PREFACE

Contents in this volume are thirty-one papers presented at the "Symposium on Innovation and U.S. Research," during the 178th A.C.S. National Meeting, September 1979, in Washington, D. C. One other paper not presented at the symposium has been included because it provides significant additional insight. Co-sponsored by the Industrial Research Institute and the A.C.S. Divisions of Industrial and Engineering Chemistry and Chemical Marketing and Economics, the Symposium brought together nearly three dozen distinguished and knowledgeable speakers representing, we believe, a cross-section of the best current thinking on industrial innovation. Most aspects of the innovation process were covered, with detailed analysis of problems and recommendations for change both internal and external to the corporation. The authors represented industry, government, and academe; we admit to seeking somewhat more input from industry because the process of innovation is carried out for the most part by industry, not by government or universities. This volume gives an excellent picture of innovation, what its nature is, where it stands, and what can be done to stimulate it in the United States.

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INTRODUCTION

It is encouraging to note that innovation is receiving major attention by industry and government policy makers not only in the United States but in most other industrialized nations as well. Among other benefits, innovation is seen as a way to create new jobs, increase productivity, and reduce inflation. Due to a combination of circumstances, U.S. innovation has been lagging somewhat behind its past outstanding performance. Current statistics, such as our continuing trade deficits, with no hope of a surplus in the immediate future, illustrate the seriousness of the current situation. By no means, however, is innovation dead in this country, nor will it be in the future.

The terms invention, research, and innovation need to be clarified. Invention is the discovery of a new material, process, or device; it is the identification of something new. Research is carried out to discover something new, sometimes purely for the sake of new knowledge, and other times for commercial application. Innovation, on the other hand, is the entire process of recognizing a need, identifying a new solution (usually through applied research), developing an economically attractive process, product, or service, and then marketing that process, product, or service. Stated more simply, innovation is the process of developing and commercializing new technology.

Inventors differ from innovators in that the former are involved in the conception or discovery of something new, whereas the latter take this concept or discovery all the way to commercial reality. The important point is that R & D, even though only a part of the innovation process, can be the critical first step in this process, whether the innovation is in response to market pull or technology push. As pointed out in this volume, a healthy climate for R & D is crucial to a healthy climate for innovation and business in general.

There are, of course, other factors that bear heavily on innovation, such as new knowledge and the supply of well-trained, creative graduates from our universities. Government regulations also have a particularly strong influence on the rate and direction of innovation in the private sector.

Donald Rumsfeld, President and Chief Executive Officer of G. D. Searle & Co., and formerly a four-term Congressman, Ambassador to NATO, White House Chief of Staff, and Secretary of Defense, pointed
out the pervasiveness of government regulations by stating in *Fortune* (Sept. 10, 1979) that, “When I get up in the morning as a businessman, I think a lot more about government than I do about our competition, because government is that much involved.”

Recognizing the need to stimulate innovation, the White House in April 1978 initiated a Domestic Policy Review on Industrial Innovation, coordinated by the Department of Commerce. Results of that review were sent to Congress by President Carter on October 31, 1979. Proposed action to stimulate innovation is also evident in the form of several bills before Congress. We look forward to even more action and indeed one purpose of this volume is to keep industrial innovation at the fore.

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