VI. Poultry (*continued*).

4. Creamed chicken.

*Note:* In all preparations apply conservation principles by using wheat flour substitutes and avoiding excess fat.

SECTION IV

PREPARATION AND USE OF VEGETABLES AND FRUITS

I. Purpose:

To illustrate the principles underlying the cooking of vegetables and fruits.

II. Effect of cooking vegetables.

A. Softening the cell wall. This is especially important in tubers and roots, as potatoes, beets, but is less important with celery, cabbage, onions, which are often eaten raw.

B. Change in flavor. *Improved,* in potatoes, green beans, spinach. *Changed without impairing,* in onions, celery, cabbage, if cooked carefully. *Destroyed or impaired*—long cooking of celery results in loss of flavor due to loss of volatile flavoring substances; long cooking of onions, turnips, cabbage, results in the production of strong flavor.

C. Change in color. Color in white vegetables (onions, turnips, cabbage) and green vegetables (peas, beans, asparagus) is retained by limiting time of cooking. Darkened color results from long continued cooking and is accompanied by an impaired flavor.

D. Moisture content. *It is reduced in baked vege-*
II. Effect of cooking vegetables (continued).

tables, e.g., squash, potatoes, but it may be increased slightly in cooked green vegetables, more markedly in "soggy" boiled potatoes.

E. Losses. Kind and amount depend upon —

1. Method of cooking; e.g., whether baked or boiled.
2. With and without skin.
3. Size of pieces.
4. Amount of water.

III. Demonstration of effects of cooking.

In order to show some of the most important of the above principles, samples of vegetables should be prepared either by the instructor or by such students as may be able to give additional time. These samples should be ready for exhibition and discussion at the beginning of the lesson period. In each case secure three samples by taking out the following portions:

1. Vegetable cooked until just soft enough to be pierced by a fork.
2. A portion cooked twice as long as in 1.
3. A portion very much over-cooked.

Note in all cases the character of the vegetable broth as well as the vegetables. Use the vegetables and broths in the preparation of creamed vegetables and vegetable soups.

A. Carrots.

1. Cooked whole.
   a. In boiling water.
   b. By steaming.
III. Demonstration of effects of cooking (continued).
   2. Cut in slices, cubes, or straws.
      a. In a large excess of water.
      b. In as little water as possible.

B. Cabbage, onions, or turnips.
   1. Cooked in large pieces or whole.
   2. Cut in small pieces.

IV. Class work.
   A. Prepare potatoes as follows to insure a minimum of loss:
      1. Baked.
      2. Boiled in the skins. While still hot remove peeling, and brown (whole) in a small amount of savory fat (bacon fat or fat saved from the experiment in the meat lesson) or vegetable oil.
      3. “Stewed” potatoes. Cut pared potatoes in thin slices, barely cover with water, and add salt and butter to season. Boil until the slices are tender but still whole and just enough water left to make them juicy. No water should be poured off.

B. Contrast the methods of cooking old and young spinach if both are available. (Emphasize in both cases the necessity of thorough cleaning.)
   1. Young spinach. Cook without the addition of any water for 10 minutes, chop fine, season with fat and salt. Simmer for 10 minutes.
   2. Old spinach. Blanch, to remove rank flavor. Cook in a limited amount of water. The time
IV. Class work (continued).

will vary with the age of the vegetable. Finish as in I.

C. If time permits, prepare such vegetables as are available on the local market to illustrate the above principles and attractive methods of serving.

D. Dried vegetables.

If cooked at 100° C., all dried vegetables should soak in cold water from 8 to 12 hours. If cooked under 15 pounds pressure, the soaking is unnecessary.

1. Succulent dried vegetables. Green beans, carrots, onions, etc., should be cooked in the water in which they were soaked to avoid loss of the mineral constituents.

2. Dried legumes.

a. Some legumes, such as cow peas, are rank in flavor so that the water in which they were soaked cannot be used.

b. Cook by boiling or under pressure, dried soy beans, pinto beans, lima beans, peas, or other legumes.

c. With the cooked vegetable prepare baked beans, bean or pea soup, bean loaf, bean croquettes, and other preparations which may serve as meat substitutes.

V. Compare the economic and nutritive value of these dishes with similar portions of meat.¹

VI. Fruits.

A. The principles of cooking are practically the same as those involved in cooking vegetables.

B. Fruits as a source of sugar.

Soak well-washed dried prunes overnight in enough water to cover them. Cook in the same water until tender. Remove the fruit and reduce the juice to a thick sirup to be poured over the fruit. Note that no added sugar is necessary to sweeten them.

C. Fruit sweetened with sugar and sugar substitutes.

1. Cook three equal portions of the same fruit and sweeten them respectively as follows:
   a. With sugar, recording the weight of sugar used.
   b. With the amount of corn sirup which contains the same weight of total solids as the weight of sugar used in a. (See note (3) below.)
   c. With the amount of corn sirup which contains the same weight of sugar as that used in a. (See note (4) below.)

Is there a noticeable difference in sweetness or other qualities in the three samples?

A note on the quantitative relation between commercial corn sirup and cane sugar.

1) Composition of corn sirup:

   78% commercial glucose
   32% dextrose
   9% sucrose
   37% dextrin, etc.

   22% water

Density of a 78% sugar solution = 1.4.

Weight of 1 cup of sirup — 237 × 1.4 = 332 grams.
VI. Fruits (continued).

(2) Calculation for substitution on the basis of total solids (commercial glucose):

\[ 332 \text{ grams} \times 78\% = 260 \text{ grams commercial glucose in 1 cup of sirup}. \]

\[ \frac{200}{260} = 0.77, \text{ or approximately } \frac{3}{4} \text{ cup of sirup} = 1 \text{ cup of cane sugar (200 grams)}. \]

(3) Measures containing the same amount of total solids (commercial glucose):

<table>
<thead>
<tr>
<th>Sugar Measure</th>
<th>Sirup Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{3}{4} ) cup</td>
<td>( \frac{9}{16} ) cup</td>
</tr>
<tr>
<td>( \frac{1}{2} ) cup</td>
<td>( \frac{3}{8} ) cup</td>
</tr>
<tr>
<td>( \frac{1}{4} ) cup</td>
<td>( \frac{3}{16} ) cup</td>
</tr>
<tr>
<td>( \frac{2}{3} ) cup</td>
<td>( \frac{1}{2} ) cup</td>
</tr>
<tr>
<td>( \frac{1}{3} ) cup</td>
<td>( \frac{1}{4} ) cup</td>
</tr>
</tbody>
</table>

1 tablespoon sugar = \( \frac{3}{4} \) tablespoon sirup.

(4) Measures containing the same amount of sugar:

<table>
<thead>
<tr>
<th>Sugar Measure</th>
<th>Sirup Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 cup</td>
<td>( \frac{3}{5} ) cup</td>
</tr>
<tr>
<td>( \frac{3}{4} ) cup</td>
<td>( \frac{1}{5} ) cup</td>
</tr>
<tr>
<td>( \frac{1}{2} ) cup</td>
<td>( \frac{4}{5} ) cup</td>
</tr>
<tr>
<td>( \frac{1}{4} ) cup</td>
<td>( \frac{2}{5} ) cup</td>
</tr>
<tr>
<td>( \frac{2}{3} ) cup</td>
<td>( \frac{1}{15} ) cup</td>
</tr>
<tr>
<td>( \frac{1}{3} ) cup</td>
<td>( \frac{8}{15} ) cup</td>
</tr>
</tbody>
</table>

1 tablespoon sugar = \( \frac{3}{15} \) tablespoon sirup.

Substituting sirup for sugar on the basis given in (3) does not give a very sweet product in cakes, therefore the equivalents on the basis of the sugar in the sirup have been used in the cake recipes given later.

With either basis, it has not been found satisfactory to use all sirup. Half sugar and half sirup have given the best results in our experience.

Owing to the amount of water in the sirup, the liquid in the type recipe must be reduced according to the amount of sirup used. With 1 cup of sirup use \( \frac{1}{4} \) cup less liquid.
VII. Vegetables and fruits as salads.

Emphasize —

A. Importance in the diet.
B. Principles of preparation.
C. Classification of salad dressings.
D. Food value and cost.

SECTION V

PREPARATION AND USE OF CEREAL PRODUCTS

I. Cereal flours.

A. Comparison of thickening power.

Make a sauce with each of the flour substitutes, using 1/2 tablespoon with 1/2 cupful water and boiling for 1 minute. Compare as to consistency, texture, color, and flavor. Tabulate results and determine which is best fitted for conservation purposes under present local conditions.

B. Apply these results in making some of the following types of sauces, which should be served in suitable combinations. List the ways in which each may be used.

Types of sauces:

1. Named according to the liquid used.
   a. White sauce — using milk (inaccurately called cream sauce).
   b. Cream sauce — using cream.
   c. Tomato sauce — using tomato juice.