Letters

In Support of Building Well

To the Editor:

I found Paul Hanke's review of my book, *The Apple Corps Guide To The Well Built House*, unusual. Mr. Hanke clearly disagrees with me often, yet he finally "recommend[s] the Well Built House only with many reservations." If Mr. Hanke finds the presentation so spotty, why does he recommend it at all? He is dismayed when I neglect to cover building practices I don't approve of, but then begs the point: This book is meant to convince customers to pay for a well-made and long-lasting structure. My view of how they can reach that goal is the substance of the text. Maybe Mr. Hanke thought Apple Corps should have written a ten-volume bible, and was sore that I didn't.

I agree there are some places in the book with plenty of details and others with few. That is the consequence of some things mattering more than others, and, I suppose, whimsy.

Proven materials and methods get my firm endorsement. For example, I describe a lasting vertical siding using two layers of boards, and I don't think much of any others. Vertical boards suffer because they present their entire length as a joint vulnerable to rain penetration, while clapboards don't. Does Mr. Hanke think I should describe in detail how to do something I believe shouldn't be done?

Industry-recommended advice on clapboard nailing is tail covering. You can't nail clapboards the way they tell you to without splitting them – what good is that? I, too, questioned the wisdom of nailing clapboards through foam insulation into plywood sheathing; he makes it sound as if he wondered alone.

Does anyone build main floors with 24-inch on-center joists? I consider a stiff floor a hallmark of a sturdy house. I use 16-inch centers minimum, sometimes 12-inch under tile, and 3/4-inch plywood just makes a good floor better, no matter what the joist spacing. If you build for "adequate," you build differently than I do.

Regarding roof framing, if the tie is too high up the rafter pair, it hasn't the leverage to hold the walls in. If the tie is low enough, even 2x4 rafters (ridiculous, I know) would restrain platform-framed knee walls from pushing out. Strong rafters and good joinery allow builders to place the collar ties higher, ballooned walls or not. Please note the final sentence of the paragraph that offended Mr. Hanke: "The joints and sizes of all the pieces must be right to make this system work."

As an aside, the house in Mr. Hanke's April 1988 Case in Point column "How I Learned To Love Balloon Framing" would get only partial help from balloon framing. The large first-floor openings mean very few full-height ballooned studs, though mercifully they would be in the middle of the wall. I could show you several New England garage ells with balloon-framed walls bowed out over the garage or carriage shed doors. A strong design considers all the loads and all the remedies.

Finally, customers "get uppity" when they don't know what to do next, when their builders let them down, or because of their personalities. If a customer wants to help himself and his builder to get the best house possible, he needs to know what help means. Once the design decisions have been made and the project is under construction, the best help is usually a simple matter. Make your decisions on time, pay your bills, encourage the work any way you can. There's more to it than that, on the job and in my book, but a truly helpful customer comes along only so often. Think about yours.

I don't know why Mr. Hanke seemed to take this book as a personal affront, but I'd be glad to talk about some of these topics further.

Jim Locke
Northampton, Mass.

Paul Hanke responds:

Please be assured that I have no personal vendetta against you or the Apple Corps. I came to the book with respect for both you and your work, and with high expectations.

I recommended the Well-Built House to JLC readers (who are generally building professionals) because I thought they might enjoy comparing notes with you. My reservations apply to the usefulness of the book for homeowners – your primary audience. I often felt you neglected to support your opinions adequately.

I wasn't upset that you didn't write an encyclopedia, and I don't fault you for not recommending practices or materials that you consider to be inferior. However, I thought you should have either made a better case against the things you dislike, or provided more detailed information on how the alternative practices or materials that you approve can be successfully installed. Perhaps I saw more "whimsy" here than you intended.

With respect to vertical siding, you recommend a "lasting vertical siding" using two layers of boards, which I take to mean the reverse board and baten (5/8 inch under, one inch exterior) that you describe in the book. But on rereading, I see that you actually qualify this method by saying that it is used for barns, where "the occasional leak matters little." I'm confused by such a recommendation. I prefer vertical shiplap, but my concern was that you did not describe application of your vertical board system with the same detail that you gave to clapboards.

As for floor framing, there is absolutely nothing less sturdy about 24-inch on-center joist spacing per se than 16-inch on-center layout. Optimum spacing is determined by consideration of joist size, species and grade, span, and total applied load. Two-by-tens 16 inches on-center can perform as well as 2x12s at 24 inches, all other things being equal. In some cases, joist size might actually be reduced by nailing or gluing the subfloor, which makes each joist act as a mini T-beam and eliminates squeaks as well. In other cases, changing grade or species could affect joist size, along with design load (50psf, first floor; 40psf, sleeping rooms; 30psf, attics).

What I think happened in my "Case in Point" roof was that the rafters spread because there was no restraint at the bottom, and the half-story kneewall was free to pivot as if it were hinged at the sole plate.

"Strong rafters and good joinery" do not allow builders to place collar ties higher if the purpose is to restrain outward thrust. To do that they must be placed as close to the wall/rafter intersection as possible. Normal collars, placed a third down from the peak, are only intended to keep the rafters from bowing in, not to control thrust. I know, I learned the hard way.

As for client relations, the construction world is full of "war stories" on the part of owners, builders, and architects – you only have to read House for examples. I chose the word "uppity" because of the tone I perceived in your writing, which again may not have been your intent.

Finally, let me say that I am in total sympathy with your desire to put quality first in construction. I disagree, however, on some of the specifics of how that can be accomplished (which I suppose is to be expected). I believe that the advice in your book would sometimes result in spending a client's money in ways that would not make the best use of it, such as for more important increases in quality, amenities, or energy conserving measures.

Lightning Protection

To the Editor:

I was appalled to read the "advice" given by Henry Spies concerning lightning protection (1/89, p. 16). Mr. Spies begins his response stating how little "we" know about lightning, and then goes on to give poor, uninformed advice.

If lightning rods "caused more damage than they prevented," as stated, it would become quickly apparent on the many ammunitions and explosives storage buildings protected by them. Also, I do not think that Underwriter's Laboratories would inspect, list, and attach "master labels" to protected structures if present thinking was a Mr. Spies claims.

In regards to his advice for the Northeast: The "risk assessment guide" published in NFPA 78-Lightning Protection Code states that the computed risk value should be multiplied by 1.5 in the Northeast, due to the severity of the storms in this region.

Concerning costs: An average home with conventional rods can be protected for about $1,500.

Will Priestly
Custom Specialties
Pike, N.H.

Hank Spies responds:

There are two theories on lightening protection, each with a different result in mind. The UL and building codes cover the "Franklin Theory," which is based on the ability of the lightning protection system to ground any strikes and prevent damage to the structure. However, the lightning strike will still induce large currents in electrical wiring and will probably blow out any electrical or electronic equipment in the house, and can be fatal to anyone using a telephone or contacting such equipment. Surge protectors and capacitator banks can provide additional protection in some instances.

A second theory, that of preventing the lightning strike from occurring (without induced currents in the electrical system) by the use of a dissipation array, is primarily based upon research conducted by Charles Moore at the Irving Langmuir Laboratories of New Mexico Tech at Socorro, N.M. His research indicates that if a corona (St. Elmo's fire) builds up on the lightning rods, a strike may be deflected to an unprotected area. Dissipation arrays have not been approved by code bodies but seem to protect where the standard Franklin system did not work, such as on the gas stack of Philadelphia Electric's Peachbottom nuclear power plant.

Lightning is caused by a spark jumping between two planes with opposite charges. Usually the bottom of a thundercloud has a strong negative charge. The natural charge of the earth is mainly positive, and a positive charge builds up and creeps along the ground beneath the cloud as it moves. Air is a poor conductor of electricity, so the positive charge moves along until it finds an object such as a building, tree, or person, which enables it to rise above the ground. As it rises, the negative ions in the cloud will draw it up in steps. Eventually the negative ions and the positive charge meet in the air and a bolt of lightning is formed. The process takes place in millionths of a second.

As far as the risk in anyone location is concerned, it is difficult to make generalizations. There seem to be "lightning belts," perhaps only a few miles long or wide, where lightnings strikes are frequent. Other areas only a few miles away rarely have a problem. I grew up in an area where the power lines passed through such a belt, and no electric or electronic equipment ever lasted long enough to wear out, despite capacitator banks (they helped). However, none of our buildings were ever damaged, despite being on the highest hill in the area.

In many ways, lightning protection on a specific site can be likened to a "magic tiger repellent" system. No one knows if or how it works, but no one has seen any tigers.

Affordable, or Cheap?

To the Editor:

I just read the article, "Creative Cost Cuts," by Steve Carlson in the February issue. It was with a great deal of dismay that I read many of his suggestions on cost cutting. His sugges-

tions will create a cheaper home only if the cost of construction is the only criteria of comparison. If the lifetime cost of the house is considered, then many of his suggestions are guaranteed to increase the cost of the house.

Because I specialize in remodeling I have the opportunity to observe the results of deficient building practices. Most builders seldom get the chance to see what the "down-the-road" costs are for homeowners and never (it seems) take into account the true costs of their mistakes or omissions. Carlson suggests that rakes, overhangs, fascia, etc., can be eliminated. Where is the consideration for the deterioration of siding, window trim, or paint from rain and sun? Let's take that concept one step further and also not have any gutters. Now you have roof fun-off running down the siding to the ground immediately adjacent to the foundation. Not only do you have ruined siding, but you will most likely have water behind window and door trim and certainly a wet crawl space. In about ten years, that will be good for a $50,000 re-build.

If you build 24 inches on-center with two stud corners and no subsheathing, then certainly it will support the roof, etc., if the rafters are lined up over the studs. However, the walls will vibrate like a drum every time a door is slammed or a truck drives by. This means nail pops on drywall, joint opening on trim, and an increase in sound-transmission. Of course, we haven't even considered wind or earthquake, or the sense of "cheap" we get when the walls move around.

I've been on roofs with 1/2-inch plywood on 24-inch on-center trusses. They bounce like crazy; roofing nails work loose and dead-load sag occurs between the rafters or trusses. Because of the bounce, installing the roofing is more time-consuming whether you use nails or staples.

I could go on about the various other recommendations that Mr. Carlson made, but my point has been made.

No one is suggesting today that we should build homes without insulation because it's cheaper to build. Many used to. Let's not make the same mistake and say that maintenance and durability are not necessary considerations when building.

Frank McMichael
Ukiah, California

To the Editor:

Please spare us articles on how to make a house "cheaper." More affordable is one thing, but 2x3 walls? 7 1/2-foot ceilings? Not only is it more work with non-standard items, it's flimsier and probably dangerous without an engineer looking on. Economy should be based on a 100-year basis (i.e. a life cycle), not disposability.

R. Darfler
Ithaca, New York

Steve Carlson Responds:

Amen to the idea of gauging economy over the long run. A house is only affordable if all the costs of owning it – mortgage, utilities, property taxes, maintenance, etc. – add up to an affordable total.

My article briefly surveyed scores of techniques and materials that can reduce the "sticks and bricks" component of affordability. Obviously, not all of them are appropriate for every house. But anybody who is concerned about affordability has to be open to different ways of doing things. It's just not true that every initial cost cut automatically results in a later expense.

My responses to specific criticisms follow:

The article noted in passing that savings can be achieved by reducing or eliminating soffits, overhangs, fascia, and rake ladders. It also noted that gutters can sometimes be eliminated if there is proper ground slope and drainage. In the example cited by McMichael, it would, of course, be foolish to completely eliminate both overhang and gutters. It would be fair to ask whether both are needed, how much overhang is needed, and whether soffits and fascia serve any function other than aesthetics.

I recently renovated a house that was built more than 100 years ago, framed 24 inches on-center without structural sheathing. The house was, and is, structurally sound. The walls don't vibrate and the nails haven't popped. Of course, structural bracing was used, as was recommended in the article.

I agree with Darfler that it usually makes sense to use standard materials. The article emphasized that the design should accommodate the dimensions of standard materials to minimize cutting and waste. The 2x3 studs and 7 1/2-foot ceilings were mentioned because they are considered by some to be optimal in other respects. I personally prefer 2x4s and 8-foot ceilings, but that preference has nothing to do with durability.

We all know of horror stories: "cheap" housing where the initial savings were eradicated several times over by ongoing maintenance and energy costs. Obviously, that kind of cost cutting cheats the homebuyer. Honest savings don't add to future costs.

Radon Monitors Reviewed

To the Editor:

In Alex Wilson's column "Testing For Radon" (12/88, p. 56), he said that "you will probably do better sticking with the passive monitors" as opposed to a continuous monitor because of their lack of accuracy and need for calibration.

A year ago I tested my home with a charcoal canister and found a high radon level. Upon purchasing a radon monitor, I found levels from 15 to 30 times what they should be (due in large part to having a tight house and a brick floor in a sand bed, ideas I got from your magazine). With the air exchanger (another JLC idea) on full-time, the levels fell 70 percent, which was still inadequate. Then I plugged the out-take duct of the air exchanger into the gravel layer under my floor, and the level of radon in the house plummeted. In the summer we leave the windows open. It took only a matter of hours to check the effectiveness of each procedure. I used the radon monitor to confirm that the radon was coming from the ground rather than the bricks.

It is an aggravation that the monitor is due for a calibration now and that id does have a 30 percent leeway in its readings, but it has served me well for a year. It has told me my changing radon level and helped me to reduce it by 98 percent.

Steven Warner
Eagleville, Pa.

Tight houses do not cause radon problems and radon does not come from bricks – it comes from the soil under a house (and sometimes from well water). Furthermore, we have never recommended brick floors over a sand bed except as a walkway or patio. And we don't recommend air-to-air heat exchangers to solve serious radon problems, since exchangers merely dilute the radon gas that's already in the house. We do, however, recommend sub-slab ventilation similar to what you describe (see "A Radon Guide for New Construction" in the October 1987 issue). Inexpensive passive monitors, simple equipment, and common sense can go a long way toward solving most radon problems. - Editor ■

Keep 'em coming... We welcome letters, but they must be signed and include the writer's address. *The Journal of Light Construction* reserves the right to edit for grammar, length, and clarity. Mail letters to *The Journal*, RR 2, Box 146, Richmond, VT 05477