

## BACTERIOLOGY OF MILK.

Dr. Ralph Vincent delivered the fourth lecture of his course on "Babies," on Tuesday, November 7th, at the Infants' Hospital, Vincent Square, W. He said when milk is drawn from the cow bacteria are always present, however clean the method may be. It is impossible to obtain a sterile milk, as organisms are present in the udder and ducts, though they are not to be found in the mammary glands.

The cleanest milk contains numbers of different organisms and, excluding those of scarlet fever, typhoid, etc., exactly the same kind is found in clean milk as in dirty, the only difference being in the *number*, and they are perfectly harmless. The important point is that they should not be allowed to develop.

Dr. Vincent showed a specimen of pure milk that had been in the incubator 72 hours at a temperature of 67 deg Fahr., it was definitely curdled, and there were a small number of gas holes. Supposing this to have been a specimen of ordinary dairy milk, it would have been literally riddled with gas holes, the reason of this difference being that the temperature of the pure milk specimen had, on being drawn from the cow, been reduced to 40 deg. Fahr., at which temperature it is impossible for organisms to develop.

*Streptococcus lacticus* produces only lactic acid, and given a proper start it keeps out all other organisms, but it is a blood temperature organism, and either the milk must be kept as it came from the cow or reduced to 40 deg. Fahr. and brought up again to blood temperature.

Take a specimen of the pure hospital milk, bring it immediately to 100 deg., and in eight hours no organisms will be found but the *streptococcus lacticus*. After eight or twelve hours it begins to alter, the *streptococcus* makes a certain amount of acid, and a good many other organisms are found to be present. Eight hours is the normal time for the milk taken by the infant to pass through the process of digestion.

When we go into the question of pure milk inside the babies—the first organism to act is this *streptococcus*. In dirty milk the colon bacillus gets the start, having grown what is called *dominant* at a temperature of 100 deg.

When infants are brought to the Hospital suffering from wind and colic, it indicates the gas-producing colon bacillus is already at work. A *streptococcus lacticus* culture is given in such cases to throw out the colon bacillus. This pure culture is obtained by putting the strep-

tococcus into raw milk, where it grows very vigorously. It is a true milk organism. Other organisms can live without lactose, but this cannot. The colon bacillus can, for instance, live in barley water and becomes putrefactive, but it entirely ceases to grow in lactose. So that an infant suffering from putrefactive changes due to the colon bacillus is fed at once on lactose culture.

Dr. Vincent explained that a specimen of milk kept at blood heat for three or four days, and into which the *streptococcus lacticus* had been then introduced, would undergo a series of changes, one set of organisms succeeding another until in eighteen months the specimen would become sterile.

Everything depends on the amount of acid, the kind of organism, and the precise conditions. The important things to remember were:—

- (1) That milk on being drawn from the cow should at once be refrigerated.
- (2) That the temperature should again be brought up to blood heat.
- (3) And that it should be kept in its natural state.

## PHYSICAL DEVELOPMENT DURING SCHOOL LIFE.

Since the Medical Inspection of school children has come into force, public opinion is being trained to realise that the parent's duty to the child has not been performed to its utmost, when the said child has been hastily washed and dressed, and fed on an apology for breakfast and despatched "to school"—there to learn many things useful and the reverse! We are beginning to realise that our duty to the State demands that the young citizen shall be developed along right lines, morally and physically as well as mentally. School nurses will play an important part in building up a healthy race and in inculcating hygienic ideals. It may be interesting to recollect a "few facts" about the development (if we may use such a big word about little people!) of the average child of school age. Girls grow faster than boys both in weight and height until they are about fourteen, when boys outstrip them. Both sexes increase in height and weight rapidly till about seven years of age, when they generally slack off till between ten and eleven, when the increase again becomes noticeable. An average child of 2½ years will measure about 33 ins., and weigh 33 lbs. A boy of 4 years generally averages about 40 ins., of 7 years 46 ins., of 12 years 55 ins., and of 14 years 60 ins. When weighing

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