



A dietary study of three institutions in Montana  
by Elizabeth C Cooly

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Montana State University  
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Abstract:

As a final summary for all the Institutions, I would like to quote from H.A. Pratt and R.D. Milner [Dietary Studies at the Gov. Hospital for Insane 1902-3-H.A. Pratt and R.D. Milner. U.S. Department of Agriculture. Office of the Experiment Station. Bulletin 150.] "Improperly cooked or flavored or unattractively served food may fail to stimulate the appetite; it may be unfamiliar or too familiar in appearance or taste to be palatable." Frequently one of the principal causes for table waste is unsatisfactory preparation of food including cooking, flavoring, and garnishing. When food is well cooked and tastefully served, and attractive to the eye as well as pleasing to the palate, it is much more apt to be economically eaten; — a considerable part of the pecuniary, and indeed the hygienic, economy of nutrition depends upon the methods of handling the food in the kitchen and dining room. Much more attention can be given to this phase in a family than can possibly be given in a larger institution, but even in the latter it is worthy of more consideration than is sometimes given.

Monotony in diet is especially to be avoided as this has a decided tendency to diminish the relish for food.

Foods come to be associated with days of the Week, and pleasurable effect when the meal is a surprise is very much diminished. Waste cannot be avoided but it can be kept at a minimum." It is interesting to compare the calories and per capita cost for the Institutions studied.

Warm Springs Galen Boulder 1. Number served 1,411 150 140 2. Daily calories per capita 2,978 4,339 2,599 3. Cost per capita per day \$.159 \$.529 \$.33 The range is quite wide, but each institution has its distinct problem to meet both as to requirements of those served and as to the money available.

People who have never lived in an institution cannot realise some of the inherent disadvantages of feeding in large numbers, and those in charge of institutions can make improvements only in so far as money is provided them. The science and economics involved in providing adequate and pleasing menus on limited cost, required a background of scientific training and practical institutional experience. It is false economy to leave this vital phase of work in the hands of cooks or matrons with no scientific training, no matter how competent or interested they may seem. Trained dietitians are comparatively new workers in most institutions, but with the few exceptions which prove the rule, are proving themselves invaluable. Their training demands a salary higher than the average paid in institutions, but the saving effected, and, what is more important, the better balanced and more pleasing menu served, prove the wisdom of the added expenditure. Many times, women who are too young to be permanently satisfied with the long hours of service and confinement which usually accompanies institutional positions, are employed, and this has resulted in a large turnover in this line of work. Most of the complaints against dietitians by those in charge of institutions have this basis. It must be remembered that this is a comparatively new field of work, and that time will provide a larger group of experienced mature workers, who will not chafe under the restriction of institutional life.

Montana institutions, with the possible exception of Warm Springs, are comparatively small and the

expense of a dietitian is correspondingly greater. The problem might in part be solved by the employment of an experienced State Dietitian who would work with the State Purchasing Agent and with those In charge of each institution. A more permanent policy could thus be established and the local dietitian or experienced untrained worker, could come and go without too seriously upsetting the routine of the institution. The State Board of Control in Wisconsin has recently adopted this plan. The fact which the public in general and State Officials in particular should recognize is that the field of the dietitian is a specialised line of work and that the average head of an institution does not have, and should not be expected to have, the time or the knowledge to administer this phase of work with the desired efficiency and satisfaction without trained assistance.

A State Dietitian could undoubtedly render service to other institutions of the state as the Vocational school for Boys at Miles City, the Vocational School for Girls at Helena, The Orphans' Home at Twin Bridges, and the Penitentiary at Deer Lodge.

A DIETARY SURVEY OF THREE INSTITUTIONS IN MONTANA

by

ELIZABETH C. COOLY

A THESIS

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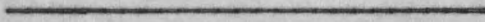
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P R O L O G U E

In writing this survey, I wish to thank Governor Dixon and President Atkinson of Montana State College for making it possible for me to make the visits which I made to Warm Springs, Galen and Boulder. I also wish to thank the Superintendents of these Institutions for the many courtesies shown me during my stay. Especially do I wish to thank the Dietitians, Miss Helen Nowak, Miss Dorothy Miller and Miss Sophie Anderson, and their co-workers for their hearty cooperation, without which such a survey would have been impossible.

To Miss Gladys Branegan and Miss Mirdyaleen Maxwell, I am indebted for their constant inspiration, guidance and helpful ready assistance in compiling the results of the studies.



BOHO  
BOND  
WWEVWIT

The first dietary studies of any kind, in this Country, were made between 1880 and 1900. Most of these were carried on in private families, for the purpose of finding the fuel and "nutriment" value of various foods common in American Diets. All of the foods in the diets were analyzed to find their chemical composition. The results of several hundred such studies, carried on in all parts of the United States, have been recorded by Dr. Atwater and Mr. Bryant (a). This period marks the first big advance in nutrition.

The next few years were devoted to studies, mainly of an economic nature, getting typical American diets, from people in various occupations. The object here was to see how the occupation influenced the quantity of food eaten, and how people with moderate or little means could obtain the most energy from foods with the smallest amount of money. While the majority of these studies were carried on with private families, some were also carried on with groups such as the Dietary Studies with the Maine Lumberman and also Dietary Studies with Harvard students. (b) From this work was evolved Atwater's Standards for Daily Diets (c) which are as follows:

- (a) The Chemical Composition of American Food Materials by W. O. Atwater, Ph. D. and A. P. Bryant, M.S. Bulletin 28. United States Department of Agriculture, Office of the Experiment Station.

- (b) Studies of the Food of the Maine Lumberman - 1901-1902 by C.D. Wood and E.R. Mansfield. United States Dept. of Agriculture, Bulletin 149, Office of the Experiment Station.
- (c) Methods and Results of Investigation on the Chem. and Economy of Food by W.O. Atwater. Bulletin 21, United States Department of Agriculture, Office of the Experiment Station.

	<u>Protein Grms.</u>	<u>Calories</u>
1. Woman doing light work	90	2400
2. Woman doing moderate work) Man doing sidentary work)	100	2700
3. Man doing light work	112	3050
4. Man doing moderate work	125	3500
5. Man doing muscular work	150	4150
6. Man doing very hard Muscular Work	175	5500

It was noted in finding the chemical composition of foods that nearly all of them contain ash of some kind. During the third big advance in nutrition, special emphasis was placed upon the kinds of ash, or minerals as they are now called, which are present in the foods we eat. Certain processes of manufacture and cooking remove a large part of these. Calcium, which is essential for bone building, blood coagulation and the normal functioning of the heart muscle, phosphorous, which also aids in bone building and has to do with the nerve control of all muscles, and iron, which aids in the formation of hemoglobin in the blood, are the minerals which are most often and most likely to be deficient in our diets. For this reason the calculations of these minerals with their standards

have been included in this survey (a).

The phase of nutrition which now occupies the center of attention is that of the Vitamins. At present there are three well established ones, Vitamin A, Vitamin B and Vitamin C. Several others are waiting more extensive experiments to prove their identity. Since none of these illusive substances have been isolated chemically, we have no quantitative measurement for them. The relative amounts present or the absence of them in any given food is indicated by plus and minus signs.

(a) Chemistry of Food and Nutrition, 1920, Dr. Henry C. Sherman, Pp. 234 to 308 and 342 to 345.

A lack of Vitamin A causes an eye trouble called Ophthalmia. This vitamin is found in butter fat and cod-liver oil, but it is not found in purified or rendered fats or oils.

When Vitamin B is deficient, there is first a loss of appetite, then loss of nerve control and finally Beriberi develops. This is prevented by the free use of green vegetables.

Of all the Vitamins, Vitamin C is the most apt to be deficient in institutional dietaries, because it is destroyed by heat. Scurvy develops when this vitamin is deficient. Tomatoes, because they contain so much of this vitamin and potatoes because they are generally eaten in large quantities, and do contain some of the substance after they are cooked, are valuable sources of "C". However, as free a use as possible of fresh vegetables and fruits is much to be de-

sired. (a).

From the above it can be seen why it is so important to have a varied diet, and also the importance of having foods in the right proportion to adequately meet the physiological needs of the body.

With these points in mind let us review what has so far been done to find out conditions in public institutions in the United States.

In 1900 Dr. Atwater investigated the dietary conditions of the insane asylums of New York State, under the auspices of the "New York State Commission in Lunacy". The next year H.A. Pratt and R.A. Milner made a similar study at the Government Hospital for the Insane near Washington, D.C. Later Dietary Studies of Public Institution in Philadelphia were carried on by Emma Smedly and R.D. Milner.

(a) The Vitamins - 1922 Sherman and Smith.

Parallel to these studies, H.L. Knight, H.A. Pratt and G.F. Langworthy carried on similar studies in Public Institutions in Baltimore. Several other states have followed the lead of these states; Ohio, Illinois, and Kansas. In Missouri, Miss June Findley reported on four hospitals for the Insane. We had access to Miss Findley's study. However the available literature on the other dietary surveys is very meagre.

#### Purpose of this Survey

The purposes of these studies were to observe different

types of institutions; to observe conditions of food preparation in them; to find the amount of food used and the amounts wasted; to note food selections, cost and quantities bought; and lastly to note any special ways of keeping tab on patients—first for the information and experience of the investigator and secondly with the thought that the results might be of interest and value to the officials of the respective institutions.

#### Methods of Obtaining Data

A weeks visit was made at each institution. The first day was generally spent in observation of conditions noting any special features about the diets, patients or methods of keeping track of them. Next, visits to the dining room or rooms, kitchen and storehouse were made.

The menus for two weeks periods were obtained, and in every case those for a month or two before were studied to be sure that the ones for the week of study were typical.

Amounts of food were recorded on cards from day to day. Cost of the food, units of purchase and unit costs were also noted on these cards.

The total number of people served, the total budget and the food budget were also noted.

Calculations of the calories, minerals, cost and vitamin content were made at home. The cost per person, per day with the number of calories, and the minerals received is given

in the summary with each institution. (a). All calculations were made from Rose's Laboratory Manual.

Rose's method for abbreviations of Dietary Calculation with large quantities was used. With one exception it was found excellent. In calculating the last group "Animal products exclusive of whole milk, and fat," the factors did not prove out, so I calculated the total calories and protein calories as usual, and subtracted the protein calories from the total calories to get the fat calories. In no case in the group were carbohydrates considered since they were present in such very small amounts. With this exception the factors were used as they stand.

(a) Mrs. Mary Swartz Rose's, Laboratory Handbook for Diets (Revised Edition 1922)

The Study at Warm Springs

The type or purpose of the institution was one of the first things noted in my visits to them. Naturally great variations were to be expected in the institutions as their problems were so different. Warm Springs, the State Hospital for the Insane, is more than a prison for confining these unfortunates. As the term hospital indicates, medical treatment is provided for bodies and minds, which frequently result in cures. Many are of course incurable. To be sure, the patients have their "disturbed" times, but many of them are perfectly rational much of the time. Most of them are quite harmless. A number of the patients have their daily work to do, though none of them are forced to work if they do not wish to. Generally, the patients are quite willing to do what is asked of them. For this reason there is very little expenditure for help other than for supervision.

Warm Springs is a small village in itself, with well kept lawns and several fine buildings. Superintendent Dr. Hathaway and the officials live in cottages which makes the place seem less of an institution.

The Main Hospital houses, the Receiving Ward, the Epileptic Ward, and the Hospital Proper, and also a Diet Kitchen. The men are housed into the Mitchel Building (where the working men are housed) and the two yards. The women are grouped in their own quarters, according to their condition. The main kitchen is

in a separate building, which contains the bakery and employees dining room. The commissary is located just behind the building.

At the time the study was made, November 4-10, 1923, there were 168 employees, and 1411 patients. Many of the patients worked around doing various things under the supervision of an employee. The attendants worked eight hours a day, and I think fared very well as far as menus and things to eat were concerned. They had a system of raises in salary which tended to make them more permanent. They started in with \$45.00 per month and were raised \$2.50 every three months until they had reached \$65.00 a month, which was the maximum salary among attendants.

Most of the people working in the kitchen were patients. For this reason, they were not always as clean as they might have been, the dietitian having to help watch constantly that their aprons were clean, but the patients did try to keep the equipment and place in fair condition. Miss Nowak, the dietitian, had placed an order for new steam kettles and hoped to have them arranged so that the kitchen would be more convenient. The kitchen itself was light and had plenty of window space for ventilation. The space allotted for baking and the number of bakers was not sufficient to supply the variety for the patients which was given to the employees. All baking for this Institution and the bread for the State Tuberculosis Sanitorium at Galen, four miles away, was done there. This was all in charge

of one baker. If there could have been another more variety could have been provided in the patients' menus.

"In providing for the population of a hospital for the insane, two fundamental principles must be recognized. First that the kinds and amounts of food be adapted to the physiological needs of the patients, and second, that these demands differ with different classes of people."

One important function of the brain is to regulate metabolism. Although very little is yet known of the dietary requirements of the Insane, it seems probable that it would be above that of a normal group of persons.

A 15 to 20% margin should be given in food to allow for these variations. (a)

All the vegetables were peeled by patients, instead of using a potato peeler. Of course nothing had to be paid for patient help, but the average wastes for a week as given by the dietitian were:

Potatoes----28 lbs. per 100

Carrots----25 lbs. per 100

Rutabagas----23 lbs. per 100

Turnips----25 lbs. per 100

(a) *Dietics in Relation to Hospitals for the Insane*, by W. O. Atwater, Ph.D. Annual Report 1904 of the U. S. Department of Agriculture, Office of the Experiment Station.

Aside from this one item, which in an institution of this size, is very large, the waste seemed to have been cut to the minimum.

To two of the buildings, food was carried through an underground passage on trucks, in five gallon containers. To the hospital it was carried in a food cart across the grounds. Often the food reached its destination cold, partly because the containers had no covers and partly because it was often ready quite a while before it was time to take it to the service rooms. There is a need for quite a bit of equipment to make the kitchen and bake shop as efficient as they should be. One thing that would add very much to the comfort of the patients, is to have steam tables installed in the service rooms, as then the food which is supposed to be served hot, may be kept that way.

For the most part food that was not served was returned to the kitchen and made into hash. As was said before, the actual table waste was reduced probably to a minimum. Most of this was in the form of tea or scraps of bread or stew.

The food delivered to the door of the service rooms was taken in and placed in serving dishes on the tables, where an attendant helped the patients to it. An aluminum cup, plate and spoon were provided all patients except those who were not so sick and who could use a fork and knife without danger to themselves or others. These latter patients have separate

dining rooms. Each patient has two slices of bread and a pat of oleo at his place, when he sits down to the table. They have as much to eat as they wish. Coffee is served in the morning and tea at noon and night. Skimmed milk is served with the breakfast food. Some of the patients receive milk toast in the afternoon aside from their regular meals.

On the whole the employees' menus were much better and there was much more variety in them than in the patients' menus. However, I was told that the patients' menus were much improved over what they had been before the dietitian came. For example in the Epileptic Ward there were 68 patients. They had been receiving every night except Wednesday and Sunday, 20 gallons of beans, or over a quart of beans per patient. This was remedied when the dietitian came.

Miss Nowak makes out the vegetable list for two kinds of vegetables, other than potatoes, a day, the week before they were to be used and sends it to the Commissary. They delivered them to the basement of the kitchen the day before they were to be used. There was quite a wide range of vegetables due probably to the fact that many of them were raised on the farm by the patients. The only criticism is that they were all cooked. Might it not have been possible to shred some of the cabbage and serve it raw? This would have increased the vitamin content.

Dried fruits which were to be served very night during the winter were nearly gone until the latter part of my study when the winter shipment arrived. Apples were used in place of these.

The meat, except for Sunday, was always beef stew, and on Sunday it was Roast Beef. The cheaper cuts were used and therefore it was often tough. In this connection I wish to quote from some "Dietary Studies in Baltimore," (a) which says:

"In planning Institution dietaries whether for the aged, the middle aged, or the young, humanity demands that some account be taken of the comfort as well as the nutritive requirements of the inmates, especially when they have become wards of the State through no fault of their own. To what extent the Dietitian is justified in going beyond the minimum ration, which is consistent with safety, or beyond the minimum cost for variety's sake, must depend upon the character of the institution and the funds at its disposal. There are, however, many methods by which variety can be obtained with little or no increased cost."

(a) Dietary Studies in Baltimore.

H. K. Knight, H. A. Pratt and C. F. Langworthy--U. S.  
Dept. of Ag. Office of the Experiment Station,  
Bulletin 223--page 44.

-13-  
Menu for a week

Sunday

Breakfast

Oatmeal  
Bread and Oleo  
Coffee  
Fried Potatoes

Dinner

Roast Beef  
Steamed Potatoes  
Carrots  
Bread and Tea

Supper

Creamed Turnips  
Bread  
Tea  
Hash  
Deep Apple Pie

Tuesday

Breakfast

Oatmeal  
Bread and Oleo  
Coffee  
Fried Potatoes

Dinner

Meat Stew and Veg.  
Steamed Potatoes  
Split Beans  
Bread and Tea

Supper

Creamed Turnips  
Raisin Bread  
Tea  
Hash  
Dried Apple Sauce

Monday

Breakfast

Oatmeal  
Bread and Oleo  
Coffee  
Fried Potatoes

Dinner

Meat Stew  
Rutabagas  
Bread and Tea

Supper

Creamed Cabbage  
Corn bread  
Tea  
Hash

Wednesday

Breakfast

Oatmeal  
Bread and Oleo  
Coffee  
Bacon

Dinner

Meat Stew and  
Sliced Potatoes  
Beets  
Coffee Cake-Tea

Supper

Rice cooked in  
milk  
Tea and bread  
Dried Apples  
Hash

Thursday

Breakfast

Oatmeal  
Bread and Oleo  
Coffee  
Fried Potatoes

Dinner

Meat Stew and Spaghetti  
Beets with Vinegar  
Steamed Potatoes  
Bread and Tea  
Ginger Bread

Supper

Creamed Rutabagas  
Apple Sauce  
Biscuits  
Tea and Hash

Saturday

Breakfast

Oatmeal  
Bread and Oleo  
Coffee  
Baked Beans

Dinner

Meat Stew and Vegetables  
Boiled Turnip and Rutabagas  
Steamed Potatoes  
Bread and Tea

Supper

Creamed Cabbage  
Corn bread and Tea  
Apple Sauce  
Hash

Friday

Breakfast

Oatmeal  
Bread and Oleo  
Coffee  
Fried Potatoes

Dinner

Meat Stew and Macaroni  
Steamed Potatoes  
Beets  
Raisin Bread  
Tea

Supper

Creamed Mixed Vegetables  
Bread  
Hash-tea  
Baked Apples

Comment - Different cereals were to be given as soon as the winter supply came in. This had not been provided before.

## W A R M S P R I N G S

Kind of Food	Pounds	Times Served	Total Calories	Protein	Fat	Carbohydrate	Acid or base
Oatmeal	894	7	1,593,108	262,836.0	143,520	1,186,752.	acid
Rice	294 $\frac{1}{2}$	3	477,090	43,291.5	16,492	417,306.5	acid
Macaroni	63	2	102,060	13,230.0	2,520	86,310.0	acid
Spaghetti	42	1	68,040	8,820.0	1,680	57,540.0	acid
Flour	1,186	14	1,888,920	244,860.0	46,640	1,597,420.0	acid
Bread	11,200	21	12,600,800	1,381,600.0	672,000	10,047,200.00	Acid
Cornmeal	200	2	324,000	29,400.0	11,200	283,400.00	acid
Crackers	15	Hospital 7 times	26,730	2,835.0	4,800	19,095.0	acid
Corn Flakes	1/8 oz. box	Special	910	73.5	28	808.5	acid
<u>Totals</u>			<u>17,081,658</u>	<u>2,486,946.</u>	<u>898,880</u>	<u>13,695,832.</u>	
Split Beans	200	1	316,000	80,000	14,000	222,000.	acid
Beans, Navy	60	1	94,800	24,000	4,200	66,600	acid
<u>Totals</u>			<u>410,800</u>	<u>104,000</u>	<u>18,200</u>	<u>288,600</u>	
Beets	1,836	2	275,400	33,048	---	242,352	base
Carrots	333	5	49,950	5,994	---	43,956	base
Turnips	877	2	131,550	15,786	---	115,764	base
Rutabagas	2,766	5	414,900	49,788	---	365,112	base
Potatoes	4,434	14	1,330,200	133,020	---	1,197,180	base
Tomatoes (canned)	45	2	4,050	810	---	3,240	base
Cabbage	1,580	5	189,600	28,440	---	161,160	base
Onions	32	hash, soup	3,840	576	---	3,264	base
Dried Apples	200	1	264,000	13,200	---	250,800	base
Fresh Apples	2,480	2	595,200	37,200	---	558,000	base
Raisins	300	2	396,000	19,800	---	376,200	base

Pounds Calcium	Pounds Phosphorous	Pounds Iron	Unit Cost	Total Cost	Units of Purchase	A	B	C
0.616860	3.50448	0.033972	\$3.33 per 90# sack	\$33.06690	110 sacks	*	+++	-
0.026505	0.28272	0.0026505	2.83 per 100#	10.33435	400 sacks	-?	+	-
0.013860	0.09072	0.0007560	0.05 per lb.	3.15000	5-150# bbls.	-	-	-
0.009240	0.06048	0.0005040	0.05 per lb.	2.10000	5-150# bbls.	-	-	-
0.233200	1.07272	0.0116600	4.15 per 140#	34.58000	600 sacks	-	+	-
3.024000	10.41600	0.1008000	0.10 per loaf	80.00		-	+	-
0.036000	0.38000	0.0018000	2.90 per 100#	5.80000	200 sacks	x	+	x
0.003300	0.01530	0.000225	0.66 per pete	0.66000	40 petes	-	-	-
			.07 per pkg.	0.07000	6-24 pkg. cartons	x	+	x
<u>3.962965</u>	<u>15.82242</u>	<u>0.1521650</u>		<u>169.76</u>				
0.3200	0.94200	0.01400	2.80 per 100	5.60	60-100#sacks	+	+	x
0.0960	0.28260	0.00420	5.90 per 100	3.54	100-100#sacks	+	+	x
<u>0.4160</u>	<u>1.22460</u>	<u>0.0182000</u>		<u>9.14</u>				
0.53244	0.61604	0.008616	1.00 per 100	18.36	Raised most	-	+	+
0.18648	0.15318	0.001998	1.00 per 100	3.33	Raised most	++	+	+
0.56128	0.40342	0.004385	1.00 per 100	6.77	Raised most	-	++	++
2.04684	1.54896	---	1.00 per 100	27.66	80,000#	-	++	+++
0.62076	2.57172	0.057642	1.00 per 100	44.34	8,000 sacks	+	++	++
0.00495	0.01170	0.000180	2.10 case 6#-10	3.15	300 cases 6# 10	++	+++	+++
0.71100	0.45820	0.017380	1.00 per 100	15.80	100,000#	++	++	+
0.01098	0.02540	0.000192	1.00 per 100	.32	Raised most	x	++	++
.064000	.096000	.003000	8.03 per 100	16.06	11,000#	x	++	++
.173600	.297600	.0074400	2.00 per 100	496.00	20-100#sacks	x	++	++
.102000	.396000	.0063000	8.53 per 100#	25.59	7,000#	x	x	x

Kind of Food	Pounds	Times Served	Total Calories	Protein	Fat	Carbohydrate	Acid or base
Canned Apples	5	working crew	1,950	75		1,875	base
<u>Totals</u>			<u>3,656,640</u>	<u>337,737</u>		<u>3,318,903</u>	
Sugar	550	21	990,000	---	---	990,000	acid
Syrup 1 1/6 lbs. 54 1/2 gals.	567.72		764,442	---	---	764,442	acid
Corn Starch	3	Hospital	5,400	---	---	5,400	acid
Kolasses 12 qts.	30	2	40,500	---	---	40,500	acid
<u>Totals</u>			<u>1,800,342</u>			<u>1,800,342</u>	
Bacon	60	1	1,281,000	---	1,281,000	---	acid
Oleo	294	14	1,029,000	---	1,029,000	---	acid
Cream, 18.5%	56	7	98,000	---	98,000	---	acid
Lard	145	3	507,500	---	507,500	---	acid
Salt Pork	20	1	70,000	---	70,000	---	acid
Butter	1	working crew	3,500	---	3,500	---	acid
<u>Totals</u>			<u>2,989,000</u>		<u>2,989,000</u>		
Milk (whole)	672	21	211,680	40,320	107,520	63,480	base
Meat	4050	14	2,430,000	1,215,000	1,215,000	---	acid
Eggs	5 doz. 10#	in baking	6,000	1,800	4,200	---	acid
Skim Milk	4,668.5	21	840,330	350,130	490,200	---	base
<u>Totals</u>			<u>3,276,330</u>	<u>1566,950</u>	<u>1,709,400</u>		
Salt, Tea, Coffee, Vanilla, Vinegar, and other condiments							
<u>Grand Total</u>			<u>29,426,450</u>	<u>4555,933</u>	<u>5,723,000</u>	<u>19,167,517</u>	

Pounds Calcium	Pounds Phosphorous	Pounds Iron	Unit Cost	Total Cost	Units of Purchase	A	B	C
<u>.000350</u>	<u>.000600</u>	<u>.0000150</u>	2.40 per 6#-10	<u>.40</u>	110 cases	x	++	++
<u>5.104680</u>	<u>6.578820</u>	<u>.1071480</u>		<u>\$659.78</u>				
---	---	---	10.25 per 100#	56.37 $\frac{1}{2}$	600 sacks	-	-	-
---	---	---	.25 per gal.	15.87 $\frac{1}{8}$	10-54 $\frac{1}{2}$ gal. bbls.	-	-	-
---	---	---	3.36 per case	.21	case	-	-	-
<u>.063300</u>	<u>.001320</u>	<u>.0002190</u>	.27 $\frac{1}{2}$ per qt.	<u>3.30</u>	bbl.	-	-	-
<u>.063300</u>	<u>.001320</u>	<u>.0002190</u>		<u>75.56</u>				
---	---	---	.15¢ per #	9.00	Farm	-	-	-
---	---	---	.26 to .29 #	80.85	500#	+	-	-
<u>.048160</u>	<u>.037530</u>	<u>.0001452</u>	1.20 per gal.	8.40	Farm	+++	+	+?
---	---	---	charged to Pork		Render own	-	-	-
---	---	---	.20 per #	4.00	make own	-	-	-
<u>.000150</u>	<u>.000170</u>	<u>.0000020</u>	.40 per #	<u>.40</u>	make own	+++	-	-
<u>.048210</u>	<u>.057700</u>	<u>.0001472</u>		<u>102.65</u>				
<u>.806400</u>	<u>.624960</u>	<u>.0016128</u>	.40 per gal.	14.00	Farm	+++	++	+?
<u>2.349000</u>	<u>4.5659000</u>	<u>.0607500</u>		395.00 meat & soup bone	4-5 cows	-	+	+?
<u>.008040</u>	<u>.016800</u>	<u>.0003000</u>	9.28 per case	1.60	3 case wk.	+++	+	-
<u>5.695570</u>	<u>4.481760</u>	<u>.0116713</u>	.20 per gal.	<u>108.40</u>	farm	++	+	+?
<u>8.053610</u>	<u>8.86426</u>	<u>.0727213</u>		<u>505.00</u>				
						+	-	-
<u>18.455165</u>	<u>36.905020</u>	<u>.2522133</u>		<u>\$1,575.69</u>				

Groups	Calories			Calcium		Phosphorous		Iron	
	Totals	Indiv. per day	% of whole	Total	Indiv.	Total	Indiv.	Total	Indiv.
Cereals	17,081,658	1820	61%	1795,223145 gr.	181758 gr	715,745626 gr	.072465 gr	68,930745gr.	.006979 gr.
Dried Legumes	410,800	40	1%	188,4480	.0191	554,7438	.0561	8,2446	.0008
Veg.-Fruit	3,656,640	370	12%	2312,42004	.23412	2880,20546	.29161	48,537744	.004913
Sugars	1,800,342	182	6%	28,6749	.0029	.59796	.00006	.099207	.00001
Fats	2,989,000	302	10%	21,83913	.00222	17,0781	.00172	.0213816	.000023
Milk (whole)	211,680	21	7%	365,2992	.0349	273,70688	.02771	.7305884	.0000734
Meat	3,276,330	332	6%	3648,18533	.36936	4015,50978	.40645	32,9427480	.0033352
Protein	4,535,933	459	15%						
Fat	5,723,000	579	19%						
Carbohydrate	19,167,517	1940	65%						
<u>Grand Total</u>	<u>29,426,450</u>	<u>2978</u>		<u>8360,189745</u>	<u>.84643</u>	<u>16717,970060</u>	<u>1.66303</u>	<u>114,2526249</u>	<u>.0115695</u>
Patients	1,411								
<u>Total Cost</u>	<u>\$1575.69</u>	<u>\$1.117 per wk.</u>	<u>\$.159 per da.</u>	Standard is .67 gr.		Standard is 1.32 gr.		Standard is .015	

SUMMARY FOR WARM SPRINGS

Comments on the Summary

There seems to be a fairly good proportion of the various food constituents. The minerals seem to be well supplied. There is monotony in the diet in two or three places, for instance always beef-stew. Would not veal stew be nearly as cheap? Could not there be a pot roast once in a while? Or some entirely different kind of meat? The variety in vegetable is unusually good. Perhaps some might be served raw instead of boiled or creamed.

The variety of dried fruits ordered was unusual for an institution and promised to make a more pleasing diet.

In looking over the vitamin content of the foods, they all seem low, due partially to the large amount of milled cereal stuffs used. Our knowledge of quantitative vitamin requirement is very limited, and there may be enough to prevent any serious trouble, but still the quantity seems too low for a very wide margin of safety.

The cost is very low especially when compared with \$.70 per day for the employees. Much variety could not be given to the patient if it is necessary to keep the low per capita cost. In Miss Findley's study made in 1917, when potatoes were high, showed the per capita cost for each of the four State hospitals which she visited in Missouri were \$.22, \$.21, \$.19 and \$.20.

This was before war prices had had their effect. Things which kept the prices down at Warm Springs were that the farm supplied many crops at a low figure, and also the fact that things were bought by the carload which results in a great saving. Even when these facts are considered it seems that the patient cost per day is lower than is desirable for their own good and happiness.

We would recommend a more generous use of whole milk (less than a cup of skimmed milk per person per day was supplied during the study) especially when one considers the fact that no butter is used. This milk could profitably be served as cocoa or chocolate to vary the inevitable tea and coffee. We would also suggest the use of more unrefined flours in breads.

The Tuberculosis Sanitarium at Galen

Galen, as the official title implies, is a hospital not like the first institution studied, but one for people affected with our most wide spread disease, tuberculosis. Tuberculosis is a very peculiar disease in many respects. One of these is that a patient may be feeling fine one day and be flat on his back the next. It is very difficult to feed patients when they are in this condition because one minute they think they want a certain thing to eat, but when it is given to them very often they will take a mouthful and decide they do not care for it at all. This makes the waste a variable factor, which cannot be recorded with accuracy.

Galen is about half-a-mile from the railroad, although the main highway runs in front of it. It is quite secluded and well kept. It is built on the cottage plan, with two exceptions, that of the hospital which houses the bed ridden patients, with a capacity of about 60 patients and that of the Pavillion where about 50 more can be housed. The Pavillion is an older building and at the time of the study, November 19th to 26th, it was not filled to capacity. Additions are being made in the cottage farm, and at present there are six cottages, five of which house men, eight to a cottage. Most of these men are able to be up and come to their meals. In the sixth, known as the Walsh Cottage, 14 women stay. Some of these patients

get up for their lunch and dinner, but not for breakfast. The cottages are kept very clean, are light, airy and sunny. The barns and farm buildings are well away from the hospital, and they are modern in every respect. There is a small artificial pond at one end of the grounds, where in the summer the patients can go canoeing or go out in the small motor boat. An industrial school under the supervision of the Civilian Rehabilitation Service, was being started to help the patients to learn new trades and also to take their mind from themselves.

There were 106 patients there and 44 workers, including nurses and employees. The workers had their quarters together, away from the patients. The environment was pleasant and every one seemed to like to do what he was doing.

Most of the patients here were not able to do any work; if they had been able to they would have been dismissed, though many of them were able to do some things on their good days and when they felt like it. From one to three in the afternoon were quiet hours, when all patients were to take a rest.

When a patient is admitted, if not too sick, he is weighed. Weigh day comes twice a month and all patients who are able to get up at all are weighed at this time. They are very much interested in this and are anxious to gain. I had access to most of the doctors' charts while making the study. In most cases the weights went down for a short period because

patients are so run down on entrance, then gradually the weights go up. Of course there was some fluctuation for one reason or another, but this was the general trend of charts of the patients at Galen during the time of this study.

For a week after admittance, Miss Miller, the Dietitian, kept very careful tab on what the patient ate. This was recorded in a card index which she kept for each patient. Any particular likes or dislikes were also noted at this time. After the first week each patient's diet was checked on his card, once in two weeks, while he was still in the hospital. Those who were able to come to the patients' dining room, were not watched as closely. The rounds were made to every patient once a day and often twice during the day.

The kitchen was clean, light and airy. The cooks kept things in good order, and in a sanitary condition. As the food for both helpers and patients was cooked together, generally the same menu was used for all dining rooms, so it was impossible to separate the amounts going to the various places.

The Hospital and Walsh Cottage food was placed in a covered vacuum food cart and then taken to the diet kitchens, when it was time to serve. In this way the food was kept very hot. Coffee and tea were made in urns at the separate diet kitchens. The trays looked attractive and in most cases the patients were ready to eat. Additional nourishment in the form of egg

nogs, milk or cocoa, was supplied to all who wished it, in the middle of the afternoon.

Before taking up the comments on the Summary, I would like to refer to Mrs. Rose's suggestions for feeding Tuberculosis Patients. (a)

"While the patient is still underweight, feed one-third more calories than ordinary. 130 to 140 grams of protein is permissible and advisable in such cases."

Also to the rules set down in another well known book. (b)

1. nourishing food
2. Determine the Individual requirement
3. Feed a surplus to obtain 10 pounds excess weight though forced feeding is not necessary.
4. Milk and eggs, not in excess but in relation to calory value of the whole diet.
5. Easily digested fats are especially good in the combat because of their high caloric value.
6. Meals three times a day and if necessary more frequently.
7. Avoid too bulky food which tend to ferment.
8. Strive to keep the normal weight.
9. Eating should be under agreeable circumstances.

(a) Mary Stewartz Rose - "Feeding the Family" 1918

(b) Carter, Howe and Mason - "Diet in Health and Disease" 1922

Menus for a week at Galen

Sunday, November 18th

Breakfast

Grapefruit  
Waffles and Maple syrup  
Boiled rice with cream  
and sugar  
Soft boiled eggs  
Butter, Coffee, Tea, Milk

Lunch

Vegetable soup  
Baked potatoes and butter  
Liver (hospital and Walsh  
cottage)  
Bread and butter  
Milk and tea  
Cherry Jello

Dinner

Roast Pork  
Sweet Potatoes and gravy  
Apple, celery, and nut  
salad (dressing)  
Bread and butter  
Milk and tea  
Pineapple whip

Dinner

Steak  
Mashed potatoes and but-  
tered peas  
Bread and butter  
Milk, Tea, Coffee  
Tapioca Cream

Supper

Potato soup and crackers  
Cold meat and catsup  
Fried potatoes  
Chocolate cake with icing  
Milk and tea  
Cheese

Tuesday, November 20th

Breakfast

Grapes (Walsh Cottage and  
Nurses' dining room)  
Oranges (Hospital, Patients'  
dining room)  
Oatmeal with cream and sugar  
Toast and butter  
Ham  
Coffee, Tea, Milk

Monday - November 19th

Breakfast

Stewed prunes with lemon  
Steel cut oats and cream  
and sugar  
Toast and butter  
Eggs, boiled or scrambled  
Coffee, Tea, Milk

Lunch

Lima Bean Soup  
Cottage cheese with pimentos  
Baked squash  
Bread and butter  
Apple sauce - Milk & Tea

Dinner

Veal Chops  
Steamed potatoes  
Creamed cauliflower  
Bread and butter  
Pickles Celery

Wednesday, November 21st

Breakfast

Oranges (help)  
Grapes (patients and nurses)  
Steel cut oats with cream and sugar  
Bacon and eggs  
Toast and butter  
Coffee, Tea, Milk

Lunch

Noodle soup  
Cold meat with catsup  
Fried potatoes  
Bread and butter  
Stewed plums and cream  
Milk, Tea

Dinner

Roast Veal and dressing  
Mashed potatoes, gravy  
Cabbage salad with cream dressing  
Hot rolls, butter  
Prune whip  
Milk, Tea  
Slice tomatoes (Welsh Cottage and Hospital)

Thursday, November 22d

Breakfast

Apricots  
Grapefruit (Welsh Cottage and Hospital)  
Cornmeal mush with cream and sugar  
Fried ham  
Toast and butter  
Coffee, Tea, Milk

Lunch

Bean soup (not strained)  
Tomatoes (sliced)  
Baked potatoes  
Bread and butter  
Sliced bananas with cream  
Milk, Tea

Dinner

Steak  
Boiled rice with gravy  
Squash  
Bread and butter  
Strawberries  
Milk, Tea

Friday, November 23d

Breakfast

Apple sauce (all patients)  
Left over fruits for nurses  
Oatmeal, cream and sugar  
Hot cakes and syrup  
Soft boiled eggs and toast (Hospital)  
Butter  
Coffee, Tea, Milk

Lunch

Clam chowder  
Macaroni and cheese  
Pickles  
Hot biscuits, butter  
Apricot whip  
Milk, tea

Dinner

Boiled salmon  
Egg sauce with pimentos  
Washed potatoes  
Apple and cabbage salad  
Rice pudding with raisins  
Milk, Tea

Saturday, November 24th

Breakfast

Bananas (Hospital and  
Walsh Cottage)  
Apple Sauce (dining room)  
Steel cut oats with cream  
and sugar  
Bacon and soft boiled eggs  
Toast and butter  
Coffee, Tea, Milk

Lunch

Vegetable soup  
Escalloped potatoes  
Cold meats with mustard  
Bread and butter  
Chocolate pudding  
Milk, Tea

Dinner

Roast Mutton  
Steamed potatoes  
Creamed carrots  
Cinnamon rolls and butter  
Cookies and baked apples  
Milk, Tea

## G A L E N

Kind of Food	Pounds	Times Served	Total Calories	Protein	Fat	Carbohydrate	Acid Base
Oatmeal and steelcut oats	33.2	5	53,784.0	4,880.4	1,859.2	47,044.4	acid
Rice	16	3	25,920.0	2,352.0	192.0	23,376.0	acid
Corn Meal	9	1	14,580.0	1,323.0	504.0	12,753.0	acid
Corn Flakes	7	Specs	11,340.0	1,029.0	392.0	9,919.0	acid
Bread	357	21	578,340.0	74,970.0	14,280.0	489,090.0	acid
Crackers	22	7	35,640.0	4,620.0	880.0	30,140.0	acid
Flour	196		217,520.0	41,160.0	7,940.0	168,520.0	acid
Macaroni	6	1	9,720.0	1,260.0	240.0	8,220.0	acid
Tapioca	4	1	6,480.0	840.0	160.0	5,480.0	acid
<u>Totals</u>			<u>953,324.0</u>	<u>132,434.4</u>	<u>26,347.2</u>	<u>794,542.4</u>	
Nuts	2	1	5,372.0	720.0	420.0	452.0	acid
Lima Beans	8 $\frac{1}{2}$	2	13,430.0	3,400.0	395.0	9,635.0	acid
<u>Totals</u>			<u>18,802.0</u>	<u>4,120.0</u>	<u>4,595.0</u>	<u>10,087.0</u>	
W. Potatoes	966	10	289,800.0	28,980.0	---	260,820.0	base
S. Potatoes	90	1	40,500.0	2,700.0	---	37,800.0	base
Carrots= parsnips	35 10	3	67,500.0	810.0	---	66,690.0	base
Celery	2 stalks or 4	2	480.0	72.0	---	408.0	base
Cauliflower	20	1	2,400.0	360.0	---	2,040.0	base
Cabbage	40	2	4,800.0	480.0	---	4,320.0	base
Onions	15	season	1,800.0	270.0	---	1,530.0	base
Peas	45	1	10,800.0	2,025.0	---	8,775.0	base
Tomatoes	20 frsh. 15 cnd.	2 2	4,050.0	810.0	---	3,240.0	base

Pounds Calcium	Pounds Phosphorous	Pounds Iron	Unit Cost	Total Cost	Units of Purchase	A	B	C
.023008	.130144	.0012616	\$4.50 per 90#	\$1.93-38.5#	2-90# sacks	+	+	+
.001440	.015360	.0001440	3.00 per 100	.54-18#	1-100# sack	+	+	+
.001620	.017100	.0000810	2.90 per 100	.35-12#	1-100# sack	+	+	+
.001400	.019810	.0001960	36 pkgs. 2.85 per carton	.16-2 pkg.	2 cartons	+	+	+
.096390	.332010	.0032130	.10¢ per loaf	35.70	50 lves daily	+	+	+
.004840	.022440	.0003300	15.66 per keg	2.64	154#	+	+	+
.039200	.180320	.0019600	6.38 per 98#	12.76	6000#	+	+	+
.001320	.008640	.0000720	.05 per lb.	.30	100# sacks	+	+	+
.001380	.005400	.0000960	.20 per lb.	.80	1 case	+	+	+
<u>.170598</u>	<u>.731224</u>	<u>.0073536</u>		<u>55.18</u>				
.001780	.007160	.0000420	1.00 per #	2.00	Thksgiving 300# mixed	+	+	+
.006035	.027730	.0005950	5.90 per #	.59-10#	100# sack	+	+	+
<u>.007815</u>	<u>.034890</u>	<u>.0006370</u>		<u>2.59</u>				
.135240	.560280	.0124480	1.00 per 100	10.50-1050#	400 sacks	+	+	+
.017100	.040500	.0004500	3.20 per case	6.40	6cs. 6#10	+	+	+
.045100	.039800	.0004800	.02 # carrots .03 # parsnips	1.00	2000# each	+	+	+
.303120	.001480	.0000200	1.50 per doz.stlk	.25	2 doz. stlk	x	++	++
.024600	.012200	.0001200	.02½ per #	.50	8000#	+	++	++
.018000	.011600	.0004400	.01 per #	.40	2000#	++	++	+
.005100	.006750	.0000900	.02 per #	.30	4000#	x	++	++
.011700	.054000	.0007435	5.15 per case	10.30	40 cs. 6# 10	+	++	++
.004950	.011700	.0001800	2.70 per case 2.25 per keg 60#	1.65	60 cs. 6# 10 1 keg fresh	++	+++	+++

Kind of Food	Pounds	Times Served	Total Calories	Protein	Fat	Carbohydrat	Acid or Base	Pounds Calcium	Pounds Phosphorus	Pounds Iron
Squash	100#	1	9,000.0	1,800	----	7,200.0	Base	.019000	.004000	.0006000
Grapefruit	60	2	14,400.0	900	----	13,500.0	Base	.012600	.012000	.0001800
Apples	255	5	61,200.0	3,825.0	----	57,375.0	Base	.017850	.030600	.0007650
Lemons	8	spcls.	2,520.0	120.0	----	2,400.0	Base	.028800	.001760	.0000480
Grapes	7	part only	1,680.0	105.0	----	1,575.0	Base	.001350	.002170	.0002100
Oranges	43	1 and as want	10,320.0	645.0	----	9,675.0	Base	.019350	.009030	.0000860
Bananas	51.5	1 and as specls.	12,360.0	772.5	----	11,588.5	Acid	.004635	.015965	.0003090
Pine apple	8	1	3,120.0	120.0	----	3,000.0	Base	.001440	.002240	.0000400
Strawberries	16	1	6,240.0	240.0	----	6,000.0	Acid	.065600	.003480	.0001680
Plums	16	1	6,240.0	240.0	----	6,000.0	Basic	.003200	.005120	.0000800
Prunes	25	2	33,000.0	1,650.0	----	31,350.0	Acid	.013500	.026250	.0007500
Apricots	25	2	33,000.0	1,650.0	----	31,350.0	Basic	.016500	.029250	.0003500
Figs	6	1	7,920.00	396.0	----	7,524.0	Acid	.009720	.006960	.0001800
Raisins	6	1	7,920.0	396.0	----	7,524.0	Basic	.003840	.007920	.0001260
			<u>631,050.0</u>	<u>49,366.5</u>		<u>581,648.5</u>		<u>.482275</u>	<u>.895055</u>	<u>.0188635</u>
Cane Honey	7	patient as desired	12,600.0	----	----	12,600.0	Base	----	----	----
Syrup	9	patient only	11,970.0	----	----	11,970	Acid	----	----	----
Sugar	200		360,000.0	----	----	360,000.0	Acid	----	----	----
Corn Starch	3	1	5,400.0	----	----	5,400.0	Acid	----	----	----
			<u>389,970.0</u>			<u>389,970.0</u>				
Lard	12	10x in cooking	42,000.0	----	42,000	----	Acid	----	----	----
Butter	84	all mls. some cooking	294,000.0	----	294,000	----	Acid	.012600	.014280	.0001680

Unit Cost	Total Cost	Units of Purchase	A	B	C
.01-3/4 per lb.	\$1.75	150#	++	X	X
\$6.00 per case	6.00	1 case	X	++	++
2.50 per box	15.00	6 boxes	X	++	++
11.50 per case	1.92	1 case	-	++	+++
2.75 per crate	.39	2 crates	X	+	+
5.50 per case	2.25- $\frac{1}{2}$ case	1 or 2 css.	+	++	+++
.06 per #	3.09	1 bunch	++?	+	+
5.03 6# 10	.84	20 cases	X	X	X
5.25 6# 10	1.75	15 cases	X	X	X
9.50 per 100#	1.52	15 cs. 25#	X	X	X
8.28 per 100#	2.07	24 cs. 25#	X	+	-
9.75 per 100	2.44	30 cs. 25#	X	X	X
7.03 per 100	.42	20 cs. 25#	X	X	X
9.53 per 100	.57	5 cs. 10#	X	X	X
<hr/>					
	<u>\$71.31</u>				
.75-2 cases 96#	.70-	2 cs. 48# ea.	-	+	-
7.75 for 15 gal.	.51 $\frac{1}{2}$	10 cs. 15 gal.	-	-	-
9.81 per 100#	19.62	4000#	-	-	-
3.25 per cs. 48 $\frac{1}{2}$ #	.40	6 cs. 48 pkg.	-	-	-
.21 per #	2.52	bht from farm	??	+	+
.47 per #	59.48	60# weekly			

Kind of Food	Pounds	Served	Total Calories	Protein	Fat	Carbohydrate	Acid or Base
Salad Oil	9	dressing	31,500.0	--	31,500.0	--	Acid
Bacon	36	2	88,200.0	--	88,200.0	--	Acid
Cream	288.75	2 daily	505,312.5	--	505,312.5	--	Acid
			<u>961,012.5</u>		<u>961,012.5</u>		
Milk	2240	21-	705,600.0	134,400.0	358,400.0	212,800.0	Base
Cocoa	4	1	9,450.0	1,560.0	4,800.0	3,090.0	Acid
Chocolate	3	1	7,087.5	1,370.0	3,600.0	2,117.5	Acid
			<u>722,137.5</u>	<u>137,330.0</u>	<u>366,800.0</u>	<u>218,007.5</u>	
Beef	307	5	184,200.0	92,100.0	92,100.0	--	Acid
Pork	116		166,320.0	139,200.0	27,120.0	--	Acid
Salmon	60	1	180,000.0	12,600.0	167,400.0	--	Acid
Mutton	80	1	96,000.0	31,200.0	64,800.0	--	Acid
Sardines	8	spcls.	4,800.0	3,360.0	1,440.0	--	Acid
Eggs	266	many	159,600.0	47,880.0	111,720.0	--	Acid
Clams	24	1	4,320.0	1,460.0		2860	Acid
Cheese	36 $\frac{1}{2}$	3	65,900.0	12,615.0	53,285.0	--	Acid
Gelatin-jello	10.2	3	16,952.4	16,952.4	--	--	Acid
Misc. foods adding to cost only as Soda, Spices, Baking Powder and Salt, Flavorings.							
			<u>878,092.4</u>	<u>357,367.4</u>	<u>517,865.0</u>	<u>2860</u>	
<b>Grand Total</b>			<u>4,554,589.4</u>	<u>680,618.3</u>	<u>1,876,619.7</u>	<u>1,997,151.4</u>	

Pounds Calcium	Pounds Phosphorous	Pounds Iron	Unit Cost	Total Cost	Units of Purchase	A	B	C
			.30 per #	\$10.80	10 bacons	x	x	x
<u>.248325</u>	<u>.193462</u>	<u>.0006352</u>	.40 per qt.	46.20	bgt. farm	+++	+	+?
<u>.260925</u>	<u>.207742</u>	<u>.0008032</u>		<u>\$99.00</u>				
2.688000	2.083200	.0053760	.10 per qt.	112.00	Bht. fm.	++	++	+?
.004480	.028360	.0001080	.21 per #	.84	6-25# box	x	x	x
<u>.002760</u>	<u>.013650</u>	<u>.0000810</u>	.28 per #	.84	4-12# boxes	x	x	x
<u>2.695240</u>	<u>2.125210</u>	<u>.0055650</u>		<u>\$113.66</u>				
.178060	3.309460	.0046050	.10 per #	\$ 30.70	2 veals-395#	+	+?	+?
.067280	1.250480	.0017400	.15 per #	17.40	1 hog-106#	+	+?	+?
.065400	.888000	.003500	.22 per #	13.20	60#	x	x	x
.046400	.862400	.0012000	.17 per #	13.60	1 mutton 380#	+	+?	+?
.008720	.118400	.0004400	5.00 per case	1.12	1 case	+	+	+
.188220	.478800	.0079800	13.50 per case	67.50	5-6 cs. 30oz.	+++	+	+
.029760	.029280		7.50 per case	7.50	15 cs. 48 e.	+	+	+
.339815	.249295	.0001460	.25 per #	9.12 $\frac{1}{2}$	300 #	++	++	+
			6.65 cs. jello 24.50 per gross gel. Varies with goods	3.75 29.46	6 cases 1 gross	+	+	+
<u>.923655</u>	<u>7.186115</u>	<u>.019441</u>		<u>\$193.35</u>				
<u>4.540508</u>	<u>11.180236</u>	<u>.0426433</u>		<u>\$556.33</u>				

Groups	Calories			Calcium		Phosphorous		Iron	
	Totals	Indiv. per da.	% of Whole	Total	Indiv.	Total	Indiv.	Total	Indiv.
Cereals	953,324	908	21%	77,280894 gr.	.0736	332,244472	.516423	3,2300808	.0030763
Dried Legumes	18,802	18	.4%	3,550195	.003381	15,80517	.01505	.287561	.00294
Veg. Fruit	631,050	601	13%	218,47575	.208067	405,459915	.386152	8,5451655	.0081382
Sugar	389,970	342	8%	---	---	---	---	---	---
Fats	961,012	915	21%	118,199025	.11257	94,107126	.089624	.3638496	.003865
Milk, Choc.	722,137	688	16%	1220,94172	1.16280	972,72013	.9264	2,520945	.0024
Meat Group	878,092	836	19%	418,915315	.398967	3255,310095	3,100295	8,793183	.008388
Total Proteins	680,618	648	15%						
Fat	1,876,619	1989	45%						
Carbohydrate	1,997,151	2216	51%						
<u>Grand Total</u>	<u>4,554,389</u>	<u>4339</u>		<u>2,056,850124</u>	<u>1.958905</u>	<u>6064,646908</u>	<u>4,823487</u>	<u>19,3174149</u>	<u>.0183978</u>
<u>Total Cost</u>	<u>\$556.33</u>	<u>Per week. 3,709</u>	<u>Per day. .529</u>		<u>Standard is: .67 gr. 3000 calories .892 for 4000 calories</u>		<u>Standard is: 1.32 1.76</u>	<u>Standard is: .015 .020</u>	
Nurses, patients and workers.			150						

SUMMARY FOR GALEN

Comments on the Summary

The fruit and vegetable group is particularly high in this institution which is necessary if the hospital is to fulfill its purpose, that of curing the patients. This generous use of fruits and vegetables is something that is much to be desired in other places for more normal diets but of course is not always possible because of expense.

The Meat Group also seems high but when we study the grouping further, it will be noted that skimmed milk, eggs and cheese are included here. The proportion is not too high when these other foods are considered as a part of this group.

This was the only one of the three institutions where butter was served to the patients regularly.

The total calories at Galen are higher than for other places because Tuberculosis is a wasting disease and a high caloric diet is needed in order to build up the body. As stated before, the waste here was quite an appreciable factor so this would reduce somewhat the actual calories each patient received. The Minerals and Vitamins are all well above the safety line. Cost was not a limiting factor here. The patients were there to get well and most of them did in time.

## Boulder - The School for the Deaf and Blind

Boulder is an educational institution for unfortunate children either deaf or blind, to prepare them to become useful citizens. The pupils are there for nine months of the year, and have regular classes five days of the week. Several of the teachers are deaf-mutes themselves, which makes them more sympathetic and patient with these children, than many normal people would be. Most of the children are very bright, and learn quickly, as is shown by the fact that they cover practically the same range of work in school in the same time as normal children.

The ordinary grammar school subjects and also vocational subjects, with practical applications, are taught.

The Superintendent, H. J. Menzemer, told me that Meningitis, Scarlet Fever and Measles, in the order named, were the primary causes for deafness. Sometimes it is hereditary but generally is caused from some disease. It may be of interest to know, that there is only one sign language and that these people can talk to people from any other country or of any nationality.

The school for the Deaf and Blind, consists of three buildings. In one of these is the main office for the school. A part of this building is used for class rooms, part for living quarters for the officials and part for the boys' dormitory. In the second building, the kitchen, dining room, and print shop were located,

while in the third building the household store room, girls' dormitory, gymnasium and a few class rooms were located. The buildings though old were kept clean and neat. The children kept their quarters clean. The kitchen help was not as permanent as in the other two institutions visited because the school was run only for nine months, and although most of the officials stayed on, this was not enough to warrant keeping much of the kitchen force during the summer.

The children were served a half hour earlier than the teachers and officers so that the latter could supervise during that time.

The kitchen was not as light nor as well ventilated as in the other institutions visited. Artificial light had to be used most of the time. This I think was partly due to the fact that the visit was made during the last days of December when the days are unusually short.

The Christmas Menu is also included in this study. This shows something of the extras that are given to the children. Parents and friends are urged to send jams and fruit to the children rather than cake and candy, although much of this is sent also.

The Officers' menus are nearly the same as those given the children. The exceptions are that the officers are given more meat, butter in place of oleo, pie once in a while, and coffee and cream. All menus are filed with the Superintendent every month and before they are served they have his approval.

The total waste including potato peelings, and table waste, does not average over ten pounds a day. The childrens' and officials' dining rooms were light and airy. One older girl and an older boy sat at the head and foot of the tables. When a new student came to the school he was put in charge of an older pupil, who was to show him the customs of the place, and often correct his table manners.

For one who had never been in an institution of this type, it is fascinating to watch the use of the sign language. Emphasis is put into what is said by gesticulations.

The enrollment of the school when visited, totaled 90 with the distribution of ages as follows:

Under 10	- - - - -	16
From 10-15	- - - - -	40
Over 15	- - - - -	34

Menus for Boulder

for one week

Sunday - December 23rd

Breakfast

Cold cereal  
Sausage  
Potatoes  
Bread  
Coffee and milk

Dinner

Bacon  
Macaroni and cheese  
Bread - Oleo  
Cake and canned apricots  
Tea and Milk

Lunch

Roast and gravy  
Bread  
Peas and mashed spuds  
Ice cream and cake  
Milk

Dinner

Potato salad  
Bread  
Apple Butter  
Cake and canned pears  
Cocoa

Monday - December 24th

Breakfast

Oatmeal  
Potatoes  
Bread  
Coffee and milk

Lunch

Hash and gravy  
Bread  
Corn  
Boiled potatoes  
Rice pudding  
Milk

Tuesday - December 25th

Breakfast

Cold cereal  
Hot milk toast  
Coffee and milk  
Canned peaches

Dinner

Vermicelli Soup  
Crackers  
Dressing and gravy  
Roast duck  
Roast turkey  
Bread and butter  
Mashed Irish spuds  
Browned sweet potatoes  
Peas - Celery - Horse-  
Cranberry sauce / radish  
Pumpkin pie Mince pie  
Coffee Milk

In Gym

Baked cheese cracker  
or toast  
Milk - Ice Cream  
Fruit - Cake

Wednesday - December 26th

Breakfast

Brownies  
Bread - Oleo  
Coffee - Milk  
Sauce - Raspberries

Dinner

Roast and gravy  
Bread  
Succotash  
Boiled potatoes  
Creamed tapioca  
Milk

Supper

Baked beans  
Corn bread  
Syrup  
Cake - Cooked apple sauce  
Tea and milk

Thursday - December 27th

Breakfast

Cream of wheat  
Potatoes  
Apple butter  
Coffee - Milk

Dinner

Roast and gravy  
Bread  
Lima beans  
Boiled spuds  
Cottage pudding  
Milk

Supper

Rice mush  
Bread  
Peanut butter  
Cake and prune sauce  
Tea and Milk

Friday - December 28th

Breakfast

Corn meal mush  
Bread - Oleo  
Coffee and Milk  
Cooked sauce - Cherries

Dinner

Baked Fish and dressing  
Bread - Cream gravy  
Stewed tomatoes  
Boiled potatoes  
(Baked beans)  
Peach Jello  
Milk

Supper

Cream of tomato soup  
Bread - Oleo  
Cake and apricots  
Tea and Milk

Saturday - December 29th

Breakfast

Oatmeal  
Pancakes and syrup  
Coffee - Milk

Dinner

Roast and gravy (already  
ordered out. It is from  
left overs)  
Bread  
String beans  
Boiled potatoes  
Rice pudding  
Milk

Supper

Scalloped corn  
Bread - Oleo  
Cake and baked apples  
Tea and Milk

BOULDER

Kind of Food	Pounds	Times Served	Total Calories	Protein	Fat	Carbohydrate	Acid or Base
Shredded Wheat	7	1	11,340	1,470	280	9,590	Acid
Puffed Wheat	4.5	1	7,290	945	180	6,165	Acid
Breakfast Brownies	6	1	9,720	1,260	240	8,220	Acid
Bread	250	21	283,500	42,000	15,000	226,500	Acid
Cream of Wheat	9½	1	14,390	1,995	380	12,015	Acid
Crackers	7	3	12,474	1,523	2,240	8,911	Acid
Flour	200		324,000	42,000	8,000	274,000	Acid
Graham Flour	100		162,000	21,000	4,000	137,000	Acid
Macaroni & Vermicelli	10	2	16,200	2,100	400	13,700	Acid
Tapioca	10	1	16,200	2,100	400	13,700	Acid
Rice	17	3	27,540	2,499	204	24,837	Acid
Cornflakes	7	1	11,340	1,029	392	9,919	Acid
Cornmeal	7.5	2	12,150	1,103	420	10,627	Acid
Oatmeal	13	3	<u>23,166</u>	<u>3,822</u>	<u>3,640</u>	<u>15,706</u>	Acid
<u>Totals</u>			<u>931,312</u>	<u>124,646</u>	<u>35,776</u>	<u>770,890</u>	
Beans	16	1	7,842	2,112	1,489	4,241	Acid
Lima Beans	15	1	<u>23,700</u>	<u>6,000</u>	<u>1,050</u>	<u>16,650</u>	Acid
			<u>31,542</u>	<u>8,112</u>	<u>2,539</u>	<u>20,891</u>	
Potatoes	330	11	99,000	9,900	---	89,100	Base
Sweet Potatoes	40	1	18,000	1,200	---	16,800	Base
Rutabagas	50	1	7,500	900	---	6,600	Base
Celery	70	1	8,400	1,260	---	7,140	Base
Onions	10	Season	1,200	180	---	1,020	Base
Peas	40	2	9,600	900	---	8,700	Base

BOULDER

Pounds Calcium	Pounds Phosphorous	Pounds Iron	Unit Cost	Total Cost	Units of Purchase	A	B	C
.002870	.022680	.0003150	\$3.75 per 36 pkg.	\$1.00	8-36 pkg. Ctn.	+	++	0
.002025	.019035	.0002250	4.20 per 36 pkg.	1.08	8-36 pkg. Ctn.	+	++	+
.001860	.014280	.0001500	7.00 per 36 pkg.	1.17	5-cs. 36 pkg.	+	+	0
.067500	.322500	.0002250	Make their own	25.00	---	+	+	0
.002945	.021610	.0002375	6.00 per ctn. 90 pkg. 2# ea.	.40	2-90# pg. 2# ea.	+	+	0
.001400	.006440	.0000700	.102 per #	.714	14-7# bx.	+	+	+
.040000	.184000	.0020000	2.70 per 100#	5.40	50-100 sacks	+	+	+
.039000	.364000	.0037000	2.95 per 100#	2.95	10-100# "	+	+	+
.002000	.009200	.0001000	.05 per #	.50	1200#	+	+	0
.002000	.009200	.0001000	.07 3/4 per #	.775	215#	+	+	0
.001530	.016320	.0001530	6.73 per 100#	1.144	500#	+	+	+
.001400	.019810	.0002030	2.40 per case	.60	10 cs. 36 pkg.			
.001350	.014250	.0000675	2.90 per 100#	.29	100#			
.008970	.050960	.0004940	3.60 per 90#	.60	90# sack	+	+	+
<u>.174850</u>	<u>1.074285</u>	<u>.0080400</u>		<u>\$41.62</u>				
.021120	.075360	.0011200	6.75 per 100#	1.22	100#		+++	
<u>.010650</u>	<u>.050700</u>	<u>.0010500</u>	.10 1/2 per #	1.20	800#		+++	
<u>.031770</u>	<u>.0126060</u>	<u>.0021700</u>		<u>\$2.42</u>				
.046200	.191400	.0042900	.02 per #	70.00	2000	+	++	++
.007600	.018000	.0002000	4.35 per cs. 6# 10	4.25	3 cs. 6# 10	++	+	
.037000	.028000	---	.02 per #	1.00	Ranch	+	++	+++
.054600	.025900	.0003500	1.50 per doz. bunch	6.00	8 doz. bunch	x	++	x
.003400	.005400	.0000600	.02 per #	.20	Ranch	+	++	+++
.011200	.050800	.0006800	3.85 per 6# 10	3.85	10-6# 10	+	+	+++

Kind of Food	Pounds	Times Served	Total Calories	Protein	Fat	Carbohydrates	Acid or Base
String Beans	15	1	3,600	675	--	2,925	Base
Succotash	20	1	4,800	900	--	3,900	Base
Corn	30	2	7,200	1,050	--	6,150	Base
Tomatoes	45	2	4,050	810	--	3,240	Base
Pumpkin	25	1	2,250	450	--	1,800	Base
Apples	39	5	9,560	585	--	8,775	Base
Cranberries	48	1	10,250	720	--	9,800	Base
Pears	15	1	5,650	225	--	5,625	Base
Apricots	15	1	5,850	225	--	5,625	Base
Peaches	15	1	5,850	225	--	5,625	Base
Blackberries	15	1	5,850	225	--	5,625	Acid
Cherries	15	1	5,850	225	--	5,625	Base
Prunes	11 3/4	1	2,820	775	--	2,045	Acid
Apricots	9.5	1	12,540	627	--	11,915	Base
Raisins	5	Several	6,600	530	--	6,270	Acid
Citron	20	Xmas	<u>26,400</u>	<u>1,320</u>		<u>25,080</u>	Acid
			<u>262,990</u>	<u>23,707</u>		<u>239,283</u>	
Sugar	102	Many	183,600	--	--	183,600	Acid
Syrup	3 gals=24#	3	32,400	--	--	32,400	Acid
Cornstarch	4	1	<u>7,600</u>	--	--	<u>7,600</u>	Acid
			<u>223,600</u>			<u>223,600</u>	
Lard	16	Many	56,000	--	56,000	--	Acid
Oleo	7.25	14	25,375	--	25,375	--	Acid
Bacon	10	1	24,500	--	24,500	--	Acid
Butter	3	Officer	10,500	--	10,500	--	Acid
Cream	72.5	Daily	<u>126,875</u>	--	<u>126,875</u>	--	Acid
			<u>243,250</u>		<u>243,250</u>		

Pounds Calcium	Pounds Phosphorus	Pounds Iron	Unit Cost	Total Cost	Units of Purchase	A	B	C
.003900	.007800	.0001650	\$2.65 per 6# 10	\$ .88	20-6# 10	X	X	X
.007600	.045400	.0005800	5.80 per 24#-2	3.80	20-24# 2	X	X	X
.001800	.030900	.0002400	3.75 per 6#-10	2.85	16-6# 10	X	X	X
.004950	.011700	.0001800	Puree-2.75 cs. Plain-2.90 cs.	2.35	puree 10-6# 10 plain 20-6# 10	++	+++	+++
.005750	.0147680	.0002000	2.25 6# 10	2.25	3- 6# 10	X	X	X
.002730	.004680	.0001170	3.50 6# 10 1.50 per box .28 per qt.	1.85	20-6# 10 15-18 boxes 50 qts.	X	++	++
.008640	.006240	.0002880		7.00		X	X	X
.002250	.003900	.0000450	3.60 6# 10	1.20	15-6# 10	X	+	X
.002100	.003750	.0000450	3.25-6# 10	1.08	15-6# 10	X	X	X
.002400	.003600	.0000450	3.10-6# 10	1.03	15-6# 10	X	X	X
.009600	.012600	.0001950	3.53-6# 10	1.17	8-6# 10	X	X	X
.002850	.002700	.0000450	4.08-6# 10	1.36	8-6# 10	X	X	X
.006345	.012337	.0003525	4.47 $\frac{1}{2}$ 6# 10	1.12	30 50# bxs.	X	+	+
.006270	.011115	.0001330	5.10 25#	2.04	16-25# bxs.	X	X	X
.003200	.006600	.0001050	.09 $\frac{1}{2}$ per #	.46	12-25# bxs.	X	X	X
<u>.024200</u>	<u>.006600</u>	<u>---</u>	.42 per #	<u>8.40</u>	100#	X	X	X
<u>.244585</u>	<u>.504172</u>	<u>.0083155</u>		<u>\$124.14</u>				
--	--	--	10.28 per 100#	10.48	5000#	+	+	+
--	--	--	3.60 per 6# 10	1.80	10 6# 10	+	+	+
--	--	--	.09 per #	.56	6 48# etn.	+	+	+
--	--	--		<u>\$12.64</u>				
--	--	--	.14 per #	2.24	170#	+	+	+
--	--	--	.25 per #	1.81	5-30# css.	+	+	+
.005800	.107800	.0015000	.17 per #	1.70	Ranch	+	+	+
.000450	.00510	.0000060	.35 per #	1.05	90# lots	+++	+	+
<u>.062350</u>	<u>.048575</u>	<u>.0001595</u>	.60 per qt.	<u>19.80</u>	Ranch	+++	+	+
<u>.068600</u>	<u>.156885</u>	<u>.0016655</u>		<u>\$26.60</u>				

Kind of Food	Pounds	Times Served	Total Calories	Protein	Fat	Carbohydrates	Acid or Base
Whole Milk	380	Daily	119,700	11,400	60,800	47,500	Base
Cocoa	8½	Often	<u>21,081</u>	<u>3,315</u>	<u>9,690</u>	<u>8,076</u>	Acid
			<u>140,781</u>	<u>14,715</u>	<u>70,490</u>	<u>55,576</u>	
Roast Beef )	165	2	99,000	49,500	49,500	---	Acid
Wieners )							
Sausage )	115	2	207,000	44,850	162,150	---	Acid
Pork )							
Duck							
Turkey	72	1	129,600	28,080	101,520	---	Acid
Salmon	65	1	19,500	13,650	5,850	---	Acid
Eggs	30 dz. 60#	Several	10,800	5,400	5,400		
Skimmed Milk	1100	Several	198,000	82,500	115,500		
Cheese	4	2	<u>7,200</u>	<u>2,040</u>	<u>5,160</u>		
			<u>671,100</u>	<u>226,020</u>	<u>445,080</u>		
Extra Ground							
Mince Meat	25	1	3,732	3,035	1,427	27,270	Acid
Peanut Butter	4	Several	<u>10,959</u>	<u>2,126</u>	<u>7,592</u>	<u>1,241</u>	Acid
			<u>42,691</u>	<u>5,161</u>	<u>9,019</u>	<u>28,511</u>	
Condiments							
<u>Grand Totals</u>			<u>2,547,266</u>	<u>402,361</u>	<u>806,154</u>	<u>1,338,751</u>	

Pounds Calcium	Pounds Phosphorous	Pounds Iron --- --	Unit Cost	Total Cost	Units of Purchase	A	B	C
.456000	.353400	.009120	.08 per qt.	\$12.80	Ranch	+++	++	+
.095200	.602650	.0002296	.12 per #	1.00	3-50#	x	x	x
<u>.551200</u>	<u>.956050</u>	<u>.0012415</u>		<u>\$13.80</u>				
.095700	.077870	.0024750	1.25 per #	12.50	Beef 65#	-	++?	?+
.066700	.009970	.0017450	.21 per #	13.80				
			1.25 per #					
			.15 per #	15.62	Farm	-	++?	++?
.041760	.077616	.0010800	.35 per #	25.20	Farm	-	++?	++?
.070850	.074620	.0003575	2.55 per #	16.50	65#	x	x	x
.040200	.108000	.0018000	.35 per doz.	10.00	Cases-2	+++	+	-
1.342000	1.056000	.0027500	.12 per gal.	13.32	Farm	+	+	+
.040200	.108000	.0018000	.285 per #	1.22	60#	++	++	-
<u>1.697410</u>	<u>1.722076</u>	<u>.0120075</u>		<u>\$108.36</u>				
---	---	---	1.55 per #	3.88	110#	x	x	x
.002840	.015960	.000080	.17 per #	.68	25#	+	++	x
<u>.002840</u>	<u>.015960</u>	<u>.000080</u>		<u>4.56</u>				
				<u>8.11</u>				
<u>2.771255</u>	<u>4.555488</u>	<u>.0335200</u>		<u>\$342.25</u>				

Groups	Calories			Calcium		Phosphorus		Iron	
	Totals	Indiv. per da.	% of Whole	Total Grams	Individual	Total Grams	Individual	Total	Individual
Cereals	931,312	950	36%	79.20705	.08082	486.651005	.496581	3.64212	.003716
Dried Legumes	31,542	32	1.2	14.39181	.01487	57.10518	.06774	.98301	.001000
Fruits-Veg.	262,900	268	10.3	110.797005	.102853	227.589916	.232232	3.7669215	.0044844
Sugars	223,600	228	8.8	---	---	---	---	---	---
Fats	243,250	243	9.5	31.075800	.0317	70.088905	.071519	.7544715	.000729
Milk & Cocoa	140,781	143	5.5	243.6963	.2548	433.19065	.44203	.5624025	.000579
Meats	671,100	683	26.0	768.92673	.78426	780.100428	.79602	5.4393975	.0055504
Sundries	42,691	43	1.6	1.28652	.00131	7.119888	.00726	.03624	.00004
Protein	402,361	410	16						
Fat	806,154	322	31						
Carbohydrate	<u>1,338,751</u>	<u>1,352</u>	<u>52</u>						
<b>Total</b>	<u>2,547,367</u>	<u>2,599</u>		<u>1,255.378</u>	<u>1.28</u>	<u>2,063.415</u>	<u>2.104</u>	<u>15.08456</u>	<u>.01539</u>
Pupils and Workers	140 in all			Standard is	.67	Standard is	1.32	Standard is	.015
Cost	\$342.25	\$2.53 per week .53 per day							

SUMMARY FOR BOULDER

Comments on the Summary

With the exception of things classed under the meat group, further explanation seems unnecessary. In the meat group, skim milk, and eggs are included, besides meat. 600 quarts of milk were used during the week which makes a splendid average of two and one-half cups (5/6 of a quart) per person per day.

The minerals are above the safety line, as are the amounts of Vitamin "A" and "B". The Vitamin "G" content is low. It seems that it would be advisable to increase this by serving more variety of green vegetables (which at this season would have to be canned) or by serving fresh fruits, as apples.

The cost average 33¢ per person per day, which was quite moderate.

It would seem that the adequacy of the diet in all particulars, should be of utmost importance for these growing children, and that the State Appropriation should be sufficient, to cover the inclusion of more greens and a few fresh fruits. Of course the cost of these would be higher at the time of year this study was made and it is quite possible that if the institution had been studied in the fall or spring, the lack would not have appeared.

The breakfast menus all seem a bit too hearty for young students. Potatoes and cereals both are not needed in the same

meal and the use of meat for breakfast is questionable. Fruit could be substituted for practically the same cost.

No butter is used here, but this cannot be considered serious since whole milk is used quite generously. While coffee appears on the menus, it was never served to the children under fourteen.

### Final Summary

As a final summary for all the institutions, I would like to quote from H. A. Pratt and R. D. Milner: (a)

"Improperly cooked or flavored or unattractively served food may fail to stimulate the appetite; it may be unfamiliar or too familiar in appearance or taste to be palatable."

Frequently one of the principal causes for table waste is unsatisfactory preparation of food including cooking, flavoring, and garnishing. When food is well cooked and tastefully served, and attractive to the eye as well as pleasing to the palate, it is much more apt to be economically eaten; -- a considerable part of the pecuniary, and indeed the hygienic, economy of nutrition depends upon the methods of handling the food in the kitchen and dining room. Much more attention can be given to this phase in a family than can possibly be given

(a) Dietary Studies at the Gov. Hospital for Insane: 1902-3-H.A. Pratt and R.D. Milner. U.S. Department of Agriculture. Office of the Experiment Station, Bulletin 150.

in a larger institution, but even in the latter it is worthy of more consideration than is sometimes given.

Montony in diet is especially to be avoided as this has a decided tendency to diminish the relish for food.

Foods come to be associated with days of the week, and pleasurable effect when the meal is a surprise is very much diminished. Waste cannot be avoided but it can be kept at a minimum."

It is interesting to compare the calories and per capita cost for the institutions studied.

	Warm Springs	Galen	Boulder
1. Number served	1,411	150	140
2. Daily calories per capita	2,978	4,339	2,599
3. Cost per capita per day	\$.159	\$.529	\$.33

The range is quite wide, but each institution has its distinct problem to meet both as to requirements of those served and as to the money available.

People who have never lived in an institution cannot realize some of the inherent disadvantages of feeding in large numbers, and those in charge of institutions can make improvements only in so far as money is provided them. The science and economics involved in providing adequate and pleasing menus on limited cost, requires a background of scientific training and practical institutional experience. It is false economy to leave this

vital phase of work in the hands of cooks or matrons with no scientific training, no matter how competent or interested they may seem. Trained dietitians are comparatively new workers in most institutions, but with the few exceptions which prove the rule, are proving themselves invaluable. Their training demands a salary higher than the average paid in institutions, but the saving effected, and, what is more important, the better balanced and more pleasing menu served, prove the wisdom of the added expenditure. Many times, women who are too young to be permanently satisfied with the long hours of service and confinement which usually accompanies institutional positions, are employed, and this has resulted in a large turnover in this line of work. Most of the complaints against dietitians by those in charge of institutions have this basis. It must be remembered that this is a comparatively new field of work, and that time will provide a larger group of experienced mature workers, who will not chafe under the restriction of institutional life.

Montana institutions, with the possible exception of Warm Springs, are comparatively small and the expense of a dietitian is correspondingly greater. The problem might in part be solved by the employment of an experienced State Dietitian who would work with the State Purchasing Agent and with

those in charge of each institution. A more permanent policy could thus be established and the local dietitian or experienced untrained worker, could come and go without too seriously upsetting the routine of the institution. The State Board of Control in Wisconsin has recently adopted this plan. The fact which the public in general and State Officials in particular should recognize is that the field of the dietitian is a specialized line of work and that the average head of an institution does not have, and should not be expected to have, the time or the knowledge to administer this phase of work with the desired efficiency and satisfaction without trained assistance. A State Dietitian could undoubtedly render service to other institutions of the state as the Vocational School for Boys at Miles City, the Vocational School for Girls at Helena, The Orphans' Home at Twin Bridges, and the Penitentiary at Deer Lodge.

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