it was sixteen cycle! White features back-loaded, nine-foot folded exponential horns, in non-resonant cabinets that don't need a room corner to do an excellent job. The R-J speaker enclosures, exhibited under wraps at the last New York fair, caused a lot of commotion because of excellent bass reproduction despite their small size. They appeal to the devotee who must ration his living room space and who