

growth: (1) a stage lasting for from eight to twelve hours in which the production of acid is very slight; (2) a second stage of about twelve hours in which there is rapid production of acid."

#### FACTORS IN PUTREFACTION.

"The contents of the small intestine are normally acid, owing to the formation of lactic acid from lactose by the lactic bacteria. The normal dejection contains no lactose, and, as a result partly of the absorption of sugar, and partly of its fermentation, the lactose-content is continually diminishing as the food products pass through the alimentary canal, till, in the lower part of the colon, there is none at all. It is important to bear in mind this gradual elimination of lactose, for it constitutes the chief explanation of the difference between the *flora* of the small and of the large intestine.

"Were it not for the acid condition, putrefactive processes would occur. All the conditions favouring the action of the proteolytic bacteria are present save one. Absence of acidity is the essential condition of putrefaction and consequently the presence of acid prevents its occurrence. In the large intestine the acidity steadily diminishes so that the intestinal dejecta when they reach the soil do not contain any marked excess of acid. Not infrequently the normal dejection is amphoteric."

Dr. Vincent then describes the bacteriological examination of the intestinal dejecta and points out that since everything depends on an accurate recognition of the organisms, the microscopical equipment must be of the highest quality.

In the examination of the intestinal dejections at the Infants' Hospital, the routine plan adopted is that the "square" containing the dejection is removed from the infant, folded up, labelled and transferred at once from the ward to the research laboratory. In private cases the nurse is instructed to select a representative portion of the dejection, to place it in a closed vessel under suitable precautions and send it to the laboratory.

The writer then describes the method of examining the dejection in the laboratory.

#### ACID POISONING—THRUSH.

"There are some cases of acid poisoning due to micro-organisms but they are very different from a colon toxæmia. I refer especially to cases of "thrush." In one case the dejection was found to consist almost entirely of the spores of the *Oidium lactis* to the practical exclusion of all other organisms. I went to the ward and found an infant who had only been admitted a few hours previously. It was moribund and the mouth was covered with thrush. The infant, in fact, was "mouldy" from one end to the other. These moulds only develop in an acid medium, and they may be compared with the rank vegetation found in acid marsh land. Fresh milk is extremely hostile to such fungi. As a rule fresh milk will completely rid the intestine of the *Oidium lactis* in about twenty-four hours. A

cooked milk containing an excessive amount of sugar of the wrong character is, according to my experience, the diet favouring the development of these organisms. They are, consequently, extremely liable to develop on a diet of condensed milk.

#### VALUE OF BACTERIOLOGICAL DIAGNOSIS.

"Among the workers at the Infants' Hospital there is no doubt that by means of the bacteriological examination we have arrived at a means of diagnosis which in respect of accuracy and precision is far superior to any other means at our disposal. Our diagnosis and treatment are fundamentally dependent on the reports from the Research Laboratory. This has really been established beyond doubt by the close correspondence between the gravity of the bacteriological report and the gravity of the clinical condition. This is so important that I may very briefly refer to the kind of evidence that has impressed us. It was only the other day that I proceeded directly from the laboratory to the wards in order that while the microscopical picture was still in my mind's eye I might immediately correlate it with the actual clinical condition for the appearance indicated a very grave condition. The infant was dead. It had only been admitted the previous afternoon and died the same evening. On one occasion my report indicated a severe colon toxæmia. On my proceeding to the cot it was clear that there had been some mistake. I insisted that this infant had never passed the dejection reported on, and, in order to establish this, gave instructions that the next dejection from this infant should be sent to the laboratory. A minute or two later the sister of the lower ward came to the laboratory to report that a mistake had in fact been made. The cot was No. 18, but it was No. 18 in the upper ward. We immediately proceeded to this ward and there found the infant. It was comatose. This incident occurred some time ago, but it demonstrated to us all in a striking manner the fact that the personal equation had been sufficiently eliminated and that only practical experience was required to enable the observer definitely to recognize by bacteriological examination the character of the case."

#### COLON TOXÆMIA.

After discussing the question of colon toxæmia at some length Dr. Vincent points out that it "exerts a profound influence on the general health. It is not merely a question of lessening the power of resistance, for it has been shown experimentally that certain organisms, notably the tubercle bacillus, will grow in the culture tube much more actively and much more rapidly in the presence of bacterial toxins than they will in their absence. When the tubercle bacillus is grown in a medium with and without toxin it is found in some cases that the growth of the cultures is very greatly accelerated by the presence of the toxin in the medium. The acceleration so produced may result in a growth a million times

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