

following the beginning of the treatment all evidence of eczema had disappeared.

The second case showed some evidence of responding when the treatment had to be discontinued owing to an infection which developed in the hands which had been the parts mostly affected by the eczema, and to necessary medical treatment of the infected hands. The third subject was slow to react to the use of the milk and lactose and his condition showed little, if any, improvement.

The principles of the *acidophilus* treatment have been clearly set forth in different publications from the laboratory, and it is only when these principles are adhered to that favorable results should be expected. The ingestion of relatively small numbers of the bacilli should not be expected to lead to implantation and bodily improvement. Furthermore, the viability of the organism must be preserved in its preparation for therapeutic purposes. Finally, it should be understood that the *B. acidophilus* is not a panacea for all ills.

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**Growth and reproduction upon simplified food supply.**

**II. Influence of food upon mother and young  
during the lactation period.**

By H. C. SHERMAN and MARIE MUHLFELD.

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Breeding rats were fed upon diets containing respectively one sixth whole milk powder to five sixths ground whole wheat or one third whole milk powder to two thirds ground whole wheat. Young were successfully reared on both diets and both would be regarded as adequate for growth, reproduction and successful suckling of the second generation. The larger proportion of milk in the second diet resulted in the following evidences of improved nutrition: (1) Increase in the number of young produced. (2) Increase in the percentage (and therefore also in the number) of young successfully suckled. (3) Better maintenance of the body weight by the mother while suckling the young. (4) Higher average weight of young at a standard weaning age of four weeks.

(5) More economical utilization of the calories of food consumed (as well as of the body material of the mother) in the rearing of the young to weaning age.

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### Some phases of the disinfection theory.

By BARNETT COHEN.

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*Bact. typhosum* and *Bact. coli* (*communis*) were suspended in distilled water, tap water, and M/500 buffer solutions, respectively, at constant temperature levels ( $0^{\circ}$ ,  $10^{\circ}$ ,  $20^{\circ}$ ,  $30^{\circ}$  C.); and the numbers of survivors were determined by means of decimal dilutions upon agar plates. The conditions imposed (moderate H-ion concentrations at moderate temperatures) permitted a closer study of the disinfection process than has been usually possible.

It was found, of course, that *coli* was relatively more resistant than *typhosum*, but this greater resistance (at  $P_H$  3.5) decreased as the temperature level rose. At  $0^{\circ}$  C., *coli* was 67 times more resistant, and at  $30^{\circ}$  C. it was only 8 times more resistant than *typhosum*. There was a high inconstancy in results between duplicate tests carried out in tap or distilled water. This inconstancy could at times be correlated with comparatively insignificant fluctuations in  $P_H$  of the water. When very dilute (M/500) Clark and Lubs buffers were used, this variability disappeared very largely.

At  $20^{\circ}$  C., *Bact. typhosum* possesses the greatest tolerance within a narrow zone delimited by  $P_H$  5.0 and 6.4. A slight increase in acidity beyond the zone results in conditions of maximum mortality. For *Bact. coli* the zone is wider and centered about neutrality. Cohen and Clark<sup>1</sup> found that the  $P_H$  optima for growth and fermentation of bacteria may be different. It is now found that the optimum for tolerance may also be distinct.

The logarithmic decline in numbers of bacteria may be modified by suitably chosen conditions. This applies also to some monomolecular chemical reactions. The logarithmic course in either case is merely a statistical integration and gives no information

<sup>1</sup> Cohen, B., and Clark, W. M., *Jour. Bact.*, 1919, iv, 409.