

The Woman's College of
The University of North Carolina
LIBRARY



CQ
no. 199

Class _____ Book _____

Accession _____

Gift of
Mary Pleasants Shockey

A STUDY OF DIETARY PRACTICES OF FRESHMAN GIRLS TO
FIND IMPLICATIONS FOR THE TEACHING OF FOODS
AT THE SECONDARY LEVEL

by

MARY PLEASANTS SHOCKEY

✓
5282

A thesis submitted to the
Faculty of
The Consolidated University of North Carolina
in partial fulfillment
of the requirements for the degree
Master of Science in Home Economics

Greensboro

1956

Approved by

Esther F. Segner
Adviser

ACKNOWLEDGMENTS

The writer wishes to express sincere appreciation to Miss Esther F. Segner for her constant guidance and encouragement which she has willingly given throughout this study. Appreciation is also extended to Miss Mabel N. Swanson, director of dining halls, all students who participated in the study, and members of the Home Economics staff of the Woman's College who gave their help and encouragement.

M. P. S.

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION	1
II. REVIEW OF LITERATURE	4
III. PROCEDURE	13
IV. DIETARY ADEQUACIES AND INADEQUACIES	21
V. CONCLUSIONS AND IMPLICATIONS	36
BIBLIOGRAPHY	40
APPENDIX	42

LIST OF TABLES

TABLE	PAGE
I. Distribution According to Four Categories of Seventy-two Cooperating Students	15
II. Distribution of Cooperating Students According to Highest Level of Home Economics Training in Secondary School .	16
III. Ages of Cooperating Students	17
IV. Distribution of Scores on Dietary Record	24
V. Dietary Scores of Students Having Had Home Economics in Secondary School Only - Subgroup A	27
VI. Dietary Scores of Students Having Had Secondary School Home Economics and Enrolled in Home Economics 103 - Subgroup B	28
VII. Dietary Scores of Students Not Having Been Enrolled in Secondary School Home Economics But Being Enrolled in Home Economics 103 - Subgroup C	29
VIII. Dietary Scores of Students Having Been Enrolled Neither in Secondary School Home Economics Nor in Home Economics 103 - Subgroup D	29
IX. Range of Scores According to Amount and Place of Home Economics Study With and Without Snacks	31

CHAPTER I
LIST OF FIGURES

FIGURE	PAGE
1. Students Consuming Highest Ten Types of Snacks	26
2. Deficiencies in Meals Without Snacks of Students According to Four Categories	33
3. Deficiencies in Meals With Snacks of Students According to Four Categories	34

only if a program is provided which will interest people in eating health-giving foods.

The continuing existence of individual groups and individuals throughout our population who are subject to nutritional deficiencies needs improvement.

During periods of war, widespread nutritional programs are developed to eat, in spite of this, malnutrition is still to be found. A larger per cent of boys from the South were recruited for the Army because of faulty nutrition. It was also found that during the recent Korean conflict malnutrition on the part of injured soldiers was proved to be a complicating factor in their recovery. The fact that there has been set up within the United States a Food and Agriculture Organization indicates a world-wide interest in trying to solve nutritional problems.

One of the most difficult social and economic problems are

*Snodgrass, Windsor G. (ed), Annual Review of Medicine, California: Stanford University Press, 1950, Vol. 1, p. 127.

CHAPTER I

INTRODUCTION

In the Annual Review of Medicine published by Stanford University, the statement is made that "nutrition is the single most important environmental factor affecting the health of Americans It enters into all aspects of health including mental health."¹ While interest in eating is innate, the public will be fed adequately only if a program is provided which will interest people in eating health-giving foods.

The continuing existence of underfed groups and individuals throughout our population makes one suspect that nutrition education needs improvement.

During periods of war, intensive nutrition programs are carried on but, in spite of this, malnutrition is still to be found. A larger per cent of boys from the South were rejected for the armed services due to faulty nutrition. It was also found that during the recent Korean conflict malnutrition on the part of injured service men proved to be a complicating factor in their recovery. The fact that there has been set up within the United Nations a Food and Agriculture Organization indicates a world-wide interest in trying to solve nutritional problems.

Some of the most difficult social and economic problems are

¹Cutting, Windsor C. (ed), Annual Review of Medicine, California: Stanford University Press, 1950, Vol. 1, p. 127.

fostered and intensified by human hunger. Starvation and malnutrition continue throughout the world despite vast over-production in the United States causing fantastic amounts of food to be stored. Distribution has become an international dilemma and a national economic problem of major proportions. Malnutrition is a direct result of culturally acceptable foods being unavailable in the right places at the right time, although immense supplies of surplus food are in storage. Another problem is that of willingness or motivation on the part of people everywhere to eat nutritionally adequate foods when they are available. The latter becomes an educational problem and will be dealt with in this study.

The writer's interest has been heightened by her observations in relation to the concept of glamour associated with the svelte figures of cinema actresses. This concept is further enhanced by advertising through such mass media as television, radio, magazines and displays in stores.

Teen-agers and older women whose chief interest in life lies in competition for social recognition are especially susceptible to food fads and nutritional quackery. This author believes that these people could somehow be taught to recognize the relationship between weight control and nutritional adequacy of food intake and that it is not necessary to decide between them nor that health can be maintained only if one decides to choose between them.

This study is being made to find some simple answers to questions related to one segment of this larger problem. This is a status study of the dietary practices of a group of college freshmen through which the investigator hopes to discover the major adequacies and in-

adequacies of their food intake in light of their previous and present instruction about food and nutrition. She hopes further to draw some implications for the improvement of teaching people to make food choices which will serve to maintain an optimum health status.

A dietary diary to make a survey of food practices has been used in a variety of studies for many years. These studies have been made in the elementary schools and in homes. The present study, although carried out in a school, is a study of dietary habits among the significance.

There was an awareness of the importance of food and well-being in 1934 when Helen M. Burt was an investigator in a study on food habits of high school girls in Iowa vocational schools. She reported, "and of the most important objectives of high school nutrition classes is to interest the pupil in the relation of food to health." Her study was concerned with determining the extent to which home economic teaching was attaining this goal. There were 480 girls in the eleventh and twelfth grades, 175 had no home economic training; 305 had previously been enrolled in such vocational classes. A one-day sampling was made in the winter and another was made in the spring. The students recorded without signatures their intake of food. Definitely inadequate diets were found in both groups and these inadequacies did not seem to be a result of insufficient money spent for food.

Helen M. Burt, "Home Economic Training and the Food Habits of High School Girls," Journal of Home Economics, Vol. 25 (March, 1934), pp. 12-21.

CHAPTER II

REVIEW OF LITERATURE

A dietary form to make a survey of food practices has been used in a variety of studies for many years. These studies have been made in the elementary schools and on through the universities. With the current interest in nutrition, a study of dietary intake assumes new significance.

There was an awareness of the association of foods and well-being in 1932 when Botto² made an investigation in Kentucky on food habits of high school girls in seven vocational schools. She reports, "one of the most important objectives of high school nutrition classes is to interest the pupil in the relation of food to health." Her study was concerned with determining the extent to which home economics teaching was attaining this goal. There were 480 girls in the eleventh and twelfth grades, 138 had no home economics training; 342 had previously been enrolled in home economics classes. A one-day sampling was made in the winter and another was made in the spring. The students recorded without signature their intake of food. Definitely inadequate dietaries were found in both groups and these inadequacies did not seem to be a result of insufficient money spent for food.

²Botto, Mildred, "Home Economics Training and the Food Habits of High School Girls." Journal of Home Economics, Vol. 26 (March, 1934), pp. 159-61.

"From the health standpoint there is probably nothing more important than dietary habits," reports Segner³ in her evaluation of student achievement in the foods unit of the proposed course of study of Wisconsin in 1936. She not only studied food intake but also the foods on the table which were rejected by the girls. She further evaluated the food and nutrition teaching in her conclusions:

no significant gains in the dietary habits of 322 high school girls resulted from this basic course; there is apparently little relationship between what students know about food values and their dietary habits. Many of these students are not consuming adequate amounts of milk, butter, raw and cooked vegetables and fruit and whole cereals. This is partly because they do not choose them, but more often because they are not served. Better motivation for helping students improve their dietary should be developed or else that concept should be stricken from the objectives.⁴

An investigation made by Morris and Bowers⁵ of the diets of one hundred college women in Utah noted that the institution served a better dietary than did the homes of the young women. A one-week survey was made and consistent deficiencies in phosphorus, iron, vitamin B, and ascorbic acid were found.

A detailed study carried on by Brendle⁶ in 1941 called attention to the lack of knowledge of food needs of individuals. She drew these conclusions:

³Segner, Esther F., An Evaluation of Student Achievement in the Foods Unit of the Proposed Course of Study for Home Economics in Wisconsin, Master's thesis, University of Minnesota, 1936. p. 12.

⁴Ibid., pp. 50-51.

⁵Morris, Sadie and Bowers, Mildred, "A Study of the Diets of One Hundred College Women," Journal of the American Dietetic Association, Vol. 15, May, 1939, pp. 358-62.

⁶Brendle, Cleo, Food Production and Consumption Practices in a Selected Group of North Carolina Homes. Master's thesis, Greensboro, North Carolina, The Woman's College of the University of North Carolina, 1941, p. 10.

If teaching is "changing one's behavior," we have a lot of teaching yet to do in regard to the dietaries of the American people if they are to be raised above the danger line. The lack of knowledge of food and food needs is not the only factor concerned with inadequate diets, but the writer believes it to be an important one The Home Economics teacher should place emphasis upon the use of foods which are available to the usual rural family.

A study done by MacMillan and Leverton⁷ on diets of college girls in a cooperative dormitory in 1942 brought out the pattern many girls follow when choosing their foods. They were chosen mainly for likes and dislikes. The girls bought smaller quantities than recommended for an adequate diet at the minimum cost. These diets were low in protein, low in leafy green and yellow vegetables, and low in eggs, cereals and meats. The girls were not well-nourished.

In 1943, the effect of a nutrition program on the eating habits of thirty first-grade children was investigated by Outlaw.⁸ She reports, "There is a direct relationship between economic status and amounts of improvement shown in reports of children and in school lunch eating habits." Likewise, a comparison was made on the relationship between intelligence quotients and improvement of eating habits. It was stated that "There may be a direct relationship between intelligence and improvement which is obscured by the small numbers in the groups."⁹ Many experts in the field of nutrition may question these statements.

⁷MacMillan, Thelma and Leverton, Ruth, "The Self-Chosen Diets of College Girls in a Cooperative Dormitory." The Journal of Home Economics. Vol. 35, (October, 1943), pp. 514-18.

⁸Outlaw, Eunice Bryan, A Study to Determine the Effect of a Nutrition Program on the Eating Habits of a Group of First Grade Children. Master's thesis, Greensboro, North Carolina. The Woman's College of the University of North Carolina, 1943, p. 39.

⁹Ibid., p. 41.

In the same school Sharpe¹⁰ made a survey of the diets of the boys and girls in the fourth, fifth, and sixth grades in an attempt to find possible relationship between diet, health, and growth of these children. In her recommendation Miss Sharpe indicated that more citrus fruits needed to be included in the school lunch diet to offset the vitamin C deficiency, and that adult education needed to reach the families of those children who either bring their lunch or go home for the noon meal.¹¹

Eating habits of students studying nutrition were analyzed by O'Connell¹² in a study of a group of adolescents. In reporting she stated that foods which were selected more frequently after the course in nutrition was given, were those which were discussed, then prepared and eaten by the students during the laboratory period.

Although many foods teachers find that adolescents tend to have little spirit of adventure about testing or eating unfamiliar foods, O'Connell reports that:

Tenth and eleventh grade students tend to select foods more for variety's sake than for health's sake. Stress should be placed upon preparation of protective foods in the laboratory, for pupil's changes in food habits tended to center around those foods which were prepared in the laboratory.¹³

¹⁰Sharpe, Evelyn Terry, A Survey of the Diets of the Children in the Fourth, Fifth, and Sixth Grades of Curry School. Master's thesis, Greensboro, North Carolina, The Woman's College of the University of North Carolina, 1947, p. 46.

¹¹Ibid., p. 34.

¹²O'Connell, Sister Mary Frances, A Study of the Influence of Nutrition Knowledge on the Food Selection Habits of High School Students. Master's thesis, Greensboro, North Carolina, The Woman's College of the University of North Carolina, 1943 Abstract.

¹³Ibid., p. 28.

Both boys and girls were included in a study by Blackman.¹⁴ The one hundred and twenty-four complete student records included urban and rural children. There were forty-three boys and eighty-one girls from the eleventh and twelfth grades. Their average age was sixteen years. In one school, urban A, it was reported that better diets were selected by the boys. The boys' diets were superior to those of boys or girls in other schools. The girls' diets were found to be generally deficient. Two reasons are brought out for the type of diets that they selected. One is that too few foods are eaten; the other too many foods served from the same food group. The needed vegetables and fruits are omitted. Only one of the nineteen girls in school C and six of the twenty-six girls in school D, both rural schools, had as much as one serving of citrus fruits or tomato a day. Only nine of the eighty-one girls had two servings of butter a day. A larger proportion of girls than boys ate sweets more often than twice a day in each school except one. It was alarming how many sweet foods were used by these high school students.

Data for a study by McCall¹⁵ were obtained from records kept at one of the home management houses on the campus of the Woman's College of the University of North Carolina. One set of menus for each cost level was analyzed.

¹⁴Blackman, Nina Ruth, A Survey of Food Practices of 124 Eleventh and Twelfth Grade Students in Three North Carolina Communities, Master's thesis, Greensboro, North Carolina, The Woman's College of the University of North Carolina, 1946, pp. 22-31.

¹⁵McCall, Nancy, An Evaluation of the Adequacy of Diets Planned in a Home Management House, Master's thesis, Greensboro, North Carolina, The Woman's College of the University of North Carolina, 1946, p. 16.

"The low cost level was found to be inadequate in all of the specific nutrients except vitamin A and ascorbic acid."¹⁶ The reason for an inadequate diet for many students is the tendency to plan menus mostly for personal likes and dislikes. McCall believed that the girls often neglected principles of nutrition which they had been taught.¹⁷

As with many dietary studies on college students the intake of protective foods is lower than that of other foods. This deficiency was noted in the findings of Debois.¹⁸ She reports, "It is apparent that the foods most poorly consumed are breakfast fruits, especially grapefruit and oranges; fish and vegetable salads, including the lettuce used as a base for the salad."

Krahnke¹⁹ concluded that children might respond to selecting an adequate school lunch if they were asked to state food likes and dislikes within the food groups in which there were indications of inadequacy and suggest particular dishes which could be served on the school lunch plate.

"Home economists and other groups interested in promoting health have long been concerned with people's diets. But any extensive

¹⁶Ibid., p. 27.

¹⁷Ibid., p. 28.

¹⁸Debois, Rita, A Study of Plate Waste in the Dining Hall of a State Woman's College, Master's thesis, Greensboro, North Carolina, The Woman's College of the University of North Carolina, 1946, p. 33.

¹⁹Krahnke, Gwendolyn Elisabeth, Evaluation of the School Lunch Menus at a Demonstration School, Master's thesis, Greensboro, North Carolina, The Woman's College of the University of North Carolina, 1949, p. 78.

analysis of the diets of a large group was very costly," says Army.²⁰ There have been various data-gathering forms used. Botto²¹ used a mimeographed sheet in collecting a list of foods eaten for one day by high school girls in Kentucky. An adaptation of this form was made by Segner²² for use in Wisconsin. Specific directions were given to record the number of "helpings" of food eaten.

The three-day record of food intake to help assess under-nutrition is recommended by the Department of the Army of the United States.²³ In the symposium of methods for evaluation of nutritional adequacy it is reported, "The 3-day record of food consumed may be kept by housewives for themselves and families. Careful instructions and checking of results are necessary."²⁴

At the 1952 meeting of the National Food and Nutrition Institute, Sebrell²⁵ in discussing the nutrition situation, says, "In very few regions have adequate appraisals of nutritional status

²⁰Army, Clara Brown, Evaluation in Home Economics, New York: Appleton-Century-Crofts, Inc., 1953, p. 213.

²¹Botto, loc. cit.

²²Segner, loc. cit.

²³Spector, Harry, Peterson, Martin S., and Freedmann, J. E., (editors), Methods for Evaluation of Nutritional Adequacy and Status. A symposium sponsored by the Quartermaster Food and Container Institute for the Armed Forces. Quartermaster Research and Development Command, United States Army Quartermaster Corps and Medical Nutrition Laboratory Research and Development Division Office of the Surgeon General. Washington: Government Printing Office, 1954, pp. 186-88.

²⁴Ibid., p. 189.

²⁵Sebrell, W. H., Jr., M. D., "Nutrition . . . Past and Future," Proceedings of National Food and Nutrition Institute, United States Department of Agriculture. Agriculture Handbook No. 56, Washington: Government Printing Office, 1952, p. 6.

been made. The starting point toward minimizing malnutrition must be a knowledge of what people eat, what nutrients they need, and why dietary inadequacies prevail."

"It has been said that nutrition is to total health what reading is to total education," says Roberts.²⁶ To be able to improve the health of the high school girl or boy she believes, "Teaching nutrition to high school boys and girls requires great skill and a knowledge of the way adolescents think and act. They do not usually exhibit an interest in nutrition unless they can be shown how it serves their own special needs."²⁷ Roberts further points out the nutrition problems calling attention to a study in which sixty thousand school children in thirty-eight states participated. The data were taken from a three-day food record, and the standards for the classification of diets were based on recommendations of the Foods and Nutrition Board of the National Research Council. Only one-third of the children had a "good" diet and the diets of two out of three children were unsatisfactory.²⁸

Tinsley²⁹ decided to experiment with a three-day dietary record

²⁶Martin, Ethel Austin, Roberts' Nutrition Work With Children, Chicago: The University of Chicago Press, 1954, p. 1.

²⁷Ibid., p. 430.

²⁸Ibid., p. 14.

²⁹Tinsley, Willa Vaughn, Development of Instruments for Evaluating Food Practices, Nutrition Information, and School Lunch Programs and Their Use in Nutrition Education at the Elementary Level. Doctoral dissertation, The University of Minnesota, 1947, pp. 29,30.

partly on the basis of a study being similarly conducted at the Harvard School of Public Health. The Harvard study was a longitudinal one planned to cover a fifteen year period with five thousand Massachusetts school children cooperating. She wanted to find positive relationships through "correlation techniques" between the results of a complete seven-day record with that of each single day and each combination of days. From these correlations Tinsley³⁰ found that any three days including Sunday had as high or higher positive correlation with the seven-day record than did any other period.

Therefore, this investigator chose to go along with Tinsley's conclusions and used a three-day dietary form which included Sunday, Monday and Tuesday for collecting data on food intake.

³⁰Ibid., p. 32.

CHAPTER III

PROCEDURE

The investigator attempted to find some relationship between the amount and place of nutritional study and present dietary practices on the part of a selected group of college freshmen. The findings from such a study then should suggest implications for improved ways of teaching nutrition at the secondary school level and possibly at the college level.

All freshmen home economics majors at the Woman's College of the University of North Carolina, who regularly ate their meals in the dining halls, were chosen to participate in a dietary study. A basic period of nine consecutive meals for three days was selected. The days chosen were Sunday, January fifteenth through Tuesday, January seventeenth, 1956 when there were no special occasions at the college. A three-day dietary form based on one by Tinsley³¹ was used. Co-operating students were given the forms (Exhibit A in Appendix). Those freshmen who were enrolled in home economics courses were handed the three-day forms on Tuesday, January tenth and continuing through Saturday, January fourteenth, 1956.

The writer met students in their classes, explained use of dietary sheets and gave each girl the following duplicated directions:

³¹Ibid., p. 205.

This study is being made in order to carry out a plan of research for a Master's Thesis. The information will be considered confidential and will be used only by groups. It will be treated as mass data-not dealt with individually. Your instructor will have access to the final results of the study which will be completed by the end of the year. Would you please help with this study by answering the following as accurately as you know how to do?

Age _____. Circle grades in which you were enrolled in home economics in secondary school. 7, 8, 9, 10, 11, 12, none. Are you enrolled in Home Economics 103, Feeding the Family? Yes _____ No _____. Write down for a 3 day period all the food and beverages you have consumed during the 24 hours. List servings in approximate cupfuls, table-spoons, teaspoons, slices, etc. An approximate average serving of a green vegetable is $\frac{3}{4}$ cup, approximate average serving of other vegetables and fruits is $\frac{1}{2}$ cup. State whether food is raw or cooked. Be specific. Example; mashed potatoes: $\frac{3}{4}$ cup, bread; 1 square, cornbread. Please record as soon after eating as possible for the sake of accuracy.

Those who were not enrolled in home economics classes were sent letters with an enclosure asking them whether or not they would meet with the investigator on Monday, January, ninth to receive the record forms (Exhibit B in Appendix). Some were not able to be present. They were later personally visited in their dormitories and given the dietary information. The instructions were explained to them and questions concerning the study answered. All of the girls were quite willing to participate and were very interested in knowing the outcomes.

Many of the forms were returned to their instructors but some were returned personally or mailed to the investigator. Of the ninety-seven forms given out 74 per cent of those returned were usable.

A starting point toward raising the levels of nutrition is to find out what people eat. By comparing the diets of various groups categorized according to amount and place of instruction, the author hoped to find some positive relationships. With the recognition of the complexity of food patterns, one is led to understand the limitations of this kind of study and is warned to avoid over simpli-

fication of conclusions in regard to cause and effect relationships.

Although the method used is a crude one for making such a study, some important points might be seen if the food intake and the in-between-snacks were compared with needed nutrients.

In order to make the annalysis of data as effective as possible it seemed important to find out from students what their past and present exposure to courses in home economics had been (Table I). A

TABLE I
DISTRIBUTION ACCORDING TO FOUR CATEGORIES OF
SEVENTY-TWO COOPERATING STUDENTS

Categories	Number	Per cent
A Secondary School Home Economics*- no 103	39	54
B Secondary School Home Economics - plus 103	19	26
C No Secondary School Home Economics - no 103	12	17
D No Secondary School Home Economics - plus 103	2	3
Totals	72	100

* This includes seventh, eighth, ninth, tenth, eleventh, and twelfth grade home economics.

breakdown by categories shows the students' opportunities for studying foods and nutrition and learning something about dietary requirements. These subgroups are henceforth designated as A, B, C, and D. Over half of the students had secondary school home economics but had had no college home economics course in foods. More than one-fourth of the girls had had secondary school home economics and were enrolled in Home Economics 103, Feeding the Family. A little less than one-fifth had no home economics in secondary school nor were they enrolled in Home

Economics 103. Fewer than one-twentieth had no secondary school home economics but were enrolled in Home Economics 103, Feeding the Family.

Further interest came in seeing how the students were distributed according to the highest level of home economics training in secondary school (Table II). Of the seventy-two students studied, one-fifth had had no secondary school training in home economics. Less than one-tenth

TABLE II

DISTRIBUTION OF COOPERATING STUDENTS ACCORDING TO HIGHEST LEVEL OF HOME ECONOMICS TRAINING IN SECONDARY SCHOOL

Highest Grade	Number	Per cent
Twelfth	21	29
Eleventh	11	15
Tenth	20	28
Ninth)		
Eighth)	6	8
Seventh)		
No training	14	20
Totals	72	100

reached a level higher than junior high school level, but three-fourths of the girls had work in senior high school.

The ages of the cooperating students ranged from seventeen to twenty (Table III) Both the average and modal ages were eighteen.

In order to determine the opportunities which the students had to select adequate food daily it was necessary to study a set of menus for the nine meals covering three days. These were provided by the director of dining halls. The quality of food was influenced by amount

TABLE III
AGES OF COOPERATING STUDENTS*

Age	Number	Per cent
Seventeen	4	6
Eighteen	45	62
Nineteen	15	21
Twenty	2	3
No age given	6	8
Total	72	100

* The average age was eighteen years.

paid for it which was \$1.07 per student per day for complete food cost.

These menus were studied by the investigator and found to be relatively adequate (Exhibit C in Appendix). A fuller explanation of this appears in the next chapter.

By comparing a student's record form with the day's menu the author was able to determine in every respect what was eaten at meal time by the girls and what was to be considered as snacks.

The dietary records were then evaluated by means of a modification of Tinsley's³² Score Sheet for a Three-Day Food Record which was based on the Basic Seven (Exhibit D in Appendix). The score sheets were also analyzed according to needs of girls aged sixteen to twenty, standards set up by Food and Nutrition Board of the National Research

³²Tinsley, op. cit., p. 211.

MENUS IN DINING HALLS AT THE WOMAN'S COLLEGE
OF THE UNIVERSITY OF NORTH CAROLINA

Sunday, January 15th, 1956

Breakfast

Orange Juice
Choice of Cereals
Herring Roe Cakes
Sugarbread-Toast-
Butter
Coffee-Milk

Dinner

Chicken a la King on Biscuit
Ford Hook Limas
Buttered Carrots
Cranberry Salad-Mayonnaise
Loaf Bread-Butter
Chocolate Sundae
Coffee

Supper

Wieners-Chili
Cabbage & Green
Pepper Slaw
Wiener Rolls
Potato Chips
Green Gage Plums
White Cake-
Caramel Icing
Milk

Monday, January 16th, 1956

Breakfast

Pink Grapefruit
Choice of Cereals
Omelet
French Crumb Cake
Toast-Butter
Coffee-Milk

Lunch

Cheese Strata
Carrot, Apple & Raisin Salad
10-Minute Cabbage
Peach Tapioca Cream-Wh.
Cream
Milk

Dinner

Hungarian Goulash
Mashed Potatoes
Lemon Buttered
Broccoli
Ripe & Green
Olives
Sweet Pickles
Loaf Bread-Butter
Cherry Pie
Coffee

Tuesday, January 17th, 1956

Breakfast

Oranges
Choice of Cereals
Bacon
Spice Muffins
Toast-Butter
Coffee-Milk

Lunch

Vegetable Soup-Crackers
Banana Nut Salad-Mayonnaise
Ham & Relish Sandwiches
Blackberry Cobbler-Wh.
Cream
Milk

Dinner

Roast Pork-Gravy-
Dressing
Buttered Green
Beans
Buttered Corn
with Pimiento
Spiced Crabapples
Loaf Bread-Butter
Strawberry Ice
Cream
Coffee

Council, Revised 1953.³³

In order to evaluate consistently the many dietary records, the writer found it expedient to prepare a code to take into account the composition of mixed dishes (Exhibit E in Appendix).

The procedure finally evolved into the business of sorting and tabulating the record forms according to adequacy of daily food intake with and without snacks and with regard to amount and place of food study. Out of such an analysis would grow some conclusions and possible recommendations in regard to the teaching of food and nutrition.

³³Bowes, Anna dePlanter and Church, Charles F., M. D. Food Values of Portions Commonly Used. Eighth Edition. Philadelphia: College Offset Press, 1956, p. 4.

SCORE SHEET FOR EVALUATING ADEQUACY OF THREE-DAY DIET

FOOD GROUPS	No. of servings	Rating				Diet Score
		0	1	2	3	
1. Green & yellow vegetables (some raw, some cooked or canned), Av. serv: 2/3 c. cooked or 1 c. raw		0	1	2	3	1. _____
2. Oranges, tomatoes, grapefruit, raw cabbage, or salad greens. Av. serv: 1 orange, 1 tomato, 1/2 grapefruit, 1 c. raw greens, or 1/2 c. juice		0	1	2	3	2. _____
3. Potatoes Av. serv: 1/2 c. cooked		0	1	2	3	3. _____
4. Other fruits and vegetables (raw, dried, cooked or canned) Av. serv: 1/2 c. cooked		0	2	4	6	4. _____
5. Milk & milk products (fluid dried or evaporated) or cheese. Av. serv: 1 c. fluid milk or 1 cubic inch of cheese		0	3	6	9	5. _____
6. Meat, fish, poultry, dried beans or peas, nuts, or peanut butter. Av. serv: 2 or 3 oz. of meat or fish, 4 tbs of peanut butter, 4-8 nuts, 1/2 c. cooked beans or peas		0	1	2	3	6. _____
7. Eggs or egg custard. Av. serv: 1 egg		0	1	2	3	7. _____
8. Bread, flour cereals (whole grain or enriched). Av. serv: 1 slice bread, 1 c. cooked or 1 c. prepared cereal, 1 griddle cake or waffle		0	3	6	9	8. _____
9. Butter or fortified margarine Av. serv: 1 tsp.		0	3	6	9	9. _____
Total Score						

CHAPTER IV

DIETARY ADEQUACIES AND INADEQUACIES

In dealing with certain sciences one can use infinite precision whereas, in studying applied aspects of nutrition - that is, nutrition related to human behavior - it is impossible to set up a sufficiently controlled experiment to gather completely accurate data. What people eat is influenced by many factors. Such forces as family food patterns and emotional environment have a bearing on food intake.

One way to study the effect of education on food intake is to find gaps between "good" and actual practices which result in spite of attempted formal education. In order to do this the writer acquainted herself with accepted standards of "good" nutrition for young adults. She then studied the food intake of a group of individuals along with finding out the amount and place of their formal nutrition education. By comparing these two factors she hoped to get some inkling of the effectiveness and/or ineffectiveness of formal nutrition education as recorded by the cooperating individuals. The results of her study are reported in the following pages of this chapter. The report is organized under the following headings: dining hall meals, criteria for adequacy of meals, comparisons of scores by subgroups, and summary of results.

Dining Hall Meals

The four regular dining rooms of the Woman's College radiate from a central kitchen, and each seats approximately 450. Students eat their meals in any dining hall they choose. Cafeteria service is used

for all the meals. For these meals students who have been trained to use uniform quantities serve the plates. The atmosphere is friendly and pleasant.

Left-overs are served as such, rather than combined with other foods to make a new dish, and are used ordinarily as extras at lunch. They are served to the student only at her request. The students are allowed second helpings of bread and often of the main dish. Only one serving of dessert is permitted unless there is a left-over dessert as was the case on the second day of the study at the noon meal.

At breakfast, no choice is offered except for cereals. The meal consists of a fruit, choice of a prepared cereal, a main hot dish, usually eggs or egg dishes, bacon, or hot cereal, a hot bread and toast, butter, milk and coffee. Lunch consists of a main hot dish, often a meat substitute, a salad, bread, butter, dessert, and milk. About once a week, there are sandwich spreads served in place of a main dish. Dinner consists of meat, poultry or fish, two vegetables, one of which is usually starchy, salad or relish, dessert, coffee or milk.

Menus for the three days of the study as listed on page 18 followed the general pattern described above.

The meals for the first day, Sunday, had a green and yellow vegetable, a citrus fruit, potato, other fruits and vegetables, two servings of milk, plus a serving of ice cream, an adequate amount of meat and bread; butter was served for breakfast and the noon meal.

For Monday, the second day, milk and butter were served twice. A milk pudding was served at lunch. There were also ample amounts of bread, and other fruits and vegetables. A citrus fruit plus a green and/or yellow vegetable was on the menu, potatoes and meat were served for dinner. An omelet was on the menu for breakfast and also a cheese

sandwich dipped in egg was used for lunch.

The third day, Tuesday, meat was served for breakfast and dinner. Ham and relish spread plus a vegetable soup made with a meat base and with several vegetables were included in the lunch. Ice cream and two servings of butter and a hot bread as well as other breads and cereals were on Tuesday's menu. Other fruits were used in the dessert and salads.

Having checked the adequacy of the three day's menus against a score sheet (Exhibit C in Appendix), the writer concluded that for girls 16-20 years of age, the menus were relatively adequate with the possible exception of:

Butter	- low each day
Milk	- inadequate amounts
Eggs	- relatively low
Potatoes	- moderately low

Scoring of Dietary Forms

Meals listed by students during a three-day period were scored according to the same score sheet as were the dining hall meals. Five levels of nutritional adequacy were used as criteria in studying student scores. The top level, or optimum diet, is one which produces normal nutriture with sufficient food stored in reserve; the adequate diet is one which supplies a day-to-day amount of food and just balances the nutrients needed by the body; a marginal diet produces a type of nutriture in which the function and structure of the body are unimpaired but reserves are inadequate; a submarginal diet, produces a nutritional status that has latent malnutriture - that is, impaired function or structure but not to the extent where disease is easily detected; a poor diet will produce deficiency conditions, the evidence of which will depend on the extent and length of period the diet was followed. The boundaries may not be clear-cut but they were used to

make comparisons. The writer believed them to be in harmony with statements made by food and nutrition experts.³⁴

After scores were calculated they were arranged by intervals of five, starting with the lowest score of 23. This procedure resulted in five possible intervals, that is, 23-27, 28-32, 33-37, 38-42, 43-47 (48). Each interval was identified according to level of nutritional adequacy as poor, submarginal, marginal, adequate and optimum. Since none of the scores fell within the optimum level, it was omitted in the tables that follow. The highest score any student made fell into the adequate level (Table IV). This was the same score that was attributed to dining hall menus (Exhibit C in Appendix). Of the

TABLE IV
DISTRIBUTION OF SCORES ON DIETARY RECORD
72 Cases

Score Intervals	Meals Without Snacks		Meals With Snacks	
	Number	Per cent	Number	Per cent
38-42	18	25	20	28
33-37	27	37	28	39
28-32	17	24	18	25
23-27	10	14	6	8
Totals	72	100	72	100

seventy-two cases studied, the largest distribution of scores was in the marginal area. Over one-third of the group had adequate diets for three

³⁴From class notes in Home Economics 573 under Professor Evelyn Cox.

days. The food selected by more than one-half of the number fell into the marginal diet. A little less than one-third of the girls chose a diet which proved to be submarginal; whereas, only one-ninth of scores of cooperating individuals were in the poor diet interval.

Almost all of the scores of students' meals with snacks were higher than those whose diets were scored on meals without snacks. In-between-foods which are consumed by college girls have become an item of food to study along with the regular three meals. The high proportion of snacks that are consumed makes one take note of this. With a soda shop on the campus, drug stores, grocery stores, lunch counters, restaurants, a bakery and a "dime store" nearby, as well as the many coca cola machines in campus buildings, one wonders why there aren't more "snack" items eaten. Only one girl in the sample of seventy-two had no in-between-food; whereas, one student consumed seventeen "snack" items in three days. Since food intake is encouraged by sociability and the "coffee hour" has come into its own, one becomes increasingly aware of the fact that three meals a day are not the only important times for eating. Soft drinks hold a prominent place in a college girl's diet as evidenced by the amounts of coca cola, pepsi cola, and 7 up which are freely dispensed on the campus. The high proportion of soft drinks used by the cooperating individuals, due in part to availability, is of interest (Figure 1). Over four times as many students chose soft drinks as chose fruit drinks. Nearly two-thirds of the entire sample chose soft drinks. The same proportion, one-third, chose cookies and fruit. Candies were eaten by more than half of the girls and cake was used by more than one-third. Peanuts and other nuts were not as popular as various crackers. A little less than one-sixth chose the former and

over one-fourth ate the latter. Almost twice as many students chose milk, milk drinks, ice cream and cheese as chose tea and coffee. Nearly a fifth of the students used coffee or tea while over one-third chose milk, milk products, ice cream or cheese for in-between-foods.

A further breakdown of the study of the ten highest snacks is reported by subgroups A, B, C, and D in Exhibit F in Appendix as a Master Table.

Comparisons of Scores by Subgroups

Comparisons were made between scores within each subgroup, with other subgroups and with the total group. The scores in subgroup A are dealt with in Table V. This was the largest subgroup having a little

TABLE V

DIETARY SCORES OF STUDENTS HAVING HAD HOME ECONOMICS IN SECONDARY SCHOOL ONLY - SUBGROUP A

39 Cases

Score Intervals	Meals Without Snacks		Meals With Snacks	
	Number	Per cent	Number	Per cent
38-42	10	26	10	26
33-37	14	36	15	38
28-32	11	28	11	28
23-27	4	10	3	8
Totals	39	100	39	100

over half of the cooperating students. All four subgroups are shown in Table I, page 15. Selecting snacks seemed to make little difference in the dietaries of Group A. Over one-fourth of these students had an adequate diet, either with or without snacks. Approximately one-tenth of the girls were in the poor diet range. Somewhat over a third were

in the marginal group and under a third had submarginal dietary scores.

A little less than one-fifth of the students were in subgroup B (Table VI). Five per cent shifted from the poor to adequate level by their choice of snacks. Although there is no evidence of a cause and

TABLE VI

DIETARY SCORES OF STUDENTS HAVING HAD SECONDARY
SCHOOL HOME ECONOMICS AND ENROLLED IN HOME
ECONOMICS 103 - SUBGROUP B

19 Cases

Score Intervals	Meals Without Snacks		Meals With Snacks	
	Number	Per cent	Number	Per cent
38-42	4	21	5	26
33-37	7	37	7	37
28-32	5	26	5	26
23-27	3	16	2	11
Totals	19	100	19	100

effect relationship from actual data, on the basis of the kind of snacks they selected, students in group B improved their diets proportionally more than did any other subgroup in the study. The writer would like to believe that this ability to choose snacks is related to their study of foods and nutrition. Almost one-fourth of the group had adequate diets. Nearly one-third had a marginal diet. Approximately one-fourth had a submarginal food intake, and a little less than one-tenth of scores indicated a poor diet.

Subgroup C was unfortunately so small, having only two cases, that any conclusions would be invalid (Table VII). One might expect that since the two scores in this subgroup fell into adequate and marginal level that chance had as much influence as any other factor.

TABLE VII

DIETARY SCORES OF STUDENTS NOT HAVING BEEN ENROLLED IN
SECONDARY SCHOOL HOME ECONOMICS BUT BEING ENROLLED
IN HOME ECONOMICS 103 - SUBGROUP C

2 Cases

Score Intervals	Meals Without Snacks		Meals With Snacks	
	Number	Per cent	Number	Per cent
38-42	-	---	1	50
33-37	2	100	1	50
28-32	-	---	-	--
23-27	-	---	-	--
Totals	2	100	2	100

Subgroup D, the fourth and last one studied included one-sixth of the sample (Table VIII). Although the number at each level is sub-

TABLE VIII

DIETARY SCORES OF STUDENTS HAVING BEEN ENROLLED NEITHER
IN SECONDARY SCHOOL HOME ECONOMICS NOR HOME ECONOMICS
103 - SUBGROUP D

12 Cases

Score Intervals	Meals Without Snacks		Meals With Snacks	
	Number	Per cent	Number	Per cent
38-42	4	33	4	33
33-37	5	42	5	42
28-32	2	17	2	17
23-27	1	8	1	8
Totals	12	100	12	100

group D is extremely small, there is evidence that the proportionate scores representing adequate and marginal levels are higher than in the total group (Table IV, page 24) and than subgroup A (Table V, page 27) and subgroup B (Table VI, page 28). At the lowest level the scores are the same as that for the entire sample. At the submarginal level, the scores are smaller than subgroup A (Table VI, page 28). To have subgroup D - those who have had no formal food and nutrition courses at any school level - achieve relatively higher scores with and without snacks is disconcerting to those who have attempted to help students at the secondary school and college level to improve their food practices. However, these figures indicate no improvement in dietary level through the choice of snacks as tended to be true with those students having had home economics training.

In order to tease out any further possible evidence about relationships between dietary scores and educational place in which students had studied food and nutrition, another type of table was made (Table IX). This search for evidence included recording top, median, and low scores of segments of the sample according to every possible combination of formal education in home economics.

The number of students in all but one of these categories is small. The resulting picture does not indicate that there are any apparent differences in scores resulting from the amount or place of home economics or the lack of it.

It seemed important to study deficiencies in meals according to the four subgroups, A, B, C, and D (Table I, page 15) and the nine food groups used. Since there were no deficiencies in the food group which includes meat, fish, poultry, legumes and nuts, there are but eight

TABLE IX

RANGE OF SCORES ACCORDING TO AMOUNT AND PLACE OF HOME
ECONOMICS STUDY WITH AND WITHOUT SNACKS

Grade Level	Top Score	Median Score	Low Score	Number
Junior High Only	34 (33)*	32.5 (30)	26 (25)	4
Senior High Only (10-12)	39 (39)	36 (35.5)	25 (23)	7
103 Only	39 (37)	37.5 (36.5)	36 (36)	2
Junior and Senior High Only	42 (42)	34 (34)	27 (27)	30
Junior High Plus 103	33 (33)	33 (32.5)	33 (32)	2
Senior High Plus 103	41 (41)	37 (36.5)	33 (32)	2
Junior, Senior High Plus 103	41 (40)	34 (33.5)	24 (23)	13
No Home Economics	40 (39)	34.5 (34)	26 (26)	12
Total				72

* () Scores of students without snacks.

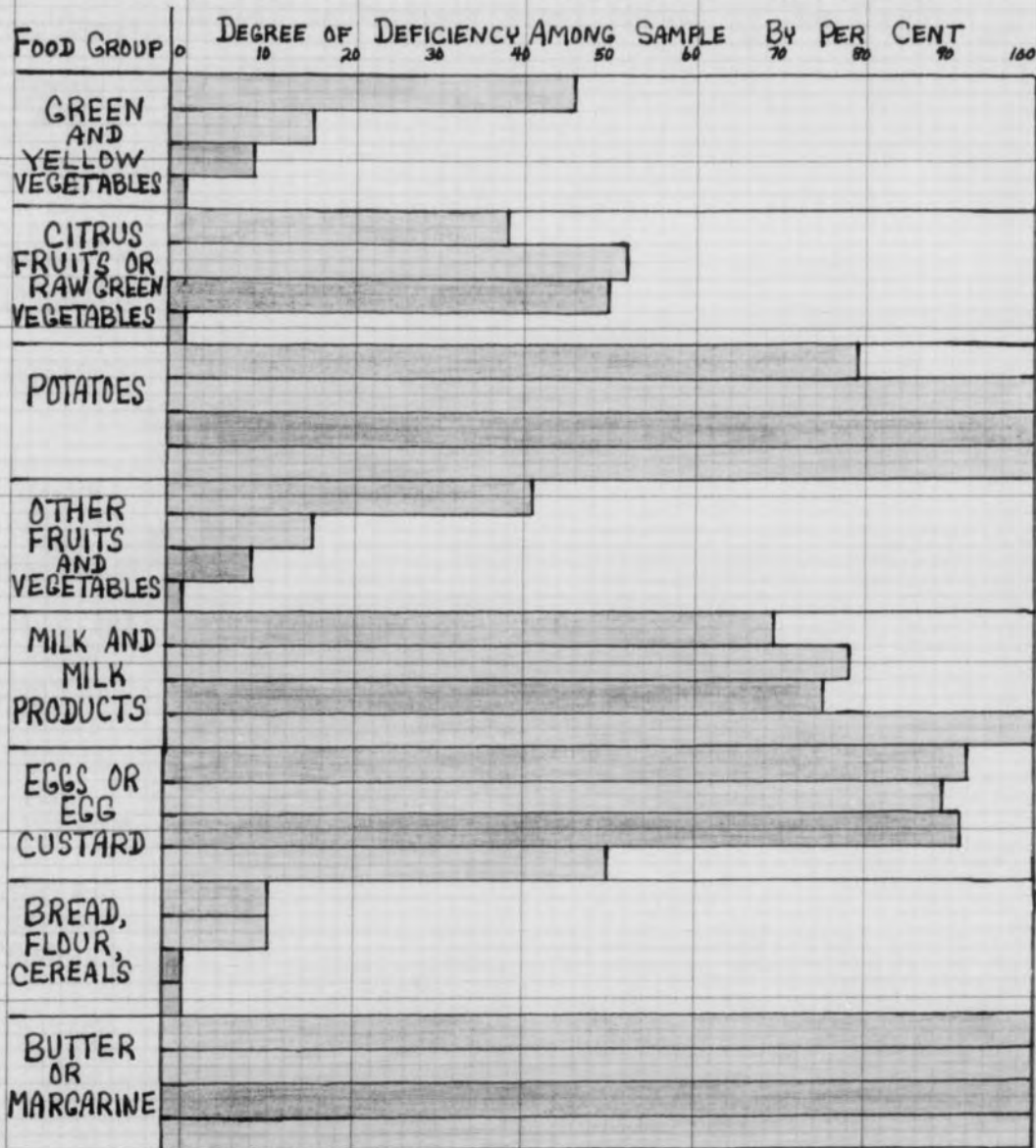
columns in Figures 2 and 3 which follows. Figure 2 shows deficiencies in food intake without snacks while Figure 3 shows deficiencies with snacks.

The food groups in which the greatest proportion of dietaries were deficient even with snacks according to the scoring device used, were "butter and margarine" and potatoes. The next greatest deficiencies were in egg or egg custard and milk and milk products. The least deficiencies shown by all subgroups were in the following food groups: breads and cereals, green and yellow vegetables; other fruits and vegetables. Citrus fruits, raw green vegetables were found to be moderately deficient in the diets with snacks of the four subgroups.

A higher deficiency was shown by some of the subgroups in the meals without snacks than was shown in the meals with snacks. Subgroup B showed a greater deficiency in potatoes and citrus fruits and raw vegetables in meals without snacks. Also subgroup A had a greater deficiency in food groups green and yellow vegetables and in other fruits and vegetables than did any other subgroup. No difference was shown in deficiencies in meals with or without snacks by subgroup C. The largest difference of deficiency shown in subgroup D was in the milk and milk products, ice cream and cheese food groups. Little difference was shown in the bread and cereal food group between meals with snacks and meals without snacks. The only difference shown by any subgroup in the egg or egg custard food group in deficiency was by subgroup B.

Summary of Results

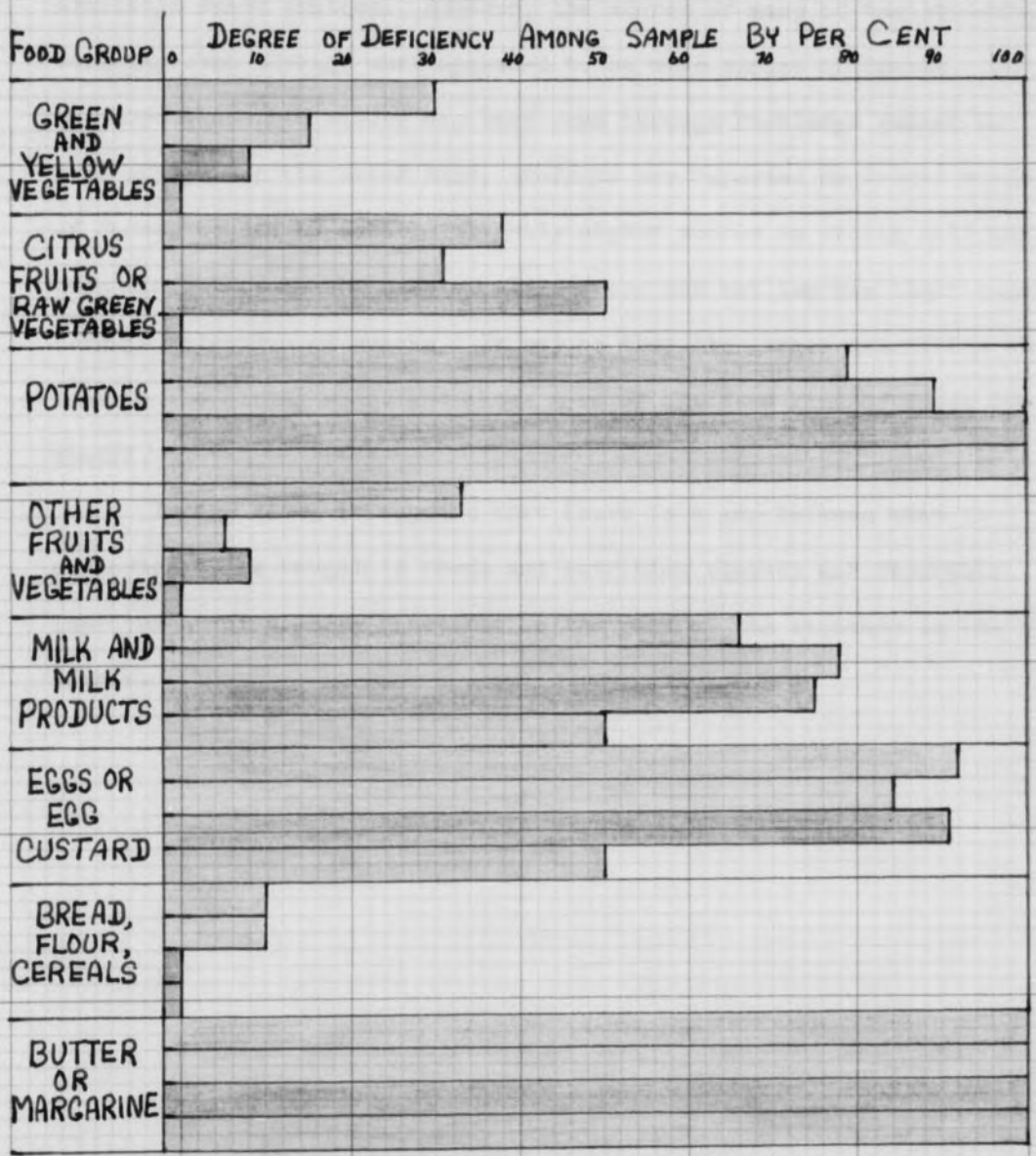
In recapitulation the score given to the three-day meals in the dining hall indicated that the meals were relatively adequate. Although



KEY: SUBGROUP A SUBGROUP B SUBGROUP C SUBGROUP D

FIGURE 2

DEFICIENCIES IN MEALS WITHOUT SNACKS OF STUDENTS ACCORDING TO FOUR CATEGORIES



KEY: □ SUBGROUP A □ SUBGROUP B □ SUBGROUP C □ SUBGROUP D

FIGURE 3

DEFICIENCIES IN MEALS WITH SNACKS OF STUDENTS ACCORDING TO FOUR CATEGORIES

none did, it would have been possible for any student to have reached an optimum score by wise selection of food in the dining hall plus available snack choices. However, the scores of many of the students were improved through what appeared to be wise choice of snacks. One may hope that this wisdom may have come through knowledge gained in food study. On the other hand, students who reported no formal study of foods, tended to achieve slightly higher scores on dining hall meals than did others in the sample. This group did not improve their scores through selection of snacks. It may be they ate larger quantities of food in the dining rooms and chose more of the same kind of foods for snacks.

In any case, it appears that there is a gap between what is purported to be taught in foods and nutrition classes and favorable improvement of dietary practices on the part of the students in the sample.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

The investigator studied dietary practices of freshman girls to find implications for the teaching of foods and nutrition. A three-day dietary form was administered to all freshmen home economics majors who regularly ate their meals in the dining halls of Woman's College, University of North Carolina. A score sheet was set up to evaluate the dining hall meals as well as the total dietary records of cooperating students. Five levels of nutritional adequacy were used as criteria for analyzing student dietary scores. They were described as: optimum, adequate, marginal, submarginal, and poor. Assignment of students' dietary scores were calculated according to subgroups.

The sample of seventy-two girls was categorized into four subgroups according to the place and amount of formal study in foods and nutrition. Data were studied for level of nutritional adequacy for the entire group and for each of the four subgroups. Some of the most important results were:

1. The dining hall meals as offered to students were relatively adequate.
2. More than one-half of scores of the entire sample fell into the marginal (or less adequate) level of nutritional adequacy.
3. Students could have raised the level of their food intake to an optimum level through wise choices of snacks, although none in this study did so.

4. Students with home economics training at various levels achieved scores ranging from poor to adequate. This was also true for those who had had no home economics training. Those with home economics training tended to improve their dietaries through wise choice of snacks while the non-home economics group did not.
5. The almost universal acceptance of "snack-eating" seems to have been a part of the cultural pattern of students in the sample. The snacks eaten during the three-day period ranged from none (one person) to seventeen (one person). Snack foods are readily available both on campus and nearby.
6. Available evidence from this study tends to indicate that home economics teachers of food and nutrition are succeeding less well than their stated goal of "improved food practices" would suggest. This may imply the need for teachers to orient their teaching more closely with individual and family health and to develop better, that is, more effective methods of teaching this important subject.

Evidently there has not been enough logical and emotional appeal to establish in the individual a deep appreciation of the importance of health or the many reducing diets would not be prevalent. Recognizing that change takes a long time, what needs to be accomplished in dietary management will entail much patience and a deeper appreciation of values.

Few teachers and supervisors in the past have recognized the many aspects of group life in changing food habits. Evidently in their methods and techniques they have not given enough emphasis to this phase when carrying out their programs as evidenced by the fact that

existing conditions remain the same. One wonders if the problem might be that teachers start to work with pupils where they think they should be instead of where they are. More knowledge is needed concerning "why people eat what they eat," what foods they like that are available and how these facts can be utilized and combined with a desire for good health.

As a result of this study, the writer has come to wonder whether the requirements as used on the score sheet for evaluating dietary intake, does not over emphasize the need for butter or margarine and potatoes. It will be noted that the score sheet was evolved from the requirements stated in the "Basic Seven" and in the recommended daily dietary allowances of the Food and Nutrition Board, National Research Council.

Greater progress will probably be made when students and their teachers become aware of and decide to do something about:

1. Interrelated aspects of nutrition education.
2. Type of objectives that do not conflict with accepted food patterns.
3. Having tolerance for individual idiosyncracies.
4. Teaching people, through group decision, to become motivated about different and better dietary practices.

Home economics and other teachers of nutritional aspects of health need to realize that:

1. The responsibility cannot be left to the nutritional chemist to determine the desired calories and vitamin content of food.

2. Merely for families to have an adequate budget or ample supplies will not insure good nutrition.
3. To apply nutrition knowledge in a family situation is a privilege given to those who plan meals for others.
4. Cooperation and coordination from parents, community groups and others interested in the protection and maintenance of health may be the "keys" to improved dietaries.

More might be accomplished in the area of foods and nutrition teaching if the following suggestions were used:

1. Pupils, with the guidance and help of teachers, participate in selecting, planning, carrying out and evaluating their entire experiences.
2. Parents, with the assistance of teachers and supervisors secure information regarding the field of adult education.
3. Youth who have left school and gone to work be reached through local programs.

BIBLIOGRAPHY

BOOKS

- Army, Clara Brock. Education in Your Daughter's New York
 Appleton-Century-Crofts, Inc., 1931. 176 pp.
- Deans, Anna deLottow and Charles de March. W. H. Deans, 1871-1911
 Fabrics Company, Inc., 1912. 112 pp.
- Galton, Francis. Hereditary Genius. London, England: Macmillan & Co., 1869. 311 pp.
- Martin, Ethel Austin. Robert's Nutrition Work Book. Chicago:
 The University of Chicago Press, 1931. 128 pp.

PUBLICATIONS OF THE GOVERNMENT, LEARNED

SOCIETIES, AND OTHER ORGANIZATIONS

- DeWitt, W. E., Jr., M. D. "Nutrition . . . Food and Fitness."
 Proceedings of National Research Council, National Academy of Sciences,
 United States Department of Agriculture, Washington, D. C., 1931. 10 pp.

BIBLIOGRAPHY

- DeWitt, W. E., Jr., M. D., and J. E. Swanson (Editors).
 Methods for Evaluation of Nutritional Studies and Reports - A
 Symposium. Advisory Board on Governmental Education and Research
 and Committee on Foods, Department of the Army, Office of the
 Quartermaster General, Washington, Government Printing Office,
 1934. pp. 100-55.

PERIODICALS

- Allen, Alfred. "Mass Education Training and the Food Problem." Food
 Survey. Journal of Food Research, 12:13-22, (May,
 1934).
- MacMillan, Helen and Ruth Loveland. "The Self-Chosen Diets of
 College Girls in a Cooperative Dormitory." Journal of Food
 Research, 15:174-78, (October, 1935).
- Warren, Saba and Alfred Moore. "A Study of the Diets of the
 Andrew College Women." Journal of the American Dietetic
 Association, 14:23-24, (May, 1917).

BIBLIOGRAPHY

BOOKS

- Army, Clara Brown. Evaluation in Home Economics. New York: Appleton-Century-Crofts, Inc., 1953. 378 pp.
- Bowes, Anna dePlanter and Charles F. Church, M. D. Food Values of Portions Commonly Used. Eighth edition. Philadelphia: College Offset Press, 1956. 110 pp.
- Cutting, Windsor C. (ed). Annual Review of Medicine, Vol. 1, California: Stanford University Press, 1950. 484 pp.
- Martin, Ethel Austin. Roberts' Nutrition Work With Children. Chicago: The University of Chicago Press, 1954. 527 pp.

PUBLICATIONS OF THE GOVERNMENT, LEARNED

SOCIETIES, AND OTHER ORGANIZATIONS

- Sebrell, W. H. Jr., M. D. "Nutrition . . . Past and Future," Proceedings of National Food and Nutrition Institute United States Department of Agriculture, Agriculture Handbook No. 56, Washington: Government Printing Office, 1952. p. 6.
- Spector, Harry, Martin G. Peterson, and J. E. Freedman (editors). Methods for Evaluation of Nutritional Adequacy and Status - A Symposium. Advisory Board on Quartermaster Research and Development Committee on Foods, Department of the Army, Office of the Quartermaster General. Washington: Government Printing Office, 1954. pp. 186-88.

PERIODICALS

- Botto, Mildred. "Home Economics Training and the Food Habits of High School Girls," Journal of Home Economics, 26:159-61, (March, 1934).
- MacMillan, Thelma and Ruth Leverton. "The Self Chosen Diets of College Girls in a Cooperative Dormitory," Journal of Home Economics, 35:514-18, (October, 1943).
- Morris, Sadie and Mildred Bowers. "A Study of the Diets of One Hundred College Women," Journal of the American Dietetic Association, 15:358-62, (May, 1939).

UNPUBLISHED MATERIAL

- Blackman, Nina Ruth. A Survey of Food Practices of 124 Eleventh and Twelfth Grade Students in Three North Carolina Communities. Master's thesis, Greensboro, North Carolina: The Woman's College of the University of North Carolina, 1946. pp. 22-31.
- Brendle, Cleo. Food Production and Consumption Practices in a Selected Group of North Carolina Homes. Master's thesis, Greensboro, North Carolina: The Woman's College of the University of North Carolina, 1941. p. 10.
- Debois, Rita. A Study of Plate Waste in the Dining Hall of a State Woman's College. Master's thesis, Greensboro, North Carolina: The Woman's College of the University of North Carolina, 1946. p. 33.
- Krahnke, Gwendolyn Elizabeth. Evaluation of the School Lunch Menus at a Demonstration School. Master's thesis, Greensboro, North Carolina: The Woman's College of the University of North Carolina, 1949. p. 78.
- McCall, Nancy. An Evaluation of the Adequacy of Diets Planned in a Home Management House. Master's thesis, Greensboro, North Carolina: The Woman's College of the University of North Carolina, 1946. p. 16.
- O'Connell, Sister Mary Frances. A Study of the Influence of Nutrition Knowledge on the Food Selection Habits of High School Students. Master's thesis, Greensboro, North Carolina: The Woman's College of the University of North Carolina, 1943 Abstract.
- Outlaw, Eunice Bryan. A Study to Determine the Effect of a Nutrition Program on the Eating Habits of a Group of First Grade Children. Master's thesis, Greensboro, North Carolina: The Woman's College of the University of North Carolina, 1943, p. 39.
- Segner, Esther F. An Evaluation of Students Achievement in the Foods Unit of the Proposed Course of Study for Home Economics in Wisconsin. Master's thesis, University of Minnesota, 1936. p. 12.
- Sharpe, Evelyn Terry. A Survey of the Diets of the Children in the Fourth, Fifth and Sixth Grades of Curry School. Master's thesis, Greensboro, North Carolina: The Woman's College of the University of North Carolina, 1947. p. 46.
- Tinsley, Willa Vaughn. Development of Instruments for Evaluating Food Practices, Nutrition Information, and School Lunch Programs and Their Use in Nutrition Education at the Elementary Level. Doctoral dissertation, The University of Minnesota, 1947. pp. 29, 30.

EXHIBIT A
THREE-DAY FOOD RECORD

First Day

Please fill in blanks but do not sign your name.

List your food intake for a day. Tell whether you had one or two servings and give approximate amounts. Include butter, sugar and cream used in coffee, and all soft drinks.

Breakfast

- | | | |
|----------|----------|----------|
| 1. _____ | 4. _____ | 7. _____ |
| 2. _____ | 5. _____ | 8. _____ |
| 3. _____ | 6. _____ | 9. _____ |

Mid-Morning

- | | | |
|-----------|-----------|-----------|
| 10. _____ | 11. _____ | 12. _____ |
|-----------|-----------|-----------|

APPENDIX

- | | | |
|-----------|-----------|-----------|
| 13. _____ | 14. _____ | 15. _____ |
| 16. _____ | 17. _____ | 18. _____ |
| 19. _____ | 20. _____ | 21. _____ |

Afternoon Snack

- | | |
|-----------|-----------|
| 22. _____ | 23. _____ |
|-----------|-----------|

Evening Meal

- | | | |
|-----------|-----------|-----------|
| 24. _____ | 25. _____ | 26. _____ |
| 27. _____ | 28. _____ | 29. _____ |
| 30. _____ | 31. _____ | 32. _____ |

Alcohol, Smoking and Rationing

- | | | |
|-----------|-----------|-----------|
| 33. _____ | 34. _____ | 35. _____ |
|-----------|-----------|-----------|

EXHIBIT A
THREE-DAY FOOD RECORD

First Day

Please fill in blanks but do not sign your name.

List your food intake for a day. Tell whether you had one or more servings and give approximate amounts. Include butter, sugar and cream used in coffee, and all soft drinks.

Breakfast

- | | | |
|----------|----------|----------|
| 1. _____ | 4. _____ | 7. _____ |
| 2. _____ | 5. _____ | 8. _____ |
| 3. _____ | 6. _____ | 9. _____ |

Mid-Morning

- | | | |
|----------|----------|----------|
| 1. _____ | 2. _____ | 3. _____ |
|----------|----------|----------|

Noon Meal

- | | | |
|----------|----------|----------|
| 1. _____ | 4. _____ | 7. _____ |
| 2. _____ | 5. _____ | 8. _____ |
| 3. _____ | 6. _____ | 9. _____ |

Afternoon Snack

- | | | |
|----------|----------|----------|
| 1. _____ | 2. _____ | 3. _____ |
|----------|----------|----------|

Evening Meal

- | | | |
|----------|----------|-----------|
| 1. _____ | 5. _____ | 9. _____ |
| 2. _____ | 6. _____ | 10. _____ |
| 3. _____ | 7. _____ | 11. _____ |
| 4. _____ | 8. _____ | 12. _____ |

Between Evening and Bedtime

- | | | |
|----------|----------|----------|
| 1. _____ | 2. _____ | 3. _____ |
|----------|----------|----------|

EXHIBIT A
THREE-DAY FOOD RECORD

Second Day

Please fill in blanks but do not sign your name.

List your food intake for a day. Tell whether you had one or more servings and give approximate amounts. Include butter, sugar and cream used in coffee, and all soft drinks.

Breakfast

- | | | |
|----------|----------|----------|
| 1. _____ | 4. _____ | 7. _____ |
| 2. _____ | 5. _____ | 8. _____ |
| 3. _____ | 6. _____ | 9. _____ |

Mid-Morning

- | | | |
|----------|----------|----------|
| 1. _____ | 2. _____ | 3. _____ |
|----------|----------|----------|

Noon Meal

- | | | |
|----------|----------|----------|
| 1. _____ | 4. _____ | 7. _____ |
| 2. _____ | 5. _____ | 8. _____ |
| 3. _____ | 6. _____ | 9. _____ |

Afternoon Snack

- | | | |
|----------|----------|----------|
| 1. _____ | 2. _____ | 3. _____ |
|----------|----------|----------|

Evening Meal

- | | | |
|----------|----------|-----------|
| 1. _____ | 5. _____ | 9. _____ |
| 2. _____ | 6. _____ | 10. _____ |
| 3. _____ | 7. _____ | 11. _____ |
| 4. _____ | 8. _____ | 12. _____ |

Between Evening and Bedtime

- | | | |
|----------|----------|----------|
| 1. _____ | 2. _____ | 3. _____ |
|----------|----------|----------|

EXHIBIT A

THREE-DAY FOOD RECORD

Third Day

Please fill in blanks but do not sign your name.

List your food intake for a day. Tell whether you had one or more servings and give approximate amounts. Include butter, sugar and cream used in coffee, and all soft drinks.

Breakfast

- | | | |
|----------|----------|----------|
| 1. _____ | 4. _____ | 7. _____ |
| 2. _____ | 5. _____ | 8. _____ |
| 3. _____ | 6. _____ | 9. _____ |

Mid-Morning

- | | | |
|----------|----------|----------|
| 1. _____ | 2. _____ | 3. _____ |
|----------|----------|----------|

Noon Meal

- | | | |
|----------|----------|----------|
| 1. _____ | 4. _____ | 7. _____ |
| 2. _____ | 5. _____ | 8. _____ |
| 3. _____ | 6. _____ | 9. _____ |

Afternoon Snack

- | | | |
|----------|----------|----------|
| 1. _____ | 2. _____ | 3. _____ |
|----------|----------|----------|

Evening Meal

- | | | |
|----------|----------|-----------|
| 1. _____ | 5. _____ | 9. _____ |
| 2. _____ | 6. _____ | 10. _____ |
| 3. _____ | 7. _____ | 11. _____ |
| 4. _____ | 8. _____ | 12. _____ |

Between Evening and Bedtime

- | | | |
|----------|----------|----------|
| 1. _____ | 2. _____ | 3. _____ |
|----------|----------|----------|

EXHIBIT B

LETTER TO COOPERATING STUDENTS WHO WERE NOT
ENROLLED IN HOME ECONOMICS COURSES

A study is being made on the food intake for a three day period of all home economics freshmen. Would you cooperate with this study by meeting in Room 102 of the Home Economics Building at 5 o'clock on Monday, January 9, 1956?

If you are unable to be present, would you please state a convenient hour you can meet me? Thank you kindly.

Mary P. Shockey

Graduate Student

Enclosure

Please check: I will		Will not
be present on Monday, 5 o'clock, January 9, 1956,		
Room 102 Home Economics Building.		
I will be able to see you.		
Date:		
Hour:		
Name:		

EXHIBIT C

SCORE OF MENUS IN DINING HALLS FROM
SCORE SHEET FOR EVALUATING ADEQUACY OF THREE-DAY DIET*

FOOD GROUPS	No. of Servings	Rating				Diet Score
		0	1	2	3	
1. Green & yellow vegetables (some raw, some cooked or canned), Av. serv: $\frac{2}{3}$ c. cooked or 1 c. raw	4	0	1	2	3	1. <u>3</u>
2. Oranges, tomatoes, grapefruit, raw cabbage, or salad greens, Av. serv: 1 orange, 1 tomato, $\frac{1}{2}$ grapefruit, 1 c. raw greens, or $\frac{1}{2}$ c. juice	4	0	1	2	3	2. <u>3</u>
3. Potatoes Av. serv: $\frac{1}{2}$ c. cooked	2	0	1	2	3	3. <u>2</u>
4. Other fruits & vegetables (raw, dried, cooked or canned) Av. serv: $\frac{1}{2}$ c. cooked	$7\frac{1}{2}$	0	2	4	6	4. <u>6</u>
5. Milk & milk products (fluid, dried or evaporated) or cheese, Av. serv: 1 c. fluid milk or 1 cubic inch of cheese	8	0	3	6	9	5. <u>8</u>
6. Meat, fish, poultry, dried beans or peas, nuts, or peanut butter, Av. serv: 2 or 3 oz of meat or fish, 4 tbs of peanut butter, 4-8 nuts, $\frac{1}{2}$ c. cooked beans or peas	7	0	1	2	3	6. <u>3</u>
7. Eggs or egg custard. Av. serv: 1 egg	$1\frac{1}{2}$	0	1	2	3	7. <u>2</u>
8. Bread, flour, cereals (whole grain or enriched, Av. serv: 1 slice bread, $\frac{1}{2}$ c. cooked or 1 c. prepared cereal, 1 griddle cake or waffle	12	0	3	6	9	8. <u>9</u>
9. Butter or fortified margarine Av. serv: 1 tsp.	6	0	3	6	9	9. <u>6</u>
* Highest possible score 48	Total Score				42	

EXHIBIT D

THE BASIC SEVEN*

U. S. needs us strong - eat the basic 7 every day.

For health - Eat some food from each group every day

Group one - Green and yellow vegetables, some raw - some cooked,
frozen, or canned

Group two - Orange, tomatoes, grapefruit or raw cabbage or salad greens

Group three - Potatoes and other vegetables and fruits, raw, dried,
cooked, frozen, or canned

Group four - Milk and milk products, fluid, evaporated, dried milk,
or cheese

Group five - Meat, poultry, fish, or eggs or dried beans, peas, nuts,
or peanut butter

Group six - Bread, flour, and cereals, natural whole grain - or
enriched or restored

Group seven - Butter and fortified margarine (with Vitamin A added)

In addition to the basic 7, eat any other foods you want

* Superintendent of Documents, Government Printing Office, Washington,
D. C. (April, 1943).

EXHIBIT E

CODE FOR EVALUATING COMPOSITION OF MIXED DISHES*

FOOD GROUP	FOOD	ONE-HALF SERVING
Other fruits and vegetables	Hungarian Goulash	1
	Vegetable Soup	1
	Sandwich Spreads	1
	Fruit Pies	1
Milk and milk products or cheese	Cheese Sandwich	1
	Ice Creams	1
	Cocoa	1
	Oyster Stew	1
	Puddings as Peach Tapioca	1
	Milk Shakes	3
	Cheese Strata	1
Meat, fish, poultry, dried beans or peas, nuts, peanut butter	Vegetable Soup	1
	Hungarian Goulash	1
	Peanut Butter crackers, four	1
	Wieners, one	1
	Bacon, two strips	1
	Ham and relish mixture	1
Egg, egg custard	Cheese Strata (cheese sandwich dipped in egg)	1
Breads, flours, cereals	Pastry from pies	1
	Sweet Buns, etc.	1
	Doughnuts, cake	1

* This code was arrived at after discussing actual recipes used with the director of dining halls.

When the score in any one food group was one-half or over, one whole credit was given to that particular food in the group.

EXHIBIT F
 MASTER TABLE I
 SELECTION OF THE TEN MOST POPULAR SNACKS
 BY SUBGROUPS A, B, C, AND D

	Subgroup			
	A	B	C	D
Number in Group*	39	19	12	2
Food				
Cake	44	21	67	0
Candies	51	74	25	50
Cookies	38	21	42	0
Crackers	21	53	17	50
Fruit	26	42	42	50
Fruit Drinks	5	37	8	50
Milk, Milk Drinks, Ice Cream, Cheese	28	42	50	50
Peanuts, Other Nuts	21	11	8	0
Soft Drinks, Coca Cola, Pepsi Cola, 7 Up	62	68	67	100
Tea, Coffee	10	32	25	50

* Percentages were figured on basis of number in each group.