Nutrition Handbook

Montana Extension Service in Agriculture and Home Economics
J. C. Taylor, Director
Montana State College of Agriculture and Mechanic Arts
and the United States Department of Agriculture, Cooperating
Acts of Congress, May 8 and June 30, 1911
Foreword

This handbook is written for health workers, teachers, and local community leaders, and will serve as a guide in methods of procedure and in subject matter. Where trained health and nutrition workers are employed, the full health and nutrition program, as herein outlined, may be undertaken; otherwise only parts of the program may be chosen and undertaken as desired.

A large number of our school children are below average weight for height, and a large per cent are growing up in a poor state of nutrition and health, and since it is poor economy to attempt to train the physically unfit, it behooves our educational system to place more emphasis on positive health instruction for all children as a definite part of the school program.

For suggestions on methods and subject matter the writer desires to make special acknowledgment to the following: Miss Lydia Roberts, Associate Professor in Nutrition, University of Chicago; Dr. Hoffman, Head of Child Welfare, Chicago, and for helpful criticism to Dr. Caroline Hedger, Elizabeth McCormick Memorial Fund, Chicago, and to Dr. Hazel Bonness of Montana State Board of Health. Use has also been made of recent publications by Dr. William Emerson, Tufts College Medical School, Boston, “Nutrition and Growth to School Children”; Hunt, Johnson and Lincoln, “Health Education and the Nutrition Class.”
The Meaning of Malnutrition

Malnutrition is faulty nutrition. It is not a disease in itself but a low condition of health and body resistance, a symptom which may result from any one of many causes.

The Danger of Malnutrition

The growth is stunted, there is danger of anemia, nervousness or severe nervous disorders; as a child, such a person is a drain on his associates; as an adult, he becomes handicapped because of low vitality and poorly developed body, and is often inefficient and unable to perform his share of the world’s work. One of the most serious results of malnutrition is shown in the increased susceptibility and lack of resistance to disease. The malnourished child is much more apt to contract the different children’s diseases because his body lacks the proper resistance. Because of this lack of resistance the case is apt to be a more serious one and the patient is apt to recover less rapidly. The increase of tuberculosis among school children, particularly in larger cities, is alarming. Malnutrition makes the child less resistant to tuberculosis, and the disease, once started, increases the degree of undernutrition.

There is also a close relation between malnutrition and backwardness in school. As a rule the malmourished child has less power of concentration and attention and the brain does not work as efficiently. (There are, however, exceptions to this rule.) Dr. Tregold, one of the leading authorities on mental deficiency, believes it possible for malnutrition to be so severe and prolonged that a degree of mental deficiency may be produced.

Some Signs of Malnutrition

1. Underweight for height (7% below average) or 20% above average weight for height.
2. Failure to gain at the normal rate for a definite length of time.
3. Pale, wax-like or earthy colored skin.
4. Dark circles under the eyes.
5. Mucous membrane inside eyelids and in mouth pale and colorless.
6. Hair rough, like that of farm animals poorly cared for.
7. Coated tongue.
8. Flabby muscles.
10. Decayed teeth, diseased tonsils, adenoids, etc.
11. Expression of eyes and entire face dull and listless.
12. Listless in work and in play—tires easily.
13. Lacking in mental vigor and power of concentration and attention.
15. Finicky about food.

The Causes of Malnutrition

A. General Causes
1. Ignorance
2. Poverty
3. Lack of home control

B. Specific Causes
1. Faulty diet
   (a) Insufficient food
      (1) Not enough milk
      (2) Not enough vegetables and fruit
      (3) No breakfast or too small an amount due to lack of hunger or lack of time.
      (4) Unpalatable food
      (5) Hurried meals on account of too short luncheon period and eagerness to play
      (6) Indiscriminate eating between meals—candy, etc.
      (7) Restricted food supply on account of poverty and lack of knowledge and appreciation of food values
      (8) Petty food dislikes
(b) Bad food habits
(1) Irregular meals
(2) Bolting food
(3) Eating between meals
(4) Washing down food with liquid
(5) Coffee or tea
(6) Indiscriminate eating of candy, or sweets of any kind
(7) Unsuitable food — excessive use of fried foods, hot breads, rich pastry, highly seasoned foods, etc.

2. Faulty Hygiene
(a) Too little sleep
(1) In bed too late because of
   a. Movies
   b. Evening parties
   c. Desire to stay up
   d. Reading in bed
   e. Late work
   f. Home study
(2) Up too early
   a. To work (newspaper route, etc.)
   b. To conform to father’s work
(b) To little fresh air
(1) Windows closed at night
(2) Too many sleeping in same room
(3) Out doors too little because of
   a. No regular schedule for play
   b. No place to play
   c. Music and dancing lessons
   d. Home study
(4) Unventilated or poorly ventilated rooms

(c) Constipation
(d) Over exercise
(1) Too hard work
   a. Factories
   b. Farm homes
(2) Too hard play (athletics — school contests, games, swimming, entertainment, etc., in excess)
3. Defect and Disease
   (a) Bad tonsils
   (b) Bad teeth, due to
       (1) Improper diet
       (2) Lack of care
   (d) Tuberculosis, due to
       (1) Infection
       (2) Malnutrition
   (e) Other toxins and diseases

Weight as a Standard of Nutrition

Weight is an important measure in judging nutrition since the body height requires a certain weight to support it, but it should not be considered the only standard. Weight as a standard of nutrition has been over-emphasized and not enough attention has been paid to the other standards of health (see health score card) for the normal, healthy individual. The majority of height tables now in use are too low. Then, too, we must take into consideration the breadth of the shoulders and chest, the size of the bones, etc.

Suggested Health Program to Be Carried Out by the Community

1. Have a thorough physical examination of all school children by a competent physician at the beginning of the school year with follow-up examinations for special cases.
2. See that all physical defects so far as possible are corrected.
3. Encourage organized nutrition and health work as a definite part of the school program.
4. Encourage organized nutrition and health work for the child of pre-school age.
5. Encourage the purchase of scales in every community where it is deemed advisable.
6. Encourage all community and civic organizations in the county to use their influence:
   (a) To obtain efficient nutrition and health workers (Home Economics teachers, Home Demonstration Agent, a county or school nurse, a county health officer, etc.)
(b) To obtain necessary county funds to be used for needy cases (for correction of physical defects, for buying milk, etc.)

(c) For the enforcement of such laws as the pure food laws, the quarantine law, the curfew law, etc.

(d) To establish the hot dish at noon in school where it is deemed necessary and advisable.

(e) To encourage the carrying of milk to school, especially if it is impossible to serve a hot dish at noon.

**How to Measure**

The measuring must be done very accurately, for even a very small error in height will make quite an error in determining the average weight.

To take accurate measurements:

1. Remove shoes.
2. Stand straight with heels, shoulders, and head in a perpendicular line. Put heels together against the wall. Have head, shoulders and hips touching the wall. Stand with chin perpendicular to the shoulder line, arms at sides.

The most common methods for taking measurements:

1. Tack a new tape line to a flat surface, wall or door. Put in a sufficient number of tacks to hold the tape line firmly in place.
2. Fasten two light weight pieces of wood together to form a right triangle. To measure, have the one flat surface flat against the wall, and the other surface resting on the child's head. Take reading on tape line. (A book may be used if the long edge of the book is placed perpendicular against the wall and the short edge will then be level and should rest on the child's head.)

**How to Weigh**

Be sure that the scales balance properly before the weighing is begun. Weigh small children under four without clothing. For children remove coats, sweaters, leggings, boots, shoes, etc. Have pockets free from weight.
Have child step gently onto the center of the platform and face the scale indicator, stand with feet together, arms at sides.

Method for determining the amount above or below average weight:

1. Obtain a record of child's height and weight.
2. Consult the height and weight table. Find height corresponding to child's height and take the corresponding weight for that height to find the number of pounds above or below average weight. (Age is not a factor in determining height for weight.) See table for finding per cent above or below the average weight.
### WEIGHT-HEIGHT-AGE TABLE FOR BOYS OF SCHOOL AGE

**By**

DR. BIRD T. BALDWIN AND DR. THOMAS P. WOOD

#### Table:

<table>
<thead>
<tr>
<th>Age (years)</th>
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</table>

#### Notes:

1. Age is taken at the nearest birthday; height at the nearest inch; and weight at the nearest pound. A boy is considered 6 years old at any time between 5½ and 6½ years.
2. The following percentage of net weight has been added for clothing (shoes, coats, and sweaters are not included):
   - For weights from 35 to 63 lbs. — 3.5% of net weight is added.
   - For weights 64 lbs. and over — 4% of net weight is added.
3. The figures not starred represent exact averages in round numbers. The starred figures represent smoothed or interpolated values.

Printed by the Iowa Child Welfare Research Station, State University of Iowa, Iowa City, Iowa.

Note — 1/2 lb. is the normal rate of gain for school children each month.
### WEIGHT-HEIGHT-AGE TABLE FOR GIRLS OF SCHOOL AGE

**By DR. BIRD T. BALDWIN AND DR. THOMAS D. WOOD**

<table>
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<th>Age—years</th>
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</table>

**Notes:**

1. Age is taken at the nearest birthday; height at the nearest inch; and weight at the nearest pound. A girl is considered 6 years old at any time between 5½ and 6½ years.

2. The following percentage of net weight has been added for clothing (shoes, coats, and sweaters are not included):
   - For weights from 35 to 65 lbs., 3% of net weight is added.
   - For weights from 66 to 82 lbs., 2.5% of net weight is added.
   - For weights from 83 lbs. and over, 2% of net weight is added.

3. The figures not starred represent exact averages in round numbers. The starred figures represent smoothed or interpolated values.

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**TABLE FOR FINDING INSTANTLY THE PERCENT ABOVE OR UNDER NORMAL WEIGHT**

Note: Slide Rule for Workers—Minnesota Public Health, E. A. Meyerding, M. D., Director of Hygiene, St. Paul, Minnesota.

Note: This table has been compiled for convenience in ascertaining the percentage of weight over or under normal.

Copyright, 1922, by the Colorado Tuberculosis Association, 409 Barth Block, Denver, Colorado.

Illustration: If the child’s normal weight is 51 pounds and he weighs 58, refer to the left-hand column, locate the number 51, follow the columns to the right until you reach the column bearing at the top the number “7” the number of pounds he is above normal weight, and you instantly see that he is 13% above weight. Conversely if the child should weigh 51 pounds and weigh but 44, proceed in the same manner, and you will see that he is 13% underweight.

<table>
<thead>
<tr>
<th>Lbs. above or below avg. wt.</th>
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Directions for Conducting Nutrition Work in Schools Where There are No Trained Health Workers to Assist in the Work

1. Weigh all the children each month (on the same day of the month at the same hour of the day, if possible).

2. Measure all the children at the beginning and at the end of the school year.

3. Give out each month the weight tags which are to be taken home to the parents and returned to the teacher next day. (These tags may be secured from the Home Economics Extension Department at a small cost.)

4. Check up on the food and health rules once a month (see page 23). Attempt to stimulate further interest in health through the discussion of these rules at least once a week.

5. Teach one of the series of food and health lessons in connection with the work in hygiene.
Directions for Conducting Nutrition Work in Schools Where There Are Trained Health Workers (Home Economics Teacher, Home Demonstration Agent, and Public Nurse) to Assist in the Work

1. Summarize the health of each child on the health and nutrition summary sheet. This summary sheet is to be left in the room in which the summary is made. (The use of the health score or summary sheet does not call for a diagnosis of any case except by a physician.) Deviations from the normal health standards are noted on the summary sheet by the health worker, and if medical examination is considered advisable the parents should be notified by the health worker.

2. The children should be weighed every month (weight tags sent home to parents) and measured at least two times a year.

3. Use the nutrition class weight chart. Plot the weight curve for each month. (The brownie health ladder may be used in the lower grades instead of the weight charts.)

4. Check on the food and health rules once each month. Discuss these rules at some period each week.

5. Teach one of the series of food and health lessons at least once a month.

Health Program for Special Cases of Malnutrition

1. Have a thorough examination by a competent physician. (The parents should be present.)

2. Correct all physical defects—diseased tonsils or adenoids, defective teeth, defects of vision or hearing, etc.

3. Go to bed early (8 o'clock or earlier) every night. Take at least eleven hours of sleep.

4. Eat three good meals a day at regular hours. Eat slowly—take at least twenty minutes for each meal. The meals should contain some whole grains every day in bread or in cereal, an abundance of vegetables raw and cooked, (particularly green vegetables) fruit (particularly oranges to create an appetite—as many as six may be given each day in stubborn cases of malnutrition), and at least one quart of milk (only very small amounts of meat or eggs are
needed). Special attention should be given to the diet of children having certain organic disorders, such as appendicitis, diabetes, hernia, kidney trouble, etc., and these cases should be under a competent physician’s care.

5. Drink no tea, coffee, or coca cola, etc. Weak cocoa may be given in moderate amounts.

6. Take mid-morning lunches—graham crackers and milk or fruit, but no sweets or trash (if these lunches do not interfere with the appetite for regular meals or do not cause discomfort).

7. Drink an abundance of water—4 to 6 glasses a day.

8. Have at least one or two hours of rest at some time during the day (at noon or after school) with clothing loosened, shoes removed, lying flat on the back with a pillow under the shoulders. (This helps also to overcome the fatigue posture.)

9. Shorten the school hours if possible, or give up school entirely until health is regained. Give up all outside activities—dancing, music, contests, special entertainments, etc.

10. Take very little vigorous exercise until weight is normal. (Strenuous games, swimming in cold water, etc.)

11. Spend as many hours as possible in the fresh air. Have an abundance of fresh air at night—winter and summer.

12. Have at least one hot dish at noon (a combination of milk and vegetables is best).

The lessons following have been grouped so as to give two years of work, a different subject being taken up each month:

**First Year**
- Oct.—The Meaning of Health
- Nov.—The Race for Health
- Dec.—Milk
- Jan.—Sleep and Rest
- Feb.—Teeth
- March—Vegetables
- April—Achievement Day

**Second Year**
- Oct.—A Day’s Program
- Nov.—A Good Breakfast
- Dec.—Fruit
- Jan.—Cereals
- Feb.—Playing Cafeteria or Meal Planning
- March—The Effect of Eating Between Meals
- April—Achievement Day
LESSON I

The Meaning of Health

1. Object of the lesson:
   To interest the children in health work and to arouse a desire in them to do the things that will help them to grow strong and healthy; to show what a healthy boy and girl should look like.

2. Illustrative Material:
   Pictures of a good healthy child and a thin, sick looking child.

3. Method:
   a. Ask the children which they would choose for their games, (baseball, football, tug of war, etc.). What can thin, sickly boys and girls not do? Ans. They can not play hard games. They get tired too quickly. People in good condition can do almost anything. Which of the children will have the better disposition? Which one is apt to get sick most quickly? Which of these children looks better? Why? (In our health lessons we are going to learn how to become healthy children so that we will be more apt to grow up to be strong healthy men and women.)

4. A pattern to work by
   A. Points of a body in good running order:
      Alert, happy expression.
      Bright eyes, whites clear, no dark circles or puffiness.
      Clear, red tongue, sweet breath.
      Good color in cheeks, lips, eyelids, ear-lobes.
      Clear skin, not too dry nor too moist.
      Glossy hair.
      Proper weight for height, age and type.
      One or more daily bowel movements at regular hour.
      Sound quiet sleep.
      Good appetite.
      Good nerve control.
      Cheerful disposition.
B. Points of a Well Built Body:
Strong even teeth, well enameled, meeting properly, no cavities.
Firm muscles, firm fatty tissue underneath skin.
Even shoulders. Shoulder blades flat against back.
Straight back, no lateral curve, or accentuation of normal curve at waist.
Deep, broad chest.
Flat abdomen.
Straight legs.
Normal size of knees and ankles.
Strong foot arches.
Straight toes.

C. Points Showing Good Posture:
Head erect, chin in, chest high and forward of abdomen.
Abdomen firm, flat.
Feet parallel.
Ear, shoulder cap, hip-bone, knee and ankle bone in alignment.

D. Explanation of a Pattern to Work By:

Teeth — Should be strong, even, perfect. The grinding surfaces of the lateral teeth should meet directly. The upper incisors and canines should slightly overlap the lower. They should be clean and without caries. They should be well enameled. Where rickets has occurred when the child was young you can see that certain of the permanent teeth as they develop show a poor deposit of enamel, pitted or irregular. This happened when the enamel was being laid down on the teeth in the first two or three years because bone development was not good at that time. Perfect teeth have good enamel.

Tongue—An evidence of good health is a clean, red tongue.

Eyes—Should be clear and bright. There should be no puffiness underneath.

Skin—Not too dry nor abnormally moist with perspiration, but clear and smooth.
Cooperative Extension Service
Montana State College
Bozeman, Montana

CLASS ROOM RECORD

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Color—Should be good in cheeks, lips, mucous membranes lining lips and eyelids and ear-lobes.

Shoulders—May be square, slightly sloping or very sloping but must be even. All three types are equally compatible with good health. They should not, however, be the round shoulders which so often accompany the sunken chest. Shoulder blades should lie flat across the back.

Back—Should be straight. There is a normal curve of the spine, but there should not be an abnormal accentuation of this curve. Unfortunately almost universally one finds a more or less marked lumbo-sacral lordosis (curve in the lower back). As a result of this the pelvis is tipped abnormally forward and the abdomen made much too prominent. This is poor body mechanics and the effect is very fatiguing. Lateral (to the side) and rotary curvatures of the spine are of course abnormal.

Abdomen—Should not be so prominent that a perpendicular line touching the abdomen would fall forward of the chest. The chest should be a little in front of the abdomen. Most children of eighteen months to three years seem to have a certain abnormal prominence of the abdomen. The explanation is not entirely clear. The increased strength of the abdominal muscles of older children is undoubtedly a factor favoring the correction of this abdominal prominence. Considerable abdominal muscular development in the two or three year old runabout is not to be expected.

Muscular Development—Uniform but not necessarily exaggerated.

Subcutaneous Tissue—Plentiful and firm.

Limbs—Straight, indicating good bone growth—no previous rickets.

Knees and Ankles—A mild or severe form of rickets will make for a certain lack of strength at the knees. It will also make for enlarged ankles and enlarged knees. The optimal ankle is strong and straight but no measurement can be given for optimal size.
Arch of the Foot—The very high arch is not usually as desirable as the average arch. Even a very low arch, practically a flat foot, provided it be straight, strong and pliable, can not be condemned too much, although it may rather easily become weak and inefficient. The foot should be held straight, not turned out in walking. This straight position enables one to get over the ground more rapidly, but what is much more important, it favors maintaining a strong arch.

These are also manifestations of a body in good running order, viz.:

Alert expression.
Unobstructive breathing.
Steady nerves, no restlessness.
Cheerful disposition.
Good muscular coordination.
No distress on ordinary exertion.
Proper weight for height, age and type.

We must always remember that standard heights and weights are averages. We are considering here the optimal person and it is quite proper that his height and weight should be distinctly above the average. It is equally important to remember that whereas the proper weight for height, age and type of body-build is an important factor in judging optimal physical development, it is only one of the many factors and should not be given undue emphasis.

Explanation of the Health and Nutrition Summary Sheet

The summary sheet is a record of the state of health and nutrition of each child and is to be left in each room as a reference for the teacher or health worker. A duplicate copy is given to the Extension Agent. This record enables the teacher or health worker to tell at a glance the condition of health and nutrition of each child; it also serves as a means of emphasizing definite health standards. It is a record which the children themselves can understand and as a result, each child is stimulated to do follow-up work in the home. Because of the child’s
# HEALTH AND NUTRITION

## Summary Sheet

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Note: A check (V) indicates defect. Two checks (VV) indicate correction of defect. One star (*) indicates health standard attained. Two stars (**) indicate health standard attained as far as possible.
desire to have a gold star placed before his name, he will be better able to secure the attention of his parents and thus secure better cooperation.

**How to Use the Summary Sheet**

If for instance the child is below average weight, a red cross or a red star is placed in the column headed "Below average weight." When the weight is brought up to normal through corrected food and health habits or probably corrected physical defects, a blue cross or a blue star is placed in the square below the red star. If, instead, the child is above the average weight the blue cross or red star is placed in the column "Above average weight." If under the column "Normal Air Passages" all the defects are found, a red star is placed under each heading, "Acute or Chronic Tonsilitis," "Enlarged or inflamed tonsils," etc. If the defects are corrected a blue star is placed in the square beneath each red star. If a medical examination is considered advisable a statement is sent home to the parents, giving reasons why such an examination is deemed advisable. If the child and the parents cooperate to such an extent (and continue to cooperate throughout the year) that a satisfactory health standard is attained, and a blue star has been placed beneath every red star on the chart, a gold star is placed after the child's name on the Summary Sheet. If for instance the child has faithfully observed (and continues to observe throughout the year) all the food and health rules and has had all physical defects corrected in so far as possible but can never obtain relief from certain physical defects, he should have two small gold stars placed after his name on the Summary Sheet. For example, a child who has had infantile paralysis or a child whose deafness can not be corrected.

The Summary Sheet is then a visible efficiency test of the results of right living and of correction of such physical defects as may lower the general health and efficiency of the individual.
Directions for Using the Weight Charts

The normal weight line should be in red. The numbers at the left side of the page designate pounds. The row of numbers at the top designate weeks. Each square (up and down the page) equals 1 pound. Each square (across the page) equals 1 week.

To plot the normal or average weight line:
John B. should weigh 71 pounds. Place a red dot at the figure 71. The minimum gain for each month is approximately one-half pound. If the school year is of 10 months' duration the child should then have gained at least 5 pounds. Count up from 71 five pounds (to 76 pounds). On a line even with 75 and through 40 weeks make a red dot. Connect with a red line this dot with the dot at 71. This is the normal weight line. The normal weight line will be below the actual weight line if the child is overweight.

Note: Be sure to plan so the normal weight line will be near the center of the page.

To plot the actual weight line:
John B. weighs 63.5 pounds. Start a black dot at 63.5. If the child gains in weight the next month count over 4 squares and up to the point indicating the weight at the end of the month. Make a black dot here and connect the two dots with a black line. If the child loses weight in a month count over 4 squares and down to the point indicating the weight at the end of the month.
Name Betty Brown  Height 54 inches  Weight 63.5  Grade 5
Date.........................  Age 9  Average Weight 71
Underweight 7.5 lbs. 11 ozs.
1. Object:
   To present the food and health rules which will help to win the race for health.

2. Outstanding points of the story:
   a. We are all in the business of eating food. It was given us as our birthright.
   b. This food business is an important one because it is the sole source of growth material, energy material, and body-regulating material. From it the body is made and run.
   c. Some people’s bodies are made and run a great deal better than other people’s bodies.
   d. Under present day conditions, an understanding of food and the workings of the human body are necessary to good growth.

3. Illustrative material for the story:
   a. Food and Health Habits Chart. (Provide one chart for each pupil. Charts may be obtained from the Home Economics Extension Office, Bozeman.)
   c. Twin dogs picture. (May be obtained from the Battle Creek Sanitarium, Battle Creek, Mich.).

4. Method:
   a. Show the health ladder (see directions below), and explain the race.
   b. Explain the food and health rules. (These rules are to be checked each month. As a reminder to the children and as a means of arousing interest there should be a discussion of the food and health rules at least once a week during the opening exercise period or at some other satisfactory time.)

   **Directions for Making the Health Ladder**

   Use light weight cardboard 24 inches wide and 30 inches long. Draw a ladder with 24 rungs. Each space between the rungs is to represent 4 oz. or four spaces to represent 1 lb. Mark at the left of the ladder (for the first pound, and begin-
ning at the bottom rung) 4 oz., 8 oz., 12 oz., 16 oz., etc. Mark the pounds at the right side of the ladder (beginning at the lowest rung) 1, 2, 3, 4, 5, 6 lbs. Cut the brownies or dolls out of light weight, colored cardboard. Write a child’s name across the front of each brownie. Fasten each brownie to the cardboard with thumb tacks.

**Directions for Using the Ladder**

At the beginning of the race, fasten all the brownies on the very first rung at the bottom of the ladder (with feet on the rung) so that each child will have a fair start. The idea is to see which of the children can gain weight the fastest and get to the top of the ladder first.

If a child loses weight at the end of the first month he is moved down below the first rung of the ladder (at the bottom) the corresponding amount. (The feet of the brownie always mark the point at which the gain is recorded.)

It is advisable to use the health ladder particularly in the lower grades. The weight record charts as shown in the bulletin may be used for each child in the upper grades. The weight curve is to be plotted after each monthly weighing.

**Explanation of Food and Health Record Chart**

To the Parents:

The food and health rules are given out to help stimulate an interest in health. Parents should cooperate with the school by carefully preserving the record and by helping the child to check his own record each day. A check is made with an X for each rule carried out each day of the week. Count the number of X’s for each day and place the total number in the column marked “Total number of perfect records each day.”

Teachers may use any plan of reward which they think advisable.

**Explanation of the Food and Health Rules**

1. A good breakfast may include cooked cereal (preferably some whole grain), fruit, toast or bread, weak cocoa or milk, probably an egg or some bacon. Do not give fresh bread or rolls, hot biscuits, pancakes, waffles, doughnuts, fried potatoes, fritters, etc. A good rule to follow—“No breakfast, no school.” (Dr. Hedger.)
2. Tea, coffee, cocoa, etc., are stimulants and should never be given. However, weak cocoa, (1 level teaspoon of cocoa to a cup of milk) may be given occasionally.

3. The milk may be taken on cereals, in cream soups, on toast, in creamed vegetables, in weak cocoa, egg nog, milk drinks (milk flavored with fruit or vanilla) and in custards, or junkets.

4. Vegetables that may be eaten raw are: lettuce, celery, radishes, tomatoes, onions, cabbage, carrots, turnips, kohlrabi, fresh cucumbers, asparagus tips, endive, and water cress.

5. Green or leafy vegetables include: turnip or beet tops, spinach, Swiss chard, endive, lettuce, wild greens (cress, dandelion, lamb’s quarter, wild lettuce), celery, green onions, asparagus, and cabbage.

6. In addition to 3 cups of milk daily the child should have one serving of any two of the following: meats, including fish, game and poultry (bacon and salt pork are classified as fats), cheese, dried beans or peas. These foods are needed for muscle and tissue building material. It is important that one egg be eaten in some form daily.

7. It is well to drink one glass of water every morning before breakfast. Water, particularly at meal time, should not be taken in such quantities that insufficient food will be eaten. Food should not be washed down with water or any other liquid.

8. Take at least 15 minutes to eat breakfast, and at least 20 minutes for the other meals.

9. The habit of indiscriminate eating between meals which destroys the child’s appetite for wholesome foods at meal time, should be discouraged. However, underweight children or those who are growing very rapidly may need a lunch of milk and bread or graham crackers or fruit. Sweets, ice cream sodas, cracker jack, peanuts, etc., between meals destroy the child’s appetite for wholesome foods.

10. The child should form the habit of going to the toilet at a regular time each day (before or after breakfast is a good time).

11. Two full baths each week are necessary for body cleanliness. The whole body (hands, face, neck, ears, etc.) should be kept as clean as possible every day.
## FOOD AND HEALTH HABITS RECORD CHART

<table>
<thead>
<tr>
<th>Name of Child</th>
<th>First Week</th>
<th>Second Week</th>
<th>Third Week</th>
<th>Fourth Week</th>
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<td></td>
<td>S</td>
<td>M</td>
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<td>W</td>
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<tr>
<td>1. A good breakfast daily</td>
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<td>2. No tea or coffee</td>
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<td>3. At least 3 cups of milk daily in some form</td>
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<td>4. Two vegetables besides potato daily to include: A good serving of some leafy vegetable</td>
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<td>5. Two servings of fruits daily (raw, canned, or dried)</td>
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<tr>
<td>6. A raw fruit, vegetable, or canned tomatoes, daily</td>
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<td>7. Whole grains in bread or cereal</td>
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<tr>
<td>8. One serving daily of any two of the following: Cheese, eggs, meat, dried beans or peas</td>
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<td>9. 4 to 6 glasses of water every day</td>
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<td>10. Food eaten slowly and chewed thoroughly</td>
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<tr>
<td>11. No sweets between meals</td>
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<td>12. A bowel movement daily (without a laxative)</td>
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<tr>
<td>13. At least two baths a week (mark days with an X)</td>
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<tr>
<td>14. Hands washed before eating</td>
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<tr>
<td>15. At least 2 hours were spent in fresh air every day</td>
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<tr>
<td>16. The teeth brushed at least twice a day (preferably morning and night)</td>
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<tr>
<td>TOTAL NUMBER PERFECT RECORDS EACH DAY</td>
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</table>

Parents and teachers should see to it that growing children also observe the following health habits:

17. Child 6-9 years—in bed 8:00 or earlier for at least 6 days a week.
18. Child 9-16 years—in bed at 9:00 or earlier at least 5 days a week.
19. Sleep with windows open at night.
20. Keep hands, pencils or anything apt to be unclean or injurious away from the mouth, nose, eyes, ears, etc.

21. Sit, stand, and walk erect and breathe deeply.
22. Protect eyes from strain or injury.
23. Wear proper clothing to prevent exposure in winter and in bad weather.

Parent's signature
14. The hands should be washed on leaving the toilet and always before eating. Disease germs may be carried by dirty hands to food and thus into the body.

15. If during bad weather or if the child is ill, play is not advisable out of doors. He should be dressed warmly and allowed to play in some sheltered place or in a room with an abundance of fresh air.

16. Teeth should be brushed before breakfast and before going to bed. Tooth paste need not be used every time. Common salt is excellent for cleaning the teeth.

17. Dirty hands, finger nails, pencils, etc., may carry disease germs to the mouth or eyes. The eyes should not be rubbed; hard sharp substances should not be put into the ears to remove wax.

18. It is well to encourage the child to take the exercises given in the posture lesson at least once a day. This will help to strengthen round shoulders. In addition to this it is always necessary to walk and sit correctly.

19. Reading or working should be done with the light over the left shoulder. Reading in bed or in a poor light or in the dusk should be prohibited. The eyes should be protected from the bright sun or any bright glaring light.

20. See that the child's coat is buttoned up in winter and that he wears rubbers or overshoes and warm hose or leggings when necessary.

To the teacher:

The record charts are to be returned by each child after keeping one week, for a week of inspection and discussion and crediting. (The honor roll system may be used.) On the following week they are taken home again and kept for another week when they will be returned for inspection. New record sheets may be given out when these are completed.

The teacher may use her own ingenuity for arousing and keeping the interest of her pupils in the health rules. If posters are made, only sound, scientific principles should be emphasized on these posters.

An honor roll chart may be made and kept in a conspicuous place in the room. This chart should include the names of the children, the months of the school year, and space for the gold and silver stars, if they are used.
Lessons III
Milk

1. Object:
To make the children see for themselves the importance of milk as a food, and to make them want to drink it.

2. Outstanding points of the story:
   a. Milk is an indispensable food for growing boys and girls. It cannot be replaced by any other food if proper growth is to be maintained.
   b. Milk is an indispensable food for building bones, teeth, and muscle tissue because it is by far the richest source of lime and phosphorus, and is the very best tissue builder.
   c. Children grow best and develop the best bones and teeth when they take one whole quart of milk each day along with other good wholesome foods.

3. Illustrative material:
   b. Glass of milk.
   c. Dish of lime.
   d. Roll call chart.

4. Method:
   a. Why children should drink milk.
      Can any other foods take the place of milk?
      (a) Show the pictures of the pigs, puppies and chickens that have had milk and those that have had no milk. (Small charts illustrating feeding experiments with animals and children may be bought at 15c a chart from the National Dairy Council, 910 South Michigan Avenue, Chicago, Illinois.)
      (b) Have the children describe the difference in appearance of these two animals.
      (c) Have children guess the ages of these animals.
      (d) Explain that the only reason for their difference in size is the food they ate.
(e) Have children try to guess what animal No. 1 and animal No. 2 had to eat. (Make clear that the wee, skinny one had as much of his food as he wanted but he didn’t have any milk, and his failure to grow was caused only by the lack of milk.)

(f) Repeat the question, “Do you think any food will take the place of milk?” Clinch this thought. “Milk made the one grow; lack of it kept the other from growing as he should.”

b. Another reason for drinking milk:

(a) Have the children feel deep down into the arms. Where else are bones found? What makes bones and teeth hard?

(b) Teacher may show some lime in a saucer. Tell of the different kinds of lime. (Lime found in food such as milk and vegetables, and lime used in plastering, etc. Explain that only the lime found in food can be used by our bodies.) Compare the color of lime with the bones and teeth.

Have a quart of milk and a quart of water on the table. Put lime into the water (just as much as the water will dissolve). There is more lime in one quart of milk than in one quart of saturated lime water. Milk also contains a substance called phosphorus which helps to build bones, teeth and muscle.

(c) What happens to children when they have no food containing lime? (milk or vegetables). Ans. The bones do not harden properly and they may have a disease called rickets. Sometimes the legs are bowed and the ribs are apt to be abnormal. The teeth may not come in at all or they may be soft and decay easily. The bad effects of not having sufficient lime foods may not be noticed right away, but they will be noticeable after a time.
(d) Milk also contains some substances called vitamins which help children to grow. Tell about the children in Europe who did not have enough of one of these substances (vitamin A) and did not grow, and as a result of the lack of this vitamin an eye disease developed which caused many children to go blind.

c. The third reason for drinking milk:

(a) Have each child feel his own arm. Is the flesh solid? (If so, we call this good muscle tone.)

(b) Some of the tissues or muscle building foods: milk (the most important building food), cheese, nuts, meat, dried beans, eggs, fish, cereals (wheat, corn, oats).

Children need some of this building food every day, but not very much, for muscles do not grow very fast. If a sufficient quantity of milk is taken it is better to eat only a small amount of other building foods in addition.

(c) Have each child write a story about the milk-fed animal and the one without milk.

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LESION IV
Sleep and Rest

1. Object:
To get the child to see the necessity for long hours of sleep and to show that if they do not go to bed at an early hour, they can not get enough sleep.

2. Outstanding points of the story:
   a. Rest means a complete letting go or relaxation of the body.
   b. The body needs rest to:
      1. Keep the body organs in good condition.
      2. Allow the body to grow.
      3. Let the body repair itself.
   c. The amount of rest that is necessary varies with the age of the child.
   d. There are signs that are significant of lack of rest.
Illustrative Material:

a. Diagram of circulatory system drawn on board. (Diagram may be obtained from physiology.)

b. Children used to illustrate change in their action during rest and when at work.

c. Clock illustration drawn on board.

d. Mirror which can be passed around the room.

e. Roll call chart.

Method:

1. Discuss the health rules. What was the hardest thing to do?

2. Why should children go to bed early? What happens when children are asleep? Plants and flowers grow at night if they have had sufficient light and sunshine during the day. Is this the growing time for children? Ans. Yes, when we sleep our whole body gets a rest. When children play all day the body does not have a chance to rest or to grow.

3. Have a child lie down and pretend to sleep. Has he really stopped like an engine does? Ans. No, the heart beats; he breathes; the body engine is still going.

Put fingers on the pulse. Count the number of times the heart beats in a minute (probably 80 counts). Have the child put the hands over the head and touch the floor. Do this ten times. Now take the pulse reading (probably around 120 counts). How much difference is found? How many more times a day? When children play the heart beats much faster than when they are quiet. Sleep gives the heart some rest. Our muscles can rest entirely, but the heart never stops until we die. Suppose the heart needs 10 hours of rest a day and we give it only 8 hours. What might this do to the heart? Will we live long? We do not want to be like a broken down old engine.

Do nerves get a rest at night? How do children act if they have not had a nap? When they haven't gone to bed when they should? How do you feel every morning? What happens if you have not had enough sleep?
4. The amount of sleep that children need.
How much time do babies sleep? Ans. Young babies should sleep 18 hours; older babies 16 hours; a child three to four years old 13 hours. How much should your father and mother sleep? Ans. 8-9 hours. How much sleep do you need? Ans. More than father and mother, and less than baby.

Wise people have figured out the following table:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Hours of Sleep</th>
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<tbody>
<tr>
<td>5-6 years</td>
<td>13</td>
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<tr>
<td>6-8 years</td>
<td>12</td>
</tr>
<tr>
<td>8-10 years</td>
<td>11½</td>
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<tr>
<td>10-12 years</td>
<td>11</td>
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<tr>
<td>12-14 years</td>
<td>10½</td>
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<tr>
<td>14-16 years</td>
<td>10</td>
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<tr>
<td>16-18 years</td>
<td>9</td>
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</tbody>
</table>

What time should you go to bed to get 11 hours' sleep? Draw a clock on the board. School begins at 8. Get up at 7 o'clock. Count back to see how many hours 11 hours is back of this (8 o'clock). During school time go to bed at 8 o'clock. Is it right to stay up as long as you want to and then get up later in the morning? Ans. No. Sleep before midnight is the best sleep. If children stay up late and get too tired before they go to bed they will not feel rested even if they do sleep late in the morning. During school time children must keep regular hours. Is this necessary in the summer time? Suppose you sleep late, miss breakfast or eat breakfast too near dinner time. What happens to the appetite for dinner? Ans. The whole day is upset and there are no regular meal hours. (The best hours for meals during the summer time are 8:00, 12:00 and 6:00 o'clock.)

5. There is another good reason for the early bed hour. Get a mirror and have the children look to find blue circles under the eyes. How can we tell whether a child has had enough sleep? Ans. By the dark color under the eyes. This is probably a sign that there has not been enough sleep. Sometimes dark circles are caused by lack of fresh air, exercises, or the phy-
sical defects such as diseased tonsils, adenoids, etc. Children underweight need even more sleep. They must also take more rest during the day.

What is meant by “rest”? Ans. Complete relaxation (lying down). Let go of self, be as limp as a rag.

6. A few simple rules to remember about sleep:
   (1) Sleep long hours with the windows open wide, winter and summer.
   (2) Sleep on a low, flat pillow, or better still, on none at all.
   (3) Eat only simple, easily digested food at night, to avoid having bad dreams.

LESSON V

Teeth

1. Object:
   To teach that proper diet makes good teeth.

2. Outstanding points of the story:
   a. Children’s teeth decay because of faulty diet.
      1. Calcium (or lime) and phosphorus are necessary to build teeth.
      2. Vitamin foods are necessary to keep gums and teeth healthy.
      3. Coarse hard food (raw vegetables, whole grain breads, etc.), develops the jaws and teeth. Chew the food thoroughly, and use all the teeth in chewing.
      4. Excessive use of sweets promotes decay because sweets are acid-forming in the mouth. This has a tendency to eat the enamel.
   b. Children’s teeth decay because of improper care. Frequent brushing is necessary to prevent lodging of food particles. Brush the teeth after each meal.
   c. Teeth decay because of lack of proper dental care. The teeth should be examined and cleaned by a dentist at least once a year or more often if necessary, to insure sound condition.
3. Illustrative Material:
   a. Charts from dental companies.
   b. Roll call chart.

4. Method:
   a. Teeth are made of lime and phosphorus and they cannot grow properly unless we give our bodies food containing these substances which the blood carries to the teeth.

   b. Sugar on the outside of the teeth causes a fermentation which produces an acid. This acid will affect the enamel so that the teeth will decay. Starchy foods will have somewhat the same effect.

   c. Our teeth are flour mills. They grind the food into small particles ready to pass on to the stomach. If our teeth are not strong and healthy, our food will not be ground up properly and our stomach will always be overworked and tired. If our teeth are dirty, the food will rub off some of the dirt and carry it into the body.

   d. At the age of two, a child has its 20 temporary or baby teeth. They should be kept clean and free from cavities. Even tiny cavities should be filled. Sound temporary teeth are necessary for the good health of the child, for without them food cannot be properly masticated. Pain from an exposed nerve and pus from an abscess harm a child even more than an adult, for they interfere with its growth, as well as cause trouble in other ways. How long do you have your baby teeth? Ans. A child will use some of its temporary teeth until it is about 12 years old. This is the greatest period of growth and a child needs good healthy teeth to prepare food for proper digestion.

   e. The important six-year molars. These teeth come in at the sixth year and are often mistaken for the last of the temporary teeth. If these decay, and are pulled, no other teeth come in to take their places and the rest of the permanent teeth are apt to come in uneven.
How to brush teeth:
With a clean tooth brush, brush the teeth, using a rolling motion of the brush, in an up and down direction, from the gums downward, on the upper teeth, and from gums upward on the lower teeth. Do not brush crosswise of the teeth for there is danger of injury to the gums. Be sure to brush the inside and the top surface of all teeth. It is best not to use sharp toothpicks since there is danger of injury to the gums. If teeth are properly brushed, toothpicks are not necessary.

A good way to clean the tooth brush: Wash the brush thoroughly in hot soapy water, rinse in clear water, sprinkle bristles with salt, and place brush in the sun for several hours.

There is still another thing we must do to make our teeth last. We must watch them to see that all decayed places are taken care of before the tooth is too far gone. We should then have our teeth examined and cleaned by a dentist at least once a year and more often if necessary.

How to have good teeth:
1. Eat foods that build good strong teeth and healthy gums:
   Milk:
   Raw and green vegetables.
   Fruit—particularly raw fruit.
   Whole grains.
2. Eat hard, coarse food to exercise the teeth and the jaws. Be sure to chew the food thoroughly and use all teeth in chewing.
3. Brush teeth thoroughly after each meal if possible, particularly morning and night. Use a high grade tooth paste. If tooth paste is not available, use a salt solution (one teaspoonful salt to one glass water).
4. Do not use sharp toothpicks.
5. Keep the tooth brush sweet and clean.
6. Do not eat sweets between meals.
7. Have teeth examined and cleaned by a dentist at least once a year and more often if necessary.
LESSON VI
Vegetables

1. Object:
   To teach the importance of all vegetables in the diet and to stimulate the desire for eating at least two good servings of vegetables other than potatoes each day.

2. Outstanding points of the lesson:
   a. Vegetables are valuable iron-giving foods. Vegetables are also valuable lime and phosphorus-giving foods.
   b. Our bodies need food iron to supply the red blood corpuscles. This iron is necessary to the oxidization of food in the tissues of the body. We need lime and phosphorus to build bones and teeth.
   c. Vegetables are valuable as laxative foods.
   d. Vegetables contain, compared with other foods, a high percentage of cellulose or crude fiber. This passes through the body undigested, stimulating normal action of the entire digestive tract and helping in the elimination of waste.
   e. Vegetables also contain substances called vitamines. Vitamines cause children to grow and they protect the body against diseases.

3. Illustrative Material:
   a. Picture of Danger Valley and Safety Hill drawn on the board. (See diagram below.)
   b. Pictures of vegetables.
   c. Roll call chart.

4. Method:
   a. Display a large variety of vegetables (they may be brought from the homes by the children or they may cut pictures of vegetables from nursery catalogues or magazines). Teach the children to recognize the different vegetables.
   b. Draw picture of Danger Valley and Safety Hill.
Every girl and boy lives somewhere in the valley, on the hillside, or on the hill. Who lives on the Hill? (Review main points of a body in good running order.) Who lives in the Valley? (Review main points of signs of malnutrition.)

Where do you want to live? Why do you want to live on Safety Hill? Ans. "To be strong and happy, ready to play, work and serve." How can we get there? Ans. Observe the food and health habits. Vegetables are one of the most important foods, for they give us minerals, vitamins and rid the body of waste.

c. Points to teach:

1. Blood contains iron. Iron makes the blood red. Who has ever cut a finger and seen the blood run out? What color was it? It is the iron in the blood that makes it red. Who has seen iron rust? What color is it? (Explain that this kind of iron is different from the iron found in food, and will not be of use to our bodies.)

2. Red blood makes rosy cheeks; pale blood makes pale skins. The blood showing through the flesh and skin helps to give the skin its color. Here is a test to see if the body has a great deal of red blood. Take a child to the light and look through the lobe of his ear. If it is not a good pink there is not enough good red blood in the body.

Which do you children want to have—good red blood or pale blood? Why? Ans. Children look better. There is also another reason. Children
with red blood feel better. They can play and work better. Children with pale blood get tired easily and are not good at work or at play.

(3) Vegetables contain iron.

Children should have good red blood because it will make them look better and feel better. Where do you suppose the blood gets its iron to make it red? Ans. From the food that we eat. If you want red blood you will have to eat foods that are rich in iron. What foods do you suppose have iron in them? Ans. All vegetables have some iron but certain vegetables have more than others. The vegetables that contain the most iron, in order of their iron content, are:

- dried beans
- green beet and turnip tops
- spinach
- Swiss chard
- dandelion and all wild greens
- string beans
- cabbage
- potatoes
- lettuce
- carrots
- beets
- celery
- turnips
- onions
- asparagus

(These vegetables also contain lime and phosphorus to build teeth and bones.) Iron is found in other foods too, such as egg, liver in combination with green vegetables, egg yolks, whole grains, figs, raisins, dates, meat, nuts, etc., but in order to get a good supply of iron we should eat a good big dish or two of these iron vegetables every day and potato besides. Note that the green leafy vegetables have the most iron so be sure to have one of these vegetables every day.
(4) Another reason why children should eat vegetables. Vegetables help the body to get rid of its waste. A broom sweeps the floor clean of waste. Vegetables contain a woody substance that acts like a broom in the body. This is called cellulose. If a child eats enough vegetables he will have a bowel movement every day without taking pills or medicine.

(5) How to save the iron when we cook vegetables. We should cook all vegetables to save the iron. Cook potatoes in the skins. Cook other vegetables in small amounts of water and use as much of this vegetable water as possible. When vegetables are steamed or baked they lose very little of their iron and other minerals.

(6) How children can learn to like vegetables. Some of you do not like vegetables very well. Did you ever learn to like something? Do you think you could learn to like vegetables the same way? Will you try? Tell me how you are going to learn. Ans. Eat a little every day until you learn. How many of you like cream of vegetable soup? What besides the vegetable in the soup is good for you? Suppose we set out dinners and see how many different vegetables we can have. (Use food stencils or the pictures of foods.) Change the vegetables for Monday, Tuesday, etc. (Be sure to have some raw vegetables or raw fruits at some time during the day. These raw foods have a substance called vitamin C that helps us to grow and helps to make our teeth good.) We will talk more about vitamins later. There is a good rule in some families—if the child does not eat his vegetables he is given no dessert.
CERTIFICATE OF ATTAINMENT

This is to certify that .........................................................., who has been a member of the Nutrition Class in the ........................................ School ........................................ County for the year ................................ shows improvement in the following:

Food and Health Habits ................................................ General physical condition ................................................

By such attainment ........................................ parents have assisted in fitting ........................................ for better citizenship.

Montana State College ................................................ Principal ................................................

Home Economics Extension .......................................... Teacher ................................................

Date ................................................ 192 ........................................ Extension Agent ................................................

(Sample of Certificate of Attainment)
LESSON VII
Achievement Day

A. Suggested Program:

1. Singing of some nutrition songs. May be found in “Songs for Community Singing,” and can be secured at 5 cents a copy from the Home Economics Extension Office, State College at Bozeman, or the County Extension Agent.

2. A nutrition play. Copies of plays may be secured from the State College or Extension Agent.

3. Talk by Home Demonstration Agent, Club Agent or County Extension Agent, or Specialist, or teacher, explaining: “What has been accomplished by this class in nutrition” (summaries of heights and weights and gains — improvements in condition of nutrition).

4. An exhibit of posters made by the children of a good school lunch box, a good breakfast for a school child, etc.

5. Presentation of “Certificates of Attainment.” These may be secured from the State College or Extension Agent.

LESSON VIII
(First of 2nd Year Work)

A Day’s Program for a Healthy Girl or Boy

1. Object:
To formulate a good day’s program for each girl and boy in the school. To stimulate a desire to follow this program.

2. Outstanding points of the lesson:
   a. A day’s program includes a definite place for good
      (1) Food habits.
      (2) Sleep habits.
      (3) Play, work and rest habits.
      (4) Fresh air and sunlight habits.
      (5) Keep clean habits.
b. There is necessity for clock-like regularity in performing these habits.

3. Illustrative Material:
   a. Chart: Daily Food Requirement.
   b. Story: David and the Health Elves, found in book “Health Habits,” published by National Dairy Council, 910 South Michigan Avenue, Chicago. Copies of this story may be secured from the State College or Extension Agent.

4. Method:
   a. Read story “David and the Health Elves.”
   b. Day’s Program:
      What does a healthy boy or girl do in one day? (Teacher writes on board, eat, sleep, work, play, breathe, walk, wash, dress, etc.) What shall we put first in our program? (Write food.) What foods?

1. Daily Food Requirement:
   (a) What foods should the day’s program include? A well-balanced diet needs minerals, vitamins, proteins and body regulators; the following plan should be followed:

   **Milk:**
   - 1 quart for children.
   - 1 pint for adults.

   **Fruits:**
   - 2 servings.

   **Vegetables to include:**
   - 1 serving potato.
   - 2 servings other vegetables to include 1 leafy vegetable.

   **A Raw Fruit or Vegetable or Canned Tomatoes.**

   **Whole Grain Products:**
   - 1 or 2 servings in bread or cereal.

   **Protein:**
   - One serving of any two of the following: Cheese, eggs, meat, dried peas or beans.
Water:
4-6 glasses.

Starches, Sweets and Fats to make sufficient calories for daily needs.

An adequate diet is a diet which furnishes sufficient amounts of each food element in a form which the body can make use of under varying conditions such as age, size, muscular activity and state of health.

Milk furnishes excellent proteins for building tissues. It supplies calcium for good bone development and contains essential vitamins. Milk may be used as a fluid food, and also in such forms as custards, creamed vegetables, cheese, milk toasts and ice cream.

Fruit is a valuable source of minerals and acts as a neutralizing agent when there are too many acid forming foods in the diet. Fruit when eaten raw is a source of vitamin “C.”

Vegetables furnish bulk, therefore act as body regulators. Potatoes furnish energy. Root vegetables provide certain minerals. The leafy vegetables provide iron. Vitamin “C” is very easily destroyed, therefore raw vegetables, raw fruits and tomatoes, canned or raw, will insure a sufficient quantity of Vitamin “C” to promote health and to protect against scurvy.

Cereals are important sources of energy. They contain considerable protein and whole cereals are rich sources of minerals.

Protein foods are usually served by every family daily. Not more than 10 or 15% of the diet should be of protein foods.

(b) Time for meals. Breakfast must come early enough so that the girl or boy can have time to eat before going to school. Let’s say ______________ (in the morning). (This will vary in different schools.) Dinner belongs at noon. If the lunch is carried to school, the dinner belongs in the evening as early as possible, say 5:30 or 6:00. This is so that the stomach will not have hard work to do when bedtime comes.
2. Sleep:
Is sleep important? Next to food, the most urgent need of the human body is sleep. How much sleep do you need? (Food and Health Habits Record.) What time do you need to get up? Then counting back on the clock what time do you need to go to bed? The girl or boy who needs to gain in weight should go to bed still earlier and get even more hours of sleep.

3. Play, exercise and rest:
Why are play and exercise important? Because we must exercise to grow right. We must not get too tired and must rest after playing very hard.
Note: Bring out the point that recess periods and noon periods for the healthy girl or boy must not be spent sitting around, although children should not play too hard. Also, that work for growing girls and boys must be so planned as not to interfere with sleep and play. Children who need to gain in weight should not play too hard, and should have a rest period some time during the day.

4. Fresh Air. We need fresh air to breathe. It means outdoor play when it is not too cold.

5. Sunshine is needed too for growth.

6. Cleanliness. We need to keep clean both inside and out.
Outside: A bath more than once a week. Teeth brushed at least twice a day, preferably morning and night. Hands washed always before eating and after visiting the toilet. Underclothing clean and well aired at night, etc.
Inside: Drinking from four to six glasses of water each day. Getting rid of the ashes in our bodies, or a bowel movement every day. (Best after breakfast.)

(c) A healthy girl’s or boy’s day’s program:
7:45 to 8:00 p. m.—Evening bath, or washing, tooth brushing, and then bed time with windows up and day time clothes airing.
7:00 a. m.—Get up time, water drinking, dressing, washing.
7:30 a. m.—A good breakfast.
7:50 a. m.—Visit the toilet.
8:00 a. m.—Outdoor play or work or going to school.
9:00 a. m.—School.
10:30 a. m.—Recess for outdoor play—short rest period.
12:00 noon.—Hands washed. Dinner or school lunch with hot dish.
12:30 p. m.—Noon recess for outdoor play and rest.
1:15 p. m.—School.
2:15 p. m.—Recess for outdoor play. Rest.
3:30 p. m.—Outdoor play or work or going home from school.
5:30 or 6:00 p. m.—Hands washed. A good evening meal.
6:30 p. m.—Quiet play or study.
7:45 p. m.—And we are around the healthy boy’s or girl’s clock.

LESSON IX
A Good Breakfast

1. Object:
   To help children to form the habit of eating a good breakfast each morning.

2. Outstanding points of the lesson:
   a. Body needs food to burn for energy. If we supply the body with less food than is needed the body burns its own tissue.
   b. Growing children not only need food for energy, but food to make good muscle and bone.
   c. If children do not eat an ample breakfast their bodies are not supplied with sufficient food for energy and growth.
3. Illustrative Material:
   a. Breakfast illustration:
      (This may be done with colored illustrations cut from magazines and mounted on cardboard. However, the best illustrations would be the actual foods measured and placed before the class.)
      1. Bowl of oatmeal (illustrative of a whole grain cooked cereal). Three-fourths cup cooked and cream or milk for it.
      2. Milk (whole) or cocoa or postum made with milk. One full measuring cup.
      3. Toast or bread. One large or two small slices.
      4. Butter. One pat or one level tablespoonful.
      5. One medium orange or apple or four medium prunes (illustrative of fruit, either fresh or cooked).
   b. Roll Call Chart.

4. Method:
   a. Why does a fireman put coal in an engine? Ans. To make it go or to do hard work. What do you need to make you go? Food, and food is also needed to repair your bodies. How do you know when your body engine is not getting enough fuel? Ans. We get thin. Were you ever in too much of a hurry to eat breakfast? What happened? You became hungry before noon. You began to get tired; you had a headache; you could not think easily. How long is it between supper time and breakfast (12 hours). How long between breakfast and lunch or dinner (6 hours). Do you see that it is the longest period of the 24 hours and breakfast is therefore the most important meal of the day? How many ate a good breakfast this morning?
   b. A good breakfast:
      1. Milk (see milk story). It makes us grow, it has lime and phosphorus for bones and teeth, and it helps to make solid flesh or muscle. Coffee and tea will not make girls or boys grow, for they are
not foods. They have no mineral, no fuel and no muscle builders. They instead stimulate the nerves and disturb digestion. Children who drink coffee and tea are nervous and often are thin and pale.

2. Cereals: Oatmeal or a whole grain cereal is particularly desirable for breakfast. It is good in minerals, gives much energy and acts as a broom in ridding the body of its waste.

3. Toast or bread are much better than hot cakes, or hot rolls, for school children. Hot cakes are not chewed enough and take longer to digest.

4. Fruits have minerals and cellulose. They increase the appetite and prevent scurvy, especially the raw or uncooked fruits.

5. A glass of water before breakfast will help you to like your breakfast.

c. A good breakfast will help to make a girl or boy well and strong.

LESSON X

Fruit

1. Object:
To get the child to know what fruits do for the body and why they should be included in the day’s diet.

2. Outstanding points of the lesson:
   a. Fruits improve the quality of the blood. Like vegetables, fruits (some more than others) supply the food iron, which the red blood corpuscles must have to burn the food in the tissues of the body. Some fruits also furnish lime and phosphorus to build bones and teeth.
   b. Fruits help to eliminate body waste. Like vegetables, they contain, compared with other foods, a high percentage of cellulose or crude fiber which passes through the body undigested.
   c. Fruits stimulate a natural appetite. They contain liberal amounts of the vitamin “C” which prevents scurvy. Vitamins are substances which are necessary to the growth and health of children and to the health of adults as well as of children.
3. Illustrative Material:
   a. Pieces of apple cut thin enough to see through.
   b. Illustration of fruits.
      (As in the Vegetable Story, children may collect colored illustrations of fruits a day or two before the story is told.) Otherwise, the names of the various fruits can be written on separate slips of paper.


c. Roll Call Chart.

4. Method:
   a. Is fruit really necessary to the body or can it be left out like candy? Fruits and vegetables furnish the same things to the body. What are they? Ans. The minerals—iron, lime, phosphorus, and vitamins.
   b. In what other way do fruits help out? Ans. They are sweet and taste good. They add flavor.
   c. What is there in fruit that you taste besides the sugar? Ans. Acid. Not many foods furnish this acid which acts as an appetizer. Tell the story of the boy who took orange juice between each meal. This made him have more of an appetite and he gained faster in weight.
   d. Fruits give bulk or fiber to the food which act as a laxative to keep the bowels regular. Give each child a piece of apple. Hold it up to the light and look through it. This framework is called cellulose. Compare this fiber with paper. All fruits and vegetables have this fiber. This fiber is a waste product and is thrown away by the body. It acts like a broom to help get rid of the waste. The acid in fruit also helps our bodies to get rid of the waste. In order to be a healthy child the bowels must move every day. If they don't mother has to give pills or some laxative medicine. Would you rather eat fruit and vegetables and whole grain cereals instead?
e. Vitamins:

How many have heard of vitamins before? Where? Ans. In the Milk and Vegetable lessons. Vitamin A in milk, Vitamin B in whole grains, Vitamin C in raw vegetables and Vitamin D in cod-liver oil. There are other vitamins, E, F and G, all important in our food. Vitamin means “life giving.” Vitamins are substances which are necessary for the growth of children and for the health of children and adults. Tell the story of the little boy who took orange juice, about six oranges a day, and had a bigger appetite and grew so much faster. Oranges and tomatoes have a vitamin called water soluble B which stimulates the appetite and also helps the child to grow.

Raw fruits and cooked acid fruits, and raw vegetables have another vitamin called water soluble C. (This substance is apt to be destroyed in the process of cooking.) When people do not have enough of this vitamin in raw foods (raw fruits or vegetables particularly) they are apt to have a disease called scurvy. In this disease the joints get sore and swell, the body loses weight, the gums become spongy and there is apt to be pus, the teeth become loose and finally fall out and the person will finally die if he is not given some raw foods. Scurvy was previously more common among sailors than it is now when they took long voyages and could not get raw fruits or vegetables. Babies sometimes get sick until they are given orange or tomato juice. If they get scurvy and are not given some raw fruit juice or vegetable juice they will probably die.

Sources of Vitamins

<table>
<thead>
<tr>
<th>Vitamin A</th>
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</thead>
<tbody>
<tr>
<td>Cream</td>
<td>Rutabagas</td>
</tr>
<tr>
<td>Egg yolks</td>
<td>Kale</td>
</tr>
<tr>
<td>Butter</td>
<td>Chard</td>
</tr>
<tr>
<td>Spinach</td>
<td>Greens</td>
</tr>
<tr>
<td>Lettuce</td>
<td>Liver</td>
</tr>
<tr>
<td>Sweet potatoes</td>
<td>Sweet breads</td>
</tr>
<tr>
<td>Carrots</td>
<td>Kidney</td>
</tr>
<tr>
<td>Yellow corn</td>
<td>Milk</td>
</tr>
</tbody>
</table>
1. Object:
To get the child to know that cereals are important in the diet and that some cereals are more valuable than others.

2. Outstanding points of the lesson:
   a. Cereals supply fuel for our bodies and give us energy to run and play.
   b. Whole grain cereal products (products in which neither the bran nor the germ or embryo has been removed) contain valuable minerals—lime, phosphorus and iron.
   c. The bran, which is a woody substance (like that of vegetables), helps to sweep the body clean of ashes or waste.
   d. The germ or embryo contains large quantities of the Vitamin B which stimulates the appetite, is important for growth and health, and helps our nerve control.

3. Illustrative Material:
   a. Have a table exhibit containing all the grains and the different cereals made from wheat, oats and corn.
   b. Draw the wheat kernel on the board. Show the starchy center with white chalk. Draw the coatings of bran with brown chalk. Use red chalk to represent the minerals—iron, lime and phosphorus. Show the em-
bryo. Explain what it is. (In the embryo there is a substance called Vitamin B which is very important for growing children. A picture of the wheat kernel with all its different parts may be secured from any large milling company.)

c. Roll Call Chart.

4. Method:
   a. The importance of cereals in the diet.

   Have the children name the cereals they like best. (Children usually name the prepared cereals.) Is it just as well to eat the prepared cereals? The only way to tell is to see what is in each. Take those made of wheat first. (Have the children name all the cereals made of wheat.) Have them examine a grain of wheat. Compare it with the drawing on the board or the chart, showing the different parts of the whole grain. Have the children name all the grain cereals (whole or cracked wheat, oatmeal, unrefined corn meal, etc.). What do you get when the whole grain cereals are eaten? Ans. All the minerals in the bran—calcium, iron, and phosphorus, the bran, which is a woody substance, and like vegetables help to sweep the body clean, and the Vitamin B, a growth-producing and appetite-producing substance which is found more abundantly in the embryo or the germ.

   Classify the cereals as to whole or part whole grains.

   (a) Whole grains:
   1. Wheat—whole wheat flour, cracked or crushed wheat (probably pettijohn, shredded wheat, Wheatena).
   2. Oats—steel cut, rolled or cracked oats.
   3. Whole barley or rye flour.
   4. Unpolished rice.

   (b) Part whole grains:
   1. Wheat—cream of wheat, shredded wheat, Pep-o’wheat and Farina.
   2. Corn—refined corn meal, hominy.
Have the children compare the whole grain with the refined product. Does it make any difference whether you eat the whole grains or the part whole grains? Name again the cereals that contain the most minerals. Ans. Oatmeal, whole wheat, whole barley, whole rye, unpolished rice, unrefined corn meal.

Does it make any difference whether you eat the cooked or the uncooked cereals? (This gives the children a chance to think about those made of the whole grains and this is one of the points that determine the answer.) The cooked cereals furnish good fuel material for our bodies and give us energy to run and play. Cereals will help children to gain in weight. Which costs most? (Compare the cost of a package of puffed wheat or post toasties or shredded wheat biscuit.)

Is whole wheat bread or rye bread made of whole or only part of the grain? Ans. Only part of the whole grain. The whole wheat flour sold at the stores is as a general rule only about 85% whole wheat. A part of the bran and the embryo are usually removed.

Whole wheat bread then will help to take the place of cereals in the diet but can not entirely replace the whole grain.

What is a pretty good rule to follow from this lesson on cereals?
1. Eat more cooked cereals.
2. Eat more of those made from the whole grains.
3. Eat the prepared cereals only occasionally.

**LESSON XII**

The Effect of Eating Between Meals

1. **Object:**
   To stimulate in the children the desire for eating at regular meal times, and not between times.
2. **Outstanding points of the lesson:**
   a. Our digestive tract is a very delicate mechanism and is run by very definite rules.
   b. Some kinds of food digest faster than others.
   c. The average mixed diet leaves the stomach in approximately four hours.
   d. Just like any other part of the body, the stomach must have rest to remain healthy.
e. Eating between meals interferes with the rest periods of the stomach.
f. Eating between meals often eliminates from child’s diet food necessary for proper growth.

3. Method:
a. Three good meals for a day:

<table>
<thead>
<tr>
<th>Breakfast</th>
<th>Dinner</th>
<th>Supper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>Meat or fish</td>
<td>Macaroni and cheese</td>
</tr>
<tr>
<td>Oatmeal</td>
<td>Baked potatoes</td>
<td>Cole slaw</td>
</tr>
<tr>
<td>Cream</td>
<td>Spinach</td>
<td>Bread—whole wheat</td>
</tr>
<tr>
<td>Toast—whole wheat</td>
<td>Bread</td>
<td>or rye</td>
</tr>
<tr>
<td>or rye</td>
<td>Butter</td>
<td>Butter</td>
</tr>
<tr>
<td>Butter</td>
<td>Milk</td>
<td>Milk</td>
</tr>
<tr>
<td>Milk</td>
<td>Pudding</td>
<td>Peach sauce</td>
</tr>
</tbody>
</table>

Now suppose a boy or girl starts out eating this good breakfast at 7:30. Then at 8:30 someone gives him a piece of candy, and 10:30 he eats a cookie.

It may look like this:

<table>
<thead>
<tr>
<th>7:30</th>
<th>8:30</th>
<th>9:30</th>
<th>10:30</th>
<th>11:30</th>
<th>12:30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>Candy</td>
<td>Cookie</td>
<td>Peanuts</td>
<td>Bread</td>
<td>Meat</td>
</tr>
<tr>
<td>Oatmeal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cream</td>
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<td>Toast</td>
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<td>Butter</td>
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<tr>
<td>Milk</td>
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</tbody>
</table>

What’s wrong? That’s it. The stomach is busy all the while. There is not one moment for it to rest. When you work very hard do you get tired? Of course you do. The stomach gets just as tired, when it has to work all the time.

Can you think of another thing that’s wrong with this plan of eating between meals? That’s it. We won’t be hungry for dinner. What of those foods for dinner do you suppose the average boy or girl would choose if he weren’t hungry? That’s right. He would choose meat and pudding.

What does that leave out? It leaves out vegetables and milk. What’s wrong? Vegetables and milk are
necessary foods for growing boys and girls. To grow good strong bodies in which to live, we cannot substitute other foods for them.

Suppose he does the same thing in the afternoon if there is candy left or if he gets hungry and eats cake or cookies or ice cream. What happens to his appetite for supper? What if he keeps this up day after day? Will he grow big and strong? (Candy or sugar contains nothing that builds the body, the muscles, the teeth and bones.) How would you expect this child to look?

The effect of too much sugar or sweets on the lining of the stomach. Have you ever held a piece of candy in your cheek? How does it feel? Ans. It puckers. If it hurts the lining of your cheek how much more apt it is to injure the more delicate lining of an empty stomach. Have you ever seen fruit juice ferment (foam)? Too much sugar in the stomach will cause fermentation. We are apt to get sick and we say our stomach is sour.

Effect of too much sugar on the teeth. Review lesson on teeth.

If someone gives you candy or sweets when will you eat them so they won't be harmful? Ans. After a meal. How many pieces of candy then? Ans. Two or three small pieces. What about eating candy one or two hours after a meal? Ans. It is better to eat it right after the meal.

Discuss what the stomach will have to do to these foods and how long it will have to work to get each meal ready for the blood. (Correlate this lesson with the lesson on hygiene or physiology.) Determine the working periods and the rest periods of the stomach. Ans. The time between breakfast and dinner; between dinner and supper; between supper and breakfast. The stomach needs rest because everything else needs rest after working.

Is eating between meals good at any time? Ans. Children who need to gain may eat certain foods that will not interfere with the regular amount of food at meals.
and it must be the kind of food that the stomach can quickly care for. What foods would be good? Ans. Milk and toast, or milk and graham crackers, or fruit such as an orange or an apple.

b. A child who eats between meals is not building a good strong body in which to live.

**LESSON XIII**

**Playing Cafeteria or Meal Planning**

1. **Object:**
   To get the child to know what foods are essential for growth and health for breakfast, luncheon, and dinner, by actually showing the foods, or colored pictures of foods, and to get him to realize that he must eat enough of these necessary foods if he is to grow strong and healthy.

2. **Outstanding points of the lesson:**
   The daily food requirement (see Lesson 7) considers the three meals taken as a whole. To satisfy this a general plan may include:
   1. A good breakfast: Fruit, whole cereal, bread, and milk to drink.
   2. A good lunch or supper:
      a. School lunch: Hot dish as soup or cocoa, whole grain sandwiches and simple dessert and fruit.
      b. Supper: Hot dish as macaroni and cheese, raw vegetables, as cabbage, bread and butter, fruit and cookies, or simple pudding. Milk to drink.
   3. A good dinner: Potato, egg, meat or fish, vegetable (leafy preferable), bread, butter, simple dessert and milk to drink.

3. **Illustrative Material:**
   a. Food stencils may be purchased from the University of Chicago Book Store, Chicago. They are to be painted in water colors and mounted on blocks for use. The children may cut foods from magazines and mount them for use in this lesson.

4. **Method:**
   a. To teach food requirements:
      1. Place the food stencils or pictures on the table. Have the children choose foods for breakfast as:
Fruits
Whole cereal (preferably 2 servings a day, one as breakfast food and one as bread or muffins.)
Toast or bread.
Milk (1 cup).

2. Choose for dinner:
Egg, if not for breakfast, fish, meat or cheese (once a day).
Vegetable, cooked or raw (preferably a green or leafy vegetable).
Potatoes (once a day, at least).
Bread (whole wheat once a day if whole cereal for breakfast, otherwise twice).
Simple dessert (if candy is eaten, it should be eaten here).
Fruit (twice a day ideal, once for sure).
Milk (1 cup each meal for children).

3. Choose for noon lunch:
Hot dish—cream soup (preferably cream of vegetable) or occasionally weak cocoa.
Sandwiches—graham, whole wheat, nut, currant, raisin or some other nourishing bread, with filling of egg, cheese, peanut butter, chopped meat, raisins, dates, nuts, jam, celery, baked bean pulp.
Simple dessert—pudding, fruit, piece of candy, plain cake or cookies.

4. Choose for supper:
Meat (once a day), cheese or egg.
Vegetable, cooked or raw (2 servings a day).
Potatoes (rice or macaroni).
Bread and butter.
Fruit.
Milk (1 cup each meal for children).

b. Have two children each take a tray and pick a good breakfast. Have one child go to the blackboard and write the list of foods as the rest of the class give them.

c. Follow the same plan for dinner, noon lunch and supper. Find out how many of the children do eat as
much as this.

d. The variation in good meals. Have children tell how these meals may be varied so they won’t have to eat the same food every day.

e. Good hours for meals during the school year—7:30, 12:00 and 6:00.

LESSON XIV
Achievement Day

A program similar to the one given at the end of the first year’s work (see Lesson VII) may be worked out by the different grades. It should be more finished and prove the value of more health habits.

Reference Books
Feeding the Family—Mary Schwartz Rose.
Food, Health and Growth—L. Emmett Holt, M. D.
Newer Knowledge of Nutrition—McCollum.
Food, Nutrition and Health—McCollum & Simmonds.
Dietetics for High Schools—Willard and Gillette.
(All the above published by MacMillan Company, Chicago.)
Land of Health—Hallock & Winslow.
Published by Charles E. Merrill Company, Chicago.
Food Facts for Every Day—Florence Winchell.
Published by J. B. Lippincott Company, Chicago.
Health Training in Schools—Theresa Dansdill.
Published by National Tuberculosis Association, 370 Sev­enth Avenue, New York City.

Magazines
Hygeia, the Health Magazine—Yearly subscription, $3.00.
Published by the American Medical Association, 535 North Dearborn St., Chicago.
Journal of Home Economics, Baltimore, Maryland. Cost $2.50 per year.
North Western Health Journal, St. Paul, Minnesota. Cost $1.00 per year.
Food and Health Education.
Published at Floral Park, New York City. Cost $1.00 per year.
Bulletins

Bulletins from U. S. Department of Agriculture, Washington,
School Lunches—F. B. No. 712.
Food for Young Children—F. B. No. 717.
Milk and Its Uses in the Home—F. B. No. 1359.
Milk for the Family—Department Circular No. 129.
Bulletins from Children's Bureau, U. S. Department of Labor,
Washington, D. C.:
Posture Clinics—Publication No. 164.
Posture Exercises—Publication No. 165.
Child Care—Publication No. 30.
Bulletins from Department of Interior, Bureau of Education,
Washington, D. C.:
Diet for the School Child—Health Education Series No. 2.
Teaching Health—Health Education Series No. 4.
Your Opportunity in the Schools—Health Education Series No. 9.
Bulletin from Federal Board for Vocational Education, Wash­
ington, D. C.:
Health of the Family—Home Economics Series No. 8, Bul­
etin No. 86.
Bulletins from State College, Bozeman, Montana:
Good Meals for Children.
What a School Child Needs Each Day.
Bulletin from Teachers' College, Columbia University, New York
Illustrative Material—Posters, Charts, Etc.
Elizabeth McCormick Memorial Fund, 848 N. Dearborn St.,
Chicago.
American Child Health Organization, 370 Seventh Avenue, New
York City.
The National Dairy Council, 910 Michigan Avenue, Chicago.
(Send for catalog of Health Education Material.)
Montana Tuberculosis Association, State Capitol, Helena, Mon-
Special Nutrition pictures may be secured from Office of Co-
operative Extension Work, U. S. Department of Agri-
ture, Washington, D. C.