that from animals receiving any of the deleterious medications of foodstuffs previously mentioned shall likewise be excluded.

6. That the veterinary inspectors of the health department make frequent visits to dairies having untested herds, in order that they may discover all advanced cases of tuberculosis, or udder tuberculosis, as early as possible.

MILK SEDIMENTS OR DIRTY MILK IN RELATION TO DISEASE.

BY GEORGE M. KOBER, M.D.

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Every consumer of milk has doubtless observed the presence of more or less foreign matter at the bottom of the bottle in which it is kept; indeed, it is a matter of such common occurrence that it hardly excites our attention, and many are disposed to look on it as a matter of course. Professor Soxhlet of Munich was perhaps the first to point out that these deposits are largely made up of the excrementitious matter from the cow, which adhering to the udder of the animal, gained access to the bucket during the act of milking.

If these sediments are subjected to microscopical examination we will find that they are composed of epithelial debris, hairs of the cow, organic and inorganic dust particles, excrementitious matter, vegetable fibers, bacteria, fungi and spores of every description: fully 90 per cent. of the germs are fecal bacilli—all of which is not only disgusting but extremely suggestive of danger. The number of micro-organisms is largely increased and we know that under a suitable temperature bacterial development and consequent decomposition are materially hastened in such a medium. The greatest danger from milk of this class is the possible presence of ptomaines or toxins produced by certain saprophytic germs from the albuminoids of the milk.

The views of Vaughan, Booker, Escherich, Harrington, Kober and others on the relation of saprophytic germs and toxins to cholera infantum and the summer diarrheas in bottle-fed children are gaining ground and will doubtless lead to great reform in the management of dairies. It may be urged that all such modern innovations involve unnecessary hardship, but it should be remembered that by attacking all the various factors concerned in the causation of the disease we may hope for the best results. The reduction in the general mortality in the registration area of the United States from 19.6 in 1890 to 16.2 per 1,000 shows what may be accomplished by preventive medicine and sanitation.

Milk in Relation to Infectious Diseases.—Milk may acquire infective properties after it leaves the udder of the animal. Numerous instances have been observed in which outbreaks of typhoid fever, scarlet fever and diphtheria, by their sudden and explosive character, affecting families living in streets and localities supplied by the same milkman, naturally pointed to the milk supply as a common cause. Dr. Michael Taylor, however, was the first physician (in 1857) to point out definitely that cow's milk might serve as the medium of spreading typhoid fever from a dairy where the disease prevailed. In 1867 he also showed that scarlet fever might be distributed in the same way. In 1877 Mr. Jacob traced a diphtheria epidemic at Sutton to the milk supply, and in 1872 MacNamara traced an outbreak of cholera at Calcutta to an infected dairy. These facts could not fail to sharpen the powers of observation in others, so that in consequence similar outbreaks were more frequently reported. I was enabled to present to the International Medical Congress held in Paris in 1900 the history of 195 outbreaks of typhoid fever, ninety-nine of scarlet fever and six of diphtheria, all traceable to milk supply.

It has been demonstrated that disease germs may not only survive, but in many instances actually proliferate, in the milk, and it is not a difficult matter to point out the many ways by which these germs gain access, especially when some of the employees are also engaged in nursing the sick, or are suffering themselves from some mild infection while continuing their duties, or are convalescent from the disease, and thus infect the milk in handling it.

After the recital of numerous epidemics and milk-borne diseases, I need hardly insist on the necessity of compulsory notification of all infectious diseases, and that milk should not be permitted to leave a farm, dairy or milk-shop during the existence of any of these diseases among the inmates or employees, nor should the latter be permitted to reside in or visit infected houses while engaged in the milk traffic without permission from the health department. The farmer or retailer should, in fact, be prepared by previous instructions to guard the milk supply from these sources of danger and call on the authorities for an immediate inspection. To prevent great loss incident to those restrictions, they may be modified so as to use the milk after proper sterilization under the direction of the health department. There is nothing strained in the requirements of the proposed legislation and by their enforcement we may hope to obtain such a standard of milk as will not only effect a decided reduction in infantile mortality, but will render the dissemination of infectious diseases through the milk supply a matter of history only. Until this is accomplished, we should patronize only such dealers as sell "certified milk," or subject the milk to pasteurization, or simply bring the milk to the boiling point in the household, and, after cooling, keep it on ice: this will not make bad milk good, but it will at least destroy its infectiousness.

SANITARY INSPECTION OF DAIRIES AND DISTRIBUTING DEPOTS.

BY E. H. WEBSTER.

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A systematic sanitary inspection of dairy farms and milk-distributing depots are anything but ideal; they are, in fact, about as bad as it is possible to conceive. Stables are poorly lighted, many having no windows whatever, and ventilation is left to care for itself. Little attention is paid to floors, ceilings, walks, or stable yards. Swine, horses and poultry are often found in the same barn with the cows. Manure is not removed, or, when removed, is thrown through an opening in the wall or just outside the door, frequently near the milk room.

The necessary appliances for sterilizing and cooling in milk room are often lacking, making it impossible properly to wash and sterilize pails, cans, bottles and other appliances, or to properly cool and hold at a low temperature the milk before delivery. Milk dealers, as a rule, have more respect for sanitation and have better appliances than the average farm, but some common practices are deplorable. Very few have appliances for sterilizing bottles.

The situation in Washington is not different from that confronting the health departments of most of the cities of any size throughout the country. The public is gradually awakening to the fact that these conditions must be changed. In order to bring about these changes within the district, it is recommended that:

1. A sufficient number of inspectors shall be employed so that each inspector shall have not over 100 farm dairies.
2. These men shall have technical training in the production and handling of milk.
3. The health officers shall have full authority to make rules and regulations, and to enforce the same, so as to safeguard the milk supply of the district from contamination through carelessness, ignorance or malicious intent.
4. The health officer, or any authorized inspector, shall have authority to revoke instantly the license or right to sell milk in the city if the provisions in these regulations are not complied with, where, in his judgment, such violation endangers the health of the consumer.

WATER SUPPLY OF DAIRY FARMS.

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The influence of a polluted water supply has long been recognized as a most potent cause of disease. Many virulent epidemics have been directly traced to this origin. The literature