BACTERIOLOGY

Chairman: WALTER A. ZYGMUNT, Meade-Johnson Research Laboratory
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ABSTRACTS

PPLO in Tissue Cultures. DOROTHY POWELSON, Purdue University, Lafayette.—Pleuropneumonia-like organisms were inoculated into cultures of animal tissue cells to determine their effects on the morphology and metabolic behavior of the cells. The PPLO produced no effect on the morphology of the cultures when they were young. As the cultures became more densely populated some cells became more granular, and finally large numbers became detached from the glass. Surviving cells gave rise to new monolayers. In inoculated cultures of strain L mouse fibroblasts, fed first with a synthetic medium (Morgan's 416) plus 5% horse serum and later with the synthetic medium alone, several cycles like this occurred during the five-month period that these cultures were maintained.

In short-term experiments no cytopathologic effect was evident. Nevertheless, cultures of explants of chick embryo heart and strain L, inoculated with PPLO, showed a change in the pattern of uptake of amino acids from the medium. Arginine and glutamine were the amino compounds chiefly involved. PPLO, 30-fold concentrated from broth cultures and suspended in M416, took up arginine and glutamine. Whether such concentrations of PPLO were present in the cells of the cultures was not determined. The supernatant fluids contained only moderate numbers of PPLO.

This work was undertaken to find out what interference PPLO might introduce in experiments with tissue culture systems. It is apparent that results of investigations on the nutrition and metabolism of cell strains could be influenced by PPLO infection of test cultures.

Preliminary Report on the Flotation Method in Combination with the Fluorescent Antibody Technique Applied to Water Analysis. SAMUEL H. HOPPER, Indiana University Medical Center, and WALTER A. MILLER, Indiana State Board of Health.—Flotation is a method used in the mining industry to concentrate particles of minerals from an aqueous slurry. It consists of the addition of a chemical which will produce a hydrocarbon-like surface on the given particles. They then become hydrophobic and may be removed from the water by bubble attachment and aeration. On application of this method to turbid water, the mud and bacteria were concentrated in the foam. A method was needed for the quick identification of these microorganisms, and this was made possible by the development of the fluorescent antibody technique. Labeled antibodies were prepared using the fluorescent isothiocyanate method. Bacteria concentrated in the foam were readily identifiable by means of the labeled antibody. Specific formulae and details will be described. Preliminary tests indicate that this method may have some usefulness in water analysis.

The Chemical Composition of Walls of Myxobacterial Microcysts. JIMMY C. ADYE, Purdue University.—Microcysts of *Myxococcus xanthus* were prepared by a special method, to be described. The walls were removed by shaking the microcysts with glass beads in the Nossal shaker. They were purified by treatment with sodium chloride, to remove adsorbed nucleic acids, and differential centrifugation. The walls appeared to be free of cytoplasmic contamination when examined in the electron microscope. The walls constituted approximately 16% of the whole microcyst. The gross composition of the walls was 6% nitrogen, 12% carbohydrate, and 29% lipid. Paper chromatography was used to analyze acid hydrolysates for amino acids and carbohydrates. The amino acids found were those already identified in walls of other gram-negative bacteria; all of the amino acids identified in walls of vegetative cells of *Myxococcus xanthus* were present in the microcyst walls. Easily detectable were glucose, glucosamine, and galactosamine. Hexosamines, determined by the method of Blix, made up about 20% of the wall of the microcyst. Among other sugars present in small amounts rhamnose and arabinose were identified. The microcyst walls contained three carotinoid pigments that seemed to be the same ones found in the vegetative cell walls. The wall of the microcyst appears to make up a larger part of the cell than does the wall of the vegetative cell. Further, it contains more carbohydrate and less lipid. The nitrogen content and composition is approximately the same in walls of both kinds of cells.

A Semiquantitative Method for the Determination of Glucose in Cell Cultures. R. M. VAN FRANK, Eli Lilly and Company.—Glucose is reported to be the controlling factor in mammalian cell multiplication. Work with cell culture systems has indicated that it would be advantageous to have a simple means of measuring glucose concentration. After a survey of conventional methods indicated that each had certain disadvantages, TES-TAPE® (Urine Sugar Analysis Paper, Lilly) was tried. TES-TAPE® has proven to be a convenient means of estimating the glucose concentration in cell cultures.

Staphylococcus Phage Typing in a Regional Laboratory. MICHAEL C. CORAGGIO and WALTER A. MILLER, Indiana State Board of Health.—The Indiana State Board of Health laboratories have been designated as one of the twenty-four regional Staphylococcus bacteriophage typing centers by the United States Public Health Service. The value of bacteriophage typing lies in its ability to demonstrate the identity or non-identity of sets of related cultures. The significance of results is enhanced by the relative stability of the phages used and the lytic patterns of the cultures tested. A brief history of the evolution of the present system of *Staphylococcus* bacteriophage typing is given. An analysis of the laboratory data for the past year reveals that 55% of the *S. aureus* cultures submitted to this laboratory were typable with the 25 bacteriophages now in use. In addition, 78% of the typable cultures were found to be lysed by bacteriophages within the three broad groups recognized in the field.