

experiments made with rolled oats at the Minnesota Experiment Station* indicate that cooking (four hours) did not increase the solubility of the carbohydrates, and the theory is advanced that the difficulty experienced in digesting imperfectly cooked oatmeal is due to the large amount of mucilaginous proteid material which surrounds the starch grains and prevents their disintegration. It is further argued that when the oatmeal is thoroughly cooked, the protecting action of the proteid substance is overcome and the starch granules are sufficiently broken up to allow the digestive juices to act. The above results with oatmeal show that in our work there was an increase in the solubility of the starch, but that the change towards the dextrin compounds was not sufficient to allow much of it to be thrown down as an alcohol precipitate. There was also an increase in the solubility of the proteid substances. It is certainly evident that the longer periods of cooking increased the amount of soluble matter, and it is quite probable that this would decrease the labor involved in digesting the food.

With the wheat farinas 27.4 per cent. of the total dry matter of the food was soluble in water at the end of twenty minutes, which increased about 10 points when cooked for two hours. As the solubility was only slightly increased at the five and eight hour periods, it would appear as though the longer cooking was not required with this food. More crude dextrin is found in this case and a noticeable difference is observed in the proteid material as compared with the oatmeal. The heat has apparently coagulated, or rendered insoluble, the protein and it has only very slowly changed again under the influence of the longer cooking. The cornmeal, like the farina, under the influence of heat, formed considerable dextrin and the solubility of the proteids was very little changed by the long boiling.

A very interesting point in connection with these experiments is that the amount of soluble matter obtained from the oat, wheat, and corn meals after twenty minutes' cooking was greater than that from some of the so-called cooked foods and even greater than that obtained from some of the much advertised predigested foods; while the longer periods of cooking, especially with the rolled oats and farina, rendered nearly as great an amount of the dry matter soluble as was obtained from the best of the malted and cooked foods. It would certainly appear as though some of these ready-to-serve foods would be the better of further cooking before serving.

DIGESTIBILITY OF BREAKFAST FOODS.

A knowledge of the composition of a food is absolutely necessary in studying, or estimating, its nutritive value. But this is not sufficient, for it is only that part of the food which is actually digested and absorbed

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