MECHANICAL OPERATIONS IN FOOD INDUSTRY

Food industry cаme into being a few hundred years ago. This was long before any knowledge was acquired about what happened during food processing which was mainly based on experience and traditions. Only recently science has become involved in foods and thus food science is a young science.

The food industry processes biological materials which are produced by agriculture, horticulture, animal husbandry and fishery. They differ greatly from each other and are of a very complicated structure and composition. That is why food processing should be based on knowledge of the properties of these biological materials and of the changes that take place during processing. But food processing can not be accomplished without mechanical operations and mechanical equipment because they create proper conditions for it.

Mechanical operations are very important in the manufacture of all kinds of products and especially in that of complex articles such as bakery products and confectionery as well as modern products such as canned and dehydrated soups, baby foods, meat products, etc.

Mechanical operations include first of all handling of materials (i.e. transportation and storage methods) which is very important in any plant. The next commonly used operation is mixing which may be used in the production of many complex articles or as an auxiliary operation in reactions where the reacting materials must be brought into close contact with each other; in physical operations such as dissolving and extraction and so on.

Size reduction and size enlargement are exceptionally important in the food industry. In the case of size reduction a distinction can be made between the operation for a purpose (to give the product a certain marketing form and dimension) or as an auxiliary operation in physical operations

such as drying, cooling, heating, etc. Size enlargement (moulding) of articles is often applied in confectionery industry, in meat processing, etc.

Finally, many mechanical separation methods are used in the food industry. Solids are separated from liquids. Examples of liquids recovered from mixtures are fruit juices and sugar solutions. The winning of a solid is of prime importance in the separation of starch from suspensions. We know the classification of solids to be also of great importance: in the cleaning and sorting of raw materials; in the separation of edible from non-edible components and in the sorting of final products according to shape and dimensions. Other mechanical separations (liquid/liquid, solid/gas and liq-

uid/gas) are also used quite frequently.

The specialized mechanical engineer who works in food industry must bе able to select the most suitable equipment for a certain purpose. He also should know the design and construction of this equipment and solve different technical and economical problems.

**EXERCISES**

**I. Translate into Russian:**

food processing, handling of materials, storage methods, size reduction, classification of solids, size enlargement, raw materials, specialized mechanical engineer, moulding, non-edible components, products of different shape and dimensions.

**II. Translate into English:**

пищевая промышленность, приводить материалы в тесный контакт друг с другом, товарный вид, вспомогательные операции, быть очень важным, подходящее оборудование, решать технические и экономические проблемы, продукты детского питания, консервированные и обезвоженные супы, методы механического разделения.