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A STUDY OF THE ADEQUACY OF THE
NOON LUNCH IN THE RURAL SCHOOLS
OF TWO COUNTIES IN MICHIGAN

THESIS FOR THE DEGREE OF M. S.
Ruth Evelyn Preston
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A STUDY OF THE ADEQUACY OF THE NOON
LUNCH IN THE RURAL SCHOOLS OF
TWO COUNTIES IN MICHIGAN

By

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INTRODUCTION

Since time immemorial the country school child has been required to carry his noon lunch to school, where he hastily consumed it as he came to it in the box, be it cake, pie or doughnuts first. Now has come the question of the adequacy of these lunches. Not until comparatively recent years have any methods been employed to ascertain just exactly what these children were bringing to eat at noon, and whether or not the nutritional requirements of the individual were being supplied.

Several studies have been made to determine the adequacy of the diet of the country school child. Davies (1) in Massachusetts in 1928-1929 conducted an extensive survey covering 800 school buildings in which she determined the extensiveness of the hot lunch as a supplement to the diet provided by the parents. In this she found that 71% of the 800 schools had no hot lunches of any kind any time of the year. Hot soups and hot drinks were served during the winter months only in 23% of the schools, and a hot meal during the entire year in 3%. This study is in reality the precursor for other similar studies, as it is the only one to date which is directly associated with the child in the rural elementary schools.

Other investigators have studied the dietary habits of the rural child, but with no particular relationship to school lunches. Roberts (2) in a report of the condition in Kentucky in 1919-1920, points out the fact that only 28% of 149 children have diets adequate for their needs as determined by a nutrition study. These results are not applicable to other localities, inasmuch as, the survey was made entirely upon those persons residing in the mountain districts. Another report with a similar purpose is that of Reynolds (3), 1926, in Virginia, studying both white and negro children. Her findings show that only 18% of 462 children of school age were receiving sufficient food. This fact was shown by a study of the health records at the schools, and by personal home visits where the dietary habits were learned.

With this rather meagre information available it does not seem that further investigation of the nutrition of the rural child is needed. One way of attacking this problem is through a study of the noon lunch in the rural schools.

Purpose of the Study. The investigation was made with the purpose of determining the adequacy of the noon lunch by a qualitative study of the contents of the lunch boxes.

Scope of the Study. With this purpose in mind a survey was made of the types of lunches served in two counties of Southern Michigan. The schools of two counties were investigated, namely, Clinton and Jackson. Clinton County is located directly north of the point from which the survey was conducted; while Jackson County is located some 35 miles to the south. The counties are divided into townships, and the townships re-divided into districts with each district having its own elementary school. Usually this school is located in such a manner as to serve approximately two and one-half miles. This, however, is controlled by three factors; first, the school population or the number of children of elementary school age, secondly, the extent to which consolidation has taken place, and thirdly, to a lesser degree, by the religion of the

community. In a certain section of Clinton County, there is a heavily populated area of Roman Catholics, which has its own schools operating independently of the County School Commissioner. As would be expected, few district schools are located in these townships. Consolidation, which simply means the combining of several districts with one large modern school serving all, in these two counties have taken place in only two instances.

The data obtained in regard to these lunches were collected during the month of January, February, March, and the early part of April.

The total number of children studying in Clinton County is 1258, with this number attending 82 schools. Of this number 80 are one-room schools and two are two-room schools. This county has only one consolidated school which serves the entire township of Bath. No data was collected from this, however. The pupils who are compelled to travel long distances

are called for and returned by school bus. All schools in the county, with the exception of those located in the towns and villages, were visited for the collection of data.

In Jackson County the total schools studied are 73 which have an attendance of 1031 pupils. All of the schools are comprised of one room. Consolidation, here had taken place in one instance but no data were obtained from it.

METHOD

Two methods were employed in obtaining the material; first, by direct contact with the teacher of each school and, second, by the use of questionnaires. Through the kind co-operation of the County School Commissioners permission was obtained to make a study in Clinton and Jackson Counties.

The data from Clinton County was secured by personal visits to the schools. A small card was given

each teacher explaining in detail the desired information. In this way she was asked to obtain the age, grade, and exact contents of the children's lunch boxes. At the noon hour this was written out by the pupils under the teacher's supervision. The information was called for later in the afternoon. The investigator visited many schools and observed some of the lunches.

The data from Jackson was procured entirely through the mail. Letters were sent to the teachers in the schools, accompanied by blanks on which the pupils wrote their age, grade, and the exact contents of their lunch boxes. These were collected and mailed back to the investigator. On two days- non-consecutive- a report of the lunches was made.

TABLE I
PRINCIPLE ITEMS IN THE LUNCH BOXES

Item	Clinton Total 1253		Jackson Total 2062		Average
	No.	%	No.	%	
Milk - - - - -	190	15.2	312	14.4	14.8
Hot food - - - - -	71	5.7	267	12.9	9.3
Vegetables- - - - -	97	7.7	240	11.6	9.6
Fruit- Total - - - - -	643	51.4	1084	50.1	50.7
Fresh - - - - -	450	35.7	824	39.9	37.8
Canned or Dried- - - - -	193	15.3	260	12.6	13.9
Meat, eggs, cheese and					
fish- - - - -	285	22.6	353	17.1	19.8
Sandwiches - - - - -	1236	98.8	2141	99.0	98.9
Pastry and Pudding- - - - -	1013	80.5	1758	85.2	82.8
Candy - - - - -	115	9.2	137	6.3	7.7
Rolls and Crackers- - - - -	131	10.4	236	11.4	10.9
Condiments- - - - -	55	4.3	83	4.1	4.2
Miscellaneous- - - - -	110	8.7	105	5.0	6.8
Tea and Coffee- - - - -	10	.7	17	.9	.8

DISCUSSION

Table I gives a summary of the various items included in the lunches as found in the two counties. The computations are based on the total number of lunches which in Clinton County was 1258 and in Jackson County was 2062. Without doubt the most popular type of food was sandwiches, since 98.9% of the lunches contained them. It is equally surprising to find that some children did not have bread of any kind or a substitute for it. 82.8% of all the lunches had some pastry or pudding. The item "pastry" includes cake, cookies, doughnuts, and sweet crackers. Any one or all of these foods may have been present in a single lunch. Candy did not appear in many of the lunches; the average percent for the two counties being 7.7%.

Fresh fruits, in nearly all of the total 1284 cases, were oranges and apples, with oranges predominating. The prevalence of a citrus fruit this year is probably due to its relatively low cost. Canned or dried fruits, occurring in 13.9% of the lunches, consist-

ed of peaches, pears, cherries, prunes, and raisins.

10.9% of the children had rolls and crackers--cinnamon rolls, coffee cake, nut bread, muffins, and both soda and graham crackers. Condiments, with only three or four exceptions in the 4.2%, means cucumber pickles. Miscellaneous items include pancakes, popcorn, yeast, macaroni, and jello which were present in but a small number of the lunches. The factor of hot food will be discussed at a later point in connection with hot food service in the schools.

TABLE II

FREQUENCIES OF PARTICULAR TYPES OF LUNCHEES OCCURRING

Type	Clinton Co. Total 1258		Jackson Co. Total 2062		Average
	No.	%	No.	%	
Sandwiches only- - -	39	3.1	73	3.3	3.2
Sandwiches and pastry only- - - -	192	15.3	397	13.3	12.8
Sandwiches,pastry and fruit- - - -	245	19.6	364	16.8	18.2
Sandwiches,pastry, fruit and addition- al food- - - - -	120	9.6	133	8.4	9.0
Sandwiches,pastry and additional food- - - - -	144	11.5	223	10.5	11.0

Table II shows the prevalence of certain types of lunches which were found. The idea might be conveyed from this that no other types were reported. Numerous others might also be tabulated, but the percentage of the total would be too small to be significant. From this it may be seen that the majority of the lunches may consist of one or more sandwiches, some kind of pastry, and either fresh or canned fruit. Lunches made up of sandwiches alone were not very frequent, being 3.2% of the total. Those comprised of sandwiches, pastry, fruit, and some additional food, such as meat, eggs, or a vegetable, were present in 9% of all the menus. This it is evident that the sandwich-pastry type of lunch, with or without some additional food, was the most popular.

TABLE III

FREQUENCIES OF VARIETIES OF SANDWICHES SUPPLIED

Kind	Clinton Total 1236		Jackson Total 2141		Average
	No.	%	No.	%	%
Whole Wheat - - - - -	28	2.0	28	1.1	1.5
Meat ¹ - - - - -	279	20.4	462	19.4	19.9
Egg - - - - -	164	12.0	295	12.4	12.2
Jelly or Jam - - - - -	139	10.1	314	13.2	11.6
Peanut Butter - - - - -	129	9.4	287	12.1	10.7
Cheese- - - - -	28	2.0	61	2.5	2.2
Vegetable Filling ² - -	50	3.6	73	3.0	3.3
Bean - - - - -	24	1.7	41	1.7	1.7
Butter- - - - -	449	32.8	598	25.2	29.0
Sweet Filling ³ - - - -	53	3.8	91	3.8	3.8
Miscellaneous ⁴ - - - -	46	3.3	115	4.8	4.0

1. Including fish and fowl

2 Including lettuce, onion, vegetable combinations in ground form.

3 Composed of white and brown sugar, honey, maple syrup, and fruit butter

4 Items - mustard, catsup, sandwich spread, salad dressing

The occurrence of the varieties of sandwiches found in the lunch boxes is indicated in Table III. Plain butter sandwiches are used more often than any other kind. Meat sandwiches-19.8% are next most prevalent, with egg- 12.2% , and jelly or jam- 11.6% following in point of use. A nut filling (peanut butter) in the sandwiches occurred in 10.2%. Cheese or vegetable fillings, as shown by the respective percentages- 2.2% and 3.3%, did not appear in any other sandwiches. It is interesting to know that whole wheat bread was used in only 1.5% of the total lunches.

TABLE IV
DISTRIBUTION OF KINDS OF HOT FOODS AND BEVERAGES*

Kinds	Clinton Total 81		Jackson Total 284		Average
	No.	%	No.	%	
Tomatoes - - - - -	8	9.8	24	8.4	9.1
Peas and Carrots - - - - -	-	-	19	6.6	6.6
Vegetable Soup - - - - -	4	4.9	-	-	4.9
Corn-escaloped - - - - -	15	18.5	26	9.1	13.8
Potatoes- various ways - - -	19	23.4	106	37.2	30.3
Beans- various ways - - - -	21	25.9	31	10.9	13.4
Creamed beef - - - - -	-	-	18	6.3	6.3
Noodle soup - - - - -	4	4.9	23	8.0	6.4
Chili Concarne - - - - -	-	-	20	7.0	7.0
Coffee and Tea - - - - -	10	12.3	17	5.9	9.1

* Percent of hot lunches of total lunches is 9.3

Table IV represents the distribution of hot foods and beverages in the lunches. The total number of lunches containing hot food for Clinton and Jackson Counties is 71 and 267 or 5.7% and 12.9% respectively. This percent omits tea and coffee, which are not considered as foods although they are hot. The higher percentage of hot foods being served to the children in Jackson County may possibly be accounted for by the presence of both a Home Demonstration Agent and a Visiting County Nurse. Clinton County has a nurse, but her visits are limited to the occasions when she is summoned by the rural teacher. The matter of hot lunches, as a whole, rests entirely on the interest and the ingenuity of the individual teacher and of the parents.

HOT FOOD SERVICE

Hot food service in the schools is optional, which fact may be readily assumed from the small number of schools in which it is in use. The accompanying table, number IV, gives the total percentage of lunches

containing hot foods or beverages, and also the frequency of the various foods prepared. The percent of hot lunches served varies considerably in the two counties.

In establishing the service in a rural school, several factors must be considered. It should require a minimum of additional time on the part of both the teacher and of the children; it should not confine the pupils through the noon hour to the point of deducting too extensively from the play period in the open air; and last, it should be of as little expense as seems possible. The last item is dependent on the community; and by this expense is not necessarily meant actually money for purchasing food at the school, but does mean the expense of preparing the common dish for the entire group. To some families this will be an added burden which they would be unable to bear.

TYPES OF FOOD SERVICE IN USE IN ONE-ROOM SCHOOLS

I- Without equipment.

School A has no equipment with which to put a successful service into use. There are families in the community who are unwilling to co-operate in the establishment of a service, because of their own personal financial status and because of the additional expenditure of time and labor connected with it. Those parents who are in sympathy with the project have sent food in glass jars which is warmed on the heating stove at the school. The large stoves are round but have a flat top, and on this a pan of water is set in which the jars are placed to heat. A variety of foods are served, including such things as vegetable soup, creamed peas, tomatoes, and creamed potatoes. This plan has the advantage of almost no work for either teacher or pupil, and adds little or no extra expense. It has the disadvantage, however, of requiring the children to transport heavy food containers, which in the case of small children is quite an added

burden. It is a simple solution to the question, nevertheless.

School B has no equipment, but the teacher has devised the plan of baking potatoes on the top of the stove. This has met the decided approval of the pupils and nearly every day they brought potatoes to be baked. The sole stipulation was that the potatoes must be cleaned before bringing them to school. Some children also brought carrots and had them baked. Each child brought his own plate and utensils with him from home and returned them at the end of the day, thereby eliminating all dish washing problems. So far as the investigator was able to learn this method was satisfactory to the pupils.

School C has the plan in which each family alternates in preparing the hot food for a week, and bringing it to the school about 11:50. In this way all preparation at the school is eliminated and the necessary cleaning following the lunch is done by two

larger girls. The district school board co-operated by building a cupboard for dishes, towels and lunch boxes. Each child brought a dish and a spoon which they left at the school. Serving was done by two girls wearing white aprons they had made in sewing class at school. The teacher is very enthusiastic over the results she obtained, as manifested by the gain of eight pounds made by one poor boy. This, she says, is a reward for her hard work.

2- With equipment provided.

School A had an enrollment of twelve pupils and eight grades. The equipment, consisting of a one-burner oil stove, a few cooking utensils, dish pans, and towels was all contributed by the parents from their own supply. Each child also had his own enamel dishes and spoon, which were kept at the school. The food was supplied by an organization of the parents of the pupils called the Friday Afternoon Club. The members also planned the menus for the coming week. The food was purchased by the Club and taken to the school for preparation by the

teacher. Each week a different group of girls took turns washing the dishes, thereby spreading the duties over the entire group. Soups were served usually twice a week; and on the day of the visit corn soup was the hot food, using two cans of corn and two quarts of milk, thus forming a very nutritive dish. In a school operating on such a basis as this, the service of the heating stove are not depended upon and hot foods can be had irrespective of the weather.

School B has an attendance of 21 pupils. The equipment consists entirely of an electric hot plate furnished by the school district. The plan is one whereby each family alternates in preparing hot foods for one week. This is brought to the school in the morning and at 11:30 it is put on to warm for the noon lunch. This system has the advantage of very little work for the teacher or pupils, and of providing an opportunity for considerable variety in supplementary dish.

Samples of representative menus are listed

below. Many new and interesting spellings of different words were learned; and in not a few cases, the imagination was appealed to for their interpretation.

Age 14- Grade 8

Two meat sandwiches

Four graham crackers

One piece of cake

Age 9 Grade 3

Two butter sandwiches

One egg

Age 16- Grade 8

Six egg sandwiches

Two cookies

One piece of cake

Two pieces of meat

Can of cherry sauce

Age 15- Grade 8

Two cheese sandwiches

Two raisin bread sandwiches

Four cookies

One piece of cake

One orange

One banana

Age 10 Grade 5

One butter sandwich

Cake with 'blue' frosting

Age 11- Grade 5

Four egg sandwiches

Ten small pickles

Age 7 Grade 1

Two buttered biscuits

Age 11- Grade 5

Two hamburg sandwiches

One piece of white cake

One orange

Jar of milk

Dish of corn soup

Age 7 Grade 2

One mustard sandwich

Two white cookies

One orange

A jar of milk

Age 10- Grade 5

Two liver sausage sandwiches

One cup of tomatoe soup

Two cups of milk

Rose(5) states that a school lunch box should contain (1)- sandwiches of eggs,peanut butter,meat, cheese,etc.,(because they are staple, easily portable, and generally liked; (2)- fruit or a juicy vegetable such as ripe tomatoes because they are apetizing and because the succulent quality is especially acceptable with the dry lunch; (3) a sweet of some kind; and (4) liquid, preferably milk.

With these foods as a standard for comparison it is calculated from the data obtained at approximately 6% of the total number of lunches had a menu that included these four items.

In evaluating the lunches from a standpoint of meeting the dietary requirements of the individual child certain definite things must be considered; namely, the energy value, the amount and kind of protein supplied, and the mineral and vitamin intake. These factors are especially important because the ages of the children ranged from 6 to 16 years and this is a period of great growth, both physically and mentally. The fact is universally accepted that a mind cannot function to its fullest capacity when the body is undernourished.

An adequate amount of food is absolutely essential in maintaining the child's weight, and in supplying him with energy. Calories to supply this may come from one or from all three sources, protein, fats, and carbohydrates. Carbohydrates, i.e., starches and sugars, and fats probably furnish the largest amount of energy,

With carbohydrates ranking first. Rose (5) states, "Plant foods may be called the original source of human energy." The animal by consuming the plant is able to convert vegetable proteins, fats and carbohydrates into animal proteins, fat and carbohydrates. to serve man for fuel.

For calculating the energy requirements of children for the various ages, Rose (4) has constructed a convenient table which gives the number of calories required per pound of body weight. For children from the ages of 6 to 16, it has been determined that 32 to 23 calories per pound, for the respective ages, is essential, which means an approximate minimum amount of 1500 to 2700 calories per day. The caloric requirement is based upon the normal weight of the child for his height and age.

On this basis and assuming that at least 25% to 30% of the total calories for the day should be consumed at the noon lunch, a study of the data obtained will give an estimate of the adequacy of the lunch insofar as energy value is concerned. Since this is not a quantitative study, definite data in regard to the actual caloric

intake cannot be given. An average of 98.9% of the children had one sandwich or more, the number of calories given the sandwich depending upon the filling within it. 82.8% had a sweet in the form of pastry and an additional 7.7% had candy. These foods furnish little other than carbohydrates. In addition to these items there are calories supplied in the milk, fruit, meat, eggs, and cheese. Table II shows the number of lunches which occurred most frequently and which brings out the fact that the largest percentage of lunches was comprised of sandwiches, pastry, and fruit- 18.2%; and the next highest percentage was comprised of only sandwiches and pastry- 13.8%. Those lunches containing sandwiches, pastry, and an additional food totalled 11%. This type of lunch may possibly furnish sufficient calories for the younger children, but not for the older ones.

The following table shows the distribution of two sweets, three sweets, three or more sweets, and candy in the diet. This would seem to indicate that carbohydrate is the source of most of the calories.

Type of Food	Clinton		Jackson		Av.
	No.	%	No.	%	%
Two sweets - - - - -	420	33.5	582	26.9	30.2
Three or more sweets- - -	199	15.8	355	16.4	16.1
Candy - - - - -	115	9.2	137	6.3	7.7

The detail of age had its influence on the amount of food brought in a lunch box, with the younger child having the least amount in this respect. The smaller ^{the} pupil, the less food was provided, and this in most instances consisted of a sandwich, some kind of pastry, or possibly the substitution of a fruit for pastry. This condition prevailed throughout the entire survey. The older child's lunch had more from point of quantity, and as a rule it was a better balanced lunch. This situation may be due to the desires of the individual child. The older child may demand more food, and hence the parent supplies a more varied menu in satisfying this demand. At the same time they may be content to supply the younger one with the easiest foods to prepare, the least expensive ones, and those furnishing the least bulk.

The protein requirement for the growing child is large in proportion to his weight. This food constituent is essential for the growth and maintenance of body tissue. The standard Rose has set for adult requirement is $\frac{1}{2}$ to 1 gram per kilogram of body weight. A safe margin for the child's use would raise this figure to $1\frac{1}{2}$ to 2 grams per kilogram. On this level there would be enough protein to produce normal growth and also prevent the utilization of body protein in the metabolic processes. Those foods which are included in the diets of the children studied and which contain appreciable amounts of protein are meat, eggs, cheese, milk, legumes, and nuts.

In establishing a minimum standard for protein intake it has been estimated by Sherman that the child at the time of most rapid growth requires but 10% of his calories in the form of proteins, if the diet is of ample fuel value and the protein is of the right kind. Therefore, to be certain that the child receives the proper amount of protein in his lunch, it should contain

approximately an average serving of meat or an egg, and at least one glass of milk in addition to one sandwich- preferably two- with a filling high in protein.

From Table I it can be seen that a comparatively small percentage of the diets contain meat, eggs or cheese- 13.8%- as an average for both counties. Milk, in 14.8% of the lunches, cannot be relied upon to appreciably increase the amount of protein, as only 4% of the lunches contained this item in addition to meat or eggs. Of the sandwiches, 19.9% are meat, 12% are egg, 2.3% are cheese, 1.7% are bean and 10.7% are peanut butter. Therefore, comparing these results with the standard set it cannot be definitely assumed that sufficient protein is being supplied.

Further considering that the ages of the rural child represent a period in which there is great development in height and weight, there is a demand for large amounts of minerals. Those minerals which are frequently inadequate in the diet and are essential for the body are calcium, phosphorous, and iron. Calcium and

phosphorous are required for bone and tissue growth mainly, and iron is especially essential for hemoglobin formation in the blood.

In taking Rose's figures for the growing child's needs, a full gram of calcium per day is necessary; phosphorous-not less than one gram per day- and preferably more; and iron-.015 grams per day is required. Vegetables, fruits and milk are chiefly responsible for the calcium and phosphorous of the diet, while eggs, liver and meats are relatively high in iron.

To insure an adequate amount of calcium and phosphorous per day, the diet should contain a quart of milk; and of this amount at least one glass is necessary at the noon meal. Data shows that only 14.8% of the children had any milk for lunch. The calcium and phosphorous also come from vegetable and fruits. In the lunches, these items occurred at the respective percentages of 9.6% and 50.7%. Iron is probably the most difficult mineral to obtain in essential amounts; and to be sure of the requirement, one or more eggs are necessary in the diet. This may, however, be replaced by

a serving of meat. In the lunches obtained, 19.8% of them contained meat, eggs and cheese; but since cheese is relatively low in iron, this percentage would be still smaller. Again may be shown the fact that the largest percentage of lunches contained only fruit as a source of minerals. This item is better than none at all, but still is far from being sufficient for children. These figures bring out the fact that the mineral requisites for the noon lunch is decidedly below standard, with the greatest deficiency in iron.

The vitamins to be considered in the lunches are Vitamin A, B (UB), and C. Again, with qualitative measurements for a basis, general conclusions can be drawn as to the vitamin content of the diets. Vitamin A is a fat,-soluble vitamin, and large amounts of it are found in butter. Since 93.9% of the lunches contained sandwiches, and assuming that the bread was buttered in all cases; it would be safe to say that the children received a fair amount of Vitamin A. On the other hand, Vitamin UB, which is abundant in whole grain cereals, seems to be decidedly deficient. This is noticed in the fact

fact that only 1.5% had whole wheat bread in their lunch. Vitamin C is most prevalent in fruits and vegetables; and since 37.3% of the menus had fresh fruits in them- especially citrus fruits- it can be concluded that for this percentage of children, an adequate amount of Vitamin C was being supplied. Taken as a whole, the vitamin content of the lunches is fairly well met, with the exception of Vitamin UB.

To give a concrete example of the adequacy of the lunches, the following one was selected and the various constituents calculated as closely as data would permit without definite amounts of the food being known:

Age 11 Grade 5

Food	Cal.	Prot.	Ca.	P	FE
2 slices white bread	100	3.60	.011	.033	.00035
2 hamburgs	150	20.44	.012	.220	.00231
1 white cake	200	-	-	-	-
1 orange	100	1.56	.088	.040	.00039
milk	100	4.76	.174	.134	.00029
Corn soup (with milk)	150	7.14	.261	.201	.00043
Total-	800	37.5	.546	.631	.00377

Figures used in this calculation are taken from Rose (4).

This child's lunch was fairly adequate for his needs, assuming that he is an average normal child of 11 years. His caloric requirement is calculated to be from 2100 to 2300 calories per day of which amount he consumes roughly 800 at the noon lunch, leaving 1300 calories at a minimum to be made up in the two remaining meals. The protein, calcium and phosphorous intake of this lunch is about the normal amount, but the iron tends to be slightly below average for the age. Vitamins are about average with the exception of Vitamin UB.

From this a comparison can be made with those lunches tabulated in Table 2. The general conclusions can be made that, taken as a whole, the lunches of the rural school children are inadequate for the body requirements of the ages represented.

SUMMARY

1. Data on 3320 lunches representing 2289 rural elementary grade pupils housed in 155 schools in two counties in Michigan were collected.
2. Data are presented concerning the nutritive value of the lunches, and it is concluded that they are at a minimum for calories and below standard for protein and mineral content.
3. Age appeared to be an influencing factor in the adequacy of the lunch, with a smaller child having the least adequate.
4. Milk was present in only 14.8% of the total lunches.
5. Hot foods were furnished to 5.7% of the pupils in Clinton County and to 12.9% in Jackson; the higher use in Jackson being possibly accounted for by the amount of nutrition service done through the field workers.
6. Tea and coffee were present in an average of .8% of the entire number of lunches.

7. Hot food service is supplied in the schools (1) by the individual children; (2) by the parents preparing it to be used as a common dish; or (3) by an organization of people that purchase food for preparation at the school.

8. The contents of the rural school child's lunch as shown by data, tends to indicate the inadequacy of them, which condition can be greatly relieved through the more general use of hot food service.

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