A SURVEY OF FOOD PRACTICES OF SIXTY-THREE FAMILIES IN LUBBOCK, TEXAS

THESIS

A SURVEY OF FOOD PRACTICES OF SIXTY-THREE FAMILIES IN LUBLOCK, TEXAS

THESIS

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College in Partial Fulfillment
of the Requirements
For the Degree of

MASTER OF SCIENCE

By

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CHAPTER I

PLAN OF THE STUDY

Introduction. The problem of malnutrition is recognized as being one of national importance.[1,2,3] Compared with other countries, the United States produces an apparent abundance of food;[4,5] yet a large proportion of the population has been found to consume food lacking nutrients in amounts which authorities

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1 Arthur C. Bartlett, "Food in The Present Emergency," Journal of the American Dietetics Association, 18:813, January, 1942.

2 Margaret Mead, "Dietary Patterns and Food Habits," Journal of the American Dietetics Association, 19:4, January, 1943.

3 Frank G. Boudreau, "Food and Nutrition; Basic Factors in International Relations," Nutrition Reviews, 1:129, March, 1943.

4 Ibid., p. 129.

5 Mead, op. cit., p. 814.

believe are necessary for optimum health and efficiency.[6,7,8]

More and more attention is being given to the problems involved in securing adequate diets for all people. The National Nutrition Conference in May, 1941,[9,10] launched a well-organized program for studying and improving nutrition in the United States. At this conference numerous problems in foods and nutrition confronting the nation were considered and twelve recommendations were made to the President of the United States.[11] These recommendations included the using of the Recommended Daily

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6 Russel M. Wilder, "Nutrition and National Defense," Journal of the American Dietetics Association, 18:1,2, January, 1942.

7 Hazel K. Stiebeling, and Esther F. Phipard, "Diets of Families of Employed Wage Earners and Clerical Workers in Cities," Circular 507, United States Department of Agriculture, p. 191.

8 Neige E. Todhunter, "The Evaluation of Nutritional Status," Journal of the American Dietetics Association, 18:79, February, 1942.

9 Helen S. Mitchell, "The National Nutrition Outlook," Journal of Home Economics, 33:537, October, 1941.

10 Proceedings of the National Nutrition Conference for Defense, Federal Security Agency, United States Government Printing Office, Washington, D. C., 1942.

11 Digest of major recommendations made to the President by the National Nutrition Conference, May 26-28, 1941, is given in the Appendix.

Allowances as set up by the Committee on Foods and Nutrition of the National Research Council[12] as a "nutritional yardstick" or dietary standard for the nation. The Recommended Daily Allowances set up by the Committee on Foods and Nutrition is not based on the minimum requirement of nutrients to keep an individual merely in nutritional balance but rather on what is considered an optimum intake. Nutritionists believe that the optimum intake is not the same percentage above the minimum requirement for all nutrients. In the case of calories the optimal intake at any given age and size is not more than 10 per cent above the amount which meets the individual's energy expenditure, whereas, for protein the allowance is 50 per cent above actual requirements. A 50 per cent allowance above minimum requirements is also satisfactory for phosphorus and iron but the calcium intake should be at least twice that of the minimum requirement.

The allowances for the vitamins are even greater than that for calcium. The optimal allowances for vitamin A, riboflavin and ascorbic acid should be at least three or four times the minimum

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12 Ibid., p. 231.

requirement which prevents symptoms of a deficiency of these nutrients.[13] For the other vitamins the intakes are not quite as high as for those just mentioned. Thus the Recommended Daily Allowances are an optimum dietary standard which is believed to promote optimum, positive health. "An optimum diet," says Dr. Sherman, "would add not only years to one's life but also life to one's years."[14]

Sherman points out the desirability of two types of standards, one "in terms of the individual chemical factors involved",[15] such as the Recommended Daily Allowances of the Committee on Foods and Nutrition of the National Research Council, and the other "in terms of articles or types of foods which one actually chooses and consumes."[16] Furthermore Sherman believes that

> . . .in the present state of nutritional knowledge, the most soundly scientific procedure seems to be to put dietary standards only partly in numerical terms for chemical factors, and make at least equal use of distribution standards and other simplifications in terms of everyday foods.[17]

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13 H. C. Sherman, Chemistry of Foods and Nutrition, New York: The Macmillan Company, 1941, pp. 490-491.

14 Money Management, The Food Dollar, Household Finance Corporation, Chicago, Revised December, 1942, p. 3.

15 Sherman, op. cit., p. 493.

16 Ibid., p. 493.

17 Ibid., p. 494.

Distribution standards are defined as those standards expressed in terms of relative amounts of the different types of foods for an individual.[18]

The nutritional standard when expressed in terms of foods may have numerous interpretations including standards for weekly market orders expressed in pounds, number of servings of food per person per day, or even amounts of food for a year for an individual. The simplest form of the nutritional standard, however, is contained in a statement by Lord Astor, chairman of the League of Nations' Mixed Committee on Nutrition, when he said a dietary standard is "enough food, including enough of the right kinds of food."[19] Unquestionably nutritionists and other technically trained people should be prepared to think in terms of both types of standards. This, however, would be difficult for less trained people or for people in general.[20] Expressing the Recommended Daily Allowances in terms of actual foods makes the nutritional standard more understandable for people in general and simplifies the application of the "nutritional yardstick."

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18 Ibid., p. 490.

19 Ibid., p. 494.

20 Ibid., p. 493.

Schools, professional organizations and the state nutrition committees for the forty-eight states, as well as the food industry, are translating this optimum standard into terms of local foods. "Allowances are made for the food habits of every part of the country including minority groups as Latin-Americans and Negroes." Two examples of interpretation of the dietary standard in terms of actual foods are the Texas Food Standard[22] and the standard market lists for various incomes as prepared by the United States Bureau of Home Economics.[23,24]

Many authorities believe that food habits are an important factor to be considered in order to

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21 Mitchell, op. cit., p. 540.

22 A copy of the Texas Food Standard may be found in the Appendix.

23 Market Lists for Moderate-Cost and Liberal Meals, Bureau of Home Economics, United States Department of Agriculture, Slightly Revised, October, 1942.

24 Three Market Lists For Low Cost Meals, Bureau of Home Economics, United States Department of Agriculture, Slightly Revised, October, 1942.

improve the diets of people.[25,26,27,28] Whitacre, acting as a member of the research committee of the food and nutrition division of the American Home Economics Association, compiled a list of problems in home economics in which research is needed.[29] Of 618 suggestions for needed research the greatest number, 136 requests, were for research in food preparation. Second in demand were 106 requests for more investigations of dietary habits and other factors contributing to health. More definite information about food habits in local communities would give a better basis for teaching people wiser food practices.[30]

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25 Mead, op. cit., p. 2.

26 Roy M. Dorcus, "Food Habits: Their Origin and Control," Journal of the American Dietetics Association, 19:738, March, 1943.

27 Mary Sweeny, "Changing Food Habits," Journal of Home Economics, 34:457, September, 1942.

28 Hazel K. Stiebeling, "The National Research Council's Committee on Food Habits," Journal of Home Economics, 33:541, October, 1941.

29 Jessie Whitacre, "Needed Research in Foods and Nutrition," Journal of Home Economics, 33:649, November, 1941.

30 Stiebeling, op. cit., p. 543.

Stiebeling and Phipard[31] and others[32,33] have suggested that the improvement of the nutritional status of people is a problem for the entire educational system of the nation. This need for nation-wide education is expressed in one of the other recommendations of the National Nutrition Conference in 1941, namely the "mobilization of every educational method to spread the newer knowledge of nutrition among laymen by means of the schools, motion pictures, the radio, the public press, home and community demonstrations, and all other suitable means."[34] Many of these groups are now giving information on nutrition to the public in the form of talks, film strips and news stories. Until recently schools have not utilized to any great extent the opportunities "to spread nutritional knowledge and arouse interest in better diets."[35]

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31 Stiebeling and Phipard, op. cit., p. 2.

32 "How Prevalent Is Malnutrition?", Nutrition Reviews, 1:33, December, 1942.

33 Lowell S. Selling, "Some Physiological Aspects of Nutrition," Journal of the American Dietetics Association, 18:744, November, 1942.

34 Proceedings of the National Nutrition Conference for Defense, op. cit., p. 231.

35 Mary Jean Bowman, and C. Arnold Anderson, "Nutrition Education Programs," Nutrition and Food Supply: The War and After, Annals of the American Academy of Political and Social Science, 225:152, January, 1943.

More and more emphasis is being placed on supervised food selection for students of all ages through the school-wide cafeterias. The greater attention which schools are giving to applied subjects, such as vocational studies, has emphasized nutrition and the individual well-being of the student.[36]

By means of various kinds of dietary surveys an analysis of the food practices of a community and of the adequacy of its dietaries may be made. Such surveys would give a public school staff a picture of the food habits of the community which it is serving. In many schools the teacher of vocational home economics is one person, perhaps the only one, on the staff who has had the training necessary to study and understand food habits and food requirements of a people. It is her responsibility, therefore, to make her teaching program applicable to the food problems of the people in her community through knowing and interpreting the food habits of her community.

Purposes of the study. The purposes of this study are:

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36 Ibid., p. 152.

1. To judge the adequacy of the dietaries of some families in Lubbock, Texas, by standards based on those of the Bureau of Home Economics and the Texas Food Standard.

2. To determine from these dietaries the frequency of

a. the foods used,

b. the methods of cooking and

c. the methods of meal planning.

3. To study possible relationships between certain factors which appear to affect the adequacy of dietaries.

4. To emphasize the necessity of a closer relationship between the needs of a community and the teaching of foods and nutrition in home economics classes.

a. To offer suggestions which can be used as a basis to make the teaching of foods and nutrition in high school classes more applicable to the lives of the students in the community.

b. To suggest bases for the selection of methods of food preparation which are suitable to high school girls.

c. To offer principles to be used as a basis of food selections so that the teaching will be effective in improving the food habits of the community.

Selection of subjects. The subjects for this study were families selected at random from among those living in Lubbock, Texas. All of the families were American-born. Thirty-two surveys were secured in the spring and summer of 1942 by contacting housewives who were willing to check the survey form and keep the food record for a week. No effort was made to choose families from any particular income range or profession nor was any other such factor considered in the selection of the subjects. Five surveys were secured in the fall of 1942 in the same way. The remaining twenty-six surveys were obtained in the spring of 1943 from the families of girls studying homemaking in Lubbock Junior High School. Two Junior High School homemaking teachers and their classes cooperated in this and an attempt was made to secure surveys from all of the families represented in each class. Several families, however, were unable to complete the surveys because of unusual home conditions. Most of the families were very cooperative in checking the surveys and in keeping the food record for a week. This willingness

to cooperate may indicate a general interest in food and nutrition problems.

Plan of the study. Upon first visiting each family, the investigator explained the survey and showed the family how to keep an accurate record of food consumption for a seven-day period. Household scales were furnished for weighing the foods. In addition to keeping the food consumption record, each family was asked to check cooking habits used, methods of menu making, types of foods preferred and the frequency these types of foods were served. No attempt was made to secure data on food expenditures. A sample of the survey form used is included in the Appendix. The families were urged to consult the person in charge of the study whenever any difficulties were encountered in recording the data. At the end of the seven-day period a second visit was made to check the record for accuracy and completeness of information. The records were also collected at this time. This procedure followed closely that of Stiebeling and Phipard in their studies of family dietaries.[37]

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37 Stiebeling, and Phipard, op. cit., p. 4.

Methods of tabulation. The quantities of foods used by the family for a seven-day period were tabulated in units or pounds under the following groupings:

1. Milk
2. Eggs
3. Meat, poultry and fish
4. Cooking fats
5. Green and yellow vegetables
6. Potatoes
7. Other vegetables
8. Citrus fruits and tomatoes
9. Other fruits
10. Whole grain products
11. Other cereals
12. Butter and margarine
13. Sweets
14. Dry beans, peas and nuts

These groups correspond closely to those set up by the Bureau of Home Economics and to those in the Texas Food Standard.[38,39,40] Because of the large number of groups, it was difficult to compare and interpret results. Furthermore, according to Sherman, the science of nutrition gives the best guidance to people whenever the dietary standard is explained in terms of general types rather than individual articles of food.[41] This allows for individual freedom of choice and for seasonal influences. For these reasons these groups were recombined on the basis of types of food into nine

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38 Three Market Lists for Low-Cost Meals.

39 Market List for Moderate-Cost and Liberal Meals. . . .

40 Texas Food Standard, Appendix.

41 Sherman, op. cit., p. 493.

groups as follows:

1. Dairy products, including cheese and milk
2. Eggs
3. Meats, dry beans, peas and nuts
4. Cereal products and breads
5. Green and yellow vegetables
6. Citrus fruits and tomatoes
7. Other fruits and vegetables
8. All fats
9. All sweets

Five ounces of cheese were estimated to be equivalent to one quart of milk and the cheese consumed was expressed as quarts of milk. Since meats, dry beans and peas, and nuts are similar in food value, they were grouped together. This gave families credit for using meat substitutes. There was no particular reason in this study for listing potatoes separately from other vegetables or listing butter and margarine separately from cooking fats; therefore, these were given in single groups. Notations were made of the amounts of whole grain products included in each dietary. These amounts were then considered in scoring certain cases where difficulty was encountered in deciding the dietary class in which they belonged.

Scoring the dietaries. A family standard of food consumption was set up based on family composition, age and sex. All members were assumed to be moderately active and body weight was not considered. Each family standard was a composite

made up by adding together the quantities necessary for each individual of the family as given in Table I on the following page. The standards for weekly food consumption for each individual were based on those of the Bureau of Home Economics placing the foods in the nine groups previously described. The standards for various ages and sexes for the three low-cost dietary plans were averaged together to get a minimum-adequate standard for each individual.[42] The minimum-adequate standard is above the minimum requirement necessary to prevent deficiency symptoms but is not as high as the liberal or the optimum standard. The standards of the Bureau of Home Economics for the liberal dietary were used as the liberal standard in this study.[43] The weekly food consumption records were evaluated more fairly when a standard for weekly food consumption ranging from the minimum quantities, that would be adequate, to the liberal quantities, which some families might desire, were used. This family

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42 Three Market Lists for Low- Cost Meals, op. cit.

43 Market Lists for Moderate-Cost and Liberal Meals, op. cit.

TABLE I

MINIMUM-ADEQUATE AND LIBERAL QUANTITIES OF FOOD

PER WEEK FOR DIFFERENT AGE GROUPS*

Age groups	Range of Minimum to Liberal for Each Food Group								
	Dairy products	Eggs	Meats, beans, peas, nuts	Cereal products	Green & yellow vegetables	Citrus fruits & tomatoes	Other fruits & vegetables	Fats	Sweets
	qts.	no.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Children									
9-12 mos.	7.0-7.0	5.0- 5.0	0.1-0.1	0.5-0.5	1.5-1.5	2.0-2.0	1.0- 1.0	0.1-0.1	0.1-0.1
1- 3 yrs.	5.2-7.0	5.3- 6.0	0.2-0.4	1.3-1.0	1.3-1.5	1.5-2.0	2.3- 2.9	0.3-0.1	0.2-0.1
4- 6	4.3-7.0	5.3- 7.0	0.5-0.8	1.5-1.3	1.6-2.5	1.5-2.5	3.5- 5.6	0.4-0.4	0.5-0.4
7- 9	4.8-7.0	5.3- 8.0	1.0-1.8	1.5-1.5	1.9-3.5	1.5-3.0	3.5- 7.4	0.8-0.6	0.6-0.6
10-12	5.2-7.0	4.3- 8.0	1.9-2.6	3.5-2.1	2.2-3.5	1.5-3.0	4.6- 8.0	0.9-1.0	0.7-1.0
Girls									
13-15	5.3-7.0	5.0- 9.0	2.8-3.1	3.8-2.5	2.7-3.5	1.5-4.0	5.0- 8.2	1.0-1.1	0.9-1.1
16-20	5.3-7.0	5.0- 9.0	3.1-3.6	2.9-1.4	2.8-3.5	1.5-4.0	5.0- 9.0	0.8-0.9	0.7-0.9
Women									
Moderately Active	4.2-6.0	4.0- 9.0	2.1-3.1	3.5-1.5	2.2-3.5	1.5-5.0	5.2- 7.8	0.9-1.1	0.9-1.1
Boys									
13-15	5.5-7.0	4.0- 9.0	2.2-4.0	4.9-2.9	2.8-4.0	1.9-4.5	6.7-10.3	1.2-1.4	0.9-1.4
16-20	5.5-7.0	3.3- 9.0	2.5-5.0	6.3-3.3	2.8-4.0	1.9-5.0	7.5-12.0	1.4-1.9	1.2-1.9
Man									
Moderately Active	4.2-6.0	3.3-10.0	3.0-4.1	4.6-2.4	2.8-3.5	1.5-5.0	5.9- 7.8	1.0-1.5	1.1-1.5

* Based on Bureau of Home Economics Standards, Revised October, 1942.

standard gave a better picture of the food needs of each family for it allowed variations in individual tastes, food budgets and home production. For example, one family preferred potatoes to cereals, its intake of cereals being slightly low. The deficiency was compensated for by a liberal intake of potatoes and other vegetables.

Calculations were made to determine the consumption of the minimum adequate standard in terms of percentages. These gave a basis for comparison of the actual food consumption with the minimum adequate standard for the family. The dietaries were then grouped into the following classes: (a) Good class--dietaries meeting all the minimum-adequate standards with a few exceptions where the intakes were judged sufficient for a particular family. (b) Fair class-- dietaries meeting the standard for milk and for two of the other four "protective foods".[44] and meeting most of the other

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44 Sherman, op. cit., p. 616. According to Sherman the protective foods are milk, fruits, vegetables and eggs for each is regarded as a good or excellent source of at least two of the four factors, calcium, ascorbic acid, riboflavin and vitamin A. These factors are not necessary merely for protection against deficiency but for the promotion of better-than-average health. Less emphasis is placed on eggs as a protective food because they do not reduce intestinal putrefaction and promote the development of wholesome bacterial flora in the digestive tract as do the other three protective food groups.

standards. (c) Poor class-- dietaries failing to meet the standards for either the adequate or fair classes and which were in serious need of improvement. Incidentally, all dietaries not meeting the minimum standards for milk were classed as poor but not all the poor dietaries were low in milk.

Allowances were made for a slight sub-minimum consumption of a few food groups if certain other groups of similar nutritive value were consumed in liberal amounts. This liberty was taken in classifying dietaries only after considering family composition in relation to its food choices. For example, in the good class, family number 24 composed of a man and wife, 65 and 51 years old, showed a sub-minimum intake of cereals and green and yellow vegetables, whereas, their intake of eggs, citrus fruits, and other fruits and vegetables was high. Notwithstanding this deficiency, their dietary was classed as good. This judgment was used and some margin allowed in deciding the quality of each dietary because it was felt that precise lines could not be drawn between good, fair, and poor dietaries. This interpretation of the standard was made for some dietaries which met all the minimum standards except that for green and yellow vegetables. In these cases, the dietary was classed as good if the intake

of citrus fruits and other fruits and vegetables greatly exceeded the minimum adequate standards, and if the percentages of the family's minimum-adequate standard for these two plus that of green and yellow vegetables averaged one hundred per cent.

CHAPTER II

RESULTS

General. All income ranges were represented among the families of the study as shown in Table II on the following page. Of the sixty-three families studied, two had incomes above $4,000; one of these was in the poor, the other in the fair class of dietaries. Of the five families having incomes under $1,000, three were in the poor and two in the fair class of food consumption. No family with an income under $1,000 nor above $4,000 had a dietary in the good class. There seemed to be no tendency for any one occupational group to have better or poorer dietaries than another. The occupations of the families in each dietary class varied widely.

Families with dietaries classed as good had an average of 1.2 children per family. In this class there was a family with an income of $1,000-2,000 which had one other adult member, a father of seventy. There were two parents in each family in this class.

There was an average of 1.3 children per family with dietaries in the fair class. There were five

TABLE II

FAMILY PATTERN, INCOME RANGE AND PROFESSION
OF SUBJECTS HAVING GOOD, FAIR AND POOR DIETARIES

DIETARY CLASS	SUBJECT NUMBER	SIZE OF FAMILY			INCOME RANGE	OCCUPATION
		PARENTS	CHILDREN	OTHERS		
Good	1	2	1		1000-2000	Teacher
	3	2	2		1000-2000	Electrician
	10	2	2		1000-2000	Housemoving
	17	2	2		2000-4000	Doctor
	24	2			2000-4000	Teacher
	25	2		1	1000-2000	Merchant
	27	2	1		2000-4000	Salesman
	40	2			1000-2000	Rancher
	51	2			2000-4000	Farming and House Renting
	68	2	1		2000-4000	Railway Switchman
	79	2	1		1000-2000	College Student
	107	2	2		2000-4000	Mail Clerk
	135	2	3		1000-2000	Carpenter
Fair	28	2	1		2000-4000	College Professor
	30A	2	1	1	2000-4000	Merchant
	14	2		2	2000-4000	Automobile Salvage Dealer
	78	2			1000-2000	Air Corps
	106	2	2		Under-1000	Laborer
	37	2	2		2000-4000	Lumber Business
	49	2	2		2000-4000	Teacher
	9	2	4		1000-2000	City Cold Storage
	43	2	1		2000-4000	Army Officer
	48	2	1		2000-4000	Printer
	53	2	1		2000-4000	Army Officer
	13	2			Under-1000	Milkman
	116	2	1	1	2000-4000	Meatcutter
	123	2	2	1	2000-4000	OPA
	124	1	2		Above-4000	Father Deceased

	116	2	1	1	2000-4000	Meatcutter
	123	2	2	1	2000-4000	OPA
	124	1	2		Above-4000	Father Deceased
Poor	5	2	2		2000-4000	Automobile Salesman
	101	2	5		2000-4000	Aircraft Woodworker
	8	2	2		2000-4000	College Professor
	102	2	3	1	1000-2000	Mechanic
	44	2	2		1000-2000	Wholesale Warehouse Clerk
	35	2	3		Under-1000	Railroad Foreman
	23	2	1		1000-2000	Tobacco Salesman
	19	2	2		1000-2000	Plumber
	16	2	2		Under-1000	None (mother W.P.A. Housekeeping Aid)
	112	2	3		1000-2000	City Employee
	7	2		1	Under-1000	W.P.A.
	100	2	3		1000-2000	Salesman
	31	2	2		1000-2000	Rancher
	11	2	4		1000-2000	Shoe Repairman
	30B	2	2		1000-2000	Electrician
	105	2	3		1000-2000	Mechanic
	103	2	3		2000-4000	Ice Engineer
	75	2	2		1000-2000	Trucker
	65	2	2		1000-2000	Salesman
	12	2	2		1000-2000	Trucker
	45	2	3		1000-2000	Trenching Machine Operator
	108	2	1		1000-2000	Defense Worker
	115	2	3	1	2000-4000	Mechanic
	132	2	1		2000-4000	Manager Glass Department Sash and Door
	122	2	2		2000-4000	Telephone Employee
	130	2	3	1	Above-4000	Ginning and Farming
	118	2	2		1000-2000	Branch Manager Standard Brands
	119	2	2	1	1000-2000	Grocer
	121	2	2		2000-4000	Teacher
	114	2	3		1000-2000	Repairman for School
	129	2	2		2000-4000	Post Office Clerk
	67	2			1000-2000	College Student
	128	2	5		2000-4000	Mechanic
	136	1	6		1000-2000	Father Deceased
	134	2	3		1000-2000	Fireman

other members in four of the families; namely, a seventeen year old girl, aged grandparents, a grandfather and an adult sister. These other members of family units were all found in families of $2,000-4,000 incomes. The father of one family in this class was deceased.

In the thirty-five families with dietaries classed as poor, there was an average of 2.5 children per family. It may be assumed that a family of five with an income of $1,000-2,000 would spend less per person for food than a family of three, which is the average size family having a dietary in the good class. It has been found by other workers that low expenditures for food result in poor dietaries which might account partly for the poor quality of some dietaries in this class.[45,46,47,48,49] The largest

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45 Wilder, op. cit., p. 5.

46 Boudreau, op. cit., p. 129.

47 Martha Compton Hardy, et al,"Nutritional and Dietary Inadequacies Among City Children From Different Socio-Economic Groups," Journal of the American Dietetics Association, 19:177, March, 1943.

48 Stiebeling and Phipard, op. cit., p. 97, 99,100.

49 Reynolds, et al., "The Dietary Habits of College Students," Journal of Home Economics, 34:384, June, 1942.

family (six children) in this class, the father of which recently had been killed in an accident, had an income of $1,000-2,000.

In this class a thirty-year old sister lived with one family which had no children and whose income was under $1,000. The father of this family had no occupation but the mother was a Housekeeping Aid in the Works Progress Administration. A grandmother seventy-four years old lived with one family which had three children and whose income was $2,000-4,000. A grandfather eighty-four years old lived with another family which had two children and which had an income of $1,000-2,000.

Other workers have found that families who can afford adequate dietaries frequently have poor ones.[50] In the Lubbock study, this tendency was illustrated by a family which had a very poor dietary even though having an income above $4,000 and employing a full time maid and cook who was furnished her meals.

The diets of all classes were relatively high in sweets, eggs, citrus fruits and fats as is shown for individual families in Table III on page 24.

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50 Stiebeling and Phipard, op. cit., p. 99.

TABLE III

WEEKLY FOOD CONSUMPTION OF FAMILIES AND THE PERCENTAGE OF THE MINIMUM ADEQUATE STANDARD FOR EACH FOOD GROUP FOR EACH FAMILY

Family No.	Dairy products		Eggs		Meats, beans, peas, nuts		Cereal products		Green & yellow vegetables		Citrus fruits & tomatoes		Other fruits & vegetables		Fats		Sweets	
	qts.	%	no.	%	lbs.	%	lbs.	%	lbs.	%	lbs.	%	lbs.	%	lbs.	%	lbs.	%
GOOD CLASS OF DIETARIES																		
3	20.0	110	30	166	13.2	200	16.5	140	8.1	98	32.8	547	18.0	99	6.3	203	15.1	407
10	40.0	215	24	142	15.6	217	19.4	159	7.6	93	19.3	322	17.9	99	7.0	226	4.0	138
25	19.0	151	14	133	14.1	174	11.4	90	5.4	73	19.3	407	19.0	112	9.9	341	12.6	406
27	15.5	113	27	220	14.5	199	20.8	175	12.1	161	20.3	451	12.7	79	8.4	290	7.5	259
51	10.0	119	30	534	13.7	249	16.1	199	7.7	160	19.7	657	13.5	165	4.5	237	9.1	455
63	17.0	202	16	219	3.4	67	11.4	141	5.7	119	7.6	253	14.8	153	2.6	95	5.6	280
79	17.0	119	21	280	11.6	227	3.5	43	5.2	108	9.1	304	12.6	114	2.1	111	5.0	250
1	27.0	180	24	173	15.1	217	22.0	208	9.4	139	17.0	340	12.4	82	6.5	260	17.0	680
24	21.0	101	46	240	17.8	136	12.0	70	5.8	50	13.1	259	34.9	133	6.8	153	14.1	307
40	11.3	161	12	154	10.5	251	8.4	127	6.3	162	10.5	420	8.9	88	3.8	238	0.7	44
17	22.0	126	46	274	8.9	193	15.4	107	4.4	88	16.4	298	29.1	212	8.1	277	11.6	580
107	23.0	204	21	200	8.7	166	10.4	116	8.4	142	11.1	317	20.6	170	0.8	35	7.3	343
135	33.0	158	84	504	18.3	195	25.7	154	10.2	93	36.1	481	20.5	89	8.0	195	8.0	211
FAIR CLASS OF DIETARIES																		
22	14.0	103	13	143	8.2	155	9.1	97	4.5	74	14.2	316	12.4	93	3.1	141	2.1	95
30a	24.0	173	33	338	11.8	162	15.5	119	4.5	59	27.7	565	19.5	86	5.5	177	11.3	379
14	13.0	107	20	199	6.5	74	12.4	87	5.4	59	6.3	105	33.2	154	5.0	159	3.3	82
78	9.0	109	13	213	9.8	64	8.1	52	6.6	109	0.0	0	7.4	81	4.1	156	1.5	83
109	111.0	677	60	931	9.0	55	37.5	159	5.4	55	25.2	420	4.1	19	3.5	97	8.4	193
37	23.0	139	17	199	9.1	74	14.2	93	1.8	18	14.3	237	14.1	65	7.5	253	11.3	259
49	13.0	111	36	429	11.8	176	14.1	111	4.1	68	14.3	238	14.1	65	7.5	253	11.3	259
9	27.0	211	36	429	11.8	176	14.1	111	4.1	68	14.3	238	14.1	65	7.5	253	11.3	259

124	20.0	155	55	283	5.3	73	7.6	56	6.0	104	13.4	273	7.9	45	1.8	55	4.3

POOR CLASS OF DISTRICTS

5	15.5	81	12	74	12.0	136	11.5	72	4.2	40	5.7	89	14.1	62	3.1	79	15.4
1	26.0	109	17	65	7.3	55	17.6	67	12.5	80	9.3	89	20.7	60	5.3	54	5.3
3	17.5	95	54	190	6.4	119	10.1	93	5.7	48	11.2	187	25.0	156	2.2	85	5.8
2	14.0	60	8	35	7.1	81	22.4	150	4.5	41	0.0	0	13.8	60	6.3	154	4.8
4	5.0	27	12	67	7.6	151	16.3	150	0.5	6	15.3	255	14.2	84	5.0	102	5.0
5	7.0	30	6	30	0.5	79	26.5	101	2.6	21	10.5	200	12.0	45	1.8	270	10.0
2	13.0	95	50	243	8.3	115	0.0	82	2.0	26	20.7	460	6.7	42	4.8	173	3.3
9	10.5	92	24	134	8.5	58	2.5	23	0.5	6	6.6	110	4.6	25	1.5	43	1.0
5	1.0	5	0	0	5.6	65	13.6	90	2.0	22	2.1	35	13.7	67	3.3	80	4.5
2	10.0	56	42	151	7.0	67	13.8	74	1.0	7	17.2	191	17.8	65	6.5	158	10.0
7	2.5	20	13	106	5.5	76	17.4	155	2.5	36	1.5	33	13.5	82	5.5	106	4.6
1	13.0	57	57	180	8.1	78	13.5	76	5.7	32	2.7	39	9.1	38	2.6	58	5.0
31	12.5	63	0	0	7.6	67	17.9	155	0.0	0	14.3	238	6.1	89	5.8	149	9.1
11	26.0	95	56	131	15.8	176	15.1	54	4.8	40	8.3	92	7.8	30	2.0	68	5.5
30b	12.0	63	16	103	13.5	155	14.0	77	4.6	45	10.3	161	17.1	72	7.5	174	9.8
1	5.0	20	11	106	11.1	97	15.3	75	1.3	10	16.6	210	34.5	122	1.5	89	4.1
103	25.0	93	89	141	6.3	55	6.3	50	5.8	40	2.1	27	10.0	63	7.0	157	2.0
75	22.0	234	14	126	8.3	53	12.1	135	4.7	72	2.6	65	15.4	97	10.8	450	3.8
65	27.0	142	24	130	10.3	110	12.8	86	1.4	14	5.3	68	0.0	28	7.1	192	1.4
12	30.0	178	15	80	9.0	83	7.3	78	1.0	147	10.4	189	2.0	13	3.8	165	2.5
45	28.5	91	33	150	15.5	129	16.2	89	10.9	89	27.4	326	13.0	47	5.5	74	5.0
108	25.5	265	27	220	3.4	47	3.5	80	1.9	25	1.0	22	3.9	24	2.4	83	3.3
115	24.5	94	69	248	11.3	101	13.9	76	6.0	46	26.3	315	15.8	49	6.0	118	6.5
102	12.0	81	21	171	13.6	175	10.0	84	11.3	151	14.8	329	22.4	139	7.6	262	4.6
112	12.0	95	6	63	5.0	81	8.1	78	6.4	94	15.7	393	17.4	53	2.6	100	7.5
100	15.0	49	56	145	8.5	75	12.1	64	6.0	47	7.5	83	16.5	60	5.4	104	6.5
113	8.0	42	27	103	15.3	100	15.2	99	5.1	53	18.0	300	15.1	65	4.3	113	7.8
119	15.0	75	26	158	5.9	41	9.5	55	3.0	20	16.9	245	23.8	121	5.7	83	12.3
121	24.0	143	12	74	6.0	90	16.9	150	1.5	17	4.5	82	10.0	55	5.5	160	5.0
114	15.5	56	24	111	8.5	75	12.7	69	4.5	56	7.1	95	17.6	68	4.3	93	7.0
120	11.0	53	10	60	13.1	157	11.6	88	0.5	5	11.7	195	12.7	81	6.0	152	14.0
67	5.0	60	15	247	5.8	75	5.4	42	5.2	108	8.4	280	5.5	50	4.5	257	4.3
123	40.0	118	56	113	15.2	180	22.4	91	0.0	0	7.8	72	25.7	75	5.1	95	7.4
106	22.5	64	30	90	8.5	85	25.0	125	2.0	13	13.0	124	20.0	66	4.0	71	7.0
104	13.0	97	13	103	6.8	78	16.8	110	1.2	15	3.0	50	10.0	80	5.0	155	2.5

* This family owned a cow which furnished the milk but an accurate record of quantities consumed was not given.

A total of 76 per cent of the families met or exceeded the liberal standard for sweets. Ninety-two per cent of the good dietaries and 67 and 71 per cent respectively of the fair and poor dietaries met or exceeded the liberal standard for sweets. About equal numbers of families met the dietary standard for dairy products and for meats. The dietaries were lowest in green and yellow vegetables and other fruits and vegetables, all classes being consistently low in these two groups. More than half of the dietaries were low in cereal products and only four of the sixty-three families used as much as fifty per cent of their total cereal and bread intake as whole grain products which is considered standard.[51] Of these, two dietaries were in the good class and two were found in the fair class. One family each in both the fair and poor classes used no whole grain cereal products at all. One family in the fair group used no citrus fruits or tomatoes. The number of families meeting the minimum adequate standard for each food group as well as the percentage meeting this standard are given in Table V, page 38.

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51 Sherman, op. cit., p. 510.

It is a popular opinion that people of this region eat large quantities of dry beans. However, only 51 per cent of the families used beans during the week for which the food record was kept. Eighty-four per cent of families with dietaries in the good class used beans while 60 and 63 per cent respectively of the families with dietaries in the fair and poor classes used beans.

A wide variety of cooking habits was found to be used. Vegetables were usually boiled, frequently baked, steamed and creamed and sometimes fried. Meats were usually fried or roasted and seldom broiled, braised or boiled. Coffee was usually made by the drip or boil method. Silex type coffee makers were seldom used. Dried fruits were soaked more frequently before cooking than were dried beans, but a large number of families cooked both without soaking. Soda was very seldom used in cooking vegetables or meats but was commonly used in making breads. There was a rather general use of pot liquor. Moderate or very small amounts of water were used in cooking vegetables, and foods were usually cut into medium sized pieces for cooking rather than being cooked whole or being cut into small pieces. Frozen foods were not frequently used. The use of pressure cookers was not common among

these families. Foreign dishes as Mexican, Chinese or Italian were not generally used but were about equally well-liked in the few instances where they were served. This infrequent use of foreign dishes may be attributed to the absence of foreign-born persons among the families of this study.

A tabulation of food habits showed that fish was not often used nor was fish a favorite food, while other meats were used often and were favorite. Dried beans were generally well liked and were used often according to the opinion of the families. Actual consumption during the survey period does not confirm this. Salads were a favorite food and were served often which might indicate a liberal use of fruits and vegetables. This, however, was not the case for consumption records showed an inadequate use of fruits and vegetables to be one of the chief defects of the dietaries. Citrus fruits were favorite and were used often which was evidenced in the results from the food consumption records. A rather frequent use of dried fruits was indicated. Fried foods were used frequently.

Both food habits and cooking habits of the families in the three dietary classes were very similar. These data represent the family's opinions of what they do and what they like but apparently do not always represent their actual food practices.

The families were asked to check how they planned meals, whether weekly, daily or just before meals. The results, given in Table IV, page 29, were rather evenly distributed among the three methods of planning meals. It seemed doubtful whether many families understood what is meant by weekly meal planning. When questioned, many housewives who checked that they planned meals by the week, stated that they bought staple foods for a week at a time which they apparently believed meant weekly meal planning. Some rather interesting results from this tabulation are explained later when discussing each dietary class.

TABLE IV

METHODS OF MENU MAKING USED IN

GOOD, FAIR AND POOR CLASSES OF DIETARIES

Method of menu making	Dietary Class Good	Fair	Poor	Total dietaries
Weekly	7 (54%)	5 (33%)	7 (20%)	19 (30%)
Daily	5 (38%)	9 (60%)	12 (34%)	26 (41%)
Just before meals	1 (8%)	1 (7%)	16 (46%)	18 (29%)

Discussion of dietaries in the good class. Of the thirteen dietaries classed as good, only one met or exceeded all of the minimum-adequate standards for the family. Several dietaries were included in this class which fell below one hundred per cent of the minimum adequate standard for the family for one or two of the nine food groups. Some of these were approximately one hundred per cent (namely, 90-99 per cent) for one or two of the food groups and were well above one hundred per cent for the other food groups. It was believed that the nutritive value of the diet was not seriously affected. For these families a liberal quantity of certain of the food groups would practically compensate for the slightly low amount of other groups which have similar food value. In family number twenty-four which had only seventy per cent of cereal products, the family consisted of two adults, fifty-one and sixty-five years old. A low intake of energy giving foods would not be serious for a family consisting of people of those ages whose occupation of teaching did not require much physical activity. Family number seventy-nine whose dietary was low in cereals had sufficient quantities of other foods, including eggs, meats, beans and nuts and other fruits and vegetables to offset the low cereal intake. Furthermore, this

dietary was definitely superior to those in the fair class.

No family whose dietary was in the good class consumed less than 100 per cent of the minimum-adequate standard of citrus fruits and tomatoes. Three dietaries had slightly less than 100 per cent of both green and yellow vegetables and other fruits and vegetables. Family number three had 99 and 98 per cent respectively of these two food groups. Family number ten had 92 and 99 per cent respectively of the two food groups and family number 135 had 93 per cent of green and yellow vegetables and 89 per cent of other fruits and vegetables. In the other cases where the consumption of green and yellow vegetables was low, the intake of citrus fruits and tomatoes as well as other groups such as eggs, milk, etc., was high and the intake of other fruits and vegetables was adequate.

The consumption of both milk and eggs was more than 200 per cent of the minimum-adequate standards for family number sixty-eight which compensated for their 67 per cent consumption of meats, beans and nuts.

In the two dietaries in which fats were low, other sources of fats such as dairy products and meats, beans and nuts were liberal.

Only one family had a low intake of sweets, whereas most of the others were even above the liberal standard.

It is interesting to note that in the thirteen dietaries classed as good the chief defect was the use of insufficient amounts of green and yellow vegetables and of other fruits and vegetables. There was an apparent high consumption of sweets. This would seem to indicate that diets which are reasonably good could be improved by a more liberal use of vegetables of all kinds and of fruits other than citrus fruits. The calories from sweets should be replaced by foods which contribute other nutrients besides sugar.

Seven families with dietaries in the good class indicated that meals were planned on a weekly basis, five planned meals by the day and one housewife planned them just before mealtime.

Discussion of dietaries in the fair class. Only one of the fifteen dietaries in this class was low in eggs. All of them met the minimum-adequate standard for milk for this was one of the requirements a dietary must meet to be classified as fair. Seven were low in meats, beans and nuts but this deficiency was made up by the adequate consumption of milk and eggs by these families. Ten families consumed sub-

minimum quantities of cereal products, four of these being not less than 90 per cent of the minimum-adequate standard. It is questionable whether the fair dietaries as a whole furnished sufficient calories to meet energy requirements for the families. Perhaps the rather high consumption of sweets which has been observed replaced the more nutritious cereal products.

The most frequent deficiency was in the low consumption of vegetables in general and fruits other than citrus fruits. Thirteen (87 per cent) were below the standard for other fruits and vegetables. In most cases, if the consumption of one was low the consumption of the other was low also. This seems to indicate a rather general lack of application of the knowledge of the importance of these two protective food groups. From data obtained in the survey it is believed that the families apparently knew that fruits and vegetables should be served more often than they were. Also, it may be that the frequency of serving fruits and vegetables was sufficient but due to small servings the quantities eaten by a family in a week were below the minimum-adequate standards. Four dietaries were low in sweets but these were not considered seriously low as the calories furnished by sweets could be

easily secured from other more nutritious sources. However, these same dietaries were also low in cereal products and other fruits and vegetables.

In this class five families planned menus weekly, nine families daily and one just before meals.

Discussion of dietaries in the poor class. Thirty-five dietaries were classed as poor. Only seven (20 per cent) met the minimum standard for milk. Eggs and sweets were the most frequently used in adequate amounts, twenty-three (66 per cent) of the dietaries meeting the standard for eggs and twenty-nine (83 per cent) for sweets. Fourteen (40 per cent) families consumed adequate quantities of meats, dry beans, peas and nuts. Twenty-six (74 per cent) families failed to meet the requirements for cereal products. None used as much as fifty per cent whole grain products. Green and yellow vegetables and other fruits and vegetables were used in adequate quantities less frequently than in any of the other groups, thirty-two (91 per cent) and thirty-one (89 per cent) families respectively, using below minimum quantities of these two food groups. Twenty-one (68 per cent) families consumed adequate quantities of fats.

The largest percentage (46 per cent) of families with dietaries in this class planned menus just before mealtime and the fewest (20 per cent) planned meals by the week. Thirty-four per cent planned meals on the daily basis.

CHAPTER III

COMPARISON OF FINDINGS TO THOSE OF OTHER STUDIES

In this study as in that of Stiebeling and Phipard[52] the consumption data refer to food brought in rather than to food actually eaten by the families. No deductions from the weight as purchased were made for waste in preparation or at the table.

In the Stiebeling study 40-60 per cent of all dietaries were in need of improvement.[53] The diets of 50 per cent of Lubbock families were found to be definitely in need of improvement while most of the diets classed as good could be improved by increased use of fruits, vegetables and whole grain cereal products.

Stiebeling and Phipard[54] found the dietaries studied to be relatively high in fats, sugars and

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52 Stiebeling and Phipard, op. cit., p. 4.

53 Ibid., p. 99, 100.

54 Ibid., 101.

meats but low in milk products, eggs, fruits, and vegetables other than potatoes. They found that even the diets classed as good were below the standards which many authorities believe to be optimal for the protective foods.[55] Sherman points out that the improvement of present day diets would necessitate the inclusion of larger quantities of leafy and green vegetables and of milk as well as whole grain cereals.[56]

As seen in Table V, page 38, the fewest families consumed sub-minimum quantities of sweets; relatively few used too-low quantities of eggs, but 54 per cent used too little meats, dry beans, peas, and nuts. In a section of the country which produces much meat, grain and milk, a large percentage of this representative group of families consumed too small quantities of these foods, whereas, citrus fruits, which must all be shipped in, is one of the three food groups eaten in most adequate quantities. Not only was the consumption of cereal products low but practically no whole grain products were used. The very high percentages of families not consuming adequate quantities of green and yellow vegetables and of

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55 Sherman, op. cit., p. 501.

56 Ibid., p. 501.

TABLE V

SUMMARY OF THE NUMBER AND PERCENTAGES OF DIETARIES OF EACH CLASS MEETING THE MINIMUM ADEQUATE STANDARD FOR THE FOOD GROUPS

Food Group	Number of Dietaries Meeting Minimum Adequate Standards				Percentage of Dietaries Meeting Minimum Adequate Standards			
	Good Class	Fair Class	Poor Class	Total Cases	Good Class	Fair Class	Poor Class	Total Cases
Number of Dietaries	13	15	35	63	13	15	35	63
Dairy Products	13	15	7	35	100	100	20	56
Eggs	13	14	23	50	100	93	66	79
Meats, dry beans, peas, nuts	12	8	14	34	92	53	40	54
Cereal Products	10	5	9	24	77	33	26	38
One-half Whole Grain Cereals	2	2	0	4	15	13	0	6
Green & Yellow Vegetables	7	2	3	12	54	13	9	19
Citrus Fruits and Tomatoes	13	14	19	46	100	93	54	73
Other Fruits and Vegetables	7	3	4	14	54	20	11	22
Fats	11	11	21	43	85	73	60	68
Sweets	12	11	29	52	92	73	83	33

other fruits and vegetables (81 and 78 per cent respectively) and the 56 per cent of families consuming sub-minimum quantities of milk indicate that much improvement is needed in regard to these two important food groups. Stiebeling's results indicate the same condition existing throughout the country.[57]

The data of few studies other than that of Stiebeling and Phipard which have been made are comparable to those in the Lubbock study. The general conclusions of these studies, however, can be compared with considerable accuracy.

Hardy, et al, evaluated the dietaries of Chicago school children on a basis of consumption of "protective foods", namely, (a) milk, (b) fruits and vegetables, and (c) meat, fish, poultry and eggs.[58] Although the food records included cereals, no information was given on cereal consumption nor on the consumption of any of the other food groups. The five levels of adequacy used in evaluating the dietaries were based on those of the Bureau of Home Economics.

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57 Stiebeling and Phipard, op. cit., p. 100, 101.

58 Hardy, et al, op cit. p. 175-176.

These authors found that the "need for improvement of the dietary was widespread and progressivley more in evidence as the economic status of the family became lower."[59] This same need for improvement was emphasized by the results found in the Lubbock study where only one dietary or 1.6 per cent of the sixty-three dietaries studied met all of the standards set up for a minimum adequate dietary.

Hardy, et al, found inadequacies to be the least frequent for protein foods and the most frequent for fruits and vegetables.[60] For meat, fish and eggs, 15 per cent of the diets of the children were below the minimum requirements, 37 per cent were low in milk and 65 per cent were below minimum for fruits and vegetables including potatoes. The Lubbock study found 44 per cent of the dietaries were below the minimum adequate standard for milk and cheese; 21 per cent were low in eggs, which were grouped separately from meats, and 46 per cent were below minimum standard for meats. (This is an average of thirty-four per cent for meats and eggs, including dry beans, peas and nuts.) Sixty-two percent of the Lubbock families were below minimum for the average of these three groups: (a) green and yellow

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59 Hardy, et al., op. cit., p. 176.

60 Ibid., p. 179.

vegetables, (b) citrus fruits and tomatoes (c) other fruits and vegetables which compares closely with the sixty-five per cent below minimum found by Hardy, et al, for these food groups.[61] In both studies the diets were the most deficient in fruits and vegetables.

Reynolds, et al, in a study of the dietary habits of college students representing six schools, obtained records of the number of servings of foods consumed in a seven day period.[62] The foods checked were: (a) milk, (b) green or yellow vegetables, (c) citrus fruits or tomatoes, (d) meat, fish and poultry, and (e) whole grain products. Milk was counted only when it occurred as a beverage. These workers found that meat was chosen most frequently by the largest number of students and that whole grain products were chosen the least frequently. Milk followed meat in popularity, green and yellow vegetables and the citrus fruit group being next.

Although these data were based only on the number of servings per week and were not compared with any standard, the results indicate similar dietary practices as found in the Lubbock study.

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61 Ibid., p. 179.

62 Reynolds, et al., op. cit. p. 379.

Wiehl[63] found that 20 per cent of high school students from low income families in New York City had a diet which furnished less than two-thirds of their calorie needs. In the Lubbock study it was found that 62 per cent of the families had dietaries low in cereal products and 78 per cent were low in other fruits and vegetables. Both of these food groups are important sources of calories along with sweets and fats. Furthermore, 22 per cent were low in other fruits and vegetables which included potatoes and sweet potatoes. This raises the question as to whether the calorie intake of these families was adequate. Wiehl[64] also found that 30-42 per cent of the diets of New York City school children furnished less than one third of the standard allowance for vitamin A and 25-34 per cent showed a deficiency greater than one third of the allowance for ascorbic acid. Of the children, 20-31 per cent were deficient in calcium and 26 and 32 per cent respectively of the younger and older girls had diets which furnished less than one third of the allowance for iron. Deficiencies were also

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63 Dorothy G. Wiehl, "Medical Evaluation of Nutritional Status: VII, Diets of High School Students in Low Income Families in New York City," The Millbank Memorial Fund Quarterly, 20:73, January, 1942.

64 Ibid., p. 73.

found in riboflavin and thiamin.

In a dietary survey in Halifax[65] food purchase and consumption records were kept for one week as was done in the Lubbock study. The data on food consumption were calculated in terms of the recognized nutrients (protein, fat, carbohydrates, calcium, phosphorus, iron, the vitamins and energy value) and then compared with the Canadian Dietary Standard. Of eighty-two family dietaries, 10 per cent were classed as good or as meeting or exceeding the standard; 20 per cent were classed as fair or as meeting between 70 and 99 per cent of the standard, and 70 per cent of the dietaries were poor or below seventy per cent of the standard. Thus a higher percentage of families in Halifax had dietaries in need of improvement than did families in Lubbock. If, however, as suggested in the Halifax study[66] the standard was lowered to the 70 per cent level as minimum-adequate, the percentage of diets needing improvement appears much lower. In the Halifax study the most serious deficiencies were in the low intake of calcium by children and of the vitamins, especially thiamin, by the entire group.

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65 E. Gordon Young, "A Dietary Survey in Halifax," reprinted from the Canadian Public Health Journal, 32:6, May, 1941.

66 Ibid., p. 7.

In other Canadian dietary studies deficiencies were found in calcium, iron, thiamin and ascorbic acid.[67,68,69] In the Quebec study, the extremely low calcium consumption was a result of low milk and cheese consumption.[70]

Even though the individual nutrients were not calculated for the Lubbock dietaries, it may be assumed there were appreciable deficiencies in several nutrients because of the low consumption of dairy products, vegetables and whole grain cereals. The ascorbic acid intake, however probably was adequate.

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67 J. Ernest Sylvestre, and Honore Nadeau, "Enquete sur l'Alimentation Habituelle des Familles de Petits-Salaries dans la Ville de Quebec," reprinted from the Canadian Public Health Journal, 32:20, May, 1941.

68 Jean M. Patterson, and E. W. McHenry, "A Dietary Investigation in Toronto, Families Having Annual Incomes Between $1,500-$2,400," reprinted from the Canadian Public Health Journal, 32:28, May, 1941.

69 George Hunter, and L. Bradley Pett,"A Dietary Survey in Edmonton," reprinted from the Canadian Public Health Journal, 32:35, May, 1941.

70 J. Ernest Sylvestre, and Honore Nadeau, op. cit., p. 20.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Summary and conclusions. In this study the following was found to be true:

1. Of sixty-three dietaries evaluated, three of 1.6 per cent met all the minimum adequate standards as set up by the United States Bureau of Home Economics.

2. Twenty-one per cent of the dietaries were classed as good.

3. Twenty-four per cent of the dietaries were classed as fair.

4. Fifty-six per cent of the dietaries were classed as poor.

5. The dietaries as a whole were seriously low in (a) whole grain cereals, (b) green and yellow vegetables, (c) other fruits and vegetables and (d) dairy products .

6. More adequate amounts of citrus fruits and tomatoes than any other food group were consumed by the families as a whole.

7. Eggs were used in fairly adequate quantities.

8. Although the consumption of meats, dry beans and peas, and nuts by many of the families (48 per cent) was below minimum adequate amounts, it is believed that the comparatively higher consumption of eggs at least partially remedied the deficiency.

9. Cereal products were frequently used in sub-minimum quantities while the consumption of sweets frequently was much above the minimum requirements. This suggests that sweets may be replacing more highly nutritious cereal products in the diets. Families may be receiving sufficient calories from highly refined foods rather than from cereals which would also furnish numerous other essential nutrients.

10. The consumption of minimum-adequate quantities of sweets was exceptionally high, 75 per cent of the families meeting or exceeding the liberal standard.

11. Families indicated they were familiar with a variety of methods of cooking foods and that they used these methods. The least variety of cookery was used for meats.

12. Pressure cookers were infrequently used for food preparation by families.

13. Frozen foods were very infrequently used.

14. The families as a whole used a variety of foods.

15. Planning meals ahead of time was done more often in families having dietaries in the good and fair classes.

Suggestions for application of results of this study to teaching foods and related subjects in the high school. The results of this study may be applied to the teaching of foods and related subjects in the following ways:

1. Since a wide variety of methods of cooking foods appears to be in general use already, it seems that the emphasis in high school foods classes may be more in achieving the standards of a good product for foods prepared by various methods rather than on increasing the variety of methods which families use.

2. Meats were cooked in a more limited number of ways than were other foods. It may be desirable to teach methods of preparation of meats other than frying and roasting, and, particularly in low-cost or limited dietaries, to teach more ways of extending small amounts of meat and using meat substitutes.

3. Frozen foods were not frequently used at the time of this study but as they become more common on the market and less expensive, it will be necessary to give instructions on their care and use.

4. It was found that dried beans and dried fruits were not used in as large quantities as might be desirable and that when they were used, these foods were frequently not soaked before cooking. Attention needs to be given to ways of cooking these foods to increase their palatability so they will be included in the diet more often.

5. Although such principles as cooking foods whole or in medium sized pieces and in small amounts of water seem to be generally known and applied, these and other similar principles need to be continually stressed in high school foods classes.

6. Perhaps pressure cookers were not common among Lubbock families for most families report never using one. It would seem advisable to teach the use of a pressure cooker in preparing foods for immediate service as well as for use in canning. This could be one step toward encouraging people to do home canning which in turn may result in an increased use of fruits and vegetables and the consequent improvement of dietaries.

7. Families expressed a liking for salads and indicated they used salads frequently. The amounts of fruits and vegetables actually used as shown by the food records were often below the minimum adequate standard for the family. This would seem

to indicate that people either do not recognize standard size servings, do not serve what they like, or the salads which they serve do not contain significant amounts of fruits and vegetables. If, as shown by the families, salads are well liked, then teaching a variety of ways of using available fruits and vegetables in salads would be one way of achieving an improvement of dietaries.

8. The frequent use of pies and cakes probably accounts in part for the excessively high consumption of sweets. The time spent in homemaking classes teaching girls to make pies and cakes could be used to better advantage if they were taught how to make desserts using fruits and milk. This would be one way of including in the diet more of these two foods which were found to be used in too small quantities.

9. Much needs to be done in foods classes to find the particular food likes as well as food needs of each girl in the class.

10. Emphasis needs to be placed on planning in advance for the inclusion of the necessary food groups in the diets. This need was evidenced by the fact that the families with poor dietaries did the least planning of their meals.

11. Studies should be made of the food habits of people in each community if the teaching of meal

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planning and food preparation is to be successful.

It must be kept in mind when interpreting results from a dietary survey that there are possibilities for error in obtaining the data. The foods weighed were sometimes weighed as purchased and sometimes were weighed after preparation. This was the case whenever the foods on hand in the refrigerator were weighed. No record was kept of table scraps or other refuse. It was felt, however, that the families as a whole were conscientious in trying to keep accurate food records. There was little variation among the families in the general pattern of the food supplies or in the quantitive consumption of foods.

It is felt that this survey is infinitely more accurate than an interview type of study. Reasons for this opinion have been given previously when numerous discrepancies were found between what the people thought they served and their actual food consumption. Much attention was given to the food intake of each individual family which is important if the needs of each individual family are to be considered in planning an effective nutrition program.

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APPENDIX

Recommended Daily Allowances for Specific Nutrients, Committee on Foods and Nutrition, National Research Council

	Calories	Protein grams	Calcium grams	Iron mg.	Vitamin A *** I.U.	Thiamin (B_1) mg.**	Ribo-flavin mg.	Nicot-inic Acid mg.	Ascorbic Acid mg.**	Vit D I.U
Man(70 Kg.)										
Moderately active	3000	70	0.8	12	5000	1.8	2.7	18	75	/"/"/
Very active	4500					2.3	3.3	23		
Sedentary	2500					1.5	2.2	15		
Women(58 Kg.)										
Moderately active	2500	60	0.8	12	5000	1.5	2.2	15	70	/"/"
Very active	3000					1.8	2.7	18		
Sedentary	2100					1.2	1.3	12		
Pregnancy(latter half)	2500	85	1.5	15	6000	1.8	2.5	18	100	400-800
Lactation	3000	100	2.0	15	8000	2.3	3.0	23	150	400-800
Children up to 12 years										
Under 1 year"	100/Kg.	3-4/Kg.	1.0	6	1500	0.4	0.6	4	30	400-800
1-3 years /"	1200	40	1.0	7	2000	0.6	0.9	6	35	/"/"
4-6 years	1600	50	1.0	8	2500	0.8	1.2	8	50	
7-9 years	2000	60	1.0	10	3500	1.0	1.5	10	60	
10-12 years	2500	70	1.0	12	4500	1.2	1.8	12	75	
Children over 12 years										
Girls, 13-15 years	2800	80	1.3	15	5000	1.4	2.0	14	80	/"/"
16-20 years	2400	75	1.0	15	5000	1.2	1.8	12	80	
Boys, 13-15 years	3200	85	1.4	15	5000	1.6	2.4	16	90	/"/"
16-20 years	3800	100	1.4	15	6000	2.0	3.0	20	100	

The objective goal toward which to aim in planning practical diet rules; can be met by a good diet of natural foods. Such a diet will also provide other minerals and vitamins. 1 mg. Vitamin A equals 333 I.U., 1 mg. ascorbic acid = 20 I.U..**requirements may be less if provided as vitamin A; greater if provided chiefly as the pro-vitamin carotene.

"Needs of infants increase from month to month. The amounts given are for approximately 6-8 mo. The amounts of protein and calcium needed are less if derived from breast milk.

"Allowances are based on needs for the middle year in each group.(as 2,5,8,) and for moderate activity.

"Vitamin D is undoubtedly necessary for older children and adults. When not available from sunshine it should be provided probably up to the minimum amounts recommended for infants.

THE NATIONAL NUTRITION PROGRAM

Digest of major recommendations made to the President by the National Nutrition Conference, May 26-28, 1941

Make use of the recommended allowances of calories, protein, and certain important minerals and vitamins prepared by the Committee on Food and Nutrition of the National Research Council, both as a general goal of good nutrition in the United States and as the yardstick by which to measure progress toward that goal.

Translate these allowances. . . into terms of everyday foods and appetizing meals suitable for families and individuals at different economic levels in such a way that the newer knowledge of nutrition can be applied simply and practically, in every home, and in accordance with food preferences of the family.

Continue vigorous research to add to the present knowledge of nutritional needs of individuals, the nutritional status of groups in the population, the nutritive content of everyday foods and the effects of various methods of processing, storing, and cooking on their nutritive value.

Educate more widely professional workers as doctors, dentists, social service workers, teachers, in the newer knowledge of nutrition.

Mobilize every educational method to spread the newer knowledge of nutrition among laymen.

Mobilize all neighborhood, community, state, and national organizations and services that can contribute in any way to raising the nutritional level of the people of the United States.

Vigorously and continuously attack the fundamental problems of unemployment: insecure employment, and rates of pay inadequate to maintain an American standard of living.

Make full use of any practical devices, such as the stamp plan, free school lunches and low cost milk distribution, which will bring nourishing, adequate meals to those who would not otherwise afford them, and at the same time help to distribute food surpluses at a fair return to the farmer.

Try to improve food distribution, including processing, marketing, packaging, and labeling, to bring greater real economies for the consumer.

Encourage in all practical ways greater production by agriculture of the foods needed in more abundance, according to the newer knowledge of nutrition, in the average American diet.

Encourage in every practical way more production for home use by rural people, especially those at low income levels.

The "enrichment" of certain staple food products, such as flour and bread, with nutritive elements that have been removed from them by modern milling and refining processes. Pending further developments in the milling of grains so as to retain their full, natural nutritive values, enrichment is an economical way to improve American dietaries almost universally, without interfering with deeply engraved food habits. The method, however, should be used with discretion and only on the basis of findings by medical and nutritional experts.

THE TEXAS FOOD STANDARD

For one week I need about:*

3½ to 7 qts. milk

7 eggs

2 to 3 lbs. meat, poultry, fish or cheese

1/2 lb. cooking fat

4 lbs. Irish or sweet potatoes

4 lbs. green or yellow vegetables

4 lbs. other vegetables

2 to 4 lbs. citrus fruits, tomatoes, raw cabbage, strawberries, or melons

4 lbs. other fruits

1/4 to 1½ lbs. whole grain products

1½ to 3 lbs. other cereals and bread

1/2 lb. butter, or margarine with vitamins added

1½ lbs. sweets

1/3 to 1/2 lb. dried peas, beans, nuts

*For use in shopping, multiply the amount for one person by the number in the family. Quantities given are for fresh products.

Prepared by Texas State Nutrition Committee, issued by the Extension Service, Agricultural and Mechanical College of Texas and the United States Department of Agriculture, R. H. Williamson, Director, College Station, Texas.

DIETARY SUMMARY

FAMILY DESCRIPTION

Date:_____ Food Record No.__

History Family Members	Father	Mother	Boys	Girls	Other adults in household
Age					
Height					
Weight					
Place of birth					
Religion or faith					
Occupation or profession					
Other interests					
Gardening					
Active sports					
Dancing					
Reading					
Lodges or clubs					
Illnesses or afflictions					
If Deceased					
Cause of death					
Age at death					

Yearly Income: Check range--under $1000___, $1000-2000___
$2000-4000____, above $4000___.

Guests	Men	Women	Boys	Girls
Number				
Number of meals eaten				
Help that have meals with family				
Number of meals eaten				

COOKING HABITS

Check your Cooking practices	Favorite method	Disliked	Usually	Seldom	Never
1. Vegetables:					
1. bake					
2. steam					
3. boil					
4. cream					
5. fry					
6. pressure cooker					
2 Meats:					
1. roast					
2. broil					
3. braise					
4. boil					
5. fry					
6. pressure cooker					
3. Coffee					
1. percolate					
2. drip					
3. boil					
4. Silex					
4. Dried beans:					
1. soak several hours					
2. unsoaked					
3. pressure cooker					
5. Dried fruits					
1. soak several hours					
2. unsoaked					
3. pressure cooker					

Check your cooking practices	Favorite method	Dis-liked	Usual-ly	Seldon	Never
6. Use of soda					
1. vegetables					
2. meats					
3. breads					
7. Use of Pot-liquor					
8. Amt. of water to cook vegetables					
1. much					
2. moderate					
3. little or none					
9. Pieces for cooking					
1, whole					
2. medium					
3. small					
10. Thaw frozen food					
11. Foreign dishes:					
1. Mexican					
2. Chinese					
3. Italian					

FOOD HABITS

Meal Planning (check)

Food	Favorite	Often	Occasionally	Seldom	Never
How often do you serve					
1. Meats					
2. Fish					
3. Dried beans					
4. Salads					
5. Fried foods					
6. Citrus fruits					
7. Pies					
8. Cakes					
9. Dried fruits					

Method of Menu Making (check)

Weekly _____
Daily _____
Just before Meals____

Average number of total meals eaten per person per day____

Average number of meals father____eats at home
mother____
children____

Type of Meal

Breakfast

Supper

Dinner

FOOD CONSUMPTION SHEET

Food	On Hand Beg.	Bought During the Week Mon.	Tues.	Wed.	Thu.	Fri.	Sat.	On Hand End	Total Used	Cost per unit
Milk										
sweet - whole										
skim										
buttermilk										
Dried										
evaporated										
condensed										
Cheese										
American										
cottage										
cream										
Eggs										
Lean Meats, Fresh or Canned										
beef										
pork										
lamb										
fish										

FOOD CONSUMPTION SHEET

Food	On Hand Beg.	Bought During the Week Mon.	Tues.	Wed.	Thu.	Fri.	Sat.	On Hand End	Total Used	Cost per Unit
Fruits										
citrus										
fresh										
canned										
other fruits										
fresh										
dried										
frozen										
canned										
Cereals										
flours										
whole wheat										
white, enriched										
white, plain										
rye										
ready-to-eat										
whole-grain										

FOOD CONSUMPTION SHEET

Food	On Hand Beg.	Bought during the Week Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	On Hand End	Total Used	Cost per Unit
Other Cereals										
uncooked cereals										
cornmeal										
yellow										
white										
oatmeal										
rice										
brown										
white										
tapioca										
wheat										
hominy										
macaroni, etc.										
Fats										
butter										
margarine										
salad oil										
shortening										

FOOD CONSUMPTION SHEET

Food	On Hand Beg.	Bought During the Week Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	On Hand End	Total Used	Cost per Unit
Vegetables, Fresh or Frozen										
potatoes										
sweet potatoes										
tomatoes										
leafy										
green										
yellow										
others										
Vegetables, Canned										
tomatoes										
leafy										
green										
yellow										
Vegetables, Dried										
beans										
peas										
nuts										

FOOD CONSUMPTION SHEET

Food	On Hand Beg.	Bought During the Week Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	On Hand End	Total Used	Cost per Unit
bacon										
suet										
peanut butter										
Sweets										
sugar										
honey										
sirups-cane										
corn										
maple										
molasses										
sorghum										
jellies or jams										
preserves										
Miscellaneous										
yeast										

TABLE I

MINIMUM-ADEQUATE AND LIBERAL QUANTITIES OF FOOD

PER WEEK FOR DIFFERENT AGE GROUPS*

Groups	Range of Minimum to Liberal for Each Food Group								
	Dairy products	Eggs	Meats, beans, peas, nuts	Cereal products	Green & yellow vegetables	Citrus fruits & tomatoes	Other fruits & vegetables	Fats	Sweets
	qts.	no.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Children									
9-12 mos.	7.0-7.0	5.0- 5.0	0.1-0.1	0.5-0.5	1.5-1.5	2.0-2.0	1.0- 1.0	0.1-0.1	0.1-0.1
1- 3 yrs.	5.2-7.0	5.3- 6.0	0.2-0.4	1.3-1.0	1.3-1.5	1.5-2.0	2.3- 2.9	0.3-0.1	0.2-0.1
4- 6	4.3-7.0	5.3- 7.0	0.5-0.8	1.5-1.3	1.6-2.5	1.5-2.5	3.5- 5.6	0.4-0.4	0.5-0.4
7- 9	4.8-7.0	5.3- 8.0	1.0-1.8	1.5-1.5	1.9-3.5	1.5-3.0	3.5- 7.4	0.8-0.6	0.6-0.6
10-12	5.2-7.0	4.3- 8.0	1.9-2.6	3.5-2.1	2.2-3.5	1.5-3.0	4.6- 8.0	0.9-1.0	0.7-1.0
Girls									
13-15	5.3-7.0	5.0- 9.0	2.8-3.1	3.8-2.5	2.7-3.5	1.5-4.0	5.0- 8.2	1.0-1.1	0.9-1.1
16-20	5.3-7.0	5.0- 9.0	3.1-3.6	2.9-1.4	2.8-3.5	1.5-4.0	5.0- 9.0	0.8-0.9	0.7-0.9
Women									
Moderately Active	1.2-6.0	4.0- 9.0	2.1-3.1	3.5-1.5	2.2-3.5	1.5-5.0	5.2- 7.3	0.9-1.1	0.9-1.1
Boys									
13-15	5.5-7.0	4.0- 9.0	2.2-4.0	4.9-2.9	2.8-4.0	1.9-4.5	6.7-10.3	1.2-1.4	0.9-1.4
16-20	5.5-7.0	3.3- 9.0	2.5-5.0	6.3-3.3	2.8-4.0	1.9-5.0	7.5-12.0	1.4-1.9	1.2-1.9
Men									
Moderately Active	4.2-6.0	3.3-10.0	3.0-4.1	4.6-2.4	2.8-3.5	1.5-5.0	5.9- 7.8	1.0-1.5	1.1-1.5

* Based on Bureau of Home Economics Standards, Revised October, 1942.

TABLE II

FAMILY PATTERN, INCOME RANGE AND PROFESSION
OF SUBJECTS HAVING GOOD, FAIR AND POOR DIETARIES

DIETARY CLASS	SUBJECT NUMBER	SIZE OF FAMILY PARENTS	CHILDREN	OTHERS	INCOME RANGE	OCCUPATION
Good	1	2	1		1000-2000	Teacher
	3	2	2		1000-2000	Electrician
	10	2	2		1000-2000	Housemoving
	17	2	2		2000-4000	Doctor
	24	2			2000-4000	Teacher
	25	2		1	1000-2000	Merchant
	27	2	1		2000-4000	Salesman
	40	2			1000-2000	Rancher
	51	2			2000-4000	Farming and House Renting
	68	2	1		2000-4000	Railway Switchman
	79	2	1		1000-2000	College Student
	107	2	2		2000-4000	Mail Clerk
	135	2	3		1000-2000	Carpenter
Fair	28	2	1		2000-4000	College Professor
	30A	2	1	1	2000-4000	Merchant
	14	2		2	2000-4000	Automobile Salvage Dealer
	78	2			1000-2000	Air Corps
	106	2	2		Under-1000	Laborer
	37	2	2		2000-4000	Lumber Business
	49	2	2		2000-4000	Teacher
	9	2	4		1000-2000	City Cold Storage
	43	2	1		2000-4000	Army Officer
	48	2	1		2000-4000	Printer
	53	2	1		2000-4000	Army Officer
	13	2			Under-1000	Milkman
	116	2	1	1	2000-4000	Meatcutter
	123	2	2	1	2000-4000	OPA
	124	1	2		Above-4000	Father Deceased

	116	2	1	1	2000-4000	Meatcutter
	123	2	2	1	2000-4000	OPA
	124	1	2		Above-4000	Father Deceased
Poor	5	2	2		2000-4000	Automobile Salesman
	101	2	5		2000-4000	Aircraft Woodworker
	8	2	2		2000-4000	College Professor
	102	2	3	1	1000-2000	Mechanic
	44	2	2		1000-2000	Wholesale Warehouse Clerk
	35	2	3		Under-1000	Railroad Foreman
	23	2	1		1000-2000	Tobacco Salesman
	19	2	2		1000-2000	Plumber
	16	2	2		Under-1000	None (mother W.P.A. Housekeeping Aid)
	112	2	3		1000-2000	City Employee
	7	2		1	Under-1000	W.P.A.
	100	2	3		1000-2000	Salesman
	31	2	2		1000-2000	Rancher
	11	2	4		1000-2000	Shoe Repairman
	30B	2	2		1000-2000	Electrician
	105	2	3		1000-2000	Mechanic
	103	2	3		2000-4000	Ice Engineer
	75	2	2		1000-2000	Trucker
	65	2	2		1000-2000	Salesman
	12	2	2		1000-2000	Trucker
	45	2	3		1000-2000	Trenching Machine Operator
	108	2	1		1000-2000	Defense Worker
	115	2	3	1	2000-4000	Mechanic
	132	2	1		2000-4000	Manager Glass Department Sash and Door
	122	2	2		2000-4000	Telephone Employee
	130	2	3	1	Above-4000	Ginning and Farming
	118	2	2		1000-2000	Branch Manager Standard Brands
	119	2	2	1	1000-2000	Grocer
	121	2	2		2000-4000	Teacher
	114	2	3		1000-2000	Repairman for School
	129	2	2		2000-4000	Post Office Clerk
	67	2			1000-2000	College Student
	128	2	5		2000-4000	Mechanic
	136	1	6		1000-2000	Father Deceased
	134	2	3		1000-2000	Fireman

TABLE III

WEEKLY FOOD CONSUMPTION OF FAMILIES AND THE PERCENTAGE OF THE MINIMUM ADEQUATE STANDARD FOR EACH FOOD GROUP FOR EACH FAMILY

Family No.	Dairy products		Eggs		Meats, beans, peas, nuts		Cereal products		Green & yellow vegetables		Citrus fruits & tomatoes		Other fruits & vegetables		Fats		Sweets	
	qts.	%	no.	%	lbs.	%	lbs.	%	lbs.	%	lbs.	%	lbs.	%	lbs.	%	lbs.	%
									GOOD CLASS OF DIETARIES									
3	20.0	110	30	168	13.2	200	16.5	149	8.1	98	32.8	547	18.0	99	6.3	203	15.1	487
10	40.0	213	24	142	15.6	217	19.4	150	7.6	92	19.3	322	17.9	99	7.0	286	4.0	138
25	19.0	151	14	132	14.1	174	11.4	90	5.4	73	18.3	407	19.0	112	9.9	341	12.6	406
27	15.5	113	27	220	14.5	199	20.8	175	12.1	161	20.3	451	12.7	79	8.4	290	7.5	259
51	10.0	119	39	534	12.7	249	16.1	199	7.7	160	19.7	657	18.3	165	4.5	237	9.1	455
68	17.0	202	16	219	3.4	67	11.4	141	5.7	119	7.6	253	14.8	133	2.6	95	5.6	280
79	17.0	110	21	288	11.6	227	3.5	43	5.2	108	9.1	304	12.6	114	2.1	111	5.0	250
1	27.0	180	24	173	13.1	217	22.0	208	9.4	139	17.0	340	12.4	82	6.5	260	17.0	680
24	21.0	101	46	249	17.8	156	12.0	70	5.8	50	18.1	259	34.9	138	6.8	155	14.1	307
40	11.3	161	12	194	10.3	251	8.4	127	6.3	162	10.5	420	8.9	98	3.8	238	0.7	44
17	22.0	126	46	274	8.9	198	15.4	167	4.4	68	16.4	298	29.1	212	6.1	277	11.6	580
107	23.0	204	21	200	5.7	106	10.4	116	8.4	142	11.1	317	20.6	170	0.8	35	7.3	348
135	38.0	158	84	384	18.3	195	25.7	154	10.2	93	36.1	481	20.5	89	8.0	195	8.0	211
									FAIR CLASS OF DIETARIES									
28	14.0	103	18	143	8.2	155	9.1	97	4.5	74	14.2	316	12.4	93	3.1	141	2.1	95
30a	24.0	173	38	336	11.8	162	15.5	119	4.5	59	27.7	565	15.3	86	5.5	177	11.0	379
14	18.0	107	29	199	6.5	74	12.4	87	5.4	59	6.3	105	33.2	154	5.0	139	3.3	92
78	9.0	129	18	290	2.8	68	2.1	32	6.6	169	0.0	0	7.4	81	4.1	256	1.5	88
106	111.0	587	60	361	5.0	55	37.5	259	5.4	55	25.2	420	4.1	19	3.5	97	6.4	188
37	23.0	120	17	109	8.3	90	15.6	95	1.8	18	14.0	231	[illegible]	[illegible]	[illegible]			
40	19.0	101	36	217	11.5	[illegible]	[illegible]	[illegible]	[illegible]									
9	[illegible]	[illegible]																

124	20.0	153	55	263	5.3	78	7.6	56	8.0	104	13.4	273	7.9	45	1.8	55	4.2	140

POOR CLASS OF DIETARIES

5	15.5	81	12	74	12.0	136	11.5	72	4.2	40	5.7	89	14.1	62	3.1	79	15.4	428
101	36.0	109	17	53	7.3	55	17.6	67	12.5	80	9.3	89	20.7	60	3.3	54	5.3	95
8	17.5	95	54	100	6.4	110	10.1	93	3.7	48	11.2	187	23.0	136	2.2	85	3.8	141
102	14.0	60	8	55	7.1	81	22.4	150	4.5	41	0.0	0	13.8	60	6.3	154	4.8	120
44	5.0	27	13	67	7.6	151	16.3	150	0.5	6	15.3	255	14.2	84	5.0	198	5.0	185
55	7.0	30	6	30	0.5	79	36.5	191	2.6	21	19.5	260	12.0	45	12.8	278	16.0	356
23	13.0	95	50	243	8.3	115	0.0	82	2.0	26	20.7	460	6.7	42	4.8	178	3.3	122
19	16.5	92	24	134	2.5	38	2.5	23	0.5	6	6.6	110	4.0	25	1.5	48	1.0	32
16	1.0	5	0	0	5.6	65	13.6	90	2.0	22	2.1	35	13.7	67	3.3	89	4.5	132
112	16.0	56	42	151	7.0	67	13.8	74	1.0	7	17.2	191	17.8	63	6.5	158	10.0	208
7	2.5	20	13	106	5.5	76	17.4	150	2.5	36	1.5	33	15.3	82	5.5	196	4.6	159
100	13.0	57	37	180	8.1	78	13.5	76	5.7	32	2.7	39	9.1	38	2.6	58	5.0	122
31	13.5	63	0	0	7.6	87	17.9	135	0.0	0	14.3	228	6.1	29	5.8	149	9.1	253
11	26.0	95	36	131	15.8	176	15.1	84	4.8	40	8.3	92	7.8	30	3.0	68	5.5	133
30b	12.0	63	16	103	13.5	155	14.0	77	4.6	45	10.3	161	17.1	72	7.5	174	9.8	230
108	5.0	20	21	106	11.1	97	10.3	75	1.3	10	16.6	210	34.3	122	1.5	29	4.1	85
103	23.0	93	29	141	6.3	55	6.3	50	5.2	40	2.1	27	10.0	63	7.0	137	2.0	42
75	32.0	234	14	126	8.3	58	12.1	135	4.7	72	2.6	65	15.4	97	10.8	450	3.8	165
65	27.0	142	24	139	10.3	110	12.8	86	1.4	14	5.3	88	6.0	28	7.1	192	1.4	30
12	30.0	176	15	89	9.0	88	7.3	78	1.0	147	10.4	189	2.0	13	3.8	165	2.5	109
45	33.5	91	36	159	15.5	139	16.2	89	10.9	89	27.4	326	13.0	47	3.5	74	5.0	114
108	36.5	283	27	220	3.4	47	9.5	80	1.9	25	1.0	22	3.9	24	2.4	83	3.3	114
115	24.5	94	60	245	11.3	161	15.9	76	6.0	46	26.8	315	13.8	49	6.0	118	6.5	153
132	12.0	88	21	171	19.8	175	10.0	84	11.3	151	14.8	329	23.4	139	7.6	262	4.6	159
122	12.0	95	6	53	5.0	81	8.1	78	0.4	94	15.7	593	17.4	53	2.6	100	7.5	288
130	15.0	49	36	145	8.5	75	12.1	64	6.0	47	7.5	83	16.5	60	5.4	104	6.5	138
118	8.0	42	27	103	15.3	166	15.2	99	5.1	53	18.0	300	15.1	63	4.3	113	7.8	217
119	15.0	73	26	156	3.9	41	0.5	55	3.0	20	16.9	345	23.3	121	3.7	83	12.3	315
121	24.0	143	12	74	6.0	90	16.9	139	1.5	17	4.5	82	10.0	55	5.5	162	5.0	182
114	13.5	56	24	111	8.5	75	12.7	69	4.5	36	7.1	95	17.6	66	4.3	93	7.0	163
129	11.0	58	10	60	13.1	107	12.6	83	0.5	5	11.7	198	12.7	61	5.0	152	14.0	389
67	5.0	60	18	247	5.8	75	5.4	42	5.2	108	8.4	280	5.5	50	4.5	237	4.3	215
128	40.0	118	56	118	15.2	120	23.4	91	0.0	0	7.8	72	25.7	73	5.1	85	7.4	128
136	22.5	64	30	90	9.5	83	25.0	125	2.0	13	13.0	134	20.0	66	4.0	71	7.0	149
134	18.0	97	18	103	6.8	78	16.8	119	1.2	13	3.0	50	16.0	80	5.0	135	2.5	69

* This family owned a cow which furnished the milk but an accurate record of quantities consumed was not given.