sional in industrial environments, and hence of greater significance in the relationship between industrial and academic statisticians, is economics—costs, revenues, profits, patents, intellectual property rights. Proprietary restrictions on data and results contrast sharply with many academic statisticians' experiences and, coupled with a bottom line emphasis, are sometimes viewed as unscientific.

Banks writes in Section 5: "[I]t is my impression that students at all levels should anticipate a credential deflation upon graduation." The ensuing paragraph appears to accuse the typical non-academic employer of underestimating the expertise of a newly employed statistician, while exempting academic employers of such underestimation. I have a fairly good memory of my start at Bellcore, and credential deflation was not an issue!

ACKNOWLEDGMENTS

Comment

Gerald J. Hahn

Wow! This article is a commentator's delight! It packs in more provocative ideas—and probably succeeds in offending more readers (from CEOs to Californians)—than any paper I have ever read in a technical journal; moreover, it does so in an IMS journal—not exactly a hotbed of radicalism! Its broad title "Is Industrial Statistics Out of Control?" is, in fact, too modest, and somewhat rhetorical. The author takes on academic statistics as well, and throws in five book reviews to boot! The article makes enticing reading—like a good novel, I found it hard to put down. And, amazingly, I found myself agreeing with many of the author's points! I am more competent to discuss Banks' remarks on industry than on academia—but that does not stop me from commenting on both.

FIRST SOME PLAUDITS

Add my "hear, hear" to:

- "Intelligent use of simple tools will achieve about 95% of the knowledge that could be obtained through more sophisticated techniques."
- "The real danger in the ubiquitous Taguchi cult is that industry users may copy the inefficiencies as well as the insights." I also welcome the increased appreciation of planned experiments that has accompanied the Taguchi fervor, but, like other statisticians, am dismayed at the combative attitude toward past work of some of Taguchi's more avid supporters.

Gerald J. Hahn is Manager of the Management Science and Statistics Program at the GE Research and Development Center, Schenectady, New York 12301.

- "Companies ... must have access to Ph.D. level statisticians, who may not be developing new theory, but can comfortably command the old." What is frequently needed are extensions of current methods tailored to the problem at hand.
- "Contrary to most students' beliefs, defining the problem can be the greatest service the statistical consultant provides; this task is often fluid, difficult and without unique solution. Unless students see this process for themselves, they usually think in terms of end-of-the-chapter exercises and struggle to find an exact match between a recently taught tool and the client's naive statement of the problem."
- "New industrial statisticians should be prepared to quickly build a very deep understanding of the industry that employs them." A solid scientific background is extremely helpful in this regard.
- "Superficial exposure to a great range of methods (cluster analysis, ridge regression, CART, the bootstrap, etc.) may be better education than the current drill in the mathematical consequences of sufficiency, Fisher information and the strong law of large numbers." Modern statistics is much broader than what can be embedded in one, or even many, Ph.D. programs. While academics can, to some degree, choose their own playing field, industrial statisticians cannot. Thus, the most industry can expect from an academic program is that it builds fundamental understanding, exposes students to a wide variety of important areas—and then helps them develop the skills to rapidly learn more as needed.
- "Some academic statisticians regard most indus-