quired. We note that throughout the decade of the 1950's, large numbers of new products were introduced. Most of these were protected by patents. And also, advertising expenditures grew rapidly. We can understand the incentive for both research and advertising in the drug industry in terms of the aim to create and promote product differentiations which would prevent the development of standardized commodities and which would prevent the type of price experience which occurred in penicillin and streptomycin.

Senator NELSON. Thank you.

Mr. GORDON. The product differentiation you just talked about is the chief barrier to entry into the various therapeutic categories, is that correct?

Dr. COMANOR. That is correct. It is the role of both advertising and research in this industry to promote a form of product differentiation which then serves to restrict entry and to restrict the development of price competition.

In this manner, the patent system interacts with the high level of advertising and promotion by insuring that the competition which exists in this industry will focus on chemically differentiated products, and this factor increases substantially the effectiveness of the selling efforts in this industry.

Were the patent system not to exist, the effectiveness of these efforts is likely to be reduced. If new entrants were free to produce the same chemical compound as established firms, the effectiveness of advertising in constructing barriers to entry would be lessened, and we might expect to find more stringent constraints placed upon the price behavior of the leading firms in the industry.[11]

Even in the absence of chemical differences among products, however, considerable uncertainty remains as to whether different brands of the same compound are equally good. It is claimed that tradename products which are sold by the larger companies are manufactured under quality controls which produce higher quality products. While there is no readily available evidence on quality control expenditures for pharmaceutical firms in the United States, statistics are available for Canada. Twenty-one large firms, many of which are U.S. subsidiaries, reported to the Canadian Government that quality control expenditures accounted for only 1.2 percent of total sales or approximately 3.6 percent of the cost of goods sold.

Senator NELSON. What is the distinction? 1.2 percent——

Dr. COMANOR. Of total sales.

Senator NELSON. I understand the 1.2 percent of total sales and approximately 3.6 percent of the cost of goods sold—what precisely do you mean?

Dr. COMANOR. Production costs. You can translate cost of goods sold as production costs, of the total production costs of the product, quality control accounts for only 3.6 percent. After these costs are advertising, promotion, profits, to make up total revenues.

Senator NELSON. So when you are talking about cost of goods sold, you mean the total cost of producing the product?

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[11] Restrictive Trade Practices Commission, "Report Concerning the Manufacture, Distribution, and Sale of Drugs," Department of Justice, Ottawa, app. Q, p. 145.