



Planning adequate daily meals appropriate for family use
by Marjorie Flaherty Paisley

A THESIS Submitted to the Graduate Committee in partial fulfillment of the requirements for the
degree of Master of Science in Home Economics

Montana State University

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In addition, the meals were planned to meet definite high standards for palatability and attractiveness. Acceptable food management principles were also employed by considering the economy of time, energy and fuel, during food preparation.

Paisley

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ABSTRACT

In this study, twelve daily meal plans were prepared as a means of interpreting the daily nutritional allowances for normal men, women, and children, adopted and recommended by the National Research Council in 1941. The daily dietary allowance for the moderately active man, weighing seventy kilograms, was selected as a working basis for each daily meal plan.

The food materials used in developing these meal plans were selected on their nutritional merits, and were those available locally. The different menus included a wide variety of foods to serve as suggestions for meal combinations appropriate for family use. Meal costs were calculated using the food prices current October 1, 1941.

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PLANNING ADEQUATE DAILY MEALS
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Introduction

The realization even by scientists that every human being requires a daily intake of certain basic nutrients has been slow in its development. Through a long period of investigation, extending over two hundred years, scientific workers have gradually demonstrated that the human body must be consistently supplied with certain nutrients,-- energy-producing foods, protein, minerals and vitamins, so that it may grow normally, function properly, and carry on processes of repair. As a result, people in general have begun to appreciate that some relationship exists between the intake of proper food and good health.

In the past decade, while the recognition of the importance of minerals and vitamins was growing rapidly, there also developed a demand for some definite information regarding the amounts of these and other nutrients that are required by individuals. It was not until 1941 that the Committee on Foods and Nutrition of the National Research Council prepared and released to the public a table of quantitative allowances for the specific nutrients recommended for daily dietaries (see table I). The varied personnel of the committee representing a wide range of background and experience gave a balanced perspective for setting up this "Yardstick of Nutrition" (49). In preparing these tentative allowances, literature representing the most authoritative sources was appraised, and judgments as to the various nutritive requirements were solicited from a considerable number of leaders in the fields of medicine, physiology, biological chemistry, and nutrition.

TABLE I.--CHART OF RECOMMENDED DAILY ALLOWANCES FOR SPECIFIC NUTRIENTS
Committee on Foods and Nutrition, National Research Council

	Calories	Protein	Calcium	Iron	Vit. A	Thiamin* (B ₁)	Ascorbic Acid** (C)	Riboflavin***	Nicotinic Acid	Vit. D
		gm.	gm.	mg.	I.U.	mg.	mg.	mg.	mg.	I.U.
Man (150 lb.)										
Moderately active	3000	70	0.8	12	5000	1.8	75	2.7	18	****
Very active	4500					2.3		3.3	23	
Sedentary	2500					1.5		2.2	15	
Woman (125 lb.)										
Moderately active	2500	60	0.8	12	5000	1.5	70	2.2	15	****
Very active	3000					1.8		2.7	18	
Sedentary	2100					1.2		1.8	12	
Pregnancy (latter half)	2500	85	1.5	15	6000	1.8	100	2.5	18	400-800
Lactation	3000	100	2.0		8000	2.3	150	3.0	23	400-800
Children up to 12 years										
Under 1 year	100/kg.	3-4/kg.	1.0	6	1500	0.4	30	0.6	4	400-800
1 - 3 years	1200	40	1.0	7	2000	0.6	35	0.9	6	
4 - 6 years	1600	50	1.0	8	2500	0.8	50	1.2	8	
7 - 9 years	2000	60	1.0	10	3500	1.0	60	1.5	10	****
10 - 12 years	2500	70	1.0	12	4500	1.2	75	1.8	12	
Children over 12 years										
Girls -- 13 - 15 years	2800	80	1.3	15	5000	1.4	80	2.0	14	
16 - 20 years	2400	75	1.0	15	5000	1.2	80	1.8	12	****
Boys -- 13 - 15 years	3200	85	1.4	15	5000	1.6	90	2.4	16	
16 - 20 years	3800	100	1.4	15	6000	2.0	100	3.0	20	****

* One milligram thiamin equals 333 International Units.

** One milligram ascorbic acid equals 20 International Units.

*** One milligram riboflavin equals 300 S-B Units.

**** Older children and adults probably need as much Vitamin D as the minimal amounts recommended for infants.

This chart of dietary recommendations suggests a caloric intake for individuals of varied age, sex, type of activity, and bodily condition, and a protein allowance of about one gram for every two pounds of body weight. The amounts of calcium, phosphorus and iron allotted to each person permit a reasonable margin of safety to take care of individual differences. The levels of intake recommended for the various vitamins are placed at figures high enough to provide for normal growth, repair, and regulatory functions. The Committee's aim was to approve allowances for the nutrients that would insure adequate nutrition and prevent such deficiency diseases as scurvy, due to lack of ascorbic acid; tetany, resulting from hypocalcemia; anemia, from iron deficiency; night blindness, from a lack of vitamin A; and other conditions having a nutritional background. While some of the recommended allowances may be changed as more information becomes available, the chart, in its present form, is extremely valuable in practical nutrition work.

However, the data supplied in this chart, or "Yardstick of Nutrition", are much too technical to be understood by the average homemaker for whose ultimate use these figures were intended. Calories of energy, grams of protein and minerals, units of vitamins, must be converted into practical terms, usable by the lay person. They must be interpreted as foods, combinations of foods that constitute meals, and groups of meals that make up days' dietaries. The average individual knows very little about food composition, and must depend upon trained nutritionists to assist in this interpretation. In commenting upon the situation, Dr. Lydia Roberts of the University of Chicago has pointed out, "There are many combinations of

foods which will meet these new requirements. America is fortunate today that it has a large number of trained nutritionists who can translate these allowances into terms of foods available and practical in many parts of the country".

Therefore, this study has been carried on to translate the technical information found in the "Recommended Daily Dietary Allowances", prepared for nation-wide guidance, into practical plans for adequate meals, appropriate for family use. There will be presented a series of meal plans covering a period of twelve days. Each day's menus will contain the recommended allowances for specific nutrients, and will be made up of foods locally available at reasonable current prices. In general, the plans will be in harmony with conditions of ordinary family living.

HISTORY

The earliest attention to nutritional problems was concerned with the energy-producing value of food. As long ago as 1780, Lavoisier, a member of the French Academy of Science, seemed to grasp the idea that body heat was derived, in the process of metabolism, through slow combustion resulting from the action of oxygen on ingested foods and body tissues. However, about the middle of the nineteenth century, Liebig (34) in Germany, was the first to understand clearly that the substances oxidized in the body are organic compounds of three types: protein, fat, and carbohydrate. The figures finally reported by Rubner (38) in 1902 as representing the fuel values of food constituents are as follows:

1 gram carbohydrate supplies 4 Calories

1 gram fat supplies 9 Calories

1 gram protein supplies 4 Calories

Energy-producing foods such as cereals, dried legumes, potatoes, and fats were assigned a definite place in the diet, but material as watery as a tomato seemed non-essential.

Following Liebig's work, methods of food analysis were developed, and European laboratories determined the chemical composition and nutritive value of certain food materials. By 1880, similar studies were begun in America and the first comprehensive tables on the chemical composition of American foods were issued through the United States Department of Agriculture by Atwater and Woods in 1896 (2). These investigators included, besides the three basic food constituents, data on the occurrence of water and ash. These tables, revised and expanded in 1906 (3), have served as accurate standards of reference for food composition and are still satisfactory for some foods. The introduction of new foods on our markets, and the advent of different methods of processing, have necessitated further analysis. Chatfield and Adams (10), also from the United States Department of Agriculture, published in 1940 another food composition study including foods in their natural state and some prepared for eating.

About 1911, Sherman (38) and other workers in food chemistry began to pay more attention to the minerals in foods. They found that the ash consisted of varying amounts of calcium, phosphorus, iron, magnesium, potassium, sodium, and sulphur. This led to additional studies concerning the function of these minerals in the human body.

At approximately the same time, reports began to appear in the literature about some previously unknown food constituents that seemed to in-

fluence growth, relieve nervous disorders and certain disease conditions. The name "vitamine" was finally suggested for these newly-found substances, so vital to life, yet occurring in such minute quantities in food materials. The most significant discoveries about the role of the vitamins in human nutrition have been made in the last decade. Out of the investigations of a large number of research workers from all parts of the world has resulted an impressive amount of valuable information.

From the laboratories of American workers, such as McCollum, Sherman, Wolbach, Bocher, and Palmer (14) has come evidence that vitamin A, derived from carotenoid pigments in plants, prevents degenerative changes in the epithelial tissues of animals and human beings, and promotes growth.

The work of Williams and associates, Cowgill, Strauss, Wilder (14), Sure (41), and many others, has demonstrated that thiamin or vitamin B₁, is essential to the normal functioning of the nervous system, the heart, and the metabolic processes of the body.

Studies made by Sherman, Bourquin, Hogan, Sure, Elvehjem and Bocher (14) show that a continued deficiency of riboflavin, or vitamin B₂, in the diet results in skin disorders, especially around the mouth, and may cause a type of eye cataract.

Niacin (or nicotinic acid), closely associated with riboflavin, seems to prevent or cure the deficiency disease, pellagra, according to reports from the extensive work of Spies, Sebrell, and Elvehjem (14).

Another disease, scurvy, has for many years been common among sailors, explorers and famine-stricken people, when forced to subsist mainly on dried foods. It has long been known that fresh lemon or lime juice, and

fresh vegetables would prevent or cure the disease, but the presence of a specific constituent was not recognized as the influencing factor. The development of suitable methods for the biological assay of foods by Holst and Frohlich, Cohen and Mendel, and LaMer, Campbell, and Sherman (14) led to the discovery of the anti-scorbutic factor, vitamin C or ascorbic acid.

Nearly all of the known vitamins have now been chemically identified and synthesized--a fact which is of great importance in therapy. However, all the vitamins occur in varying quantities in natural foods, and in this form seem more adapted to the body's needs. By making the proper choice of foods, these essential factors may be supplied in the daily meals. Each vitamin performs a specific function in the body and it appears that the vitamins are required in varying amounts. Therefore, it has been necessary to devise means of measuring the vitamins. The measure commonly used for vitamin A is the International Unit (I.U.), which is equivalent to 0.6 microgram (0.0006 milligram) of pure beta carotene. For thiamin, the I.U. is the vitamin B₁ activity of ten milligrams of the International Standard Adsorption Product (14). Thiamin is also measured directly by weight in milligrams, one milligram being equivalent to 333 I.U. Ascorbic acid is measured in milligrams, or in I.U.--one I.U. representing the vitamin C activity of 0.05 milligram of the International Standard, l-ascorbic acid. Both riboflavin and niacin are also measured in milligrams.

In applying these units to human nutritional requirements, it was necessary to establish some physical or chemical standard dependent upon

the vitamin intake. The condition of partial night blindness is one of the first symptoms to appear due to a deficiency of vitamin A and fortunately lends itself to physical measurement. Standards for vitamin A requirement have been worked out through a correlation of dietary surveys and the incidence of night blindness. Knowledge of the vitamin B₁, or thiamin requirement of man, has developed largely through the work of Cowgill (48). This investigator made exhaustive analyses of many types of diet, both in animals and in man, showing that the thiamin requirement varies not only from one individual to another, but in the same individual under different metabolic conditions. The estimates of amounts of riboflavin and niacin required for normal human nutrition are matters of judgment rather than of actual direct measurement. The independent judgments of Rose and Stiebling are the most authoritative estimates available at this time (14). The adequacy of vitamin C in human nutrition is determined by one or more of three measurements: (1) the resistance or fragility of the blood capillaries, (2) the excretion of ascorbic acid in the urine and (3) the content of ascorbic acid in the fasting blood, as a result of the acceptance of standards based on repeated observations on healthy normal persons (14). Richardson and Mayfield have studied (data not yet published) the vitamin C content of blood and urine of college women to determine their state of vitamin C nutrition.

The Committee on Foods and Nutrition of the National Research Council has utilized the results of many studies in preparing a chart (see table I) that shows the daily requirements of man, woman, and child, for the specific nutrients that are now recognized. For the moderately active man

these daily requirements are set up as follows: Calories, 3,000; protein, 70 grams; calcium, 0.8 gram; iron, 12 milligrams; vitamin A, 5,000 I.U.; thiamin, 1.8 milligrams; ascorbic acid, 75 milligrams; riboflavin 2.7 milligrams; niacin, 18 milligrams. Other authorities (31) list phosphorus at 1.3 milligrams.

For many years data on foods and nutrition have been collected and published, but it has been difficult for the average homemaker to make use of the technical information. Mary Schwartz Rose, in her book, "Feeding the Family" gave one of the first comprehensive translations of food principles into a form usable by the homemaker without training in nutrition. Other books and magazines have contributed popular articles on foods and nutrition. These offered some helpful suggestions, but were frequently not adapted to this locality, and did not conform to the best home management principles such as those concerned with the social and psychological aspects and the time, money, and energy expended in food management.

With the advent of the financial depression, interest in food costs was intensified, and this situation stimulated a study by Carpenter and Stiebling (9) who presented diets at four income levels, conforming to general dietary standards. For more practical use, these general dietary principles must be expressed in terms of actual servings of foods in the daily menu.

Recently Bowes and Church (8) have compiled valuable material from authoritative sources on the food values of commonly used foods in definite units. These aid in figuring diets to meet the body needs of

various individuals as specified by the National Research Council. Bowes and Church have also supplied much data on cooked foods, and have summarized important principles of preparation relative to their effect on the nutritive elements. This compilation of data is of great value to dietary technicians. As a means of making this information more usable to non-technical workers, Richardson and Chase (31) have prepared a "Wall Chart", which lists the most important food sources of minerals and vitamins needed and the approximate amounts contained in each serving.

The next step seemed to be the formulation of actual meal plans with food combinations that would provide the nutrients in amounts designated in the chart of recommended allowances (49). Food habits, availability of foods in local markets, current prices, and the application of acceptable food management practices, should be considered if the meal plans are to be of value to homemakers in this locality. This study proposes to provide this information and apply these principles.

EXPERIMENTAL PROCEDURE

In the beginning of this study, it was decided to prepare a series of daily meal plans, each of which would provide the specific nutrients in the quantities recommended by the National Research Council (see table I). The food materials incorporated in the meal plans were to be those readily available on the local markets, or from home storage. Some consideration was to be given to the principles of good home management in relation to the preparation of the proposed meals as far as expenditure of time, energy, and money is concerned. Finally, the meals, when prepared, were

to be attractive, palatable, reasonable in cost, and appropriate to ordinary family living.

Nutritive Values of Foods. Before attempting any plans for food combinations, it was necessary to make a survey of the nutritive value of foods to determine which of the common foods were good sources of the specific nutrients such as calcium, iron, vitamin A, thiamin, riboflavin, niacin, and ascorbic acid. A valuable and convenient reference for this type of study was the handbook, "Food Values of Portions Commonly Used" (8), published by Howes and Church and recently revised (1942). This manual contains data on the nutritive values of raw and cooked foods, compiled from reliable and up-to-date sources. Supplementary references were Rose's "Laboratory Handbook for Dietetics" (35), Sherman's "Chemistry of Foods and Nutrition" (38), bulletins giving the vitamin A and B₁ content of foods by Booher and co-workers (5)(6), and publications from the Montana Experiment Station giving vitamin C values of common foods (20) (32). There appears to be a decided lack of definite information about the niacin content of foods. For this reason it was practically impossible to meet the recommended daily allowance for niacin, in planning a day's menus except where foods such as pork, chicken, or glandular meats could be used.

Foods Available in Locality. The next preliminary step was to determine the foods available in the locality, both on the market and from home storage. Visits were made to grocery stores and meat markets in a small city and a nearby village where prices were obtained for the different commodities, based on the units most frequently purchased by homemakers.

The statements of the salespersons were taken as the authority for the information. As these prices were obtained during a period of rapid fluctuation, it was necessary to arbitrarily set a fixed date for the prices quoted. All prices were as of October 1, 1941 (see page 44 in the appendix). From these data, a representative price was then adopted for each commodity. Through interviews with various homemakers, information was also secured about the kinds of foods that are stored, canned, dried, or preserved by other means in the homes of the community. The value placed on these food materials was equivalent to the price on a comparable unit of a commercial product.

Food Preparation. Since it is usually necessary to prepare foods to some degree for use in meals, reliable reference books (30)(4) and files were consulted for recipes. Some of the recipes had been tested by college classes and in the Home Management House at Montana State College. Many of the recipes for the foods used in the meal plans appear in the appendix. The percentage of waste in foods as purchased, and the size of servings of edible portions, were derived from actual measurements and from well-known reference manuals (1)(12).

Recognizing that long, slow cooking in a large amount of water destroys or decreases some of the vitamin and mineral content of foods, references were consulted for data on cooked foods whenever possible (8). A recent publication by Waismann and Elvehjem (43) reports vitamin B₁ losses on cooking meats. Richardson and Mayfield (20)(32) have also published data on the vitamin C content of cooked fruits and vegetables. It was difficult to compute the food value of re-heated left-over foods,

as little information is available about them.

Food Management. According to Nickell and Dorsey (26), "Food management is the provision of food for the family to ensure physical growth, social and psychological development and well-being, with a reasonable expenditure of available resources, both human and material".

In this study, foods were selected primarily on a nutritional basis to meet the standard requirements for optimum body health by providing the nutrients necessary for growth and repair in the average individual under normal conditions.

It will be noted on the chart of Recommended Daily Allowances (table I) that specific nutrients are allotted for seventeen different types of individuals, varying in age, sex, degree of activity, and body condition. As it would be impossible, in this study, to prepare meal plans adapted to each type of individual, it was necessary to select one type as a working basis. The one selected was the moderately active man, using the daily requirements previously described on page 10 and obtained from table I. In planning the meals an attempt was made to adhere rather closely to the recommended caloric intake and protein requirement. No concern was felt if some of the minerals and vitamins exceeded the suggested levels.

In order to utilize these meal plans for families of varying make-up and size, it is suggested that a scale should be set up resembling the "ammain" scale (derived from the term "adult male maintenance") as used by Kirkpatrick (19) in his standard of living studies. To the moderately active man is assigned an index value of 1.0. To the other sixteen types of individuals are given comparative values, computed for each item in the

TABLE II.--SCALE FOR COMPUTING DIETARIES FOR PERSONS DIFFERING IN
AGE, SEX, ACTIVITY, AND BODY CONDITION

1.0 = Moderately Active Man

	Calories	Protein	Calcium	Iron	Vit. A	Thiamin (B ₁)	Ascorbic Acid (C)	Riboflavin	Niacin
		gm.	gm.	mg.	I.U.	mg.	mg.	mg.	mg.
Man (70 kg.)									
Moderately active	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Very active	1.5	1.0	1.0	1.0	1.0	1.3	1.0	1.2	1.3
Sedentary	0.8	1.0	1.0	1.0	1.0	0.8	1.0	0.8	0.8
Woman (56 kg.)									
Moderately active	0.8	0.9	1.0	1.0	1.0	0.8	0.9	0.8	0.8
Very active	1.0	0.9	1.0	1.0	1.0	1.0	0.9	1.0	1.0
Sedentary	0.7	0.9	1.0	1.0	1.0	0.8	0.9	0.7	0.7
Pregnancy (latter half)	0.8	1.2	2.0	1.3	1.2	1.0	1.3	0.9	1.0
Lactation	1.0	1.4	2.5	1.3	1.6	1.3	2.0	1.1	1.3
Children up to 12 years									
Under 1 year	100/kg.	3-4/kg.	1.3	0.5	0.3	0.2	0.4	0.2	0.2
1 - 3 years	0.4	0.6	1.3	0.6	0.4	0.3	0.5	0.3	0.3
4 - 6 years	0.5	0.7	1.3	0.7	0.5	0.4	0.7	0.4	0.4
7 - 9 years	0.7	0.9	1.3	0.8	0.7	0.6	0.8	0.6	0.6
10 - 12 years	0.8	1.0	1.6	1.0	0.9	0.7	1.0	0.7	0.7
Children over 12 years									
Girls -- 13 - 15 years	0.9	1.1	1.6	1.3	1.0	0.8	1.1	0.7	0.8
16 - 20 years	0.8	1.1	1.3	1.3	1.0	0.7	1.1	0.7	0.7
Boys -- 13 - 15 years	1.1	1.2	1.8	1.3	1.0	0.9	1.2	0.9	0.9
16 - 20 years	1.2	1.4	1.8	1.3	1.2	1.1	1.3	1.1	1.1

chart (see table II). To calculate the daily requirements of a family composed of certain individuals, combine their index numbers for each item in the chart, and use the sum as a guide. The social and psychological aspect of food management involves satisfying the likes and dislikes of the family members, introducing new foods, and using left-overs. For example, the use of liver loaf served with tomato sauce (table IV) was an attempt to provide a glandular meat, particularly rich in iron, vitamin A, thiamin, riboflavin, and niacin in a form appetizing to all members of the family. Including a slice or two of brightly colored fresh tomato on the luncheon plate (table XIV), even at out-of-season prices, was justified for psychological reasons.

In order to derive the greatest degree of satisfaction from meals, it was necessary that they meet certain standards for palatability and attractiveness. Variety is a highly desirable quality, in texture of foods served; in flavor of the different meal constituents; and in the temperature of the foods combined in the meal.

The cost factor (26) is also important in food management, and includes the expenditure of time and energy as well as money. As a time and fuel saver, the practice of dovetailing (26) was employed whenever possible. As an example, the oven was used for baking more than one food product at a time. Food costs were computed for each meal and each day, and an effort was made to keep the costs as low as possible and still meet the dietary requirements.

As the work of preparing meal plans progressed, it was found that the time required to develop a day's menus, adequate and satisfactory in all

respects, was greater than anticipated. Consequently only twelve daily meal plans could be completed. It was not a simple task to meet the nutritional requirements for a day, satisfy the standards for palatable meals, keep food expenditures within a reasonable cost, and follow acceptable practices of home management.

If it had been possible to set up a pattern or model for each type of meal, - breakfast, lunch, and dinner, then fill in a food item to supply the class of food indicated, the problem would not have been complicated. However, each food included in the daily meals was used on the basis of its own nutritional merits, and when it was replaced by some other food an imbalance often existed in the total of the nutrient factors.

In preparing these meal plans, an effort was made to utilize all of the important meats, other protein-rich foods, vegetables and fruits. Therefore, these twelve meal plans represent many of the basic food combinations that provide the recommended daily allowances of nutrients adopted as a guide for this study.

DISCUSSION OF RESULTS

The twelve daily meal plans presented in tables III to XIV inclusive, show the caloric value and the protein, mineral, and vitamin constituents of the combined foods as well as their cost. It will be noted that though the breakfasts varied somewhat in composition, as a rule they followed a general pattern. This included a fruit or juice, a cereal or cereal product or both, and a beverage, with at least one hot dish on the menu. The fruit could be fresh, dried, or canned or canned tomato juice could be substituted. Often the entire day's need of ascorbic acid was supplied

TABLE III.--DAILY MEAL PLAN NO. 1

Food	Approximate Measure	Cost	Cal.	Prot.	Ca	P	Iron	Vit. A.	Thiamin B ₁	Ascorbic Acid C	Ribo- flavin	Niacin
		ct.		gm.	gm.	gm.	mg.	I.U.	mg.	mg.	mg.	mg.
Breakfast												
Prunes	5 prunes, 50 gm.	1.5	149	1.1	.030	.047	1.8	700	.101	1.8	.175	
Whole Wheat Cereal	3/4 c. ck., 30 gm.	.7	110	3.5	.017	.112	1.7	7	.174		.048	1.47
Cream (thin)	2 T., 1 oz.	1.6	59	.8	.028	.024	.06	354.5	.01	.42*	.05	
Sugar	1 t., 5 gm.	.1	20									
Toast, white, enr.	1 slice, 10 gm.	.9	40	1.2	.008	.016	.2				.006	
Butter	1 sm. pat, 7 gm.	.6	51	.05	.001	.001	.01	312				
Coffee with cream, 1 T., Sugar, 1 t.	1 c., 8 oz.	1.7	50	.4	.014	.012	.03	187.5	.005	.21	.03	
		7.1	479	7.05	.098	.212	3.80	1,561.0	.290	2.43	.309	1.47
Lunch												
Macaroni and Cheese	1 c., 220 gm.	4.5	316	12.	.274	.248	.8	662	.082		.316	
Lettuce	1 oz., 30 gm.	.8	6	.3	.006	.012	.15	30	.027	.51	.012	
French Dressing	1 T., 15 gm.	.5	95									
Whole Wheat Muffins	2	2.0	306	8.4	.075	.218	2.1	206	.228	.7	.225	1.4
Butter	1 lg. pat, 14 gm.	1.2	102	.1	.002	.002	.02	623				
Orange Marmalade	2 T., 40 gm.	.5	118	.2								
Milk, whole	8 oz., 240 gm.	2.5	165	8.2	.238	.223	.5	462	.126	4.08	.522	.7
		12.0	1,108	29.2	.595	.703	3.57	1,983	.463	5.29	1.075	2.1
Dinner												
Baked Ham	3 1/2 oz., 100 gm.	10.0	298	21.2	.016	.256	2.5		.553		.133	
Baked Sweet Potato	1 m.l., 170 gm.	1.2	213	3.1	.056	.088	1.4	4,250	.192	18.*	.153	
Broccoli	6 med. stalks, 100 gm.	2.5	37	3.3	.146	.072	1.4	6,000	.09	136.	.35	
Whole Wheat Bread	2 slices, 60 gm.	1.8	148	5.4	.036	.222	1.8		1.192		.60	
Butter for broccoli, bread, and sweet potatoes	3 sm. pat, 21 gm.	1.8	153	1.5	.003	.003	.04	936				
Banana Cream Pie	1/6 pie	3.6	283	4.8	.109	.112	.81	1,117	.108	6.95	.245	.2
Coffee with cream and sugar		1.7	50	.4	.014	.012	.03	187.5	.005	.21	.03	
		22.6	1,193	40.2	.457	.817	8.78	12,490.5	2.14	161.16	1.511	.2
TOTAL FOR DAY		41.7	2,780	76.4	1.150	1.732	16.15	16,034.5	2.893	168.88	2.895	3.77

* Reference (8.)

TABLE IV.--DAILY MEAL PLAN NO. 2

Food	Approximate Measure	Cost	Cal.	Prot.	Ca	P	Iron	Vit. A.	Thiamin B ₁	Ascorbic Acid C	Ribo-flavin	Niacin
		ct.		gm.	gm.	gm.	mg.	I. U.	mg.	mg.	mg.	mg.
Breakfast												
Orange Juice, fr.	4 oz., 120 gm.	4.0	48		.030	.024	.4	270	.132	72.9	.072	
Refined Cereal	1/2 c. ok., 30 gm.	.8	106	3.6	.151	.177	12.8		.158			
Wheat Germ	2 T., 142 gm.	.8	54.6	3.5	.01	1.47	1.1	56	.42		.098	
Milk, whole	4 T., 60 gm.	1.3	42	2	.07	.096	.12	116	.032	1.0	.132	
Sugar	2 t., 5 gm.	.1	40									
Toast, white, enr.	2 slices, 20 gm.	1.8	80	2.4	.016	.032	.4				.02	
Butter	1 sm. pat, 7 gm.	.6	51	5.7	.001	.001	.01	312				
Jam	2 T., 40 gm.	1	118	.2								
Coffee		.8										
		11.2	539.6	17.4	.278	1.760	14.83	794	.742	73.9	.322	
Lunch												
Baked Beans	1 lg. serv., 150 gm.	1.1	583.8	35.2	.162	.674	10.74		.052	1.8	.004	
Boston Brown Bread	2 slices, 3" x 1/2", 35 gm.	1.7	140	3.4	.076	.092	1.4	102	.072		.074	
Fruit Cup:												
Orange	1/2 or., 50 gm.	2.0	25	.5	.012	.009	.15	112.5	.055	30.	.029	
Pineapple	1/2 slice, 25 gm., 15 gm. J.	1.5	22	.1	.008	.002	.05	6.2	.016	2.1	.006	
Bananas	1/2 banana, 50 gm.	1.5	50	.6	.004	.014	.3	140.	.040	5.5	.032	
Butter	1 lg. pat, 14 gm.	0.6	51	.05	.001	.001	.01	312				
Whole Milk	12 oz., 360 gm.	3.8	248	12.3	.425	.335	.75	639	.189	6.1	.783	1.0
		12.2	1119.8	52.15	.682	1.127	13.40	1311.7	.724	45.5	.928	1.0
Dinner												
Liver Loaf	1 lg. serv., 150 gm.	10.7	298.6	37.6	.032	.671	19.31	10507	2.345	52.0	3.11	27.3
Tomato Sauce	1/4 c.	1.5	246.3	4.2	.012	.054	.15	425	.101	12.9	.069	.02
Baked Potato	1 med. lg., 150 gm.	.7	129	3.	.020	.080	1.7	60	.195	16.5*	.09	2.3
String Beans	1/2 c., 100 gm.	3.0	36	2.	.039	.026	.7	1028	.064	3.	.138	.22
White Sauce (med.)	1/4 c.	1.2	110.	2.4	.039	.06	.64	434	.044	1.0	.045	
Celery	2-5" stalks, 40 gm.	1.0	8.8	.56	.028	.018	3.2	11.2	.014	2.6	.017	
Bread (enr.)	2 slices, 40 gm.	1.8	104.	3.4	.026	.040	.4		.088		.070	.36
Butter	1 lg. pat, 14 gm.	1.2	102	.1	.002	.002	.02	624				
Chocolate Cake, Choc. Icing	1 pc., 2 1/2" sq.	4.3	357	4.2	.057	.098	.7	381	.044		.106	
Coffee		.8										
		26.2	1391.7	59.46	.255	1.019	26.82	13,470.2	2.895	88.1	3.645	30.20
TOTAL FOR DAY		49.6	3051.1	129.01	1.215	3.936	55.05	15,535.9	4.061	207.5	4.895	31.2

*Reference (6)

TABLE V.--DAILY MEAL PLAN NO. 3

Food	Approximate Measure	Cost	Cal.	Prot.	Ca	P	Iron	Vit. A.	Thiamin B ₁	Ascorbic Acid C	Ribo-flavin	Niacin
		ct.		gm.	gm.	gm.	mg.	I.U.	mg.	mg.	mg.	mg.
Breakfast												
Prunes	4-5 med., 2 T. J.											
	100 gm.	2.1	169	1.1	.031	.047	1.8	700	.1	3.	.175	
Rolled Wheat	3/4 c., 30 gm.	.5	111	3.6	.017	.113	2.	6.7	.174		.048	1.4
Wheat Germ	2 T., 20 gm.	1.	39	2.5	.007	.105	.8	40.	.3		.07	.3
Top Milk	4 T., 4 oz.	.7	42	2.0	.070	.056	.12	58.	.016	1.2	.132	
Sugar	2 t., 10 gm.	.1	40									
Toast, white, enr.	2 slices, 20 gm.	1.8	80	2.4	.016	.032	.4				.012	
Butter	1 lg. pat, 14 gm.	1.2	102		.002	.002	.03	623.				
Coffee, 1 T. cream, 1 t. sugar	1 c.	1.7	50	.4	.014	.012	.03	187.5	.005	.21	.03	
		9.1	633	12.0	.157	.367	5.18	1,615.2	.595	4.41	.467	1.7
Lunch												
Rice and Cheese	3/4 c.	2.1	313.5	15.8	.534	.41	.86	809.2	.144	4.14	.779	4.8
Spinach, fr., ck.	70 gm.	2.	17.5	1.6		.034	2.4	12,250.	.086	13.37	.245	1.19
Bread, enr.	2 slices, 40 gm.	1.8	104.	3.4	.026	.04	.4		.088		.07	.36
Butter	1 sm. pat, 7 gm.	.6	51.		.001	.001	.01	312.				
Baked Apple	1, 115 gm.	1.	181.	.5	.031	.109	1.1	100.	.03	.115	.1	
Milk, whole	2 glasses, 16 oz.											
	480 gm.	5.	330.	16.4	.566	.446	1.	924.	.252	9.16	1.044	1.4
		12.5	997.0	37.7	1.158	1.040	5.77	14,395.2	.600	25.785	2.238	7.75
Dinner												
Chicken, roasted	100 gm.	15.6	198	26.2	.011	.271	2.6		.115		.075	6.5
Baked Potato	1 med., 150 gm.	.8	129	3.	.02	.08	1.7	60.	.195	16.5*	.09	2.3
Chicken Gravy	1/2 c.	1.5	193.6	3.8	.118	.094	.2	184.	.07	1.6	.222	3.34
Peas	1/2 c., 100 gm.	2.5	55	3.3	.011	.046	2.2		.25	12.	.14	
Salad:												
Grapefruit	1/2, 100 gm.	2.4	44	.5	.016	.016	.3	21.	.076	37.	.06	
Apple	1/2, 76 gm.	.5	48.4	.24	.006	.008	.24	52.4	.03	.8	.05	.38
French Dressing	2 T., 30 gm.	2.	190									
Lettuce	1 leaf, 10 gm.	1.	2	.1	.002	.004	.05	10.	.009	.2	.004	
Rolls, wh. wh.	2, 60 gm.	.8	149	4.2	.046	.090	.86	160.2	.146	.32	.122	.64
Butter for peas and rolls	3 sm. pat, 21 gm.	1.8	153	1.5	.003	.003	.04	936.8				
Apricot Whip	1/2 c.	.8	100.2	.74	.007	.011	.69	945.	.009	1.11	.029	.04
Sugar Cookie, plain	2-3" diam., 40 gm.	1.	134	2.2	.01	.028	.2	68.	.016		.03	
Coffee, 1 T. cream, 1 t. sugar	1 c.	1.7	50	.4	.014	.012	.03	187.5	.005	.21	.03	
		32.6	1,485.2	46.54	.264	.663	9.11	2,624.9	.921	69.84	.852	10.20
TOTAL FOR DAY												
		54.2	3,115.2	96.24	1.579	2.070	20.06	18,635.3	2.116	99.9	3.557	19.65

* Reference (8.)

TABLE VI.--DAILY MEAL PLAN NO. 4

Food	Approximate Measure	Cost	Cal.	Prot.	Ca	P	Iron	Vit. A.	Thiamin B ₁	Ascorbic Acid C	Ribo- flavin	Niacin
		ct.		gm.	gm.	gm.	mg.	I. U.	mg.	mg.	mg.	mg.
Breakfast												
Apricots, dried, ok.	4-6 halves, 30 gm.	1.4	88	1.6	.021	.031	2.3	3,150	.027	2.04	.081	
Shredded Wheat	1 biscuit, 30 gm.	1.0	110	3.1	.012	.097	1.4	3	.066		.055	
Top Milk	4 T., 60 gm.	.6	118	1.6	.056	.024	.12	709	.02	.85*	.1	
Sugar	2 t., 10 gm.	.14	40									
Toast, (enr.)	1 slice, 25 gm.	.9	65	2.1	.013	.025	.2		.017		.017	
Butter	1 sm. pat, 7 gm.	.6	51	.05	.001	.001	.01	312				
Cocoa	2 o., 10 oz. milk	3.2	326	11.6	.368	.366	1.0	480	.14	.6		
		<u>7.84</u>	<u>798</u>	<u>20.05</u>	<u>.471</u>	<u>.544</u>	<u>5.03</u>	<u>4,654</u>	<u>.27</u>	<u>2.89</u>	<u>.853</u>	
Lunch												
Cheese Fondue	1 serv., 75 gm.	5.3	249	12.2	.204	.245	2.01	129.5	.043		.285	.8
Salad:												
Orange	1/2 med., 50 gm.	2.0	25	.5	.012	.009	.15	117.5	.055	30.0	.059	
Grapefruit, can.	5 slices, 75 gm.	2.0	43.5	3.7	.012	.013	.225	16	.056	27.7	.045	
Sweet French Dressing	1 T.	1.0	12.8	.33		.001	.05		.01	.01		
Wheat Germ	2 T.	.8	56	3.5	.01	.147	1.	56	.42		.098	
Rolls, whole wheat	2, 70 gm.	.8	210	6.	.074	.12	1.2		.128		.074	
Butter	1 lg. pat, 14 gm.	1.2	102	.1	.002	.002	.02	623				
Cottage Pudding	1 serv.	1.8	261	4.9	.071	.071	.65	470	.129	.5	.159	.55
Lemon Sauce	2 T.	.7	44.9	.01	.001		.01	79	.001	.65		
Tea		.3										
		<u>15.9</u>	<u>1119.4</u>	<u>31.24</u>	<u>.386</u>	<u>.608</u>	<u>5.315</u>	<u>1491.</u>	<u>.842</u>	<u>58.86</u>	<u>1.440</u>	<u>1.35</u>
Dinner												
Fried Halibut	115 gm.	8.7	207	19.5	.021	.224	1.1		.036			
Tartar Sauce		1.	201.6	.38	.005	.014	.19	103	.009	.3	.013	
Escalloped Potatoes, 1/2 c. white sauce	140 gm.	2.9	272.2	7.2	.166	.19	1.9	605.6	.258	16.7	.35	2.36
Peas	1/2 c. so., 100 gm.	1.6	55	3.3	.011	.046	2.2		.25	12.	.14	
Celery	2-5" stalks, 40 gm.	1.3	8.8	.56	.028	.018	.32	11.2	.014	2.68	.017	
Bread (enr.)	1 slice, 20 gm.	.9	65	2.1	.016	.025	.25		.055		.044	.23
Butter for bread and peas	1 lg. pat, 14 gm.	1.2	102	.1	.002	.002	.02	623				
Ice Cream, homemade	1/2 c.	3.3	245	3.7	.126	.104	.2	785	.049		.219	
		<u>20.9</u>	<u>1156.6</u>	<u>36.84</u>	<u>.375</u>	<u>.623</u>	<u>6.18</u>	<u>2127.8</u>	<u>.671</u>	<u>31.68</u>	<u>.783</u>	<u>2.59</u>
TOTAL FOR DAY		<u>44.6</u>	<u>3074</u>	<u>68.13</u>	<u>1.232</u>	<u>1.775</u>	<u>16.52</u>	<u>8272.8</u>	<u>1.783</u>	<u>93.43</u>	<u>3.076</u>	<u>3.94</u>

*Reference (8)

MEAL PLAN NO. 5

Food		Cal.	Pro.	Ca	P	Iron	Vit. A.	Thiamin B ₁	Ascorbic Acid C	Ribo- flavin	Niacin
		ct.	gm.	gm.	gm.	mg.	I. U.	mg.	mg.	mg.	mg.
Breakfast											
Tomato Juice	1/2 c., 100 gm.	1.9	23.1	1.	.007	.016	.33	841.5	.092	13.7	.05
French Toast	2 slices	1.8	185	8.6	.111	.152	1.3	491.	.16	1.	.288
Corn Syrup (dark)	4 T., 80 gm.	2.1	236		.048	.001					.94
Butter	1 lg. pat, 1 1/4 gm.	1.2	102	.1	.002	.002	.02	623			
Bacon	1 slice, 10 gm.	3.0	63	.9	.001	.011	.2	1	.01		.01
Milk (whole)	12 oz., 360 gm.	3.8	245	12.3	.425	.235	.75	693	.189	6.12	.783
		11.9	856.1	22.9	.594	.520	2.60	2,428.5	.451	20.82	1.131
											1.94
Lunch											
Scrambled Eggs and	1, 50 gm.	2.1	79	6.4	.029	.112	1.6	750	.075		.175
Beef Brains	1 3/4 oz., 50 gm.	3.2	63.5	5.3					.125	7. *	.125
Spinach	1/2 c. ck., 100 gm.	3.3	25	2.3		.048	3.4	17,500	.175	19.1	.35
Vinegar		.1									1.7
Cornbread	2 pc., 2 x 2 x 1	1.7	241	6.3	.081	.109	.81	572	.140	.69	.182
Butter	1 lg. pat, 1 1/4 gm.	1.2	102	.1	.002	.002	.02	623			.64
Prune Whip		3.	178.2	2.9	.022	.046	1.03	356	.075	3.2	.104
Tea		.3									.3
		14.9	688.7	23.3	.134	.317	6.86	19,801	.590	29.99	.936
											5.64
Dinner											
Veal Roast (shoulder)	2 slices, 100 gm.	7.0	231	32.2	.015	.287	3.6		.175		.145
Mashed Potato	3/4 c. so., 150 gm.	1.0	243	4.7	.075	.123	1.8	567	.198	15.7	.15
Gravy	1/4 c.	1.2	94	2	.059	.047	.1	110	.035	.8	.111
Peas	70 gm.	1.6	38.5	2.3	.007	.032	1.54		.175	8.4	.098
Endive Salad	1/10 head, 25 gm.	.9	6	.4	.019	.01	.5	963	.025	1.6	.059
French Dressing	1 T., 15 gm.	1.0	95								
Bread, whole wheat	1 slice, 20 gm.	.9	74	2.9	.018	.111	.9		.096		.03
Butter for bread and peas	1 lg. pat, 1 1/4 gm.	1.2	102	.1	.002	.002	.02	624			
Apple Pie	1/6 pie	3.6	571	5.	.052	.054	.59	211.3	.207	1.9	.202
Coffee		.8									1.26
		19.2	1454.5	56.1	.247	.707	9.05	2,853.3	.911	28.9	.795
											9.43
TOTAL FOR DAY											
		46.0	2999.3	102.3	.975	1.544	18.51	25,303.8	1.952	79.71	2.86
											17.01

*Reference number 8.

TABLE VIII.--DAILY MEAL PLAN NO. 6

Food	Approximate Measure	Cost	Cal.	Prot.	Ca	P	Iron	Vit. A.	Thiamin B ₁	Ascorbic Acid C	Ribo- flavin	Niacin
		ct.		gm.	gm.	gm.	mg.	I.U.	mg.	mg.	mg.	mg.
Breakfast												
Grapefruit Juice, un. sw. can.	4 oz., 120 gm.	1.9	52	.4	.012	.02	.4	24	.09	37.3	.072	
Waffles	2 large	5.6	572	14.4	.282	.326	3.16	1,299	.518	2.0	.696	2.4
Jelly	2 T., 40 gm.	1.0	104									
Butter	1 lg. pat, 14 gm.	1.2	102	.1	.002	.002	.02	623				
Coffee		.8										
		<u>10.5</u>	<u>830</u>	<u>14.9</u>	<u>.296</u>	<u>.348</u>	<u>3.58</u>	<u>1,945</u>	<u>.608</u>	<u>39.3</u>	<u>.768</u>	<u>2.4</u>
Lunch												
Cream Tomato Soup	1 c.	3.5	170	6.6	.2	.172	.7	1,010	.156	17.6	.394	.52
Crackers, whole wheat	2	1.4	48	1.2	.002	.016	.2					
Lettuce and Lima Bean Salad	1 c. sc.	4.5	304	6.7	.035	.134	2.9	45	.201	2.4	.257	
Baking Powder Biscuits	2 large	1.	241	4.9	.072	.062	.6	51	.163	.5	.155	.56
Honey	1 T.	.5	64	.1	.001	.003	.2					
Butter	2 lg. pat, 28 gm.	2.4	204	.2	.004	.004	.06	1,246				
Tea		.3										
		<u>13.6</u>	<u>1,031</u>	<u>19.7</u>	<u>.314</u>	<u>.391</u>	<u>4.66</u>	<u>2,352</u>	<u>.520</u>	<u>20.5</u>	<u>.806</u>	<u>1.08</u>
Dinner												
Creamed Codfish with hard ck. egg	1/2 c., 240 gm.	8.	459	32.6	.231	.400	3.2	1,814	.207		.599	.8
Boiled Potatoes	1 small, 100 gm.	.4	85	2.	.013	.053	1.1	40	.130	10.5	.06	1.5
Carrot Salad with Cream, Sugar, and Vinegar Dressing	1/2 c.	2.9	81	1.4	.048	.040	.43	3,251	.081	16.	.097	.4
Bread, whole wheat	2 slices, 40 gm.	1.6	148	5.8	.036	.222	1.8		.192		.06	
Butter	1 lg. pat, 14 gm.	1.2	102	.1	.002	.002	.03	623				
Pineapple Upside Down Cake	1 lg. serv.	2.2	119	3.3	.04	.05	.65	235	.09	.9	.27	.8
Whipped Cream, sw.	1 T., 15 gm.	2.5	53	.3	.012	.009	.03	315	.005	.2*	.021	
		<u>19.0</u>	<u>1,047</u>	<u>45.5</u>	<u>.382</u>	<u>.776</u>	<u>7.24</u>	<u>6,278</u>	<u>.705</u>	<u>11.6</u>	<u>1.107</u>	<u>3.5</u>
TOTAL FOR DAY		43.1	2,908	80.1	.992	1.515	15.48	10,576	1.833	71.4	2.681	6.98

* Reference (8.)

TABLE IX.--DAILY MEAL PLAN NO. 7

Food	Approximate Measure	Cost	Cal.	Prot.	Ca	P	Iron	Vit. A.	Thiamin B ₁	Ascorbic Acid C	Ribo- flavin	Niacin
		ct.		gm.	gm.	gm.	mg.	I.U.	mg.	mg.	mg.	mg.
Breakfast												
Raisins	2/3 c. ck., 66 gm.	1.1	198	1.6	.036	.068	.2	32	.092	2.32	.078	
Poached Eggs	2 eggs, 150 gm.	6.	237	19.2	.087	.336	4.8	2,250	.225		.525	2.4
Whole Wheat Toast	2 slices, 60 gm.	1.8	148	5.8	.036	.222	1.8		.192		.06	
Butter	2 sm. pat, 14 gm.	1.2	102	.1	.002	.002	.02	623				
Jolly	2 T., 40 gm.	1.	104									
		<u>11.1</u>	<u>789</u>	<u>26.7</u>	<u>.161</u>	<u>.628</u>	<u>6.82</u>	<u>2,905</u>	<u>.509</u>	<u>2.32</u>	<u>.663</u>	<u>2.4</u>
Lunch												
Baked Sweet Potato	1 lg., 170 gm.	2.1	213	3.1	.056	.088	1.4	4,250	.191	14.77	.153	
Cauliflower, fr., ck.	4 r.T., 70 gm.	1.6	22	1.7	.018	.046	.6	35	.115	29.5	.129	
Mock Hollandaise Sauce	2 T.	1.2	78	1.5	.036	.042	.092	421.2	.032	1.47	.074	.15
Dill Pickles	1 lg., 100 gm.	2.0	11	.5	.077	.052	.8					
Bread, enr.	1 slice, 20 gm.	.9	52	1.7	.013	.02	.2		.044		.035	.18
Butter for bread and sweet potato	2 lg. pat, 28 gm.	2.4	204	.2	.004	.004	.06	1,246				
Gingerbread	1 serv.	1.3	141	1.9	.046	.25	.9	47	.05	.047	.23	.5
Milk	16 oz., 240 gm.	5.	330	16.4	.476	.446	1.	924	.252	8.16	1.044	1.4
		<u>16.5</u>	<u>1,051</u>	<u>27.0</u>	<u>.726</u>	<u>.723</u>	<u>4.452</u>	<u>6,923.2</u>	<u>.684</u>	<u>53.947</u>	<u>1.665</u>	<u>2.23</u>
Dinner												
Pork Chop (shoulder)	140 gm.	8.3	506	40.8	.014	.502	4.	tr.	.84		.28	11.2
Potato, boiled (jacket)	100 gm.	.4	85	2.	.013	.053	1.1	40	.13	11.	.06	1.5
Gravy	1/4 c.	.6	77	1.9	.059	.047	.1	92	.035	.8	.111	.17
Swiss Chard, coml. can.	1/2 c., 100 gm.	3.	25	1.4		.05	3.1	9,000		15.*	.075	
Bread, enr.	2 slices, 20 gm.	1.8	104	3.4	.026	.04	.4		.088		.07	.36
Butter	1 lg. pat, 14 gm.	1.2	102	.1	.002	.002	.02	623			.033	
Apple Sauce, sw.	1/2 c. sc.	1.2	80	.2	.005	.008	.2	32		.2	.012	
Oatmeal Cookies	2	1.4	252	2.6	.036	.05	1.06	67.3	.085	.21	.058	.18
		<u>17.9</u>	<u>1,231</u>	<u>52.4</u>	<u>.155</u>	<u>.752</u>	<u>9.98</u>	<u>9,854.3</u>	<u>1.178</u>	<u>27.21</u>	<u>.699</u>	<u>13.41</u>
TOTAL FOR DAY		46.7	3,071	106.1	1.042	2.103	21.252	19,682.5	2.371	83.47	3.027	18.04

* Reference (8.)

TABLE X.--DAILY MEAL PLAN NO. 8

Food	(A) Approximate Measure	Cost	Cal.	Prot.	Ca	P	Iron	Vit. A.	Thiamin B ₁	Ascorbic Acid C	Ribo- flavin	Niacin
		ct.		gm.	gm.	gm.	mg.	I.U.	mg.	mg.	mg.	mg.
Breakfast												
Bananas, fresh	1 small, 100 gm.	3.2	99	1.2	.008	.028	.6	280	.08	11.0	.062	
Cream, light	2 oz., 56.7 gm.	1.6	118	1.6	.056	.048	.12	710	.02	.84*	.1	
Biscuits	3 lg.	1.5	362	7.3	.108	.093	.9	76	.244	.75	.228	.84
Butter	1 lg. pat, 14 gm.	1.2	102	.1	.002	.002	.03	623				
Jam	3 T., 60 gm.	1.5	177	.3								
Coffee	1 c.	.8										
		<u>9.8</u>	<u>858</u>	<u>10.5</u>	<u>.174</u>	<u>.171</u>	<u>1.65</u>	<u>1,689</u>	<u>.344</u>	<u>12.59</u>	<u>.390</u>	<u>.84</u>
Lunch												
Chicken Salad	1 serv.	9.9	263.2	21.1	.038	.23	2.5	831	.206	3.8	.081	5.
Honey-Nut Bread Sandwiches, 4 slices bread 2" x 4" x 1/4"	2	6.2	720	12.2	.104	.292	2.82	713	.366	3.6	2.888	1.52
Cocoa	2 c., 10 oz. milk	3.0	326	11.6	.368	.366	1.0	480	.14		.6	
		<u>19.1</u>	<u>1,309.2</u>	<u>44.9</u>	<u>.510</u>	<u>.888</u>	<u>6.32</u>	<u>2,024</u>	<u>.712</u>	<u>7.4</u>	<u>3.569</u>	<u>6.52</u>
Dinner												
Rolled Beef Roast (rump)	3 1/2 oz., 100 gm.	9.0	173	17.2	.013	.204	3.	30	.193		.25	
Baked Potato	1 med. lg, 150 gm.	.6	129	3.	.020	.080	1.7	60	.193	16.5*	.09	2.3
Rutabagas, creamed	1/2 c. ck., 100 gm.	.9	41	1.1	.074	.056	.5	25	.045	82.2	.093	
White Sauce, med.		.6	55	1.25	.034	.03	.32	217	.022	.5	.069	.11
Pickled Peaches	1/2 peach, 50 gm.	1.	37.5	.2	.005	.017	.1	750	.045	1.5	.045	
Bread, enr.	1 slice, 20 gm.	.9	52	1.7	.013	.02	.2		.044		.035	.18
Butter	1 lg. pat, 14 gm.	1.2	102	.1	.002	.002	.03	623				
Bread Pudding	1 c.	4.2	294.7	9.6	.220	.219	1.36	568	.170	3.12	.459	.93
Lemon Sauce	2 T.	.7	44.9	.01	.001		.01	79	.001	.65		
Coffee	1 c., 8 oz.	.8										
		<u>19.9</u>	<u>929.1</u>	<u>33.16</u>	<u>.382</u>	<u>.628</u>	<u>6.22</u>	<u>2,352</u>	<u>.717</u>	<u>104.47</u>	<u>1.041</u>	<u>3.52</u>
TOTAL FOR DAY		<u>48.8</u>	<u>3,096.3</u>	<u>88.56</u>	<u>1.066</u>	<u>1.687</u>	<u>14.19</u>	<u>6,065</u>	<u>1.773</u>	<u>124.46</u>	<u>4.99</u>	<u>10.88</u>

* Reference (8.)

TABLE XI.--DAILY MEAL PLAN NO. 9

Food	Approximate Measure	Cost	Cal.	Prot.	Ca	P	Iron	Vit. A.	Thiamin B ₁	Ascorbic Acid C	Ribo- flavin	Niacin
		ct.		gm.	gm.	gm.	mg.	I.U.	mg.	mg.	mg.	mg.
Breakfast												
Oranges, sliced	1, 100 gm.	4.0	50	.9	.025	.019	.3	225	.11	60.00	.059	
Shredded wheat bits	1 oz., 30 gm.	1.4	110	3.1	.012	.097	1.4	3	.066		.055	
Top Milk	4 oz., 4 T.	.7	42	2.	.07	.056	.12	58	.016	1.2	.132	
Sugar	2 t., 10 gm.	.1	40									
Toast, enr.	2 slices, 40 gm.	1.8	104	3.4	.026	.040	.4		.088		.07	.36
Butter	1 lg. pat, 14 gm.	1.2	102	.1	.002	.002	.03	623				
Cocoa	2 c., 10 oz. milk	3.	326	11.6	.368	.366	1.	480	.14		.6	
		12.2	774	21.1	.503	.578	3.25	1,389	.420	61.2	.916	.36
Lunch												
Creamed Dried Beef	1 full cup, 300 gm.	7.5	460	42.5	.26	.565	5.5	870	.27		.6	
Toast, enr.	2 slices, 20 gm.	1.8	104	3.4	.026	.04	.4		.088		.07	.36
Butter	1 sm. pat, 7 gm.	.6	51	.05	.001	.001	.01	312				
Mustard Greens, coml. can.	1/2 c. ck., 150 gm.	4.	42	3.5	.330	.099	8.4	15,300	.21	187.*	.563	
Apple Sauce, sweetened	1/2 c. se., 100 gm.	1.2	80	.2	.005	.008	.2	32		.4	.03	
Doughnuts	2-3" diam., 80 gm.	1.6	340	5.2	.054	.112	1.0	202	.06		.124	
Tea		.3										
		17.0	1,077	54.85	.676	.825	15.51	16,716	.628	187.4	1.387	.36
Dinner												
Scalloped Oysters	1 serv.	7.2	224	8.7	.072	.146	4.98	807	.055	.17	.056	.18
Baked Potato	1 med. lg., 150 gm.	.6	129	3.	.020	.080	1.7	60	.195	16.5*	.09	2.3
Waldorf Salad	1 serv., 1/2 c.	5.2	209.1	2.5	.046	.071	.89	103.6	.228	5.52	.087	.5
Bread, enr.	2 slices, 40 gm.	1.8	104	3.4	.026	.04	.4		.088		.07	.36
Butter	2 sm. pat, 14 gm.	1.2	102	.1	.002	.002	.03	623				
Pumpkin Pie	1 serv., 1/6 pie	3.5	377.6	7.	.12	.14	1.32	1,628	.825	1.2	.202	.74
		19.5	1,145.7	24.7	.286	.479	9.32	3,221.6	1.391	23.39	.506	4.08
TOTAL FOR DAY		48.7	2,996.7	100.6	1.032	1.862	28.08	21,326.6	2.439	271.99	2.809	11.26

* Reference (6.)

TABLE XII.--DAILY MEAL PLAN NO. 10

Food	Approximate Measure	Cost	Cal.	Prot.	Ca	P	Iron	Vit. A.	Thiamin B ₁	Ascorbic Acid C	Ribo-flavin	Niacin
		ct.		gm.	gm.	gm.	mg.	I.U.	mg.	mg.	mg.	mg.
Breakfast												
Grapefruit, fr.	Half, med., 100 gm.	3.0	44	.05	.017	.018	.3	21	.075	37.	.06	
Rolled Oats	2/3 c. ck., 30 gm.	.6	119	4.3	.024	.110	1.6		.168		.045	
Top Milk	2 oz., 4 T., 60 gm.	.7	62	1.0	.035	.028	.06	58	.011	1.1	.027	
Sugar	2 t., 10 gm.	.1	40									
Toast, enr.	2 slices, 40 gm.	1.8	104	3.4	.026	.040	.4		.088		.066	.36
Butter	1 lg. pat., 14 gm.	1.2	102	.1	.002	.002	.03	623				
Cocoa	2 c., 10 oz. milk	7.	326	11.6	.368	.366	1.0	480	.14		.6	.7
		10.4	797	20.9	.472	.564	3.39	1,182	.482	38.1	.798	.73
Lunch												
Toasted Cheese Sandwiches	2 lg., 4 slices bread, enr.	7.8	487	20.5	.539	.429	1.42	998.8	.264		.312	
Mixed Fruit Salad:												
Ban., Orange, Pineapple, Apple	1/2 c.	4.2	85	.6	.013	.017	.28	188.2	.051	9.79	.042	
Whipped Cream Dressing	30 gm.	1.7	164	.5	.015	.012	.13	395.5	.01	.19*	.03	
Cream, 1 T., Mayon., 1 T.	1 lg. glass, 8 oz.	2.5	165	6.2	.283	.223	.5	1,462.	.126	4.2	.522	
Milk		16.2	901	29.8	.850	.681	2.33	3,044.5	.451	14.18	.906	
Dinner												
Pork Shoulder Roast	1 serv., 100 gm.	5.5	169	29.7	.017	.32	5.5	tr.	.6		.2	8.
Boiled Potatoes	2 med., 200 gm.	.8	176	4.	.026	.106	2.2	80	.26	21.	.12	3.
Gravy	1/2 c.	1.2	154	3.8	.118	.094	.2	184	.07	1.6	.222	.34
Parsnips, fried	100 gm.	1.2	83	1.5	.057	.08	.7		.155	18.		
Lima Beans, cr. (dried ck.)	30 gm., 1/2 c. ck.	.8	102	6.2	.022	.114	2.7		.158		.237	
Cream (thin, for beans)	1 T., 15 gm.	.8	31	.4	.015	.013	.03	187	.005	22.	.027	
Bread, enr.	2 med. sl., 40 gm.	1.8	104	3.4	.026	.04	.4		.088		.07	.36
Butter	1 lg. pat, 14 gm.	1.2	102	.1	.002	.002	.02	623.				
Custard	1 serv., 1/2 c.	3.6	202	8.9	.163	.196	1.5	755	.114		.371	.65
Molasses Cookies	2	1.2	224	1.6	.094	.022	1.05	5.8	1.642		.043	.18
		18.1	1,341	59.6	.500	.987	14.30	1,834.8	3.092	42.6	1.290	12.53
TOTAL FOR DAY		44.7	3,039	110.3	1.822	2.232	20.02	6,061.3	4.025	94.88	2.994	13.26

* Reference (8.)

TABLE XIII.--DAILY MEAL PLAN NO. 11

Food	Approximate Measure	Cost	Cal.	Prot.	Ca	P	Iron	Vit. A.	Thiamin B ₁	Ascorbic Acid C	Ribo-flavin	Niacin
		ct.		gm.	gm.	gm.	mg.	I.U.	mg.	mg.	mg.	mg.
Breakfast												
Prunes	4-5 med., 2 T. J., 100 gm.	1.6	169	1.1	.031	.047	1.8	700	.1		.175	
Pancakes, enr.	1-6" diam.	1.0	150	5.	.081	.075	.6	141	.131	.69	.176	.56
Butter	1 lg. pat, 1 ⁴ gm.	1.2	102	.1	.002	.002	.02	623				
Syrup, corn, dark	2 T., 40 gm.	1.0	118		.024	.002						
Egg, soft ck.	1, 50 gm.	3.0	79	6.4	.029	.112	1.6	750	.075		.17	.8
Milk	8 oz., 240 gm.	2.5	165	8.2	.283	.223	.5	462	.126		.522	
		10.3	783	20.8	.490	.461	4.52	2,676	.432	.69	1.043	1.36
Lunch												
Salad:												
Orange, sliced	1 med., 100 gm.	4.0	50	.9	.025	.019	.3	225	.11	60.	.059	
Apple	1 sm., 100 gm.	1.1	64	.3	.007	.011	.3	70	.04	1.96	.067	.74
Endive	5 sm. leaves, 12 gm.	.5	3	.2	.01	.005	.25	461.5	.013	.82	.029	
French Dressing	1 T., 30 gm.	1.0	95									
American Cheddar Cheese	2 slices, 56 gm.	3.6	224	15.6	.494	.348	.6	340	.012		.149	
Whole Wheat Bread	2 slices, 60 gm.	1.8	148	5.8	.039	.222	1.8		.192		.06	
Butter	1 lg. pat, 1 ⁴ gm.	1.2	102	.1	.002	.002	.03	623				
Molasses Cookies	2	1.2	224	1.6	.054	.022	1.05	5.8	1.512		.043	.18
Cocoa	2 c., 10 oz. milk	3.0	326	11.6	.368	.366	1.0	480	.14		.6	.37
		17.4	1,236	36.1	1.000	.995	5.33	2,225.3	2.149	62.78	1.007	1.29
Dinner												
Lamb Stew	3 oz. ck., 90 gm.	2.5	207	16.2	.012	.186	2.7		.12		.126	6.
Onions	2/3 lg., 66 gm.	.4	32	1.0	.022	.03	.4	tr.	.042	5.6	.03	
Carrot	1 med., 50 gm.	.4	30	.8	.030	.03	.4	4,032	.06	2.8	.012	.3
Potato	1 med., 100 gm.	.4	85	2.0	.013	.053	1.1	40	.130	10.2	.06	1.6
Pickles, mixed sweet	1 1/2 T., 50 gm.	.5	53	.5								
Bread, whole wheat	2 slices, 60 gm.	1.8	148	5.8	.036	.222	1.8		.096		.06	
Butter	1 lg. pat, 1 ⁴ gm.	1.2	102	.1	.002	.002	.03	623				
Ice Cream	1/2 c., 1/8 qt.	3.3	245	5.2	.109	.122	.8	721	.067		.235	
Sponge Cake	1 med. pc., 50 gm.	1.9	160	3.4	.014	.056	.6	300	.036		.074	
		12.4	1,062	35.0	.231	.701	7.83	5,716	.551	18.6	.597	7.9
TOTAL FOR DAY		40.1	3,081	90.9	1.668	2.157	17.68	10,617.3	3.132	82.07	2.647	10.55

TABLE XIV.--DAILY MEAL PLAN NO. 12

Food	Approximate Measure	Cost	Cal.	Prot.	Ca.	P	Iron	Vit. A.	Thiamin B ₁	Ascorbic Acid C	Ribo-flavin	Niacin
		ct.		gm.	gm.	gm.	mg.	I.U.	mg.	mg.	mg.	mg.
Breakfast												
Apple Sauce, sw.	1/2 c. sc., 100 gm.	1.2	80	.2	.005	.008	.2	32		.4	.033	
Sausage	1/6 lb., 75 gm.	4.2	234	12.2	.007	.132	1.8					
Egg	1, 50 gm.	3.	79	6.4	.029	.112	1.6	750	.075			
Potatoes, American fried	100 gm.	.4	85	2.	.013	.053	1.1	40	.130	6.8	.060	
Bacon fat	1 T., 15 gm.		135									
Bread, enr., toast	1 slice, 10 gm.	1.8	52	1.7	.013	.02	.2		.044		.035	.18
Butter	1 sm. pat, 7 gm.	.6	51		.001	.001	.01	321				
Jam	2 T.	1.	118	.2								
Coffee		.8										
		13.0	834	22.7	.068	.326	4.91	1,143	.249	7.2	.128	.18
Lunch												
Potato Salad (2 leaves ch. lettuce)	6 hp. T., 280 gm.	4.6	372	4.8	.044	.144	2.8	330	.298	32.	.172	
Tomato, fr.	2 sl., 1/3 med., 33 gm.	.6	7	.3	.003	.009	.2	570	.192	3.2	.153	
Cottage Cheese	2/3 c., 150 gm.	5.	151	28.8	.123	.395	1.5	105				
Bread, whole wheat	1 slice, 20 gm.	.9	74	2.9	.018	.111	.9		.048		.01	
Butter	1 sm. pat, 7 gm.	.6	51		.001	.001	.01	321				
Jello	1/5 pkg., 65 gm.	1.	72	1.7								
Whipped Cream, sw., heavy	2 T., 30 gm.	3.8	106	.6	.024	.018	.06	630	.009	.2	.042	
Cocoa	1 c., 5 oz. milk	1.5	153	5.8	.184	.183	.5	240	.07		.3	
		18.0	996	44.9	.397	.861	5.97	2,196	.617	35.4	.677	
Dinner												
Liver, Beef	4 oz., 120 gm.	5.	158	23.6	.010	.448	14.6	9,000	.420	38	2.64	21.
Bacon	2 slices, 2 gm.	2.	126	1.8	.002	.022	.4	2	.02		.021	
Onions, fried	1 lg., 100 gm.	.8	49	1.4	.032	.044	.5	tr.	.062	6	.045	
Cabbage	2/3 c. ck., 100 gm.	.4	29	1.4	.045	.028	.4	55	.105	70	.100	.3
Vinegar, Butter Dressing		.7	51		.001	.001	.01	312				
Bread, enr.	1 slice, 20 gm.	1.8	52	1.7	.013	.02	.2		.044		.035	.18
Butter	1 sm. pat, 7 gm.	.6	51		.001	.001	.01	312				
Cocoanut Custard Pie	1 serv., 1/6 pie	5.	445	8.9	.122	.191	1.9	628	.11		.284	
Milk, whole	8 oz., 240 gm.	2.5	165	8.2	.283	.223	.5	462	.126	4.2	.522	.7
		18.8	1,126	47.0	.509	.978	18.52	10,771	.887	118.2	3.647	22.28
TOTAL FOR DAY		49.8	2,956	114.6	.974	2.165	29.40	14,110	1.753	160.8	5.604	22.46

by the use of a citrus fruit or tomato juice for breakfast, or if prunes, apricots, or bananas were used, a substantial amount of vitamin A was contributed toward the daily allowance of this factor. Fair amounts of thiamin, riboflavin, and niacin were furnished by whole wheat cereals, wheat germ, whole wheat flour or enriched white flour for pancakes, waffles or biscuits. Whole Wheat or enriched bread was always used for toast and French toast, in order to help provide riboflavin, niacin, and thiamin, which are the most difficult constituents to supply in meal plans, unless meats rich in these elements are included. Iron was supplied in greater quantities in whole wheat than in enriched bread, but some people find whole wheat products are difficult to digest, so that it was thought worthwhile to include both kinds of bread. The amount of iron, even in minimum enriched bread, is helpful in supplying body needs. Iron is also derived from prunes, eggs, and apricots. Milk, or any beverage made with milk, helps to provide calcium, phosphorus, thiamin and riboflavin. Bacon, where used, raised calorie intake and added flavor to the meal, however, it was considered an expensive food for the nutrient value provided. The costs of the breakfasts planned for a moderately active man ranged from 7.8 cents to 12.2 cents. Some of the foods for breakfast, which are cheap and yet nutritious, are cereals, particularly cooked cereals. When served with cream and sugar they often cost less than two cents per serving. The ready-to-eat cereals usually cost more per serving as purchased, but if the money value of the time and energy used in preparing cooked cereals were added to their initial cost, there might not be a very great difference.

Milk is a rich and cheap source of calcium and phosphorus (18). Both milk and egg are fair sources of "complete" proteins, essential to growth and life (38). Therefore, it seems advisable to include milk and egg frequently in the breakfast menu.

Lunch menus also followed a general pattern. A meat substitute dish was generally served in order to aid in bringing the protein content of the day's meals to the desired level and to supply some of the vitamins of the B- complex, often associated with protein foods. For this purpose, eggs, American cheese and cottage cheese were used. The cheeses also provide considerable amounts of calcium, phosphorus, vitamin A, and some riboflavin. They may be combined with macaroni, spaghetti, and rice to raise the caloric value.

Vegetables were often used in the lunch menu in salads or in some other form. Spinach, mustard greens, and Swiss chard are especially adapted to this type of meal, for they add color and also provide generous amounts of vitamin A. In fact, these greens contain much more vitamin A in one serving than is needed for the total daily allotment. Simple desserts such as fruit sauces, puddings, or cookies, furnished variety and caloric value. A beverage, often milk, was served with the lunch. Some hot dish or hot beverage was always included in the menu.

Lunches, planned for the moderately active man, varied in price from 12.5 cents to 19.8 cents. The highest-priced foods were generally the meat substitutes in the form of eggs, cheese, creamed dried beef or meat salads. Since these were main dishes, and contributed many nutrients, their high cost seemed justified.

Hot breads are well adapted to lunch menus as they offer variety in temperature of food, are relatively inexpensive, and have a certain amount of psychological value. The occasional use of well-prepared baked beans and brown bread lends interest to a lunch besides furnishing iron, riboflavin, and thiamin at a low cost per serving.

In general, the dinner menus followed a definite plan; a serving of meat or fish; potato (unless served at another meal during the day); a vegetable or fruit to supply additional minerals and vitamins; a dessert; and a beverage. Various types of meats were included and generous servings varied in cost from 7 to 10 cents each. A serving of roast chicken was even more expensive, amounting to 15 cents. In contrast, liver, brains, and other glandular meats, having the highest nutritional values were lowest in cost for a comparative serving.

Potatoes not only provide calories and bulk but are fair sources of iron, thiamin, riboflavin, and niacin and cost less than one cent per average serving. Many other vegetables possessing valuable nutrients can be included in a dinner plan at very reasonable costs. Of special note are ruta-bagas, turnips, parsnips, cabbage, carrots, squash, peas, beans, broccoli, and sweet potatoes. A stalk or two of celery or some pickles in a dinner add little except crispness or flavor, but are inexpensive. Sliced fresh tomatoes add color, tart flavor, ascorbic acid, and vitamin A, yet do not greatly increase the price.

The costs of the dinner menus varied from 14 to 32.5 cents, the meats and desserts being the high cost items. Desserts such as pie and cake, usually cost over 4 cents per serving, while ice cream, apple sauce with

cookies and fruit whips were less expensive.

Throughout this study an attempt was made to include foods that contain more than one nutrient in fairly large amounts and these foods proved to be the most economical in the long run. Liver would be an outstanding example of one of these highly nutritive foods, considered from many standpoints.

Meeting the daily calcium requirement did not seem to be a particularly difficult problem, for the meals were originally planned to use at least one pint of milk daily, and this amount supplied three-fourths of the calcium allotment. The remaining one-fourth was furnished by the calcium in fruits, vegetables, and meats, each food contributing a small amount. It will be noted that, without the essential pint of milk, it would be very difficult to get the required 0.8 gram of calcium, each day.

One of the nutrients that is apt to be low in some menus is ascorbic acid for it is entirely lacking in many foods. Ascorbic acid is furnished in small amounts by most fruits and vegetables, but citrus fruits, greens, and tomatoes are the richest sources. If one of these foods is included in each day's meal plans, about half the needed ascorbic acid is provided, while milk, other fruits and vegetables supply the remaining part of the 75 milligrams.

Protein is a constituent of nearly every food, but meats, and foods recognized as meat substitutes, are the best sources. For the moderately active man, whose weight is estimated at 70 kilograms, at least 70 grams of protein are needed. The average serving of meat, fish, or poultry provides about one-third of this amount, while eggs, milk and cheese, are

fair sources. It seems imperative, therefore, to include one serving of meat, and one serving of a meat-substitute dish daily to fill the need for protein.

If one thin pat of butter is eaten at each meal during a day it will supply about one-fifth the daily allowance for vitamin A. A pint of milk furnishes approximately one fifth more of the vitamin and the remaining three fifths are provided by egg yolk, peaches, oranges, apricots, prunes, pumpkin, squash, greens, carrots, and glandular meats, the latter containing approximately 5,000 I.U. in one serving.

From this discussion it is evident that planning adequate meals appropriate for family use is not an easy task. To find combinations of foods that will supply all of the nutrients in their recommended amounts, that will also be palatable, attractive, and relatively inexpensive, presents many problems. There are a few foods such as liver, milk, greens, and beans, that contain many of the nutrients in fairly large amounts, but if they were used continuously, the result would be a very monotonous diet. Variety in food seems to be essential for satisfactory meals, and to provide both variety and high nutritive value requires a thorough knowledge of food constituents and most careful planning. If the nutritional quality of a meal is given first consideration, it seems extremely difficult to supply all of the specific nutrients in desirable amounts at low cost.

SUMMARY AND CONCLUSIONS

1. In this study, a series of twelve daily meal plans was prepared to serve as guides for selecting foods to fulfil the human nutritional require-

ments adopted and recommended by the National Research Council in 1941.

2. Each day's meals included foods that were available locally, were appropriate for family use, and would furnish the recommended allowances of certain specific nutrients.

3. The daily dietary allowances for the moderately active man, weighing about 70 kilograms, were selected as the working basis for each daily meal plan. They are as follows: calories, 3,000; protein, 70 gm.; calcium, 0.8 gm.; phosphorus, 1.3 gm.; iron, 12 mg.; vitamin A, 5,000 International Units; thiamin, 1.8 mg.; ascorbic acid, 75 mg.; riboflavin, 2.7 mg.; and niacin (nicotinic acid), 18 mg.

4. The results of this study indicate that planning adequate meals to meet all of the above requirements presents many problems.

5. One serving of meat and one of a meat substitute dish, containing eggs or cheese, were needed each day to provide the larger part of the daily protein allowances.

6. The daily calcium and phosphorus requirements could be met only by including at least one pint of milk in the daily meal plan.

7. The needed iron was generally supplied by including meats, particularly beef and liver, molasses, greens, and dried fruits in the various day's menus.

8. One serving of any of the following foods at some meal during the day furnished the necessary amount of vitamin A: liver, greens, broccoli, apricots, squash, or sweet potatoes. A large pat of butter at each meal provided almost half the amount.

9. The allotted amount of thiamin was supplied by including meats, especially pork, in one of the day's meals, with additional amounts furnished by whole grain and enriched cereals and bread, wheat germ, potatoes and greens.

10. About half the needed daily amount of ascorbic acid was furnished in a serving of either citrus fruit, tomatoes, greens, or cabbage.

11. Riboflavin was obtained in small amounts from a number of foods, particularly liver, muscle meats, milk, broccoli, greens, dried navy and lima beans, red salmon, and prunes.

12. The nutrient niacin, about which we have the least information was probably furnished by servings of liver, fresh fish, pork, and other meats, potatoes and whole wheat cereals.

13. The nutrient factors most difficult to incorporate in sufficient

amounts in these planned family meals were riboflavin, thiamin, niacin, vitamin A, and calcium.

14. White potatoes, besides being a fair source of thiamin, riboflavin, and niacin, contain significant amounts of every other nutrient (except D), and are very inexpensive. They deserve a place in family meals at least once a day.

15. More attention should be given to the use of glandular meats. Not only are they inexpensive, but they are among the richest sources of thiamin, riboflavin and niacin, which are so difficult to furnish, and they also provide generous amounts of vitamin A, and iron.

16. Foods contributing significant amounts of more than one nutrient should be included frequently in the daily meals. Examples of these foods are: liver, dried navy beans, cheese, milk, rolled oats, molasses, greens, potatoes, canned peas, sweet potatoes, beef, pork, prunes and tomatoes.

17. The size of serving of some of the less expensive yet nutritious foods may be increased in order to get more food value for the money expended.

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ABBREVIATIONS AND CHEMICAL SYMBOLS USED

A	vitamin A	No.	number
approx.	approximate	oz.	ounce(s) fluid or Troy
av.	average	P.	phosphorus
c	cup	pc.	piece
ct.	cent(s)	Pro.	protein
Ca.	Calcium	pt.	pint
Cal.	Calorie(s)	qt.	quart
coml. can.	commercial canned	R.	raw
ch.	chopped	r.	rounded
ck.	cooked	sc.	scant
cr.	cream(ed)	serv.	serving
diam.	diameter	sl.	slice(s)
enr.	enriched	sm.	small
fr.	fresh	sq.	square
gm.	gram(s)	str.	strained
gr.	grated	sw.	sweetened
hp.	heaping	T.	tablespoonful-level
"	inch(es)	t.	teaspoonful-level
I.U.	International Unit	tr.	trace
J.	juice	un. sw.	unsweetened
lb.	pound(s)	Vit.	vitamin
lg.	large	wh.wh.	whole wheat
med.	medium	Wh.	whipped
mg.	milligram	wt.	weight
min.	minimum		

LIST OF REPRESENTATIVE FOOD PRICES ON OCTOBER 1, 1941*

Food Material	Unit of Purchase	Cost in Cents
BREADS AND CEREALS		
Bread, white, enr.	24 oz.	14.0
Bread, whole wheat	24 oz.	14.0
Cereal, whole wheat (to be ck.) . .	32 oz.	22.0
Cereal, wheat, shredded	12 oz.	15.0
Farina	28 oz.	22.0
Macaroni	16 oz.	6.3
Oats, rolled	20 oz.	11.0
Rice, white	16 oz.	8.7
Wheat Germ	14 oz.	23.0
Wheat, cracked	32 oz.	19.0
Wheat, rolled	32 oz.	17.0
CRACKERS		
Crackers, soda	16 oz.	16.0
Crackers, whole wheat	8 oz.	25.0
FLOURS		
Cornmeal, yellow	24 oz.	12.0
Flour, enr., min.	16 oz.	3.7
Flour, white pastry	16 oz.	3.4
Flour, whole wheat	16 oz.	4.5
DAIRY PRODUCTS		
Butter	16 oz.	40.0
Cheese, American Cheddar	16 oz.	29.0
Cottage	12 oz.	15.0
Cream, light	8 oz.	9.0
Cream, heavy	8 oz.	15.0
Milk, whole	32 oz.	10.0
EGGS, medium extras	1 doz.	36.0
FATS		
Dressing, Mayonnaise, coml. can. . .	32 oz.	35.0
Hydrogenated Fat	16 oz.	24.0
Lard	16 oz.	16.0
Oil, vegetable	8 oz.	14.0
FISH		
Cod, salt	16 oz.	25.0
Halibut, fresh	16 oz.	35.0
Oysters, fresh	1 qt.	50.0

*Products of medium quality were selected at these prices unless otherwise stated.

Food Material	Unit of Purchase	Cost in Cents
FRUITS AND FRUIT JUICES		
Apple, fresh	16 oz.	6.4
Apricots, dried	32 oz.	44.0
Bananas, fresh	16 oz.	9.6
Grapefruit, fresh	16 oz.	6.0
Grapefruit, coml. can.	No. 2	12.5
Grapefruit juice, coml. can.	46 oz.	21.0
Lemons, fresh	1 doz.	30.0
Orange, fresh, No. 150	1 doz.	38.0
Peaches, coml. can.	No. 2 $\frac{1}{2}$	25.0
Pineapple, coml. can. (sliced or crushed).	No. 2 $\frac{1}{2}$	23.5
Prunes, dried	16 oz.	11.5
Pumpkin, coml. can.	No. 2 $\frac{1}{2}$	13.0
Raisins, seedless	16 oz.	7.5
MEATS		
Bacon, medium fat	16 oz.	45.0
Beef, brains	8-12 oz. 1 "set"	15.0
Beef, dried	16 oz.	50.0
Beef, ground, hamburger	16 oz.	25.0
Beef, roast, rolled	16 oz.	36.0
Chicken, hen	16 oz.	26.0
Ham, smoked	16 oz.	30.0
Lamb, stew	16 oz.	10.0
Liver, beef	16 oz.	20.0
Pork, shoulder chop	16 oz.	25.0
Pork, shoulder roast	16 oz.	25.0
Sausage, country style	16 oz.	25.0
SUGARS		
Corn syrup, dark	3 lbs.	25.0
Honey	No. 2 $\frac{1}{2}$	25.0
Jam, homemade	12 oz.	6.0
Jelly, homemade	12 oz.	6.0
Molasses	2 lb. 5 oz.	33.0
Sugar, brown	16 oz.	8.5
Sugar, white granulated	16 oz.	6.0
VEGETABLES AND JUICES		
Beans, lima, dried	16 oz.	12.5
Beans, navy, dried	16 oz.	6.4
Beans, string, coml. can.	No. 2	15.0
Broccoli, fresh	16 oz.	10.0
Cabbage, fresh, head	16 oz.	2.5
Carrots, fresh, mature	16 oz.	3.2
Cauliflower	16 oz.	12.0
Celery, fresh	16 oz.	8.0

Food Material	Unit of Purchase	Cost in Cents
Chard, Swiss, coml. can.	No. 2	15.0
Endive, curled, fresh	16 oz.	10.0
Lettuce, fresh	16 oz.	10.0
Mustard greens, coml. can.	No. 2	15.0
Onions, fresh, mature	16 oz.	3.3
Parsley, fresh	6 oz.	5.0
Peas, coml. can.	No. 2	13.0
Pickles, dill, coml. can.	No. 2 $\frac{1}{2}$	17.5
Pickles, mixed, sweet, coml. can..	No. 2 $\frac{1}{2}$	32.5
Pickled Peaches, home can.	No. 2	10.0
Potatoes, white	16 oz.	1.9
Rutabagas, fresh, mature	16 oz.	3.5
Spinach, coml. can.	No. 2 $\frac{1}{2}$	20.0
Sweet Potatoes, fresh, mature . .	16 oz.	6.0
Tomatoes, coml. can.	No. 2 $\frac{1}{2}$	12.2
Tomato Juice	46 oz.	22.0
MISCELLANEOUS FOODS		
Baking Powder	16 oz.	17.0
Baking Soda	16 oz.	10.0
Chocolate, bitter	8 oz.	12.0
Cocoa	16 oz.	14.6
Coffee	16 oz.	34.0
Cornstarch	16 oz.	10.0
Jello	1 pkg.	5.0
Salt	16 oz.	3.0
Spices	2 oz.	10.0
Tea	8 oz.	49.0
Walnuts	8 oz.	15.0

Recipes Used in MEAL PLAN NO. 1

WHOLE WHEAT MUFFINS:

Whole Wheat Flour	2 c.
Sugar	2 T.
Salt	$\frac{1}{2}$ tsp.
Egg	1
Baking Powder	4 tsp.
Milk	1 c.
Shortening (Lard)	4 T.
Total (12) - - - - -	11.4¢
(1) - - - - -	1.0¢

BANANA CREAM PIE:

Banana	3
Milk	$1\frac{1}{2}$ c.
Sugar	$\frac{1}{4}$ c.
Salt	$\frac{1}{2}$ tsp.
Flour (enr.)	3 T.
Whole Egg	1
Butter	1 T.
Vanilla	$\frac{1}{2}$ tsp.
Total (Filling) - - - - -	18.0¢
1 serv. (Filling) - - - - -	3.0¢
1 serv. (Pastry) - - - - -	.6¢
1 serv. - - - - -	3.6¢

Recipes Used in MEAL PLAN NO. 2

BOSTON BAKED BEANS:

Beans	2 c.
Onion	1 sm.
Pork (Salt)	$\frac{1}{8}$ lb.
Salt	$\frac{1}{2}$ tsp.
Mustard	$\frac{1}{2}$ tsp.
Molasses	2 T.
Total (10 serv.) - - - - -	11.05¢
1 serv. (Small) - - - - -	1.1 ¢
1 serv. (Large) - - - - -	2.2 ¢

LIVER LOAF:

Liver (Ground and Cooked)	1½ lb.
Pork	½ lb.
Bread Crumbs	1 c.
Onion	1
Tomato Juice	1 c.
Salt	
Pepper	

Total (8 serv.)	53.4¢
1 serv.	6.7¢

TOMATO SAUCE:

Tomatoes	2 c.
Onion	1
Bacon and Fat	3 slices
Flour (enr.)	4 T.

Total (8 serv.)	11.7¢
1 serv. (½ c.)	1.5¢

Recipes Used in MEAL PLAN NO. 3

WAFFLES:

Flour (enr.)	1½ c.
Salt	½ tsp.
Baking Powder	3 tsp.
Milk	1 c.
Eggs	2
Butter	1 T.

Total (4 serv.)	11.5¢
1 serv.	2.8¢

CREAM OF TOMATO SOUP:

Milk	1 qt.
Flour (enr.)	2 T.
Butter	2 T.
Tomatoes	1 pt.
Salt and Pepper	

Total	20.7¢
1 c.	3.5¢
½ c.	1.8¢

BAKING POWDER BISCUITS:

Flour (enr.)	3 c.
Milk	1 c.
Baking Powder	6 tsp.
Fat (Lard)	6 T.
Total (9 serv.)	9.0¢
2 Biscuits	1.0¢

PINEAPPLE UPSIDE DOWN CAKE:

Butter	2 T.
Sugar (Brown)	4 T.
Pineapple (Crushed)	1 c.
Sugar	2/3 c.
Shortening (Crisco)	1/2 c.
Eggs	1
Flour (enr.)	2 c.
Baking Powder	4 tsp.
Milk	1 c.
Vanilla	1 tsp.
Total (12 serv.)	20.9¢
1 serv.	1.7¢

Recipes Used in MEAL PLAN NO. 4, 5, 6

CHEESE FONDUE:

Cheese (Grated)	1 c.
Butter	3 T.
Salt	1/2 tsp.
Paprika	
Eggs	6
Toast	6 slices
Total (6 serv.)	34.5¢
1 serv.	5.3¢

COTTAGE PUDDING:

Flour (enr.)	2 c.
Baking Powder	4 tsp.
Sugar	2/3 c.
Salt	1/2 tsp.
Milk	1 c.
Egg	1

Butter $\frac{1}{2}$ c.

Total (8 serv.) - - - - - 14.76¢

1 serv. - - - - - 1.84¢

LEMON SAUCE:

Sugar $\frac{1}{2}$ c.

Cornstarch 1 T.

Lemon Juice 2 T.

Butter 2 T.

Nutmeg

Salt

Water 1 c.

Total (2 c.) - - - - - 11.66¢

1 serv. (2 T.) - - - - - .7 ¢

TARTAR SAUCE:

Mayonnaise Dressing 1 c.

Onion Juice 1 tsp.

Capers 1 T.

Cucumber Pickle (ch.) 1 T.

Total (18 T.) - - - - - 9.3¢

1 serv. (2 T.) - - - - - 1.0¢

CORNBREAD:

Cornmeal (Yellow) 1 c.

Flour (enr.) 1 c.

Baking Powder 3 tsp.

Syrup (Dark) 2 T.

Egg 1

Milk 1 c.

Butter 2 T.

Total (6 serv.) - - - - - 10.0¢

1 serv. (2 Pieces) - - - - - 1.6¢

APPLE PIE:

Apples	6
Sugar	$\frac{1}{2}$ c.
Salt	$\frac{1}{2}$ tsp.
Flour (enr.)	2 T.
Butter	1 T.
Total (6 serv. Filling) - - - - -	15.6¢
1 serv. (Filling) - - - - -	2.6¢
Pastry - - - - -	3.8¢

PRUNE WHIP:

Prune Pulp (sw.)	$1\frac{1}{2}$ c.
Lemon Juice	$1\frac{1}{2}$ T.
Egg Whites	3
Sugar	$\frac{1}{3}$ c.
Salt	$\frac{1}{8}$ tsp.
Walnuts (Chopped)	$2\frac{1}{2}$ T.
Total (6 serv.) - - - - -	18.0¢
1 serv. - - - - -	3.0¢

Recipes Used in MEAL PLAN NO. 7

MOCK HOLLANDAISE SAUCE:

Medium White Sauce:

Butter	2 T.
Flour (enr.)	2 T.
Milk	1 c.
Salt	$\frac{1}{2}$ tsp.
Pepper	$\frac{1}{8}$ tsp.
Egg Yolks	2
Butter	2 T.
Lemon Juice	2 T.
Total ($1\frac{1}{2}$ c.-10 serv.) - - - - -	12.1¢
1 serv. - - - - -	1.2¢

OATMEAL COOKIE:

Flour (enr.)	2 c.
Sugar	2 c.
Molasses	$\frac{1}{2}$ c.
Shortening (Lard)	1 c.

Eggs	2
Milk	$\frac{1}{2}$ c.
Raisins	1 c.
Rolled Oats	2 c.
Soda	$\frac{1}{2}$ tsp.
Cinnamon	2 tsp.
Ground Cloves	1 tsp.

Total (50) - - - - - 36.1¢
 1 serv. (2) - - - - - 1.4¢

GINGERBREAD:

Sugar	6 $\frac{1}{2}$ T.
Molasses	$\frac{2}{3}$ c.
Crisco	$\frac{1}{2}$ c.
Flour (enr.)	2 c.
Egg	1
Water	$\frac{1}{3}$ c.
Baking Powder	1 tsp.
Salt	$\frac{1}{2}$ tsp.
Cinnamon	1 tsp.
Ginger	1 tsp.
Allspice	$\frac{1}{2}$ tsp.

Total (16 serv.) - - - - - 20.6¢
 1 serv. - - - - - 1.3¢

Recipes Used in MEAL PLAN NO. 8

BAKING POWDER BISCUITS:

See table for meal plan No. 3

CHICKEN SALAD:

Chicken (Cooked and Diced)	2 c.
Celery	1 c.
Mayonnaise	4 T.
Lettuce	6 leaves
Garnish (Parsley)	10 sprigs

Total (4 serv.) - - - - - 39.7¢
 1 serv. - - - - - 9.9¢

BREAD PUDDING:

Stale Bread	2 c.
Milk	1 qt.
Eggs	2
Sugar	$\frac{1}{2}$ c.
Raisins	$\frac{1}{2}$ c.
Salt	$\frac{1}{2}$ tsp.
Vanilla	1 tsp.

Total (6 serv.) - - - - - 25.2¢
 1 serv. - - - - - 4.2¢

Recipes Used in MEAL PLAN NO. 9

DOUGHNUTS:

Shortening (Lard)	2 T.
Sugar	1 c.
Eggs	3
Milk	1 c.
Baking Powder	3 tsp.
Salt	1 tsp.
Nutmeg	1 tsp.
Lemon Extract	$\frac{1}{2}$ tsp.
Flour	4 $\frac{1}{2}$ c. (approx.)

Total (28) - - - - - 22.5¢
 1 serv. (2) - - - - - 1.6¢

*SCALLOPED OYSTERS:

Oysters	1 pt.
Bread Crumbs	2 c.
Milk	$\frac{1}{2}$ c.
Butter	6 T.
Salt and Pepper	

Total (6 serv.) - - - - - 43.2¢
 1 serv. - - - - - 7.2¢

WALDORF SALAD:

Diced Apple	2 c.
Diced Celery	2 c.
Walnuts (Broken)	$\frac{1}{2}$ c.
French Dressing	4 T.
Lettuce	6 leaves

Total (6 serv.) - - - - - 31.1¢
 1 serv. - - - - - 5.2¢

PUMPKIN PIE:

Salt	1/8 tsp.
Sugar	2/3 c.
Spice	2 tsp.
Eggs (Whole)	2
Milk	1 2/3 c.
Pumpkin	1 1/8 c.
Total (6 serv.) - - - - -	17.8¢
1 serv. (Filling) - - - - -	2.9¢
Pastry - - - - -	0.6¢
1 serv. (Pie) - - - - -	3.5¢

Recipes Used in MEAL PLAN NO. 10

GUSTARD:

Milk	2 c.
Eggs	3
Sugar	4 T.
Salt	1/8 tsp.
Vanilla	1/8 tsp.
Total (6 serv.) - - - - -	21.6¢
1 serv. - - - - -	3.6¢

MOLASSES COOKIES:

Shortening (Lard)	1 c.
Sugar	2/3 c.
Molasses	1 c.
Sour Milk	1 c.
Flour (enr.)	2 1/2 c.
Salt	1/2 tsp.
Ginger	1 tsp.
Soda	2 tsp.
Total (40, 20 serv.) - - - - -	24.3¢
1 serv. - - - - -	1.2¢

Recipes Used in MEAL PLAN NO. 11

PANCAKES:

Flour (enr.)	3 c.
Salt	2 tsp.

Baking Powder	1 $\frac{1}{2}$ tsp.
Sugar	1 T.
Milk	2 c.
Egg	1
Fat (Lard)	1 T.
Total (12) - - - - -	11.4¢
1 serv. - - - - -	1.0¢

MOLASSES COOKIES:

See recipe sheet for meal plan No. 10

Recipes Used in MEAL PLAN NO. 12

TOMATO SOUP:

See recipe sheet for meal plan No. 3

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