

TECHNICAL SECTION

JOURNAL OF Agricultural and Food Chemistry

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Biochemical Engineering Aids Fermentation and Food Storage

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● In working with biological processes, engineering theory and techniques are needed in developing practical operations just as they are required in handling inorganic chemicals or petroleum. The basic difference lies in the type of chemistry involved and the influences of biological factors. ● With antibiotics, for example, a major difficulty in production is the scale-up of results found in laboratory-size fermenters and the prediction of results in factory-scale equipment. Karow, Bartholomew, and Sfat have found that the primary scale-up factor is the rate at which oxygen is supplied from the gas to the liquid phase. They have found the primary locus of oxygen transfer and outlined a method for translating data from laboratory to plant-scale fermenters. ● Vapor concentration in a closed space can be very important to the control of biological reactions—fungus growth, for example. Turk has developed a dynamic method which allows establishment of an equilibrium to give a constant vapor concentration and has derived an equation relating the variables involved.

Flavor Is Evaluated and Modified Chemically

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● Buck and Joslyn have studied the changes in color and flavor of frozen foods with attention to the accumulation of organic compounds during processing. They found that ethyl alcohol may serve as an objective criterion of frozen broccoli, rather than acetaldehyde, as in peas and asparagus. ● Data on solubility and volatility of synthetic vanilla-type flavoring materials are presented by Cartwright for use in preparing flavor concentrates and estimating loss during cooking.

Nutritive Values and Digestibility Are Studied Instrumentally

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● Changes in cottonseed meal proteins during processing have been followed by observation of changes in electrophoretic patterns by Karon, Adams, and Altschul. Patterns of the soluble protein fraction change as heat stress increases, a new component develops, and two major components become more difficult to resolve. ● Identities of pigments involved in the "chromogen(s)" ratio method of determining digestibility of forages are revealed by Smart, Sherwood, Matrone, and Wise. Through spectral absorption as well as chromatographic techniques, pigments are identified and a conclusion reached that the chromogen(s) ratio technique requires certain amounts of chloroplast pigments for applicability.

Pesticide Residues Are Studied Specifically and Broadly

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● Toxaphene was found to be transmitted to milk by cows eating toxaphene-treated alfalfa hay in the studies of Bateman and coworkers of Utah Experiment Station. No influence on hay or grain consumption was observed. Liver and kidney sections showed no changes that could be attributed to the compound and kidney fat was the only tissue found to contain toxaphene. ● Widespread use of organic pesticides has emphasized the importance of establishing the magnitude of persisting residues on and in foodstuffs. Gunther and Blinn survey basic analytical approaches as evaluation by direct measurement or by isolation followed by measurement and illustrated those approaches to pesticide residue analysis by examples from the insecticides field. They show optimism for the promise of systematization and standardization.

Fermentation Is Involved in Wine Improvement and Olive Spoilage

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● With this issue, publication of papers of the symposium on fermentation in food processing, presented at the 123rd meeting of the AMERICAN CHEMICAL SOCIETY, is completed. ● Points which must be observed with care in making fruit wines are discussed by Yang, who emphasizes the differences between the making of fruit wines and other wines. ● In attempting to find microorganisms responsible for the malodorous fermentation of olives known as "zapatera," Delmouzos, Stadtman, and Vaughn have identified the acidic end products of that spoilage.