

ing the alkali up to about four grains of the bicarbonate to each ounce of milk. An alkalescence of one grain to the ounce of milk secures a sufficiently rapid action, and gives no appreciable taste to the product. A slower action takes place even in milk to which no alkali has been added. Dilution with water hastens the process greatly; it also facilitates it in another way. If the milk be diluted with one-third or one-half its bulk of water, the curdling phase is either altogether absent, or is usually so slight as not to amount to more than a transient thickening of the milk. In practice, I have, therefore, always found it advisable to dilute the milk beforehand, either with simple water or with a farinaceous gruel, so as to abate the tendency to curdling. This tendency varies in a way I cannot always explain. Pronounced curdling delays the peptonising process very considerably, and thereby renders the product less acceptable to invalids.

The quantity of ferment that should be used is always a matter of uncertainty. It is impossible to obtain pancreatic extracts of constant strength; and not only do several specimens of pancreatic extract differ from each other, but even the same specimen varies in activity according to its age. Freshly made extracts are nearly inert, and they go on increasing in activity for many months after they are made. But supposing you to be operating with the same sample, the proportion added to the milk greatly influences the rate of digestion. I have generally used a dessert-spoonful of the extract to a half-pint of milk. If the preparation be fairly active, this proportion yields a sufficiently quick result; and, in the case of the liquor pancreaticus, communicates no flavour. The glycerine extract perceptibly sweetens the milk, and is to some people disagreeable.

After a good many trials, I now advise the following procedure for preparing a peptonised milk for the sick-room. A pint of milk is first diluted with half its bulk of water and heated to about 150° F. It is then put into a covered jug with a tablespoonful of liquor pancreaticus and twenty grains of bicarbonate of soda (in solution). The jug is then placed in a warm place under a "cosey" for one hour. At the

end of this time, the milk is at once raised to the boiling point. It can then be used like any other milk, and undergoes no further change until decomposition sets in. It is well, however, to know that peptonised milk does not keep well, and that it should be used within twelve hours of the time of preparation. The use of the thermometer may be obviated by directing the milk to be diluted with an equal bulk of *boiling* water.

Another formula, which supplies a more nutritious product, and does not require the thermometer, is the following. To half-a-pint of cold milk, in a covered jug, add half-a-pint of well boiled and *boiling* gruel. This gives a temperature of 120° to 130° F. To this add a dessert-spoonful of the liquor pancreaticus and a dessert-spoonful of a saturated solution of bicarbonate of soda (which contains about ten grains). Put under a "cosey," as before, and heat to boiling at the expiration of an hour. In this case, the trypsin of the pancreatic extract acts on the casein of the milk and (I presume) on the gluten contained in the gruel. The diastase of the extract also acts on the starch of the gruel, and converts it into sugar. This method gives us a preparation similar in design to Liebig's food for infants, but in which the proteids, as well as the amylacea, are subjected to digestion. The making of it is exceedingly easy, and it would seem well adapted both for the nursery and the sick-room. The gruel employed should be made thin; it may be prepared from wheat-flour, or from oatmeal, or from any other farina.

I have now used these fractionally digested articles of food in a considerable number of cases, and in many with gratifying results. If the process be properly performed, if it be cut short by boiling at the right moment—that is, after the curdling phase has passed away, and before ulterior changes have rendered the milk unpleasant to the palate—the resulting products are liked as well as if they were simple milk-and-water or simple milk-gruel. But if the process be carried too far—or if, on the other hand, the milk be still partially curdled when set before the patient—the product is not liked, and is even apt to cause nausea.