

been boiled, and in this also the poison was developed. But in the boiled milk to which no ferment was added, as well as in the unboiled milk to which no ferment was added, the poison did not appear, at least within the six hours.

Now, from these experiments, I conclude that foods prepared from milk, or to which milk be added, are not suitable for children who are suffering from the summer diarrhoeas. Just why the poison should appear in the milk preparations and not in the peptonoids, I cannot say. There are several possible explanations. The growth of the germ may simply be more rapid in one than in the other, and the difference in the development may be only one of time; but a difference of this kind is sufficient for all practical purposes.

Then have the prepared milk foods no legitimate use? I think they have, and desire to point out what I consider to be their proper employment.

Even under the most favorable conditions, milk can be kept unchanged only for a short time in summer. There is the same reason for the drying of milk and the preservation of its solids that there is for the curing of meat or the canning of fruit. The dried milk solids may be transported any distance and kept for any reasonable length of time, if properly prepared, without undergoing putrefactive changes. But they are to be used with children free from the summer diarrhoeas rather than with those suffering from those complaints. Where the source of the milk supply is doubtful, a properly prepared milk food would be much more reliable than the raw milk. Besides, with any dilution or addition that may be made, cow's milk cannot be rendered identical with the milk of woman.

Can the milk of the cow be rendered more nearly identical with that of woman than it is by the simple dilution with water and the addition of milk sugar? All chemists, I think, agree that woman's milk contains more peptone than does the milk of the cow. Kirchuer, who has given much attention to this subject, and has experimented largely, believes that the difference in the digestibility of milk from the cow and that from woman is wholly due to the larger amount of peptone in the latter. I cannot see, therefore, why the casein of the cow's milk should not be partially digested. That it should not be completely digested, I think there can be no question. It is certainly unscientific to feed any one for any length of time upon peptones altogether; especially is this true of children. To relieve the gastric juice altogether is to diminish its secretion. The muscle of the arm, the brain, and, indeed, every part of the body, is weakened by inactivity. The stomach can be no exception to this rule. It must have something to do, or will soon be unable to do anything. There may be, and doubtless are, exceptional cases, in which the temporary administration of peptones exclusively is desirable. But these are exceptional cases, and the administration of the completely digested food should be only temporary. Certainly these

cases do not include healthy children. For these reasons I generally prefer the partially digested meat preparations to the peptones.

If this be true, will it not be sufficient for the nurse to digest partially the cow's milk as it is fed to the child? There are these objections to giving advice of this kind. If the source of the milk is doubtful, or if it has become contaminated by unclean vessels, or if putrefactive changes have already begun in it, the process of artificial digestion will not destroy the poisonous ferment. Indeed, the temperature at which the milk is kept during the artificial digestion will only favor the development of the poison. We have Dr. Holt's evidence that the use of peptonized milk is not to be recommended in summer diarrhoeas. The artificial digestion, as carried out by the nurse, is not likely to be scientifically done. It will probably be neglected or amount to only a form, or it may be overdone, and the taste of the milk spoiled, and too great a proportion of the casein converted into peptone. If partial artificial digestion is to be practised at all, and I see no reason why it should not be, it should be done under competent direction, and when the milk is perfectly fresh.

Let us see what some of the most important properties of this prepared milk food should be. It should not contain any vegetable matter which is difficult of digestion.

This prepared milk food should be sufficiently nutritious in itself, and, consequently, should not require the addition of milk. In the use of all those prepared foods, to which the addition of milk is necessary, the same danger of introducing the poisonous ferment into the alimentary canal exists as in the use of the raw milk. Many of the prepared foods contain such small amounts of proteids that the addition of milk becomes necessary. They should contain a larger per cent. of milk solids, obtained by the evaporation of milk in vacuo.

Attention should be given to the amount of inorganic salts, especially of lime and phosphoric acid, in a prepared food. A proper amount of these substances is as necessary to the health and growth of the child as are fats, proteids, and carbohydrates.

The carbohydrates present in such a food should not be in the form of grape-sugar, but as milk sugar and dextrine. The grape-sugar is not supposed to have any specially injurious or poisonous properties; but it ferments too rapidly, and for this reason is objectionable. By roasting wheat flour its starch is converted into dextrine, and this roasted flour mixed with milk solids, obtained by the evaporation of milk in vacuo, forms a food sufficiently nutritious, and one which may be kept indefinitely without putrefactive changes occurring in it.

Prof. J. Lewis Smith, in his excellent work on *Diseases of Infancy and Childhood*, speaks well of the roasted flour; and this, added to milk solids, makes the best infant food known to the writer.