

to four million per cubic centimetre, and showing the proportion of cow manure it is necessary to have present in the milk to give a certain bacterial content, says: "Hence we observe that a contamination of one-tenth grain of manure, an almost invisible quantity to the unaided eye, per quart of milk gives a bacterial content equal to that of sewage."

It is estimated that Berlin consumes no less than three hundred pounds of cow manure with its daily milk supply. Conn proved that cow manure was very soluble in warm milk, and that subsequent straining would not remove it. Thus it is seen that there is still danger of tubercle bacilli being present in the milk, even if the udder of the animal is not affected.

It may be argued that pasteurization will remove the greater part of the danger from bacterial contamination, regardless of its source. Babcock and Russell* have demonstrated that there is an important constituent of the milk which is also destroyed by this heating process. They have found in milk an "inherent digestive enzyme"—galactase. In their experiments, ether, chloroform and benzol were used to destroy the bacteria, and yet the milk so treated underwent a physical change without an increase in bacterial life. The proteolytic enzyme—galactase—is destroyed at about 75°C., and is considerably injured at a somewhat lower point. The removal of this enzyme seriously affects the digestion of the milk in the human stomach. Are we then justified in the destruction of this ferment to counteract the lack of cleanliness observed when removing the milk from the udder?

The need, therefore, of closer observation as to the health and surroundings of the animal producing this important food is apparent. No individual is better fitted for this work of supervision than the expert veterinarian with a knowledge of the sanitary and hygienic conditions necessary to eliminate as far as possible the contamination of milk supplied by animals under his charge.

Since Pasteur's first studies on immunity, conducted with attenuated cultures of the chicken cholera bacillus, this field has received a great amount of attention. The prophylaxis and treatment of many of the contagious diseases is based upon this theory of an attenuated virus. Anthrax and black-leg vaccines, prepared by the attenuation of the virus, are used in enormous quantities throughout the world.

The most important work of to-day, from the veterinarians' standpoint, is the production of immunity in cattle against tuberculosis. Various workers, among whom Pearson and Gilliland of Philadelphia

* S. M. Babcock and H. L. Russell. Annual Report University of Wisconsin, 1903.