women, but found that although in healthy women the milk was bacteria free; in women with erysipelas, endometritis, perametritis, inflammatory diseases of the breasts, etc., the results were entirely different, the milk of such women speedily becoming sour and decomposing. This he (Vaughan) thinks accounts for cholera-infantum in nursing children, and it further shows that the milk of the mother is not always the best food for the child. He also shows by experiments such as the following that a few germs will speedily contaminate a large quantity of milk :—

"April 27th, 1888 .- To a gallon of good milk I added one-half ounce of poisonous milk, placed the whole in a bottle and left it to stand at the ordinary temperature of the room for two days. Tt was then treated for the ptomaine tyrotoxicon and thus given to a puppy in which it soon produced severe retching and vomiting. On the other hand, milk which has been sterilized by heat and protected afterwards from micro-organisms of air by a cotton-wool plug in neck of flask, will remain good for months (?). Hopten, from a study of the records of the foundling hospital at Stockholm which have been kept since 1812, as well as from his own experience in the same place, concludes that the disease is highly contagious." This is because children in the same ward, and often those attended by one nurse, were affected. Vaughan, however, believes this condition of affairs to be due to the children in the same ward or attended by the same nurse, being fed with the same food. But as it may be possible for the germs from dried stools to be disseminated, he recommends disinfection of stools and urine. Taube and Escherich hold that the stomach of the young child is only a receptacle for food, the digestion being carried on in the intestines, and if this be true the stomach becomes a culture chamber for the most effective development of micro-organisms whenever they may be introduced.

Experimenters have shown that the mucous membrane of the small intestines absorb solid substances more rapidly than the stomach, (1) that the intestinal mucous membrane will absorb unchanged casein; (2) that the proteolytic activity of the pancreatic juice is relatively well developed in the newly born; (3) that the milk sugar is split up by a ferment in the small intestine. We therefore see that the digestion of milk is almost entirely performed in the intestine, and clinical experience confirms this, as in adults suffering from intestinal indigestion, milk invariably aggravates the trouble.

111. The micro-organisms which produce the catarrhal mucous diarrhwas of infancy in summer may be, and probably are, only putrefactive in character, but those which cause the choleriform, or serous diarrhwa, true cholera-infantum, are more than putrefactive; they are pathogenic; they produce a definite chemical poison, the absorpt on of which is followed by the symptoms of the disease.

As the results of his studies, clinically and experimentally, he considers that all diarrhœas are bacterial in origin, but not all due to the same bacterium. In this connection the difference between the poison of serous or choleriform diarrhœa which acts immediately upon the nervous system, most probably having its chief effect upon the sympathetic nervous system and that of the catarrhal diarrhœa which acts primarily as an irritant to the intestine, is particularly noticeable.

IV. The bacteria which produce these diseases prove harmful by splitting up complex molecules and forming chemical poisons.

The answer to the question, "How do germs cause disease?" lies in the discovery of ptomaines, and in the ptomaine tyrotoxicon (discovered by the author) we undoubtedly have the poison of cholera-Although the germ producing this infantum. poison has not been identified, yet it is known that it does not develop below 60° F., and is an anærobic. The symptoms produced by this poison are very similar, if not identical, with those of cholera-infantum. Without going into elaborate descriptions of experiments on the effects produced by tyrotoxicon which have been carefully investigated by a large number of observers, the following are the condensed reasons for believing it to be the exciting cause in at least some instances of cholerainfantum :---

(a.) This ptomaine results from the putrefaction or bacterial fermentation [it does not occur in all milk fermentations, as the lactic acid fermentation in the ordinary souring of milk, but as the result of its own bacterium].

(b.) Tyrotoxicon has been found in the milk given to a child immediately before the appearance of the symptoms of choleriform diarrhea.

(c.) The symptoms of the disease increase if the administration of milk is continued, and abate when the milk is withdrawn.

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