

WALTER J. MURPHY, Editor

Biochemical Engineering

DURING AND SINCE WORLD WAR II, the term biochemical engineering came into increasing use. It was applied primarily to work with techniques developed in the rapidly growing area of production on a large scale by fermentation and other biochemical processes. Today it has gained extensive acceptance. Next week, a one-day symposium is being held in Terre Haute, Ind., at Rose Polytechnic Institute; a symposium is being organized for the national meeting of the AMERICAN CHEMICAL SOCIETY in Chicago in September.

A century ago, it appears, a man could be a "chemist." One could maintain a grasp of all the basic knowledge of chemistry and could follow all the new discoveries and developments which were added. Increasingly rapid additions to that knowledge made specialization necessary. One had to learn the basic principles of the entire field, then study in detail the advanced information in a single branch of chemistry, such as physical or organic. Concentrated attention was given to study of new work in that field, supplemented by a more cursory following of advances outside.

As the chemical industry grew, more and more engineering became involved, for it was a manufacturing industry. Engineers worked with chemists. But farsighted men began to work the two together in single heads, with concentrated attention to the engineering principles applicable to the implementation of chemical theory.

Under the guidance of Warren K. Lewis, the basis for modern chemical engineering was laid. The American approach to that subject has gained much respect throughout the world and it deserves a share of credit for the success of the American chemical industry.

Since World War II, the antibiotics have enlarged greatly a branch of the industry based on biochemistry and have focused attention on the need for men with knowledge of special theory and techniques. The men needed in production are chemical engineers with a sense of biological chemistry. Their work is biochemical engineering.

Biochemical engineering is not a new science or technology any more than is physical chemistry new with respect to chemistry or physics. Its bases are biochemistry and engineering theory and practice. But because there is an important and growing segment of the chemical process industries which depends on biochemistry, it is important that some chemical engineers give special attention to the development of their knowledge and skills in relation to biochemical processes. Their development in that area should go well beyond that of their fellow chemical engineers who have similar basic training but are following other specialized work. The man in biochemical engineering then must give special attention to the research and new ideas and techniques of

others with similar interests. In the fields of agricultural and food chemistry, the processes of production are tending to demand more and more of these specialists. Therefore the JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY has established a policy of publishing scientific papers on chemical engineering in the areas involving the processing of materials by application or manipulation of chemical reactions involving life processes. With this issue, we begin publication of papers which are concerned with biochemical engineering.

No Census?

THE CENSUS OF AGRICULTURE, taken every five years by direction of an act of Congress, has been a valuable guide. Plans and decisions in agriculture and related fields are influenced by its data and many have come to depend upon it. The Committee on Appropriations of the House of Representatives, in considering a bill for appropriations for the year 1954, has expressed the opinion that there are many more urgent needs to be provided for at present and that the taking of censuses of agriculture, business, transportation, manufactures, and mineral industries can be deferred without causing undue difficulties. Because of this, it has disallowed the requests for funds to support that work. The request for agriculture was \$2.4 million.

Congress in its wisdom has seen fit to set up, by law, these censuses; now Congress has turned to cutting off the funds needed to carry out the law. With the law remaining, there seems to be an admission that the census is needed. We feel sure that those who use such data will agree that its value is greater if based on regular periods of equal length, the shorter the better. A delay which will lengthen the period is likely to reduce the value of the results and increase the cost of their collection. But even more serious is the opinion of some officials that according to the law, the matter could not be brought up until five years later. By its emphasis on inherited problems the Administration has clearly implied that a great deal is needed to disentangle agriculture's costly problems. The Government faces a need for reduction of costs. The killing of a project which provides a great amount of information useful in understanding where and how effective improvement might be made is poor economy.