MICROBIOLOGY AND MOLECULAR BIOLOGY

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The Isolation of Alkalinophilic Bacteria from an Organic Polymer. Janie K. Blackburn* and Donald A. Hendrickson, Ball State University, Muncie, Indiana.——An organic polymer, used to coat the inside of beverage containers, was submitted for the isolation and identification of any organisms which might be contributing to a slime problem. Also, the effectiveness of a biocide added to some of the samples was to be investigated. Upon testing, it was found that the polymer was extremely alkaline; the average pH of the samples submitted was 11.42. Gram stains of the samples were not helpful, since the polymer samples dried on the slide as an opaque film when smears were made. Therefore, Tryptone Glucose Extract Agar having a pH of 6.70 before autoclaving, Tryptone Glucose Extract Agar with the pH adjusted to a pH in the range of 11.00 after autoclaving, MacConkey Agar, Sabouraud Dextrose Agar and Acidified Potato Dextrose Agar were used for the initial isolations. The results showed that the significant bacterial population consisted of short Gram negative rods. These organisms were identified as *Pseudomonas* and *Alcaligenes spp.*, using API 20E strips. Of these organisms, *Pseudomonas spp.* were the predominant isolates. An interesting observation was that higher sample dilutions yielded higher concentrations of bacteria. This phenomenon may be due to the presence of an inhibitory substance present in the organic polymer; however, this substance was never elucidated. A biocide known to be present in some of the samples of the organic polymer was found to be effective in the control of the population of short Gram negative rod-shaped bacteria, but not effective in the control of molds and yeasts.

A Numerical Simulation of Trichromatic Equations in Chlorophyll Estimation Using the Spectrophotometric Technique. William Chang and Ronald Rossmann, Great Lakes Research Division, The University of Michigan.——A numerical simulation of trichromatic pigment equations is made with the aid of a computer utility program. Significant quantitative differences in the estimates of pigment concentration result from using different sets of trichromatic equations. Estimates of chlorophylls *a*, *b*, and *c* were found highly correlated with the application of the equations, even though the absorbance values used as input for the simulation are not correlated.

Levels of Nitrogenous Biochemical Oxygen Demand in the Muncie Sewage Treatment Plant Effluent. Edward M. Hale, Ball State University, Muncie, Indiana.——The addition of ammonia to a river can have a number of damaging effects. Recently, there has been increased interest in biological nitrification of such ammonia, because of the resulting depletion of dissolved oxygen in the river. The usual five-day BOD test for

determining the oxygen demand of an effluent may fail to detect the potential effect of ammonia, because nitrification of effluent ammonia often doesn't even begin until sometime after five days of incubation. The oxygen demand attributable to the ammonia released in Muncie sewage treatment plant effluent was determined. It was found that ammonia was the single most important source of oxygen demand, accounting for about three fourths of the total effluent BOD. A sample of effluent was divided in half. One half was treated with allyl thiourea 10 mg/l), a known inhibitor of ammonia oxidation. Control experiments established that this level of inhibitor had no effect on the oxygen demand of a nutrient broth that contained no free ammonia. At intervals the cumulative BOD was determined on both portions. A period substantially longer than the standard five-day interval was examined using a reaeration technique. In addition, quantitative measurements of ammonia, nitrite, and nitrate were obtained on the two portions. By observing the difference in oxygen uptake between the two portions, the BOD attributable to ammonia was determined.

Incidence of the pathogen *Aeromonas hydrophila* in the West Fork White River, Muncie, Indiana. Carl E. Warnes and J. Scott Bryson,* Department of Biology, Ball State University, Muncie, Indiana.——Four sites along the West Fork White River in Muncie, Indiana were sampled bimonthly over the summer 1979 for the incidence of the fish pathogen *A. hydrophila*. The sites represented locations below the sewage treatment plant, above the sewage treatment plant, central Muncie, and upstream from Muncie. Conductivity, D.O. and temperature measurements were simultaneously taken and analyzed for correlation with incidence of the bacterium. The present study indicates high values of the organism throughout the summer with peaks (4000-5500/ml) occurring in mid June and late August. The presence of this organism in northern latitudes such as Indiana indicates potential hazard to fishes of the state as well as human infection from contaminated waters.

Hospitalization and Nosocomial Infections. Michael R. Langona, Ball State University, Muncie, Indiana.——Within the United States there exists numerous health care facilities in which individuals may receive various types of active medical treatment. One such facility of major concern to microbiologists and epidemiologists are hospitals in which extensive inpatient services are provided. Statistics supplied by the Joint Commission on Accreditation of Hospitals show that hospital admission numbers and patient expenses continue to increase each year, while available bed space increases at a lesser rate. For these reasons, it is important that the course of treatment of a hospitalized individual progress as smoothly, as quickly, and as successfully as possible. Since the late 1950's, microbiologists have become more aware of the fact that some patients were acquiring infections during and as a result of their hosiptalization. These hospital acquired infections interrupt treatment, prolong hospitalization, and eventually add to the patient's total hospital cost. It is now estimated that two to ten per cent of all hospitalized patients in acute care facilities throughout the United States will acquire a nosocomial infection. The types of microbial

organisms which are involved with nosocomial infections, and their mechanism of transmission within the hospital environment will be discussed within the contents of this paper. With the cooperation of the patient, his visitors, and the hosiptal staff, the fight against nosocomial infections may be successful.