

... about Chem Engineers in Industry

What is it a chemical engineer does? A fascinating variety of things, of course. A committee of the American Institute of Chemical Engineers has stated: The practice of chemical engineering may be in such fields as education, research, development, design, patent prosecution, economic appraisals, sales, contracting, construction, operation, maintenance, and management. But there is one of these activities for which I consider that the chemical engineer is uniquely qualified . . . process development. It is there that the chemical engineer comes into his own: in taking a process as conceived in the chemical laboratory and carrying it through the successive stages of semiworks evaluation, pilot-plant design and try-out, and full-scale plant design and construction, to a going manufacturing operation.

It is in process development that the skills of the chemical engineer have their full exercise. A knowledge of basic chemical principles, of the laws of thermodynamics, of the principles of the unit operations, will guide the way in setting up and conducting critical experiments which will serve to define the outline of a safe and economical operating process and the specifications of the most appropriate equipment.

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There is another function uniquely performed by chemical engineers — economic evaluation. From its inception as an industrial possibility — as against a scientific curiosity — a process must be evaluated by the economic yardstick: "Will the probable value of the product leave sufficient margin over the cost of ingredients, of manufacture, and of selling, to yield a reasonable return on the probable investment in facilities and working capital?"

. . . It is concern with economic feasibility that distinguishes the engineer from the scientist, and a feeling for economic realities and an understanding of the interrelationships of cost factors and profitability is something an employer might reasonably expect in a chemical engineer.

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[Were I to] list the attributes that industry wants in its chemical engineers, such a list would include a knowledge of chemistry and

We introduce with this issue the department SPEAKING OUT, a page to be devoted to the personal views of spokesmen selected because they are eminent, or controversial, or articulate, or outrageous, or just plain interesting. You may not always agree with those who speak up in these columns — CHEMICAL ENGINEERING EDUCATION may not, either — but we think you'll not be bored by them.

It is a privilege to present Dr. T. H. Chilton as our first "speaker." Dr. Chilton needs introduction neither to academics nor to industrialists in chemical engineering, for after a long and distinguished industrial career (principally with DuPont) he has spent the past five years in education. His honors are many. He is a past president of A.I.Ch.E. He has been a member of ASEE (and SPEE) for over 25 years, and long before he officially became a professor he was involved deeply in the education of chemical engineers. He has made significant contributions to the technical development of our field — for example, as co-originator with the late Allan Colburn of the transfer-unit concept.

Dr. Chilton's opinions are excerpts from an address he delivered before the Conference on Chemical Engineering Education of the joint A.I.Ch.E.-I.Chem.Eng. meeting in London, June 17, 1965.

related physical sciences, understood quantitatively with the aid of mathematics; a familiarity with the principles of engineering design; an appreciation of economic factors and of human motivation.

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One summarizing attribute that would enable the chemical engineer to make his greatest contribution: versatility. Axiomatically, a chemical engineer's problems are always new ones — each different from the one before, and the ability to handle such a succession is what I designate as versatility. For what implication this has for chemical engineering education I will only say that it would not likely result from too high a degree of specialization; neither would it be effective if too great a range of studies were covered superficially.

