

## OUR PRIZE COMPETITION.

HOW MAY MILK BE CONTAMINATED? WHAT ARE THE PRINCIPAL DISEASES, PECULIAR TO HUMAN BEINGS, WHICH MAY BE THE ORIGINATORS OF MILK-BORNE EPIDEMICS?

We have pleasure in awarding the Prize this month to Miss Phyllis Armitage, S.R.N., 3, Castle Hill, Maidenhead, Berks.

### PRIZE PAPER.

Milk furnishes a most favourable medium for the development of all pathogenic bacteria, which unfortunately are rapidly reproduced often without affecting the slightest alteration in the taste of the milk.

Numerous opportunities for this contamination arise from the cow and its surroundings, the milker and his utensils, the mode of transit and storage, the retailer, his premises and utensils, and finally the consumer.

The cow may have definite obvious tubercular lesions, or be apparently healthy and yet have a tuberculous udder; thus the milk is infected with bovine tubercle bacilli. Should the cow not be kept in a healthy, clean environment, and not groomed before milking, the milk will be very strongly contaminated with *Bacillus Coli*.

The milker can be a very potent source of milk contamination, not always because he is suffering from an infectious disease, but by virtue of being a "carrier" of the disease, whether a "healthy carrier" who is quite unaware of the fact that he has ever had any infection, or a "convalescent carrier," *i.e.*, one who has had the disease, appears well, but is unknowingly still harbouring the germ.

The cans and utensils of the milker must not be overlooked as possible sources of infection. They may have been washed with infected water. Deliberate milk dilution can also be carried out with impure water.

The mode of transit and storage is of equal importance if a pure milk supply is to be ensured. One has only to think of the dust and smoke of a railway station disseminating germs of every description to realise that the "containers" must be air-tight and dust-proof.

On arriving at the retailer's premises there is still danger of pollution, if the retailer is suffering from any transmissible disease or is a "carrier." Dirty, insanitary premises, together with utensils which are not daily sterilised will certainly be adverse to the preservation of the purity of the milk.

The consumer plays a very active part in the ultimate decision as to whether the milk remains pure and fit for human consumption or not.

Milk received into unclean vessels cannot remain pure, neither can milk which is left uncovered. A warm atmosphere, even though milk is covered, favours the multiplication in it of germs, not only the pathogenic but the bacteria which are responsible for the souring of milk.

Lack of cleanliness, whether in general habits, clothing or the hands, in those who handle the milk is a serious menace to the health of all in the home or institution. Here again the danger of "carriers" should be remembered.

Diseases which may be communicated to human beings by milk are:—Tuberculosis in children, caused by the ingestion of the Bovine Tubercle Bacillus, particularly affecting the intestines, peritoneum, glands and joints.

The human Tubercle Bacillus may be spread by milk if a person suffering with phthisis handles the milk at any stage.

Enteric fever may be spread by milk, if the milk has become contaminated with the *Bacillus Typhosus* or the Paratyphoid Bacillus from some "carrier" handling the milk, or some person suffering from a mild undiagnosed attack of the disease.

An epidemic of diphtheria may arise as a result of the growth of the Klebs Loeffler Bacillus in the milk, again either from a "carrier" or from a mild case.

An outbreak of cholera may be traced to its origin in a milk supply which in its turn obtained the cholera vibrio from water.

Scarlet fever may arise in the same way as diphtheria.

Epidemic diarrhoea, especially in young children during a hot dry spell of weather, will owe its origin to infected milk, while outbreaks of gastro-intestinal disorders affecting persons of all ages may quite possibly be traced to the milk supply.

Malta fever has of late years been traced to the infection of goat's milk by a germ known as *Brucella Melitensis*.

Epidemics of follicular tonsillitis in a given area are now thought to have their origin in the consumption of milk which has been derived from cows suffering with a form of mastitis, and whose milk contains streptococci.

*Oidium Albicans*, the fungus which causes thrush in babies, thrives in dirty stale milk.

This knowledge of the diseases which can arise from an infected milk supply led to the introduction of legislation to encourage the production of clean milk, the outcome of which was:—

The Milks' Special Designation Order of 1923, which recognises four standard grades of milk, and was a step in the right direction to eradicate milk-borne diseases.

### HONOURABLE MENTION.

The following competitors receive honourable mention:—Miss Henrietta Ballard, Miss E. Divens, and Mrs. A. M. Williamson.

Mrs. A. M. Williamson writes:—Milk lends itself not only to contamination by germs, but to adulteration, and it is the duty of the Public Health Authorities not only to safeguard the cleanliness of the milk, but to prevent interference with its quality and ensure its legal fat standard. The fat can be reduced by skimming or by centrifugalisation, or by a skilful process of mixing whole milk and separated milk, which is difficult to detect. Or milk may be artificially coloured with a vegetable dye to give it a rich, creamy appearance.

A poor quality of skimmed milk is used in the manufacture of low-grade condensed milk, which is retailed cheaply, and is much used for the feeding of infants by the poorer classes. The use of this condensed milk, which is sweetened skim milk, is one of the commonest causes of rickets.

### QUESTION FOR NEXT MONTH.

What are the exciting causes of Shock? What are its symptoms? What methods of treatment do you know of which are employed in combatting it?

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