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PUBLIC AFFAIRS PAMPHLETS

THIS PROBLEM OF FOOD

BY JENNIE I. ROWNTREE

DID YOU KNOW—

That food fads keep many Americans from getting enough to eat?

That a person who eats correctly doesn't need "vitamin" products?

That a balanced diet need not be expensive?

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THIS PROBLEM OF FOOD

By JENNIE I. ROWNTREE
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Food may not make the man but it has a tremendous effect. For centuries the stomach has been said to determine the strength of armies and now we know that it governs the brains and bodies of citizens at peace. The civilized world has come to believe that regardless of race, color, creed, or job, all should have equal opportunity for health. Whatever our democratic ideal may be, its achievement is dependent upon the vigor of the population. Schools should teach pupils to buy and to eat the right foods in order to promote health and to lessen the strain on pocketbooks. Provision of the right kind and the right amount of food is one of government's primary responsibilities.

How to supply the right foods, how to provide people with the money to buy enough, and then how to get them to buy wisely are serious problems. These problems may seem remote ones for legislatures, commissions, and cabinets to grapple with, but the decisions made have great bearing on the happiness of the average family. The difficulties are too great for governmental efforts alone. The need of an intelligent public opinion to solve the difficulties and work out a solution from which all will benefit is very great.

Not Enough Amidst Plenty

A young lawyer, Robert Jordan, read this editorial in his local paper. Then he turned to another page and saw that

This study is based on reports of the Health Committee of the League of Nations and the International Labour Office, and various United States Government bulletins on nutrition. For details regarding the sources used see page 31.

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California oranges were being dumped overboard, and Iowa corn used for firewood. Farther on, he read that dried skim milk was being given to the local school lunch room in order to combat malnutrition existing among the children.



Too much fruit, grain, and milk in one place, underfed children in another, railroad cars lying idle in the yards. The whole situation had him baffled, and reminded him of scenes in *Alice in Wonderland.* Like Alice, he decided that "something ought to be done about it." But what? It seemed essential that thinking citizens get the whole picture. But how could this be accomplished?

Finally he and his wife hit upon the idea of forming a discussion group to get at the many sides of the question. The group brought together included friends with different backgrounds and different economic and political points of view; a social worker, a young doctor training for the public health field, a high school civics teacher, a public health nurse, a nutrition specialist in extension work, a home economics teacher, and a county agent. The plan was for each to go to his own sources of information and to come prepared to discuss the subject, "America's Food Problem," from any angle he chose. The group met, and since the housekeeper's or consumer's problems touch on all the rest, the lawyer's wife started the discussion.

The Homemaker Shows the Average Family's Problem

"Our case is typical," Mrs. Jordan reported. "Our income is $1,600 a year, so we are really in the upper brackets of society. Two-thirds of America's families have less money than we do. The four of us—the children are six and eight—spend $400 for food each year. That includes no luxuries, only the cheaper meats, vegetables and fruits in season, cash-and-carry purchases, Saturday specials, and large quantity buying

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when the price warrants. I do all the cooking except baking the bread. I can fruits when they are cheap, and make all our own pickles and jellies. I defy anyone to do better with food money—a little less than 25 cents a day per person for the raw foods. Rob's lunches are included and they cost 20 cents a day, except on Saturday when he comes home. His lunches may be an extravagance, but no one in the office carries a lunch. If our income were cut, our diet might become inadequate because all of our other costs, like rent, insurance, and upkeep, are fixed. It is not surprising that many are underfed and lacking ambition, particularly when they have not been taught how to buy and how to cook economically.



"I usually buy the cheaper unmilled cereals at six cents a pound in muslin or cellophane bags," Mrs. Jordan continued. "But after the children listen to the radio I occasionally have had to succumb to their entreaties and purchase, at perhaps three times the price, some variety which makes for 'athletic prowess.' The extra 10 or 15 cents for less food value —the vitamin and mineral content is less than in the unmilled —annoys me, but children's happiness as well as health must be considered.

"The children must have milk, but having to pay over twice as much for it as the farmer gets is most unfair both to me and the farmer. When farmers get only 1 cent a pound for wheat, millers 2 cents a pound for flour, and I pay 10 cents a pound for bread it infuriates me. The same thing holds for fruits. Yet grocers are not getting rich. At any rate, American housewives struggle with food costs; surely there is very poor management somewhere."

The Social Worker Reports

"When persons with your ability, Mrs. Jordan, have difficulty with food budgets," the social worker broke in, "what

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about all the people who do not have your advantages? The less intelligent, the less well trained, and those with less income deserve help and sympathy when they fail to make ends meet.

"A recent study carried out by the Young Women's Christian Association in a number of cities showed that large numbers of middle-class young women did not get a balanced diet. In Chicago only one-fourth of those interviewed drank the daily pint of milk that they should have had. Only a half had enough vegetables, and less than one-fourth had the egg they needed.

"Many persons buy whatever appeals to them and never give bodily needs a thought. If lamb chops appeal, lamb chops are bought. If the children like oranges, cheap apples and tomatoes are passed by! Tomato juice is bought instead of tomatoes canned with purée. As a result of poor choices, many families find that their food money is gone before they have an adequate diet. Such people need not only lists of what to buy, but they also need good convincing reasons for choosing certain foods instead of others. They need to know how to cook liver, tongue, hamburger, pot roasts, and baked beans well. They should know that cheese is not a luxury to serve with pie but the cheapest of meat substitutes, and should know what tasty, nourishing sandwiches for school lunch boxes can be made with cheese.



"People need to know what foods make for health and good appetites. So much of their food money is now wasted. Many incomes are low but more than higher wages is needed. People must realize that health depends on their getting the right food. Otherwise, they are as likely as not to spend the money needed for food on clothes, recreation, or an automobile.

"Women should be taught to figure how much can be saved by cooking," the social worker added. "If I had anything

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to do with food instruction, no child would ever make a cake, a cookie, a batch of jelly, a jar of canned fruit, or a beef loaf without knowing the cost of that food as compared with a store-made one. If I were a wife, I'd show my husband occasionally how much I saved in a day by cooking, canning, and having a garden. He'd appreciate me as an economic asset. Too many women's idea of stretching a low income is to go out and work for a wage. Both men and women should realize how much is saved by home preparation. The well-to-do who prefer the ready prepared cereals, canned fruits, and bottled pickles should realize that they are buying luxuries. The less well-to-do should look upon most ready prepared foods as an extravagance. People should make use of their arithmetic to compare costs and actual values when buying food. They should also realize that the right food will lessen doctors' and dentists' bills."

The Extension Worker Tells of the Difficulties

"I certainly agree that education in food selection is needed," the extension worker chimed in, "but it is a much harder job than most people realize. There are three kinds of people in every group I teach. Those in the first accept unthinkingly all they hear; their gullibility never takes a vacation. They are unable to distinguish between the false and the true, and become victims of every faddist or salesman they meet. They go vitamin mad, diligently consuming worthless 'health' products and reducing science to an absurdity. If the money this group has spent foolishly had been used for sensible foods, both Americans' health and American agriculture would be in a better state. These faddists are found particularly among the well-to-do. They worry unduly over their own health, fuss over their children's appetites, and make eating a task instead of a pleasure. They seem to forget that



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health is for happiness, not an end in itself. In fact, these overwrought folk lose their sense of humor. As a result, they are cut off from that cheapest of all indoor pastimes—watching the advertising game on the radio and in the magazines—the game which Morley calls the contest between 'the liveliest minds and the easiest consciences.' We try constantly to make people stubbornly skeptical to selling propaganda—to keep their sales resistance high. Even so, they seem unable to use common sense when a food is said to have magical powers.

"Those in the second group listen, sometimes learn, but never think of applying lessons to themselves unless they are scared into it. They lack interest in the relation of food to health, merely satisfy their appetites—eat candy and an overrefined, poorly balanced diet, and look upon illness as something 'they caught.' In order to make an impression on this group, we are forced to overemphasize the value of minerals, proteins, and vitamins, and must be forgiven if we make the more open minded feel that food has certain magical traits.

"The third group makes intelligent use of the information given, is receptive to new ideas but not gullible, and uses new facts without undermining old foundations.

"Adjusting our education concerning foods to the needs of such varied groups is difficult. While the first needs reassurance that their diets are good, the second must be made to see that their diets need improvement, and only the third and most intelligent group can be led beyond themselves to apply their knowledge sanely and to see nutrition in relation to public health, public welfare, and economic conditions. Would that the third group were larger!"

Food and Illness

"The educational process may be difficult, but it is our primary hope," the doctor in the group asserted. "Every child health survey conducted in years has brought much malnutrition to light. Large numbers of our children are falling below the normal health standard for their age, showing not merely underweight, but tooth decay, anemia, little resistance to colds, and poor posture. Lack of a decent diet is not a temporary problem growing out of the present crisis; nor is it limited

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to the poor. Malnutrition is most common in the poor, but many, rich and poor, fail to purchase health because they do not know how to select the right food and prepare it well.

"We have cut the infant death rate in two by teaching people how to feed their babies. The health of our children should be our next job. Why should children be ill and absent from school on an average of seven days a year? Why should wage earners lose from seven to twelve days of work a year because of illness? In this scientific age, and with our present standard of living, the health of the middle-aged should be better than that of the previous generation, but this is not the case. Much of the bad health of adults, their lack of energy and feeling of discouragement, comes from poorly chosen diets.



"The high cost of medical care is a national problem to be solved only by the promotion of better health. Socialized medicine might succeed in equalizing the cost of medical care and promoting earlier diagnosis, but it would do little to lessen the nation's doctor's bill or to improve the general health. Adequate food, however, would do both—cut the total medical cost and improve the nation's health as a whole. The fact that influenza is so common at the county hospital is partly due to food. Throughout the country relief groups are ill twice as many days a year as the employed. Dental costs can also be reduced through better food, but food is expensive. Even the simplest of adequate diets are fairly costly. The foods which protect health are often beyond reach. How can people be expected to show much interest when they have only enough money to buy the cheapest of diets? Neither mentalities nor educational methods are at fault in many instances. It is lack of money."

The County Agent Speaks

"Lack of income is not the only difficulty," the county

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agent replied. "High retail food prices are also responsible. In one sense, foods are cheap but the margin between the producer's price and the retail price is very wide. The scientific advances in agriculture which have cut production costs and increased yield have not helped the family budget. Cows give twice as much milk as they did 25 years ago, but milk prices have increased. Milk today is cleaner and safer, but it is not any more available for the poor. The cost of inefficiency in delivery—for example, five milk wagons on one block carrying practically the same grade of milk—has to be met by the consumer.

"Far more grain is produced per acre than in our parents' day, but bread and cereal prices are relatively higher.



Processors, wholesale merchants, and distributors are partly responsible, for it is costly to store and handle food profitably. Let us take wheat, for example. As a grain, it can be stored indefinitely, but in order to keep well when milled, the germ and bran have to be removed. It thus loses some of its most valuable food elements. Most of the much needed vitamin B_1 is in the germ; bran contains a little of the vitamin, some of the necessary minerals, and considerable roughage; but the whole grain products give them all and at a very low cost. Yet refined flour sells for three to four times the price of wheat. When bran is sold for food it costs about 10 times as much as wheat. And the germ costs from 25 to 90 times as much! If our grain products were not so highly refined, they would be nearly as important for health as milk, vegetables, or fruits. But in milling certain health-giving qualities are lost.

"League of Nations' reports indicate that it is not in the interest of health to have the consumption of wheat decrease. The American people are eating only three-fourths as much wheat as they did 25 years ago. Grain products have been replaced by sugar and fats, and the amount of protein eaten thus

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has been cut one-sixth. The drop in the amount of vitamin B_1 obtained is even more striking. An English writer has calculated that the best-fed members of the population today are getting only about one-third as much vitamin B_1 as did the parish poor of the past. Food costs more, and our diets have not been helped in this respect by the change.

"Since grains are easy to grow, to harvest, to transport, and to store, they will always be the cheapest good food—a cheaper source of protein and calories than meat, milk, eggs, fruits, or vegetables, and a good source of iron and vitamin B_1. At 15 bushels to the acre, one acre in wheat will supply all the calories a person needs in a year. Four times as much land is required to produce the same number of calories in milk, and 14 times as much is needed if the land is used for grazing beef cattle. But, if more elements were retained in our flour, bread, and cereals; if more education were acquired regarding food values; if prices were lowered; America might well consume more of the wheat it produces and farmers would not feel so great a need of a foreign market. If all Americans ate the foods which scientists have shown are necessary for good health, we would be concerned more with increasing rather than restricting production. This is no argument against the use of meat, milk, and eggs. Animal foods are needed not only to make grain and potatoes more appetizing but to provide their share of minerals and vitamins.

"What a thrilling experiment it would be to feed everybody adequately for one year and to note the change in children's growth, in adults' energy, in the number who had to go to hospitals, in the days lost due to sickness, and in the decrease in political unrest. That would be research from which everybody would benefit and in which everyone could play a part; farmers would provide the materials, the unemployed would have work; and the doctors, nurses, and social workers would study the improvement made. Instead of decreasing production, farmers would have to fertilize and irrigate their crops to grow enough for even our own population. What a day! To teach people what food they ought to eat, and then to have them actually eat it!"

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The Educational Task

At this point the civics teacher realistically asked: "How is all this to be brought about? Even if people were properly educated regarding food, would they eat cheese, potatoes, and cracked wheat? Cheese is cheap—everybody should know that it is nourishing; yet Americans eat only a third as much as Europeans. Potatoes are the cheapest food on the market in terms of real value; yet because people think them fattening, they are not being used as much as formerly. Might not the potato growers do well to advertise?

"People's food habits are not ruled by the desire for health.



Custom and appetite appeal are as strong a force. Will any amount of education make people used to liver sausage, pumpernickel, and sauerkraut change to milk, cheese, and vegetables? Or will Mexicans who eat black beans, corn, and peppers, take kindly to potatoes, cabbage, and eggs? Habits, particularly food habits, are fixed and are changed with difficulty even by the most intelligent. An educator's persuasive powers have to be very great to change racial habits and social customs of the masses. If education is to work, it must get its subjects young."

Need Not Interfere with Racial Habits

"But it is not the aim of the food expert to make radical changes in any group's food habits," the home economist pointed out. "Minor changes are often enough. Liver sausage, rye bread, and cabbage are excellent, provided buttermilk or milk is taken as a drink. The Mexican's beans, corn, and peppers would be more nourishing as well as more appetizing with a little cheese and fruit for dessert. Green peppers deserve respect because of their vitamin C content—they have been a factor of safety in the diets of many nationalities. Beans and corn go well with each other, too.

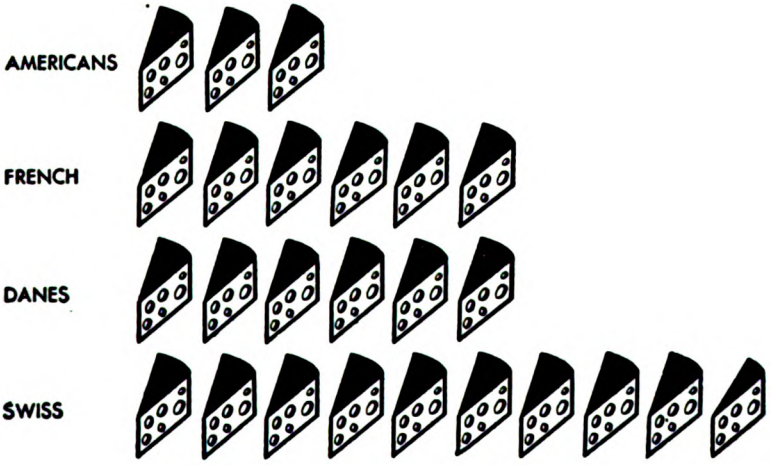
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"The diets of other peoples often show us much that we might apply to our own. The fine physiques of the Scandinavian and Slavic nations suggest that we would do well to follow their examples in eating cheese and dark bread.



"The League reports show that the Swiss eat more than three times as much cheese as we do, and the Danes and French twice as much. Since a pound of cheese is equal in food value to four and a half quarts of milk and costs but half as much, they show good economic sense. We often think of our diet as being the best in the world. Others are quite as good although different and much less expensive. The French eat much less meat than we do, but by eating twice as much wheat get more protein at less cost. Nutrition is not born in rat laboratories or in agricultural experiment stations alone. The acid test of a diet is the condition of people after generations on the same food.

THE CHEESE EATERS



Each symbol represents 2 pounds of cheese per year

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"The idea that all of us should eat alike to be well fed is pathetic. Someone ought to start a 'make the most of local foods' movement: fish on the sea coast, potatoes in regions where they grow, fruits in fruit areas, milk and cheese in the dairy states, beans again making New England famous, and chicken and corn bread in the South. Fresh vegetables from home gardens should again receive their just due. If people ate fresh local products, think of the savings there would be in tin cans. The three cents for the labeled can or jar could then be used to buy more milk or tomatoes or salmon or fresh fruit and vegetables."

"Protective" Foods

"If home-grown products were used more often," the school nurse added, "we would have to change our notions about protective foods. In the past we have always thought of fruit, vegetables, and milk as 'protective' because most people did not eat enough of them. But where home-grown foods are used, protective foods would simply consist of those essentials which are not in local use. Every region's list of protective food would be different. Meat and cheese would be protective foods in wheat regions, vegetables and fruits in the grazing regions, cereals and milk in the fruit areas. Our job would then be to stress the supplementary foods required. Today, it is taken for granted that everyone eats an over-refined diet with a good deal of meat. Such an assumption may lead into grievous error.



"What many school children need for protection, for example, is more filling food: some cheese or meat sandwiches, oatmeal or molasses cookies, lemon tarts—just good, old-fashioned, staying foods. Many children bring such light lunches to school that they are without pep in the afternoon. They need a diet with more calories. Mothers of very young children are often actually afraid to feed them egg yolk or potatoes

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or cottage cheese or plain sandwiches. They believe that sieved vegetables, fruit juices, and vitamins from bottles alone produce health. Children these days are given little opportunity to use their teeth or to discover what the rest of the family eats.

"Health may be bettered with our vitamin knowledge, but other food essentials have been overlooked and our pocketbooks have been unnecessarily emptied. Advertisers so often misuse research in order to make sales and try to get everybody to follow the crowd. They have made conformity in eating a cult. The public is also at fault. By purchasing these special products and prepared foods, it encourages their production. The dollar is really a ballot—every purchase is a vote for some article. A nutrition conscious public would demand greater value.

"A study of the diets and food costs of employed families in different sections of the country has recently been made. It shows that diets improve in every respect when more is spent for food. But only a small proportion of the diets could be termed first class, even when enough was spent. There is need for education at every income level."

The Lawyer Proposed Concerted Activity

"We have made a beginning," said the lawyer. "Our next step is to bring these varied ideas together and focus them. Let the women who understand the food problem collect and organize the material which they believe will improve health and cut costs. It might be called 'Aids in Food Selection.' The men with their less specific knowledge should seek a better understanding of the food situation with a view to developing interest in public health and governmental problems. Their summary might be called 'Nutrition and Public Policies.'

"These joint studies should help people in the selection of food, and clarify thinking."



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AIDS IN FOOD SELECTION

Methods of Indicating Dietary Adequacy

OUR FOOD is adequate when it has enough calories, protein, minerals, and vitamins for abundant and lasting health. Scientists agree remarkably well on the amounts of each that are needed. But there are a number of different ways of expressing these needs. This tends to create confusion.

The more scientific method is: first, to show why people's needs differ; second, to show the amounts in terms of calories, grams, milligrams, or units of the nutrients that different individuals require; and to indicate what the different foods contain so that proper selection can be made. The information given here has been simplified so as to help people study and correct their own diets.

A common but somewhat confusing method of indicating the proper diet is to list the foods, and then specify the weekly or monthly market orders which supply all the essential nutrients for a family. This system is ideal for relief commissions after disasters, for they can readily supply adequate food and rapidly compute the cost. The average family, however, will not be content with so limited a choice, and yet no basis is given for making substitutions.

These weekly market orders do, however, have two great advantages. They give social workers and others a means for judging diets, and they can be used as a sort of intelligence test for students to use in testing their knowledge of food requirements and food values.

Both methods are presented here so as to meet all needs. The suggestions are not made out of a desire to tell people what and how to eat. No one wants to make eating a mechanical function. But personal tastes can be satisfied and at the same time scientifically adequate diets can be chosen with very little study and effort.

Calories

The amount of energy needed, or the number of calories, depends mostly on a person's size, his activity, and the speed

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of his internal functioning. The more strenuous the work or play, the more calories needed. The more active the tissues of an individual are—and people differ—the greater the need for filling food. Lack of calories make one skinny and weak. Too many calories make one fat and lazy.

The chart on page 16 shows the approximate needs of adults. The note at the top indicates the calories required when people of different size are resting, lying in bed all day doing nothing but digesting their food. It will be seen that a woman weighing 100 pounds would use 1,350 calories, and that a man weighing 200 pounds would need 2,100. The piles of blocks show how the number of calories needed varies with the weight and activity of the individual. For example, if the man and woman mentioned above do exactly the same things —walk slowly for five hours, stand for three hours, and sit for eight hours—their needs would be:

	Walking	Standing	Sitting	Body Needs at Rest	Total
Woman's needs	(5x 60)+	(3x30)+	(8x20)=	550+1,350 (internal)=	1,900
Man's needs	(5x110)+	(3x35)+	(8x25)=	855+2,100 (internal)=	2,955

A person weighing 150 pounds would require about 2,300 calories. The average man or woman not doing manual work, leading an ordinary life in a temperate climate, should have about 2,400 calories a day.

A child's needs are greater for his size than those of adults because he is growing, is more active, and uses his energy more rapidly. They vary with age somewhat as follows:

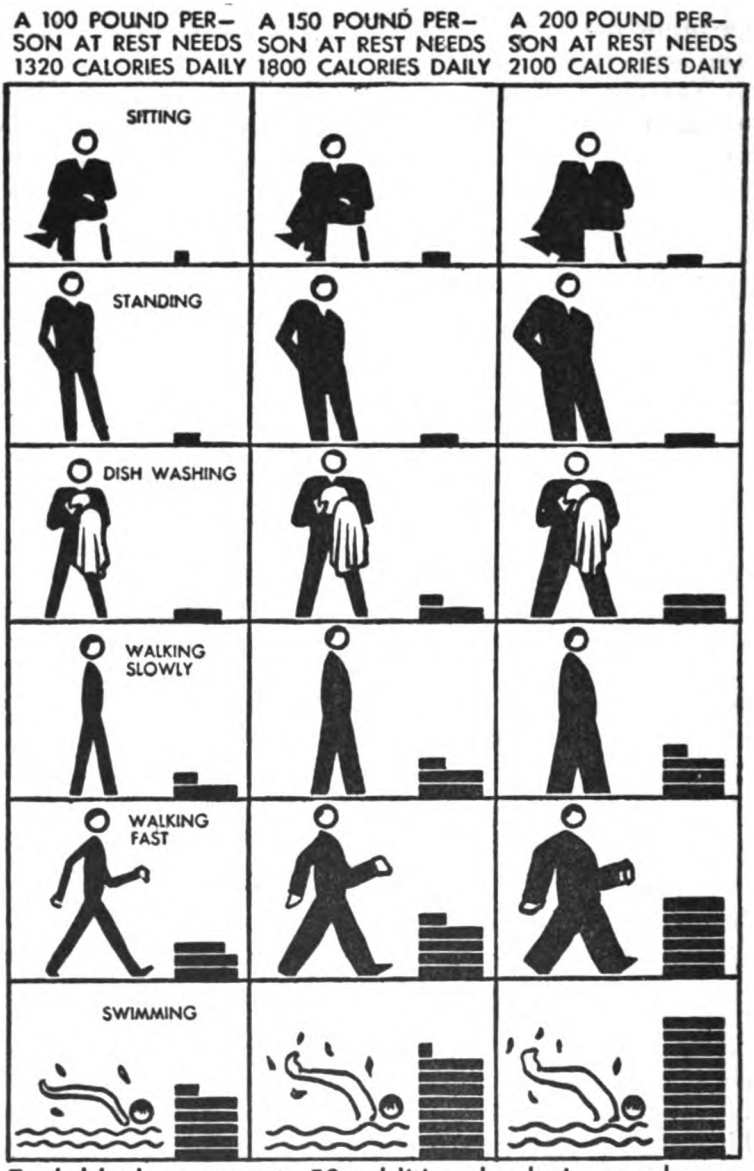
1	year	900-1,200 calories a day
2- 5	years	1,100-1,500 " " "
6-11	"	1,450-2,800 " " "
11-16	"	1,900-4,000 " " "

It should be noted that school children often require as much food as their parents, and that those of teen-age need far more.

In the past, when man was active and ate foods in their natural state, it could be said that his diet was adequate if he had enough calories. But when a man sits, rides, or exercises but little, and desires to be slender, he may cut down on his calories and thereby reduce other food essentials. When his energy requirement is low or when his foods are poorly chosen, he may suffer a shortage of proteins, minerals, or vita-

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THE EFFECT OF SIZE AND ACTIVITY ON CALORIC NEED

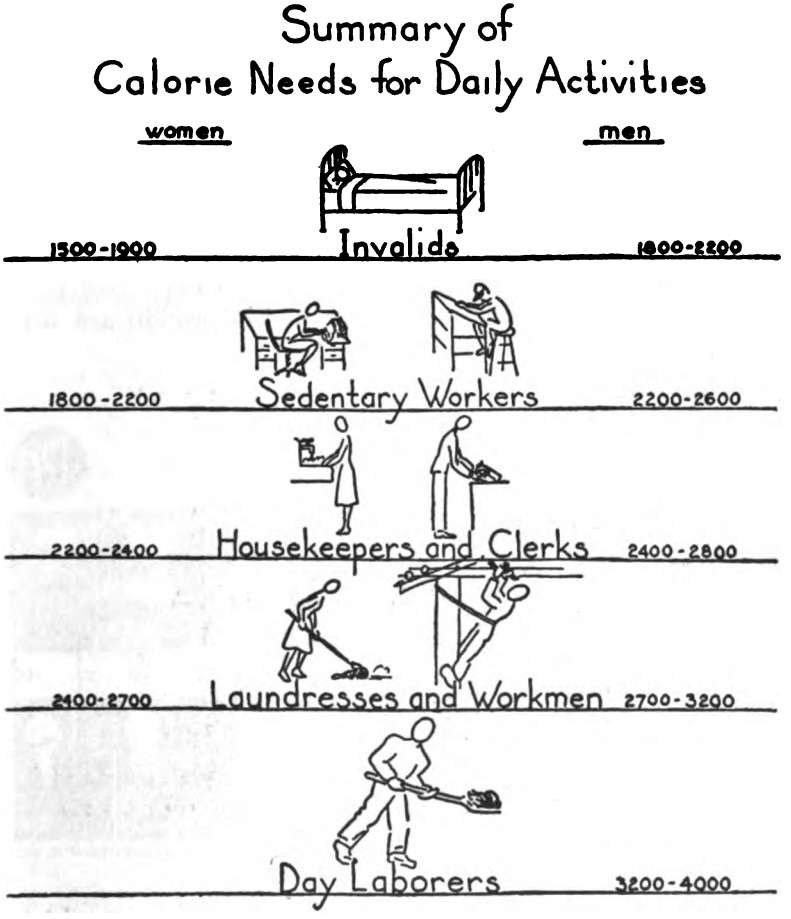


Each block represents 50 additional calories per hour

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mins. Moreover, foods are altered by refining, heating, canning, freezing, salting, pickling, drying, and sieving, with the result that some of the essential elements are lost. In such foods, there may be enough calories without satisfying the other needs of the body. Mere calories, unfortunately, do not guarantee health, although good health is impossible without enough calories.



Proteins

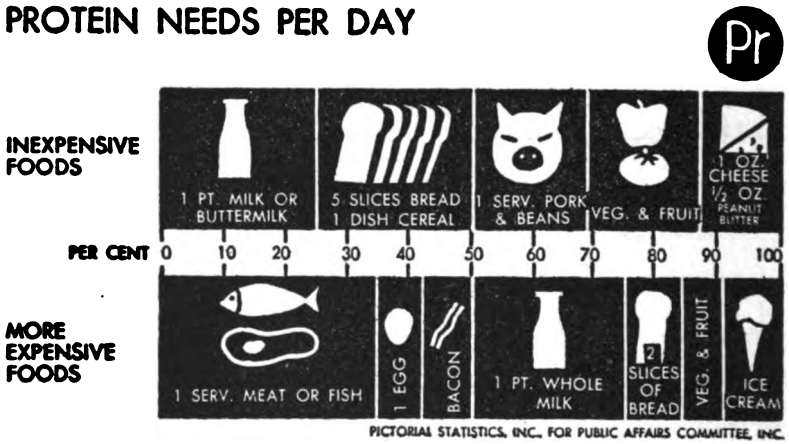
Proteins have an important place in a well-balanced diet. They stimulate appetite, aid digestion, produce healthy blood,

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build strong muscles and organs, and promote health. Proteins are essential throughout life for repair but are particularly needed during childhood. All foods in their natural state contain some protein. But meat, fish, eggs, milk, cheese, and grains are the richest sources. Even though grains and milk are not primarily protein, they are eaten in such quantities to supply other needs that they also provide the largest proportion of protein. Two to three cups of milk furnish the same amount of protein as one average serving of meat. Two to three ounces of cheese, which is more concentrated than milk, might be substituted.

While adults need about one half gram of protein daily for every pound they weigh, children need closer to a gram for every pound. This means that children need almost as much as adults. The chart below indicates how you can obtain enough protein on a cheap and on an expensive diet. In each case, many other essentials beside protein are supplied.

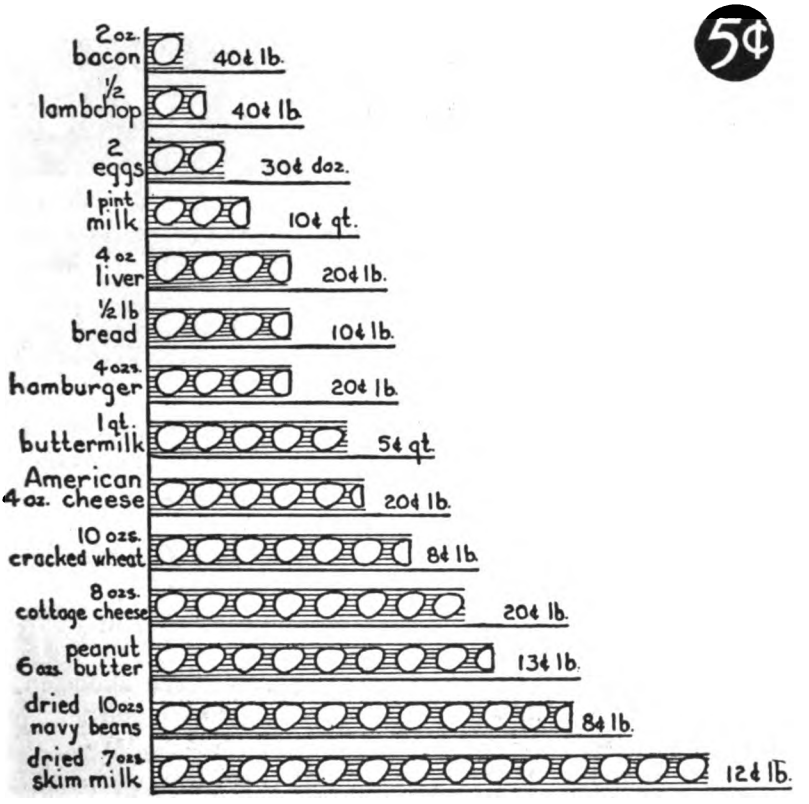
PROTEIN NEEDS PER DAY



To help the housewife, the approximate amounts which can be bought for five cents are shown in the following chart. Each symbol represents the amount of protein in one egg—one twelfth of the day's requirement for the average adult.

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Amount of Protein Purchasable for Five Cents



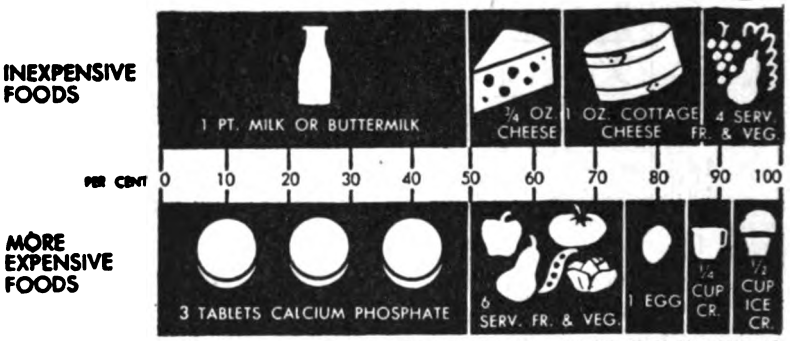
Each symbol represents the amount of protein in one egg or one twelfth of the day's requirement.

Minerals

Our bodies need many minerals, but only three—calcium, iron, and iodine—are likely to be lacking in the average diet. Since *calcium* is needed mostly for the development of bones, it is especially important during infancy, youth, and pregnancy. A baby who grows ten inches during his first year, and a teen-age child whose growth is also very great need the largest amounts. Although grown-ups require less than children, considerable is needed for digestion and to keep the body go-

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CALCIUM NEEDS OF A SCHOOL CHILD PER DAY



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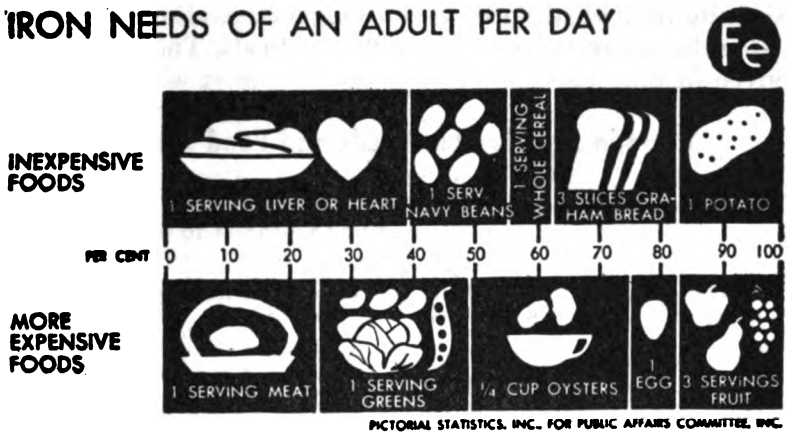
ing. No other food will take the place of milk as a source of calcium. In order for infants and children to make proper use of their calcium, vitamin D must be provided.

CALCIUM REQUIREMENT AT DIFFERENT AGES		RESULT OF A SHORTAGE OF CALCIUM
Infant	0.5-0.8 grams	Poor bone development
Pre-school child	0.8-1.0	Poor teeth
School child	0.8-1.0	Poor posture, lax abdomen,
Adolescent	1.2-1.6	constipation
Pregnant woman	1.2-1.6	
Average adult	0.6-0.7	

Iron is essential in blood, but only very small amounts are needed. It is most important during pregnancy, infancy, and adolescence, and following some illnesses. Persons who lack iron are pale, tire easily, and have a poor appetite. Iron does its job better when there is enough protein, calcium, and vitamins. The comparative value of different foods is shown below.

Iodine prevents goiter. Unfortunately, when it is not found in the water of a region, it is also lacking in the foods grown there. When it is found in the water supply, it is also present in the cereals, vegetables, milk, and fruit grown locally. The average person needs probably about 100 micrograms a day. In regions where iodine is lacking, this may be

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given as iodized salt, or in cod liver oil, or other sea foods. Sea weed is very rich; salt water fish is a fair source. The following table shows the comparative amounts in different materials.

1 teaspoon cod liver oil	40-50	micrograms
1 serving salt water fish	20-60	"
1 teaspoon iodized salt	800	"

Vitamins

Vitamins are food substances which help regulate the body processes. More vitamins are needed when a person is run down than when in good condition. Furthermore, an inefficient digestive system does not absorb minerals and vitamins well, so more may be needed when the digestive tract is not working normally. When the function of a vitamin is to control organic processes, as is the case with vitamin B_1, the more strenuous and continuous the bodily activities, the greater the need for the vitamin. A very active person needs more than an average supply of vitamins.

Since vitamins have been the subject of much advertising propaganda, people ought to be careful to compare the amounts in common foods with those in advertised material. Such comparison should either reassure people, or lead them to select foods more wisely so as to avoid expensive substitutes.

The vitamin lists which follow show average rather than

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definite individual needs, and averages have also been taken from the amount supplied by different foods. The figures are given in International Units as these are most widely used.

Vitamin A. Human Needs and Food Sources

Use:

Makes healthier mucus membranes; Lessens danger of infection; Improves eye conditions, and adaptation to light

Requirement in International Units

Average adult	4,000–6,000	Pregnant or nursing mother	5,000–6,000
Infant or child	4,000–6,000		

Food Sources	Weight	Amounts	Units
Apricots, dried	1½ oz.	½ cup cooked	600
Butter	½ oz.	1 tablespoon or pat	800
Carrots	3 oz.	½ cup cooked	4,000
Cheese	¾ oz.	¾ cup cube	800
Egg	1⅔ oz.	1 egg	500
Heart, kidney	3 oz.	1 serving	6,000
Liver	3 oz.	1 serving	9,000
Milk, whole	8 oz.	½ pint	800
Oleomargarine (with added vitamin A)	½ oz.	1 tablespoon or pat	250
Orange juice	2 oz.	¼ cup	50
Peas	3 oz.	½ cup	600
Spinach, broccoli, chard	3 oz.	½ cup cooked	18,000
Sweet potatoes, yams	5 oz.	1 small	2,000
Squash	3½ oz.	½ cup cooked	7,000
Tomato juice	4 oz.	½ cup	600
Cod liver oil, plain	4 grams	1 teaspoon	2,200–3,000
Halibut liver oil	2 grams	½ teaspoon	6,600
Average vitamin capsule	⅓ gram	1 capsule	6,000–10,000

Foods which are low or entirely lacking in vitamin A include cereals, white vegetables, and white fruits such as bananas and pineapple. Vitamin A is not lost in cooking. It is only when the diet is poorly selected or when children are given diluted cow's milk or skim milk and very few vegetables that the amount of vitamin A is apt to fall short. Children are usually given fish liver oil, green and yellow vegetables, and egg yolk to prevent a deficiency. Persons who regularly choose such poor menus as the following may not be getting enough vitamin A.

BREAKFAST	LUNCH	DINNER
bacon	jelly sandwich	ham loaf, potatoes
French toast	peanut butter sandwich	fried parsnips
		celery, apple salad
coffee	banana	chocolate pie

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If these meals were changed to include one pint of milk, one serving of carrots, squash, or greens, a sandwich filling of egg, cheese, or liver, and a serving of tomatoes or yellow fruit, they would be satisfactory.

Vitamin B_1 Human Needs and Food Sources

Use:

Aids in food utilization; Promotes appetite; Lessens constipation

Requirement in International Units

(Approximately 10 units for each 100 calories food intake)			
Pregnant or nursing mother	250-400	Average adult	250-400
		Child	150-300
		Infant	75-150

Food Sources	Weight	Amounts	Units
Beans, dried	1½ oz.	½ cup cooked	40-50
Bread, dark	1 oz.	1 slice	15-20
Beef	3 oz.	1 serving	30-100
Cereals, whole grain	1 oz.	½ cup cooked	30-40
Egg	1	1	50
Fruits, raw or cooked	4 oz.	½ cup	30-40
Liver, kidney	3 oz.	1 serving	100-150
Milk	8 oz.	1 cup	30-40
Nuts	½ oz.	2 tablespoons	15-25
Peanut butter	½ oz.	1 tablespoon	20-25
Pork	3 oz.	1 serving	200-300
Potatoes	6 oz.	1 medium	50-60
Prunes, dried	2 oz.	½ cup cooked	40-60
Vegetables	4 oz.	½ cup cooked	30-50
Products sold to supply vitamin B_1			
Vegex		½ teaspoon	75-100
Wheat bran	½ oz.	⅓ cup, dry	30-40
Wheat germ	½ oz.	⅙ cup, dry	120
Ordinary compressed yeast	½ oz.	1 cake	10-20

Comparison of the amounts contained in these special vitamin B_1 products is interesting, especially when the cost is considered.

Lack of vitamin B_1 in present-day diets is not unusual. Constipation and poor appetite are all too common. Advertisers of yeast and bran have capitalized on this fact. The person who has a good general diet has little need for such products. They are of value to those with poor food habits, or strong food prejudices, and in certain sicknesses.

The vitamin B_1 of cereals is decreased by milling and refining. It is also affected by great heat, as in puffing, flaking, and

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shredding. Vegetables cooked for a long period in water may lose as much as half of their vitamin B_1. The addition of soda to the water to retain the color of green vegetables or to soften the cellulose of dried beans increases the loss. Boiling or oven temperatures do not ordinarily affect it.

The daily need for this vitamin may be easily met by attractive and cheap foods. If a person does not eat much in the way of fresh fruit and vegetables, he may get vitamin B_1 by using unmilled cereals, dried navy and lima beans, dried fruits, milk, or liver.

SIMPLE MENUS WHICH SHOW HOW EASILY THE VITAMIN B_1 NEEDS CAN BE MET		TYPICAL AMERICAN MENU IN WHICH THE VITAMIN B_1 IS INADEQUATE	
Breakfast:			
Oatmeal	30 units	2 slices buttered toast	10 units
Baked apple	50	Marmalade	
1 glass milk	30	Juice of 1 orange	40
Lunch:			
Baked beans	50	2 sandwiches, with meat filling	20
Brown bread	40	sugar cookie	
Carrot and cabbage salad	30	Hershey bar	
1 glass buttermilk	30		
Dinner:			
Meat loaf	30	Meat pie with baking powder biscuits	30
Potatoes	40	Baked squash	10
Scalloped tomatoes	50	Celery	
Celery & apple salad	30	Caramel pudding	10
Chocolate bread pudding	10		

Vitamin C. Human Needs and Food Sources

Use:

Aids in building healthy cells in muscles, glands, bones and teeth

Requirement in International Units

Average adult	500-700	Pregnant and nursing mother	900-1,000
Infant or child	600-800		

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BETTER SOURCES

	Weight	Amount	Units
Cabbage, raw	2½ oz.	½ cup, shredded	500-700
Grapefruit juice	2 oz.	¼ cup	600
Horseradish	½ oz.	½ tablespoon	150
Lemon juice	1 oz.	2 tablespoons	300
Orange juice	2 oz.	¼ cup	600
Peppers, red or green	2 oz.	⅓ pepper	2,000
Potatoes, cooked	6 oz.	1 medium sized	400-500
Rhubarb	4 oz.	½ cup	400-500
Spinach, raw	1 oz.	¼ cup	400
Strawberries	4 oz.	½ cup	500-1,000
Tomatoes, fresh	4 oz.	1 small	600
juice, or canned	4 oz.	½ cup	600

FAIR SOURCES

Lettuce, head	2 oz.	1 serving	60
Peas, cooked or canned	3 oz.	½ cup	80-200
Pineapple juice	2 oz.	¼ cup	70-200
Spinach, cooked or canned	3 oz.	½ cup	100-180
Sweet potatoes	4 oz.	1 small	100-300

FOODS LOW, OR LACKING IN VITAMIN C

Flour, white bread, cakes, most pies
Sugar, honey, jam, candy
Eggs, meat, milk, butter, fats

WAYS IN WHICH FOODS LOSE THEIR VITAMIN C

1. Potatoes and tomatoes suffer little loss in cooking, but other vegetables lose about one third of their vitamin C in the cooking water. Wise cooks use this water in which vegetables are cooked for gravies or soup.
2. Exposure of leafy vegetables to the air reduces the vitamin C content. Extracted vegetable juices lose their vitamin C rapidly, and those marketed, therefore, furnish only insignificant amounts. The acid in tomatoes and fruit juices serves to protect the vitamin.

Simple inexpensive menus supply the necessary amounts of vitamin C. There is apt to be a shortage of this vitamin only when cabbage, tomatoes, potatoes, citrus fruits, and other inexpensive fruits and vegetables are lacking. The following menus, for example, are adequate and appetizing:

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BREAKFAST	LUNCH	DINNER
Orange or grapefruit	Cheese souffle	Meat
Cereal and milk	Scalloped tomatoes	Potatoes
Toast, jam	Brown Betty	Rutabagas
		Cabbage salad
		Rhubarb pie

Vitamin D

Vitamin D is necessary for the fullest use of calcium and phosphorus. The oils of salt water fish, particularly the liver oils, are the best natural source. This vitamin is formed when strong summer sun or ultra violet light falls on the skin, or when certain foods are irradiated with ultra violet light. Vitamin D milk is produced in three ways: either by shining ultra violet light directly on the milk, by feeding cows large amounts of vitamin D, or by adding concentrated vitamin D to the milk. All three are potent sources, furnishing from 135 to 400 units per quart. But none of this milk provides enough vitamin D for the infant or small child, who needs between 400 and 800 units daily. A teaspoon of ordinary cod liver oil furnishes about 400 units.

Other Elements

In addition to these better known and more highly advertised vitamins, others are known to be of importance.

Nicotinic acid is the food factor missing when pellagra occurs. This disease is common among the poor in the South where diets are low in protein. It is present in yeast, and in milk, meat, and many other protein foods, but the amount present in each food is not yet known.

Flavine, a greenish pigment, is found in eggs, milk, liver, meats, fruits, and vegetables, and in the germ of cereals. Since it occurs in so many foods, it does not usually present a problem. It has been found to be lacking, however, in the diet of many families in the South.

Vitamin K, the latest compound to be designated as a vitamin, is one of the four or more factors that unites to bring about blood clotting. A potent extract has been made from alfalfa leaves, and the vitamin is also found in liver and in some fish.

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The lack of vitamin E in highly purified animal diets interferes with fertility. It is found in many foods, however, and it is doubtful whether human beings ever suffer from lack of it.

The Application of Nutritional Knowledge

Knowledge of food values means little unless it is applied. New discoveries do not mean that our food habits or buying practices must be changed. They often give us good reasons for clinging to time-honored customs.

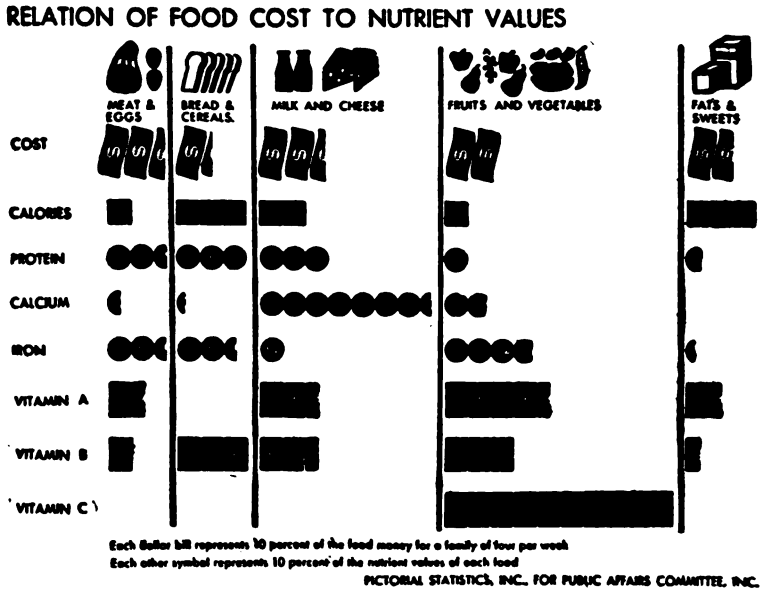
At times people like to compare their own diets with that advised by scientists. The food list below shows the amount that would be recommended for a family of four on a fairly low income. The prices given are those which prevailed in Seattle, Washington, in April, 1939.

Weekly Food List for Family of Four

6 lbs. meat and fish	$1.50	18 qts. or cans milk	$1.80
1½ doz. eggs	.45	¾ lb. cheese	.15
6 lbs. graham bread	.60	12 lbs. potatoes	.20
5 lbs. flour	.15	5 lbs. carrots, squash	.15
1 lb. cracked wheat	.08	3 lbs. cabbage, greens	.15
1 lb. oatmeal	.07	5 lbs. apples	.20
½ lb. macaroni, rice	.04	1 doz. oranges	.20
⅓ lb. crackers	.06	1 jar canned fruit	.12
		1 lb. dried beans	.08
2 lbs. butter	.60	2 lbs. bananas	.12
1 lb. lard or oil	.20	1 can peas or corn	.10
1 lb. peanut butter and bacon	.30	1 lb. dried fruit	.10
coffee, salt, etc.	.50	2 cans tomatoes	.20
Total cost of food for four people for the week			$8.12

The food for each person cost 29 cents a day, nearly ten cents a meal, which is slightly more than minimum allowance for adequate diets. The chart on page 28 shows the relation between the cost of each group of foods on the market list and its contributions to the diet. The unmilled cereals provide iron, vitamin B_1, protein, and calories at low cost. Fruit and vegetables, though they contain little protein, are the only

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sources of vitamin C, and the green and yellow vegetables contribute half the vitamin A. A pint of milk and half an ounce of cheese supply about a third of the protein needed and 75 per cent of the calcium. These foods give all the essential nutrients at a reasonably moderate cost. They are colorful, crisp, and attractive, and have an appetite appeal. Foods which provide vitamins also contain protein and contribute calories. No minerals or vitamins need be bought in drug form.

NUTRITION AND PUBLIC POLICIES

A NATION-WIDE food crusade seems needed if the American people are to be healthy and vigorous, and if children are to derive the full benefit from their schooling. We need education in nutrition and we must provide food for the children when necessary to establish and maintain health. School lunches could be made an important part of the education and health program of schools. Good lunches can often turn an apparently stupid child into a normal one. Teachers should

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insist on children being in a fit physical condition. It should be quite as much the school's responsibility to teach children to select food wisely as it is to teach them to read. Whether lunches are carried from home or provided by the school, they should be good examples of diet so that children may acquire the habit of health and understand how to maintain it.

There is need for further study on the relation of diet to personal and national characteristics. Undoubtedly food has much to do with the stability, contentment, enthusiasm, and zest for life evidenced by certain nationalities. Such studies should, therefore, include not only height, weight, posture, and color, but alertness, emotional stability, and mental stamina. They might well consider first a study of the effects of adequate prenatal care and of improved infant and child feeding. Application of science to the feeding of man might well have as much effect as it has had in feeding animals.

American farmers find it impossible to sell all of their products. Yet millions of Americans are on flabby diets unable to procure adequate food. This paradox cannot be resolved by restricting production. But it can be by better distribution. A reduction in food prices would increase the consumption of food and thus use up the surpluses. The decrease in prices might be graded—greatest for the low-wage groups, particularly for those with large families and low incomes.

Sir James Orr of Scotland thinks that public utility companies directed by marketing boards may have to run the milk depots, slaughter houses, and flour mills. These boards would buy from the farmer and sell to the distributing trades. Retail prices would be lowered by cutting the cost of distribution. Such subsidy as is necessary should, he believes, be charged up to public health rather than agriculture.

In this country the government has purchased surplus food from farmers and distributed it to families on relief. Secretary Wallace has recently suggested that these surpluses be sold at a lower price to all those whose incomes do not enable them to purchase a full diet at the existing prices. This has been put into experimental operation in Rochester, N. Y. The "two-price" scheme has a double purpose: first, to use more food and thus increase the income of farmers; and second, to improve the diet and health of those who are now unable to

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buy enough of the right kind of food. The foods that the poorer families lack—such as meat, eggs, dairy products, fruits, and vegetables—are being made available rather than bread because the aim is to provide a more balanced diet. The poor usually have enough bread. The plan is still in the experimental stage. Stamps are sold to W.P.A. workers, persons on relief, and those receiving state assistance which permit them to obtain surplus foods at any grocery store. There are variations in the plan, but usually the person on relief can get food worth $1.50 to $2.25 for each dollar spent for stamps.

Another scheme, which originated in California, calls for scrip certificates to be given to all families with incomes of less than $750 a year. With this scrip, a designated list of foods, of which there was an oversupply on farms, could be purchased at half price. The government would pay the grocers for the other half of the purchase price. The advocates of this plan believe that it would make for better health and help the farmer. To do this job adequately, the limit ought to be higher than $750. Up to the present the farmers' surpluses which the government has bought have benefited only the relief groups.

The Department of Agriculture is trying to reduce food costs. It is encouraging the setting up of public markets, the selling of ungraded fruits and vegetables in bulk, and the use of cheap containers and packages. The cutting of advertising costs is an essential part of this drive. If lower prices can be obtained in this way, there would be no need for the government to say who would benefit from lower costs. All could share. Something must be done to bring farm and store prices closer together if the 42,000,000 farm population is to get a decent income and the city's millions are to get enough to eat.

Possibly the simplest means of distributing the essential foods to those most in need would be through the system of free lunches in schools. Great Britain now operates its lunch rooms so that all school children get milk daily below cost. In Sweden a more ambitious plan is being fostered by the government which proposes to employ funds hitherto used for food-export subsidies to provide free lunches for all public-school children.

Whatever the solution, better seed, cheaper fertilizers, and better breeding of live stock will help reduce costs so that con-

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sumers can buy more. The wider use of local products, the fostering of greater pride both in the use and the preparation of local and regional foods, would cut costs, conserve food values, and reduce the listlessness about foods from which Americans suffer. Home vegetable gardens and more home preparation of food would help the pocketbook and protect health.

If everyone is to have an equal chance for health and efficiency, the government should render assistance and not increase the economic burden. Incomes are so low that it is difficult to maintain decent health standards. Taxes on food, either direct or indirect, defeat their purpose by cutting down the amount of food purchased. Taxes on foods have justly been called "the last act of weary legislators." Though they attract little attention and arouse less opposition than any other taxes, they hit those who can least afford to pay.



Sickness among the poor is much greater than for other groups, and the cost has to be borne largely by taxpayers. The sanest method for reducing such costs would be greater emphasis on diet. The additional food required for an adequate diet would almost pay for itself by reducing drug, medical, dental, and hospital bills, and by lessening the time lost from work.

Education must be such that people know how to select and prepare food properly. The greatest hopes for the future lie in making people see that their health lies in their own hands.

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