inference that a substantial part of the high profits earned by drug companies is really due to advertising- and promotion-created barriers to entry, rather than risk. This, of course, coincides with the conclusion of nearly every economist who has carefully studied the drug industry.

Upon completing our analysis of the Conrad-Plotkin-Markham-Cootner explanation of risk and profits in the drug industry, I recalled the admonition once given by the great classical economist and logician John Stuart Mill. Mill cautioned economists against the pitfall of the multiplicity of causes. We must always be skeptical of simple statistical associations among complicated economic phenomena. Professor Kenneth Boulding put it well when he said:

> Some of us, perhaps, still have to learn that arithmetic is a complement to, not a substitute for, thought, and that what my spy in IBM calls the "gigo principle"—that is, garbage in, garbage out—is a sound approach even to the most elegantly computerized simulation.

This more or less capsules my findings in reviewing the analysis of drug profits and their possible association with risk. I find, to be very brief, that the high profit experience of the drug industry is related only minimally to risk and uncertainty in a casual way. On the other hand, the high profits of the drug industry are more closely associated with high barriers to entry of new competition. In other words, in the classic tradition, the market power enjoyed by drug firms has been achieved primarily because the leading drug companies have been able to fence themselves off from effective competition, and in this sheltered position they have garnered extremely high profits—profits which the economist would label as "abnormal" or "excessive," profits substantially above the competitive norm.

(The complete prepared statement and supplemental statement submitted by Dr. Mueller follows:)

STATEMENT OF DR. WILLARD F. MUELLER, DIRECTOR, BUREAU OF ECONOMICS, FEDERAL TRADE COMMISSION

Mr. Chairman and members of the Committee. It is a privilege and a pleasure to appear before this committee. I am accompanied today by two members of the staff of the Bureau of Economics, my assistant, Dr. Russell C. Parker, and Mr. William H. Kelly.

My appearance today is in response to the request of your chairman that I submit testimony on the subject of profits in the drug industry, as well as present an independent analysis of the study *Risk and Return in American Industry—an Econometric Analysis*, presented to this committee on December 19, 1967. The study was sponsored by the Pharmaceutical Manufacturers Association and prepared by Gordon R. Conrad and Irving H. Plotkin of Arthur D. Little, Inc., in consultation with Professor Jesse W. Markham and Professor P. J. Cootner. Hereafter we shall refer to the study as the Conrad-Plotkin study.

Before turning to the study, we shall first place in perspective the profits of drug manufacturers by comparing them with those earned by business enterprises in other American industries.

PROFITS IN THE DRUG INDUSTRY

Figure 1 shows for 1966 the average rate of return on stockholders investments of leading firms in 22 important American manufacturing industries.[1] Profit

[1] This information is based on the Federal Trade Commission reports on *Rates of Return for Identical Companies in Selected Manufacturing Industries*. The industry average is based on the 12 leading companies in each industry. The 22 industries shown in Figure 1 are those where the 8 largest corporations had combined assets of $1 billion or more in 1966, thereby excluding 15 smaller industries appearing in the FTC Report. None of the excluded industries had profits as high as did the drug industry.