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ARTIFICIAL FEEDING
OF
INFANTS.

BY
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(SANITARY SUPERINTENDENT, BOARD OF HEALTH,
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"ARTIFICIAL FEEDING OF INFANTS."

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OF course, the best food for an infant is mother's milk, but it is not always possible to use this: First, because the mother may be unable to supply sufficient nourishment to sustain the child. Second, because the mother's milk is not of proper composition and does not agree with the babe. Third, because wet nurses are difficult to obtain and may be objected to not alone on account of the two foregoing reasons, but also on account of the danger that they may transmit disease to the suckling.

It becomes apparent every year that fewer mothers are able to properly nourish their offspring, a condition that is being effected by modern civilization.

The problem of proper infant treatment therefore becomes more and more important, and is one of the most perplexing that medical men have to deal with.

The natural substitute for mother's milk would be cow's milk as it is most easily procured, and as it con-

tains all the elements necessary to support and nourish human life. The reason that cow's milk is not a perfect substitute for human milk and is not adapted to the purposes of the latter, is, because the two differ materially in composition. Another reason might also be justly advanced, cow's milk that has not been sterilized may carry germs of disease, particularly those of tuberculosis, and may thus infect the child whose delicate system affords a most excellent nidus for the development of such germs.

Few persons realize the very great difference that exists between the chemical and physical compositions of cow's and human milk. Without going too deeply into the chemistry of the lacteal fluid we may say that human milk is decidedly alkaline in reaction, while the milk of the cow is acid. Then, too, human milk contains more sugar and less albuminoids than does cow's milk. But not only is the difference of albuminoids one of quantity, the latter in human milk form in the stomach, when acted on by the gastric juice, a coagulum which is soft and flocculent and consequently easily digested.

On the other hand the albuminoids in cow's milk coagulate into hard firm masses that require considerable muscular exertion on the part of the stomach to break up and digest them. This fact is an important one in the etiology of infantile diarrhœa. The delicate stomach of a child is often unable to cope with the hard indigestible curd, and the latter contains, when it has not been sterilized, the germs of putrefaction. These

germs find in the weakened stomach every condition that is favorable to their rapid development. The curd, consequently, instead of being digested is putrefied and the poisonous products of the latter process cause an inflammation that is often fatal in its results. If, as may be the case, the milk contains the bacillus of typhoid fever, or that of dysentery, or that of Asiatic cholera, then either of the three diseases is apt to follow.

There is no surer way of implanting the infectious diseases I have mentioned than through the medium of infected milk. But, you ask, how can milk be infected with such diseases? Very easily; milkmen are proverbially dishonest. They frequently water their wares, and they are by no means fastidious as to the quality of the water used by them for the purpose. I have found frogs, small eels and water-snakes in milk brought into this city.

Some one has called the cow "the curse of mankind" because of the part she plays in the spread of tuberculosis. I am inclined to believe he is right. To prevent the tough firm curding of cow's milk various methods have been devised—attenuation by adding water is resorted to and substances such as barley are added. These act mechanically on the separation of the casein. But all these methods have been found to be only partially successful. Sometimes pancreatin is used to partially digest the albuminoids of cow's milk and to thus render them more like those in human milk.

The objection advanced against this is that the operation of artificial digestion is a delicate one, requiring

expert knowledge and experienced manipulation, and that it cannot be left to the mother or nurse. At one time the process may be carried too far, and the milk is bitter and unpalatable, at another it is not carried far enough to be of any practical use.

PREPARED FOODS.

Many prepared foods are offered to the medical practitioner, each claiming special advantages.

As the physician is usually unable to personally examine these foods, to determine their composition, he must rely more or less on the statements of the manufacturers, and test such foods by actual practice.

In using prepared foods very great care should be taken at the outset to see that they are in good condition, that no deterioration has taken place through infection with the germs of putrefaction or of disease. We can only be certain in this respect of those foods that are delivered to us in hermetically sealed packages; the contents of which, when milk has been used, having been sterilized before packing. There is little doubt but that much harm has been done by the use of partially spoiled foods.

It has been quite positively settled that an infant under seven months old cannot digest starchy food. The salivary glands are not yet properly developed, and the secretion of Ptyalin, the ferment of the saliva which acts on starch, does not exist until after the above age.

It would naturally seem then that an all milk food would be the only one to use. As far as I am aware Reed & Carnrick's Lacto-Preparata is the only food of this kind offered to the Medical Profession or public, and from what I know of its composition, its preparation and the results obtained by its use I am justified in saying that it is a most excellent substitute for mothers' milk, and is the safest to use during epidemics of Typhoid Fever, Cholera Infantum and Asiatic Cholera. The milk used in Lacto-Preparata is selected with great care, the dairies being under constant supervision. The milk is run through centrifugal machines which not only remove the cream, that constituent which would cause deterioration of the product on keeping, but which also remove all foreign particles, thoroughly cleansing the milk, so to speak.

The cream later on is partly replaced with purified cocoa butter which has been found by experiment to be as digestible as milk-fat and of equal nutritive value; moreover it does not spoil.

The mixture of milk and cocoa butter is now made alkaline with lime-water, then sterilized, evaporated to dryness, ground and packed in hermetically sealed sterilized cans.

The same firm produce another food, adapted to the use of older infants and of invalids, called Carnrick's Soluble Food. It is prepared similar to the Lacto-Preparata, but contains about one-half ($\frac{1}{2}$) its bulk of dextrinized flour.

There is only one word of caution that must be given

concerning the artificial feeding of infants; it is this: Watch carefully the condition of the child; if its flesh becomes flabby and it does not seem to thrive as it ought, try the effect of small doses of a reliable emulsion of Cod Liver Oil. It is possible that the system needs a little more fat than it is getting in its food. No prepared food, as far as I know, contains as much fat as the one recommended in this paper, but it is impossible to prepare a palatable food that will keep and which will not be open to more serious objections than a slight deficiency in fat.

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