How to Use This Book

This book is a companion to *Chemical Engineering Reference Manual*. Since it is a practice problems book, there are a few, but not many, ways to use it.

Since most of the problems in the book can be solved in either customary U.S. or SI units, your first decision will be which set of units you will work in. Don't get me wrong: The exam doesn't give you such a choice. Exam problems are either in customary U.S. or SI units, not both. So, you have to be proficient with both. I recommend that you solve half of the problems in customary U.S. units and half in SI. Then, if you have time, go back to solve all of the problems a second time, using the alternate units.

The big decision you have to make is whether you really work the practice problems or not. Some people think they can read a problem statement, think about it for about ten seconds, read the solution, and then say "Yes, that's what I was thinking of, and that's what I would have done." Sadly, these people find out too late that the human brain doesn't learn very efficiently that way. Under pressure, they find they know and remember little. For real learning, you have to spend some time with a stubby pencil.

There are so many places where you can get messed up solving a problem. Maybe it's in the use of your calculator, like pushing log instead of ln, or forgetting to set the angle to radians instead of degrees, and so on. Maybe it's rusty math. What is $\ln(e^x)$, anyway? How do you factor a polynomial? Maybe it's in finding the data needed or the proper unit conversion. Maybe it's just trying to find out if that funky code equation expects L to be in feet or inches. These things take time. And you have to make the mistakes once so that you don't make them again.

If you do decide to get your hands dirty and actually work these problems, you'll have to decide how much reliance to place on the published solutions while solving the problems. It's tempting to turn to a solution when you get slowed down by details or stumped by the subject material. You'll probably want to maximize the number of problems you solve by spending as little time as possible with each problem. I want you to struggle a little bit more than that.

Studying a new subject is analogous to using a machete to cut a path through a dense jungle. By doing the work, you develop pathways that weren't there before. It's a lot different than just looking at the route on a map. You actually get nowhere by looking at a map. But cut that path once, and you're in business until the jungle overgrowth closes in again.

So, do the problems. All of them. Do them in both sets of units. Don't look at the answers until you've sweated a little. And, let's not have any whining. Please.