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The Central Role of Chemistry

Most natural scientists would readily agree that research in their various fields owes much to tools and insights derived from chemistry. However, fewer realize the full extent of its contributions. For example, biological and medical scientists, while heavily engaged in applying chemistry to their problems, are not aware of its crucial roles in solid-state physics. Lack of awareness extends to an even larger sphere—the pervasiveness of chemistry in efforts to meet societal needs. True, we have all noted applications such as plastics or pharmaceuticals, but we have not had the opportunity to see a comprehensive summary of the great number of ways in which our daily lives are conditioned by products and knowledge that have come out of research laboratories.

Of all the sciences, chemistry has been about the most ineffective in its public relations. This has not been owing to some defect in the character of chemists or their leadership, but rather to special circumstances. Chemistry does not frequently give rise to "spectaculars." Moreover, most chemists work for industry, and companies usually prefer to maintain a low profile.

A recently issued, 600-page report entitled *Chemistry in the Economy** maintains the tradition of a low-key approach, but it does set forth an admirable summary of the role of the science in meeting human needs for food, clothing, shelter, health, energy, communications, transportation, and so forth.

The heart of the report is a series of chapters dealing with such topics as food processing, textile fibers, and electronic equipment. Each of these chapters was prepared by a panel of experts drawn mainly from industry. In each case, an historical approach is taken, with key innovators identified. Major products and processes are explained with sufficient detail to be informative, while not excessively technical. At no point does the report talk down to the reader, yet a university student in freshman chemistry could understand it.

As with most such reports in the various disciplines, it is not entirely clear why the report was written or who was the intended audience. No matter. The report should be read by all academic chemists and their students. The quality of the substantive material is such that it could be used as part of a course. Most chemistry graduates are employed by industry. They and their professors would function more effectively if all understood more clearly what the students were preparing themselves for. In addition, scientists in general who read the report would broaden and enrich their comprehension of the science behind their daily lives.

The report has a particular timeliness. It has been issued at a moment when we must begin to prepare for major changes in the shape of our economy. Our present standard of living is heavily dependent on petroleum hydrocarbons, both for energy and chemical feed stocks. Our economy is also based on the use of a wide variety of other raw materials—many of them imported. The coming years will bring global shortages and high prices, and we will be under strong pressure to make do with domestic resources of energy and materials. Changes in processes and the creation of vast new chemical complexes will be necessary to meet the evolving realities. As the enormous extent of the changes and of society's dependence on science become more apparent, chemistry will emerge as the star performer.—PHILIP H. ABELSON

* *Chemistry in the Economy* (American Chemical Society, Washington, D.C., 1973). Price: \$6.50.