OBSERVATIONS WITH LACTIC ACID BACTERIA.

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IN view of the considerable vogue at present enjoyed by "curdled milk" products, the following considerations are not devoid of interest.

First in regard to the preparation of curdled milk by means of the various lactic acid bacillary cultures at present on the market. About the beginning of this year I conducted an investigation upon milk collected from several of the best known dairies in London. Should the milk it is proposed to curdle be contaminated bacteriologically, the possibility of this contamination being enormously increased by the needful six to twelve hours' incubation, despite the presence of the added lactic acid bacilli, cannot be ignored. It therefore became necessary to determine what preliminary sterilization methods should be taken with such milk as is ordinarily supplied by some of the better-class dairies before subjecting it to the lactic fermentation. I came to the conclusion that raising the temperature to the boiling point and allowing it then to fall to 40° C. was quite inadequate. Several samples of milk so treated and then incubated for eight to ten hours were found to be simply swarming with sporing and non-sporing organisms, including the *Streptococcus pyogenes longus*. It was found that the temperature should be maintained near the boiling point for almost an hour to ensure reasonable sterility, and I accordingly advised Mr. W. H. Martindale to this effect when he was placing his Trilactine product upon the market, and such a caution is therefore printed upon his boxes. Despite this warning I had a sample of milk sent me lately which had been treated for ten hours with this preparation at 37° C. without the production of the perfect curd which is usually obtained. I suggested that perhaps the tablets had been overheated in the manufacture, but examination of some of the same as had been employed dispelled this idea. Upon examining the half-curdled lumpy product I had received it was found to be swarming with bacteria, both staining and failing to stain by Gram's method, and among these *Streptococcus longus* was especially prominent. Inquiry revealed that the temperature of the milk had merely been raised to 100° C. and then allowed to fall. Had the patient for whose use the milk was designed swallowed such a bacterial culture the effect might well have been disastrous, and too strong a warning can hardly be given to ensure the future prevention of inadequate preliminary sterilization of the milk.

The second observation was made upon a patient who had suffered from typhoid fever and dysentery in South Africa. Intestinal digestion was subsequently attended by much discomfort, and food passed through the small intestine at an abnormal rate. Test meals showed that the stomach was acting quite normally; regurgitation of bile, however, occasionally occurred overnight. Examination of the faeces showed little evidence of incomplete digestion, but the bacteria were very numerous.

A large dose of bismuth was given at 9.45 a.m., upon an empty stomach, and screen tracings taken then, at noon, at 1 p.m., and at 5.15 p.m., by Dr. A. C. Jordan, to whom I am indebted for the following report: "The stomach was found to be normal in size, shape, and position. Gastric peristalsis was very active; normal in direction. The antrum pylori filled and emptied itself in the normal manner, showing the pylorus to be normal. After 2½ hours some bismuth had already begun to enter the caecum, that is, in little more than half the usual time. There was still bismuth in the stomach. One hour later (1 p.m.) there was rather more bismuth in the caecum, ascending and transverse colon, almost to the splenic flexure. Hence the intestinal contents were passing through the large intestine at the normal rate. The only abnormality consisted in the unusually rapid rate of progress through the small intestine. The lungs and heart appeared normal, and no other abnormality was to be made out."

In view of the discomfort experienced by the patient, and the bacteriological findings in the faeces, he was given curdled milk for a week. The faeces were then examined bacteriologically. No bacteria were to be seen in smears, and culture plates made with agar and with gelatine from

a whole loopful of the faeces, yielded after three days' incubation colonies varying from four to ten in number, and consisting solely of lactic acid bacteria. The diminution in bacterial contents of the faeces was thus extremely striking.

The third observation was one typical of several.

A case of chronic gleet of seventeen years' standing had been treated with gonococcal vaccine, and with a series of vaccines made from the other organisms present. The condition had thereby been very much improved, cells were almost absent in smears made from the slight discharge still present, and such as were present were of the lymphoid and epithelial varieties. These swarmed with bacteria, chiefly Gram-negative bacilli and Gram-positive cocci, and upon these vaccines had little effect. This I concluded to be due to the fact that they were resident entirely upon the surface of the urethral mucosa, just as are the bacteria upon the intestinal mucosa. I therefore decided to try the effect of instillations of living cultures of lactic acid bacteria. By means of an ordinary syringe an ounce of filtered milk culture was inserted up the urethra night and morning for a week. Upon the day following the first instillation there was slightly increased discharge, which diminished rapidly upon subsequent days, and considerable itching of the urethra. Upon the eighth day smears and cultures were taken and only lactic acid bacteria found; the urethra was thoroughly flushed that morning and evening with weak permanganate solution, and next day smears and cultures again were taken. These proved quite sterile, and after the lapse of two months the urethra is still apparently sterile and no discharge present worthy of mention.

It was found that certain varieties of lactic acid bacilli were more active in this connexion than others, and that the percentage of lactic acid present in the culture medium was of importance. A preparation according to the formula I found most useful is being supplied by Martindale under the name of "Trilactine Special for Injection," and is well worthy of extended trial in such cases where bacteria are resident upon the surface of the mucosa, and not in the glands of Littre and the lacunae.

REMARKS ON A CASE OF TUBERCULOUS PERITONITIS.

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THERE appear to me many points of interest in the following case, which does not easily fit into any of the classifications with which the current literature somewhat cursorily deals with this disease, so that although the termination proved disastrous, I think the case worthy of publication.

E. H., aged 27, was first seen by me on September 24th, 1907, with the complaint of dyspareunia and sterility, dating from her marriage two years before.

History.

Up to her visit to me menstruation had been perfectly regular and normal, and the general health always satisfactory; there had been no former illnesses, except, as was revealed by subsequent investigation, a somewhat vague attack of pelvic pain and menstrual disturbance, unaccompanied by fever, occurring after sitting on wet sand at the age of 17.

She was herself one of seven children and her husband one of three, and on both sides there was a complete absence of any tuberculous history.

Condition when First Seen.

There were no physical signs of disease in lungs or abdomen. The hymen was unruptured. Great pain was felt on introducing the finger into the vagina, but nothing abnormal in the wall of the vagina or in the vulva. The uterus was fixed in complete retroversion, and thickening of the whole vaginal vault was felt. I could not define the appendages on either side.

Believing the existing condition to be the effects of an old peritonitis, probably dating from the attack mentioned as occurring ten years earlier, but in any case the origin being obscure and not pointing in any way to tuberculous or any other specific trouble, I prescribed tonics, vaginal douches and plugs, and rest.

After-history.

Two months elapsed before the patient came to see me again, during which time she had developed a persisting, chocolate-stained discharge. She complained of having had four definite menstrual haemorrhages, and spoke also of a pain gradually