

Systemic Insecticides Are Reviewed in Symposium

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• The symposium on systemic insecticides, from the 123rd meeting of the American Chemical Society, two papers of which were published in our previous issue, now is continued and concluded with three papers. • The work of Gerhard Schrader of Germany leading to the discovery of octamethylpyrophosphoramidate (schradan), as well as a number of other compounds of significance to the development of systemics, is reviewed briefly in the first paper. Geary tells of the discovery of insecticidal powers of the bisdimethyl amide of fluorophosphoric acid and the improvement through splitting out of water to get schradan. Some particularly potent thiophosphoric acid esters are listed in tabular form. • The metabolism of schradan is considered by Casida and Stahmann who review the evidence suggesting that the biological activation to produce inhibitors of cholinesterase and chymotrypsin involves oxidation. A new type functional group named phosphoramidate oxide may be produced by oxidation at the nitrogen of a dimethylphosphoramidate group. The enzyme effecting the transformation has been named phosphoramidate oxidase. The new group is a reactive phosphorylating agent with as much as a million-fold increase in enzyme inhibitory power over that of the original group. The phosphoramidate oxide group has a positively charged quaternary nitrogen atom which may be attracted to the negative center of the cholinesterase, selectively effecting combination. • Certain heterocyclic dimethyl carbamates were found by Ferguson and Alexander to have a high degree of systemic as well as direct insecticidal action. 1-Isopropyl-3-methylpyrazolyl-(5)-dimethyl carbamate, known as isolan, has shown a high degree of insect toxicity and strong systemic action against aphids. No adverse effect on aphid parasites and predators has been found.

Mushroom Mycelium from Submerged Culture Offers Possible Food and Pharmaceutical Products

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• Block and coworkers have grown the mycelium of *Agaricus blazei* (M) in submerged culture on orange juice, citrus press water, and synthetic media. At least 12 amino acids were found in the product and the vitamin B content compared favorably with some proteinaceous foods. The mycelium grown in this fashion lacks the true distinctive mushroom flavor when cooked. The very blandness of its taste, suggest the authors, might make it a useful source of pharmaceutical concentrates of B vitamins and amino acids.

Antibiotics Reduce Utilization of Nonprotein Nitrogen by Rumen Microorganisms

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• The increasing use of antibiotics in animal feeds prompted Prescott to investigate possible effects of such feeds on rumen microorganisms which are responsible for utilization of nonprotein nitrogen by ruminants. By in vitro techniques, the addition of Aureomycin, terramycin, bacitracin, or penicillin was found to cause definite reduction in utilization of nonprotein nitrogen from urea. The extent of reduction was a function of antibiotic concentration. The possibilities of change of rumen flora after removal of liquid from the animal, variations in effects of basic diet, and variations in in vitro conditions are recognized. The authors urge in vivo studies before ruminants fed routinely on a diet containing both urea and antibiotics.

Growth Rates and Yields of *Bacillus* Bacteria Can Compare with Those of Yeasts

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• Most aerobic propagations of bacteria require at least a day between inoculation and final harvest, while primary yeast requires only six to 12 hours. Lewis and coworkers studied some strains known to have rapid propagation characteristics and report on a process for rapid mass propagation. Practical advantages for fermentation process appear to be smaller capital investment, continuous process adaptation, fewer instances of need for rigorous precautions against contamination, and use of cheap starting materials.