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BULLETIN

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Schoolhouse Meeting

Discussion of

How to Feed the Family For Health and Efficiency

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The benefits of education and of useful knowledge, generally diffused through a community, are essential to the preservation of a free government.

Sam Houston.

Cultivated mind is the guardian genius of democracy. . . . It is the only dictator that freemen acknowledge and the only security that freemen desire.

Mirabeau B. Lamar.

To the Chairman of the Schoolhouse Meeting:

The discussions of the questions given below have been prepared for the meeting to be held at the schoolhouse on Friday afternoon and are for the use of the person who conducts the meeting. Usually it will be best to have the questions written upon the blackboard before the meeting takes place, and when the time for discussion arrives, first have the question read aloud and then call for discussion from the members present. Occasionally the chairman should call out someone whom he knows to be well qualified to answer the question. At times it is well to let such person know several days in advance that he or she will be called upon so that special preparation may be made by study of some of the bulletins referred to in the bibliography or of other literature. As soon as discussion has brought out whatever of interest the members present may know, then have read the discussion of the question that is given below and, if desirable, allow discussion of that. Good judgment must be used by the chairman in calling out discussion and in stopping it before it becomes unprofitable. At times it would be well to omit or pass lightly over certain questions and concentrate on others. Be sure to stop before the members are tired and always try to have the ideas that are brought out applied to the local conditions and needs. When a meeting results in a desire to carry out some practical plan, arrange for those interested in this plan to remain after the meeting and take the necessary steps at once. Strike while the iron is hot.

Fellow Teacher and Fellow Citizens:

A revolution has been brought about in the feeding of both humans and animals since the chemists have learned how to analyze the various parts of the body, and discover what they are made of, and, similarly, to analyze the various foods eaten by men and animals and find out what these are made of. Until this was done, the feeding of both humans and animals was largely guess work, based only upon practical experience. Every well informed farmer now knows what to feed his hogs in order to produce bone and muscle in the growing season and what to fatten them in the fall; what to give his hens to enable them to produce eggs and what to fatten them for market. The thoughtful farmer everywhere is carefully studying the best method of ballancing the ration for his hogs and cattle, with the idea of securing greater growth or more abundant production. On one of our best Texas ranches, where Jersey cattle are kept for their butter profit, an expert dietitian is employed. His time is entirely devoted to studying the daily needs of these animals. Each milch cow is supplied with the ration fitted exactly to her size and milk flow, and is daily kept at her maximum efficiency through an intelligently planned food supply.

The Cotton Belt Demonstration Train, on a recent trip through Texas, exhibited two hogs. The pigs were equally promising at birth. At ten months one animal weighed 380 pounds and the other 80 pounds. One pig had been intelligently fed for the purpose of producing a fine animal. The other pig had been allowed an unbalanced and insufficient ration.

While we have begun to study more intelligently the feeding of our stock, few of us have realized yet that our own health and spirits are tremendously affected by what we eat. Some wise one has said:

> "Oft some vague impression of coming ill *de*presses us,
> When, if we'd but look back, 'tis our breakfast that
> *op*presses us."

Not only are chronic gloominess, depession, lack of courage, and

the feeling of hopelessness usually due to an improperly balanced diet, but also much of our irritableness and other unpleasant qualities. Certainly, most of our drowsiness and indolence is due either to the kind of food we eat or to diseases resulting from improper foods. No one ought to be dizzy after bending over, or feel tired and have a bad taste in his mouth in the morning, or feel "bilious" and have to take salts or calomel occasionally in order to feel half alive. It has been shown clearly that rheumatism, gout, Bright's disease, and various liver and nervous diseases that come on slowly are due to eating for long periods an improper and unbalanced diet. Lately it has been proven that the dreadful disease, pelagra, is not only caused by improper diet, but may be completely cured merely by properly balancing the patient's diet and furnishing his body with those elements the lack of which has caused the illness.

We would not advise anyone to be constantly worrying about what he should eat and drink. That is almost as bad as not giving it any intelligent consideration at all. But we would earnestly urge every housewife to study carefully the wise suggestions in this lesson today, and make an effort to balance up the family diet, and to cook each food material in the way in which that particular food ought to be cooked. Furthermore, we urge each man to use intelligence in his own eating habits and to support his wife in her efforts to keep from the table half raw biscuits or bread, the hard fried bacon and eggs, greasy flapjacks and fried pies that are now doing so much harm. I know some cases in which intelligent and well meaning wives were thwarted in their efforts to feed their family well cooked and well balanced meals by the "old man and the boys" violently demanding the hard cooked, indigestible meats, the soggy biscuit and dumplings, and greasy fried things.

I hope that the teacher and every family will write for the splendid bulletins of the University and of the United States Department of Agriculture referred to at the end of this program. Anyone that desires a copy of this program also may secure it free by writing to the undersigned.

Sincerely yours,

A. CASWELL ELLIS,
Acting Director, Department of Extension,
The University of Texas, Austin, Texas.

HOW TO FEED THE FAMILY FOR HEALTH, AND EFFICIENCY.

QUESTIONS.

1. Why do we eat? What demands does the human body make on its food supply?
2. What is the use of protein in the diet, and what foods supply it?
3. What is the value of mineral salts to the body, and how are they obtained?
4. What foods supply the heat and energy?
5. Of what value is water in the diet? Where is it best obtained?
6. Should man have a balanced ration as well as the animals?
7. How can the housewife plan and secure a well balanced ration for her family? Give an example of a well balanced ration and a poorly balanced ration.
8. (a) Why do we cook foods before eating them?
   (b) What is the effect of high temperature on all protein substances?
   (c) What temperature is necessary to cook starchy foods properly?
   (d) What is the result of too low a temperature?
   (e) What is the result of too high a temperature on fats?
9. Do you ever sleep badly and wake up tired in the morning? Are you ever "bilious"? Is your head dizzy at times? Do you have a bad taste in your mouth? Do you feel indolent, hate to move? Do you feel that you have no pleasure in your work? Do you get blue without any reasonable cause? Do you get sleepy after meals, or feel stupid and heavy when you try to read or study? What is it in your diet that causes these things?
10. What diseases are due to ignorance on questions of food and feeding?
11. What are the special problems connected with the feeding of infants and schoool children?

ANSWERS TO QUESTIONS.

1. The body of man is similar to that of the animal, and the food has two distinct functions to perform. First, the food supply must furnish the material for building up the body; and second, it must supply material for producing energy which can be converted into heat or motion. To meet the first requirement there must be foods which furnish the material for blood, bone, flesh and other tissues. These foods are the so-called prote-ins, or muscle-builders, and the mineral salts. The foods which serve as the best material for the production of energy to keep up body heat and make possible our movements are the sugars, starches and fats. The sugars and starches are often grouped together and called car-bo-hy-drates. "In the production of energy the body may be compared to an engine. Instead, however, of burning crude coal in the firebox by admitting oxygen of the air, as does the engine, man's body burns the food and its own tissues by means of the oxygen admitted to the body through the lungs." The body can no more run well without the right fuel supply, than can an engine.

2. No matter how abundant the food supply, if protein is lacking, the individual cannot live. Protein foods are essential to the growing child to build new tissue, and to the adult to repair old or worn out tissue.

The chief sources of protein are meat, fish, milk, eggs, cheese, beans, peas, peanuts, and cereals. The proteins in the vegetable foods are usually combined with large amounts of starch. Should people depend on vegetable food entirely for their protein supply, it would be necessary for them to consume too much carbohydrate in order to receive a sufficient amount of protein. Also, it is generally thought that the protein of meat is more easily digested than the vegetable protein. For these reasons it is probably wise to obtain protein from a mixed diet. If too much meat is eaten, however, it is liable to putrefy in the intestines and send poisonous compounds into the blood and through the body, producing drowsiness, dizziness, tired feelings in the morning, so-called "biliousness," kidney disorders, and many other troubles. Most of us eat too much meat.

3. The mineral materials in our diet are more important than is generally thought. A study of the body composition shows us that many mineral constituents are required. Among the most important minerals in the body are calcium and magnesium, which are found in the body skeleton; phosphorous compounds, which are distributed throughout the body and essential to every living cell; and iron, which is present in the red corpuscles of the blood. These minerals are obtained to some extent from animal foods. For example, milk contains a large quantity of lime, and eggs supply sulphur and phosphorous. However, the main supply of these mineral salts is from the fruits and vegetables. Such fruits as the apple, orange, and prune; and such vegetables as spinach, lettuce, cabbage and string beans are rich in the needed mineral foods. Some of these fruits and vegetable foods are therefore necessary in the daily diet.

4. The cheapest and best heat and energy producing foods for man are the sugars and starches found in the cereals and vegetables. Corn and wheat products, potatoes and rice should make up a large part of our diet because we need much more material to supply heat and energy than we do to build tissues.

The fat is used in the same way that the sugars and starches are; but it has two and one-fourth times the energy and fuel value of these materials, and should be taken in much smaller quantities. Bacon, lard, tallow, the fat of other meats, cream, and butter are the animal fats used by man. Small quantities of fat are found in some of our vegetables and most of our cereals. Large quantities of fat are obtained from peanuts, nuts, olives, and oils.

5. The average human body is 68 to 72 per cent water. This water is found in the tissues, the blood, other fluids, and in fact every part of the human body. Water is not, strictly speaking, a food, but it is very important in the diet. It helps to dissolve and distribute the food nutrients, and to carry off the waste products. It replaces the large amount of water given off by the kidneys, lungs, and sweat glands. A part of this water is supplied to us through such food materials as milk, fruit, and green vegetables, but this is not a sufficient amount. Adults should drink at least six glasses of water a

day. Those who have acid indigestion after meals, or so-called "heartburn" or sour stomach, should drink very little or no fluid during meals. Practically all others are helped and their digestion improved by drinking a moderate amount of water during meals, unless they use this water merely to wash down hunks of half-chewed food and thus avoid chewing. Chewing thoroughly, especially when eating starchy foods, is a very important aid to digestion. People who have a weak, "all gone" feeling an hour or so before meals should fill their stomachs with water and not eat between meals. The water helps to wash out the stomach and passes rapidly into the blood vessels and tissues. It relieves the "all gone" feeling promptly without interfering with the digestion of the meal later, as does the food that one takes between meals. When the system is not as active as it should be and, through constipation, one gets a mild, chronic "biliousness," so called, this is frequently relieved by forming the habit of drinking a couple of glasses of water when going to bed and a couple more as soon as one gets up in the morning.

6. The well balanced ration is as essential to man as to his cattle and hogs. He needs a definite amount of protein to keep the flesh and muscle in a state of repair; he needs a certain amount of mineral salts to keep the body fluids and bony skeleton in a condition of health; and he must have an adequate amount of those foods which supply him with fuel to keep his body at normal temperature, and provide energy for work or play.

Scientists have found out the exact amount of each of these food nutrients required by men and women of various sizes, and under different conditions of labor. Experts in domestic economy can figure a balanced ration for man with as much exactness as the stockman measures the rations for his animals. However, the house-wife without this careful weighing and calculating can approximate a diet that is well balanced, provided she understands the composition of our common food products, and observes a few general suggestions as to their selection and combination.

7. To secure a balanced ration for the day the house-wife should provide during each day for the family: (1) a mod-

erate amount of one or two kinds of protein; such, for example, as eggs, beef, pork, chicken, mutton, or macaroni and cheese; (2) a small amount of digestible fat, such as bacon, butter, cream, or cottonseed oil; (3) some cereal products, such as wheat bread, corn bread, oats, or cracked wheat; (4) several vegetables and fruits; combining at dinner one vegetable that is rich in starch or sugar (as rice, potato, or grits) with two that are rich in minerals and have both juiciness and flavor (as string beans, spinach, lettuce, and celery). Such a diet will completely nourish the body and give energy for work without overloading it with excess of some particular food which only interferes with efficiency and finally produces disease. The following are examples of well and poorly balanced meals.

(The teacher should write these on the board before the meeting, so all may see them.)

Dinner

(A well balanced meal)

Pot Roast of Beef	Mashed Potato
Lettuce and Cabbage Salad	Bread and Butter
Apple Shortcake	

Dinner

(A poorly balanced meal)

Fried Eggs	Sausage	Cheese
Rice	Grits	Biscuit

In the well balanced meal all the food nutrients are represented and in approximately the right proportion. There is protein in the meat; starch in the potato, bread and shortcake; fat in the butter; and mineral salt and the needed bulk in the lettuce, cabbage, and apple. In the poorly balanced meal some of the essential foods that furnish the mineral salts, bulk and flavor are lacking; while the egg, meat and cheese supply protein in a wasteful and harmful amount; and starch

is given in repeated and monotonous forms through grits, rice and biscuit. A meal that is frequently found in the farm home for both breakfast and supper is fried eggs and bacon, biscuit and milk. This is a badly balanced meal because the eggs

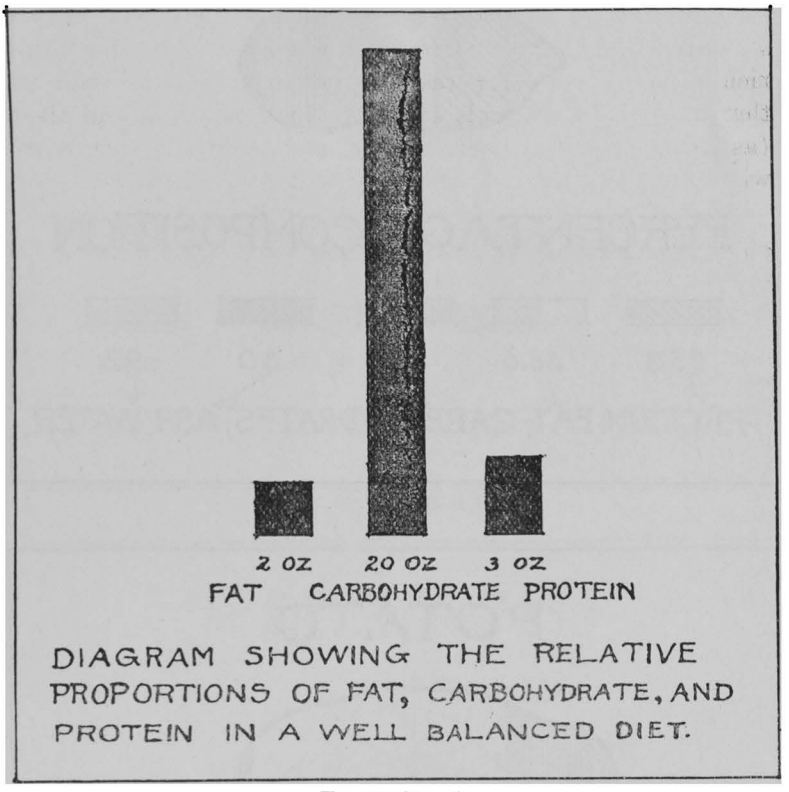
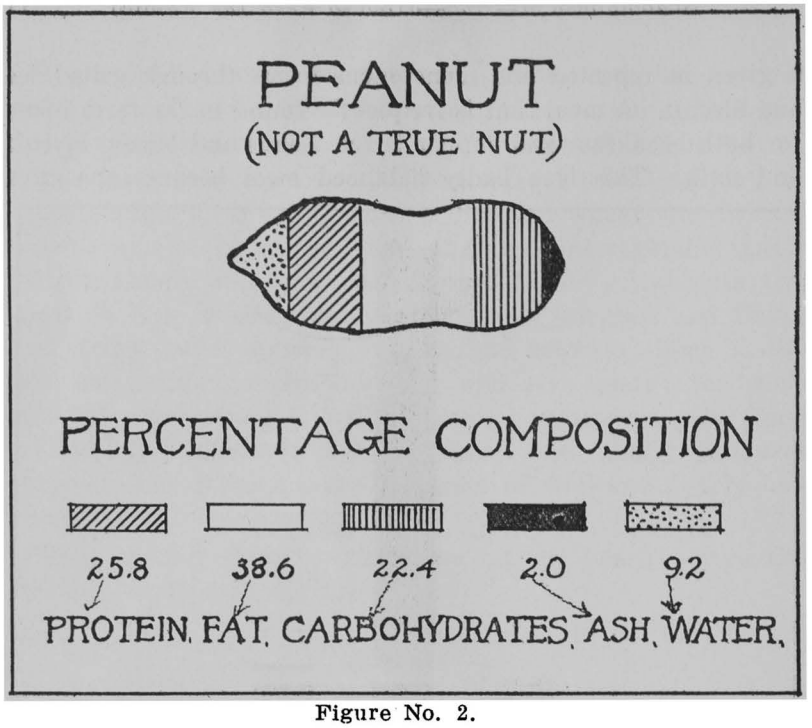


Figure No. 1.

bacon and milk are all protein foods, and wheat bread itself contains considerable protein, making thus a meal with a wasteful and harmful excess of protein, which is likely to putrefy in the bowels and cause "biliousness" and other troubles. The meal needs less protein and more starchy or sugary foods, such as grits, rice, or potatoes or fruits. It also needs more of bulky foods, such as the fruits or juicy vegetables, which keep the bowels active.



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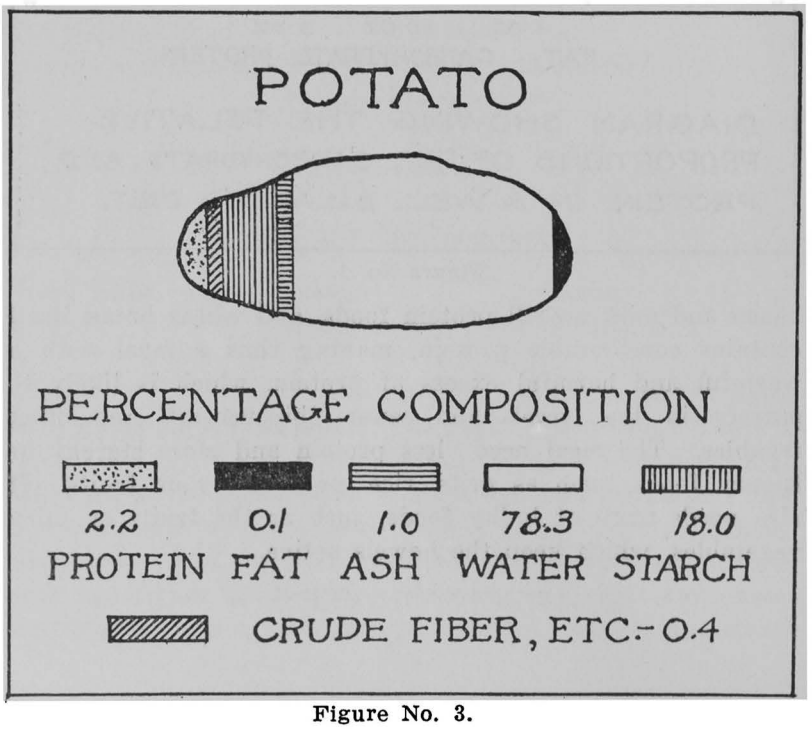

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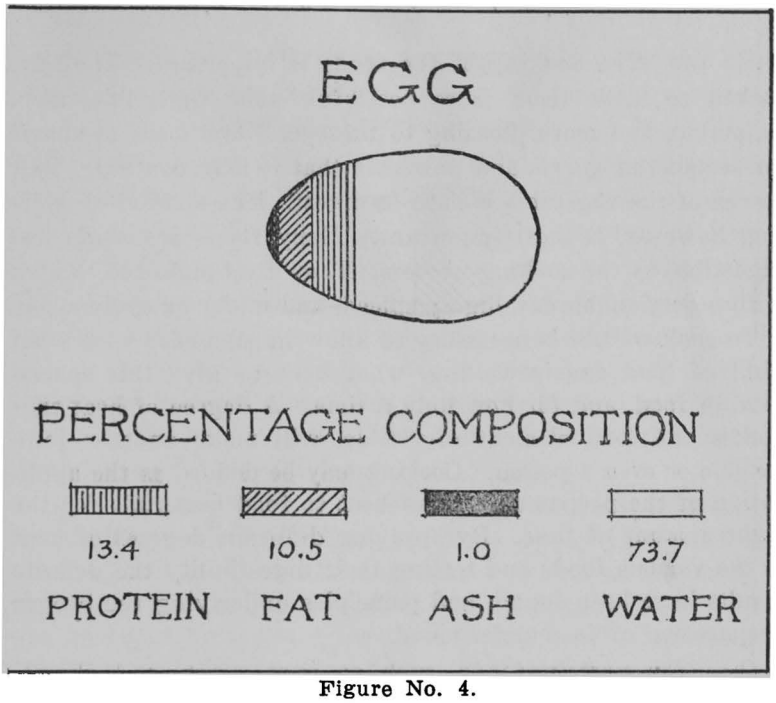

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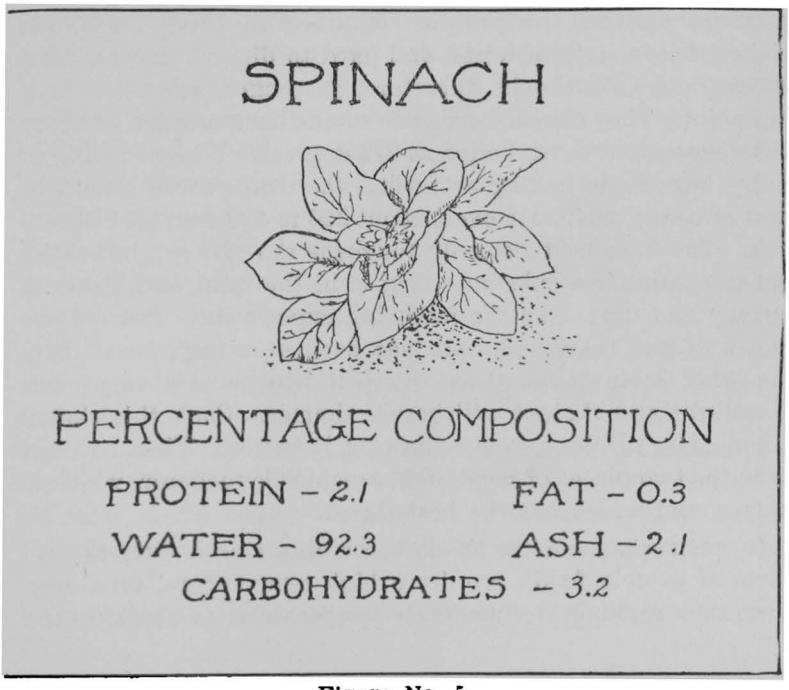

Figure No. 5.

8. (a) The cooking of the foods is important. They are cooked to make them more healthful, more digestible, more palatable, and more pleasing to the eye. Raw meat is unsafe on account of germs and parasites that it may contain. Raw starch of the vegetable is hard to digest. The method of cooking, however, is most important. Many foods are made less digestible by the cooking process. They are toughened, coated with objectionable fat, highly spiced, and under or overcooked.

To cook well, it is necessary to know in each case with what kind of food one is dealing, what heat to give this special kind of food, and for how long a time. A degree of heat that makes one food element digestible, will make another indigestible or even a poison. Cooking may be defined as the application of the proper amount of heat to food materials for the right amount of time. By applying different degrees of heat to the various foods and testing their digestibility the definite results have been found, and principles underlying the proper preparation of food determined.

(b) The protein foods, such as eggs, meat, and cheese, should be cooked at a low temperature because a high temperature hardens the protein contained in these foods and makes them tough, tasteless, and hard to digest. Meats, eggs, cheese, and milk should, therefore, be cooked below the boiling point. They should be simmered at a temperature of about 185 degrees and never boiled at 212 degrees. When cooking in a dry heat, as in baking or frying, the temperature should be that of a very moderate oven, about 260 to 320 degrees Fahrenheit. The high heat not only toughens the protein, but melts out a gelatine-like substance that is in the meat and leaves it stringy and dry. Try the following experiment. Put on two pieces of pot roast and cook one hard at a high heat. Slip the other back on the stove where it will be in a very moderate heat and the pot will barely simmer. Cook this slowly a long time till done, never allowing it to boil. Then cut and taste the two pieces of meat and see which is tenderer, which is juicier, and which has the best flavor.

(c) Starches and the foods containing starch, just the reverse of protein foods, require a high temperature, or a very long, slow cooking at a moderate temperature, to break up the

starch grains and make them more digestible. Starchy foods should therefore be boiled at 212 degrees and not simmered, or should be cooked many hours in a fireless cooker. When cooked in the stove in a dry heat, they require a high temperature also. This is why potatoes and cereals should be boiled, and biscuit and breads cooked in a hot oven. Furthermore, the heat should be kept up long enough. Nearly all of our biscuit are less digestible than they should be because the starch in the central part of the biscuit is not sufficiently cooked and is hence hard to digest. Such uncooked starch is likely to ferment in the stomach and bowels and cause gas, "heartburn," and other digestive troubles. A thoroughly cooked biscuit should be easily digested.

(e) Fats are like proteins in that they are made indigestible by high temperatures. They are split up by high heat and changed into substances that are very irritating to the lining of the stomach. The presence of these irritating substances that are produced by too high heat is indicated by the browning of the fat, such as is seen when butter is put into a hot frying pan. It is because of this splitting up of the fat that fried foods are usually hard to digest and unwholesome. The frying pan is a very conveinent, but a very dangerous implement. It should be avoided as far as possible. If it must be used to cook eggs, then the high temperatures should be as far as possible avoided by the use of a small quantity of water put into the pan after starting the cooking. In frying mushes and pies all grease should be avoided as far as this is possible. Batter cakes and flapjacks are usually doubly indigestible because of the split up grease on the outside, in which they are fried, and the raw, or half raw, starch on the inside.

9. It is true that biliousness, the dizzy head, lack of vigor, and the many other minor ills are due to improper food. These daily complaints are in some instances the direct result of constipation and the consequent accumulation of poisonous products in the system which get into the blood and are carried to all parts of the body. Constipation is often caused by eating only the concentrated foods, such as meats, eggs, cheese and bread, and omitting the foods which furnish juiciness and bulk to the meals, such as the fresh fruits and green vege-

tables. Or it may be caused by foods that are unsuitably prepared, such as soggy biscuit and hard, greasy fried eggs and bacon. Chronic cases of constipation can, many times, be entirely overcome by a careful adjustment of the food supply. A remedy for constipation often cures all the other minor ills. Again, some individuals suffer from the use of certain particular foods. Some people can not digest milk, some eggs, some cabbage, some onions, some pork, some veal. Each one should watch himself, or herself, and find out the thing that causes the trouble and stop eating that thing.

Also the habit of munching between meals, and eating rich foods before retiring at nights, is responsible for many slight disorders which result is habitual ill health.

10. It is stated that nine-tenths of all disease is preventable and that fifty per cent of our diseases result from an ignorant handling of the feeding problem. People eat too much protein, which produces uric-acid poisoning, and gives rise to auto-intoxication, rheumatism, gout and Brights disease. They eat too much sugar and starch, and diabetes results. They neglect the fresh foods and vegetables and suffer with anaemia, constipation, and rickets. They eat rich food, highly spiced food or over stimulating food and have chronic dyspepsia and uncertain dispositions. The food supply is intimately related to health and efficiency, and it is often responsible for disease and failure physical, mental, and moral.

11. The feeding of infants and school children is an important part of this problem of feeding for health and efficiency. Their physical and mental well being is largely dependent on the food supply. Their diet is not the adult diet. Special consideration should be given this subject and will follow in the subsequent discussions.

REFERENCE FOR FURTHER STUDY

The following bulletins will be helpful in dealing with the problem of right feeding.

The bulletins given below can be secured free of charge by writing to the University of Texas, Department of Extension, Austin, Texas.

"The Uses of Food and the Proper Balancing of the Diet," No. 346.

"The Principles of Menu Making," No. 333.

"The School Luncheon Problem," Part I, No. 338; Part II, 339.

"Suggestions on Infant Feeding," No. 373.

"Food for the Growing Child," No. 260.

Any or all of the following bulletins will be sent free by the U. S. Department of Agriculture, Washington, D. C.

Principles of Nutrition and Nutritive Value of Food, Farmers' Bulletin No. 142.

Meats, Composition and Cooking, Farmers' Bulletin No. 391.

Preparation of Vegetables for the Table, Farmers' Bulletin No. 256.

Meats on the Farm, Farmers' Bulletin No. 183.

Canned Fruits, Preserves and Jellies, Farmers' Bulletin No. 203.

Eggs and Their Uses as Foods, Farmers' Bulletin No. 128.

Celery, Farmers' Bulletin No. 282.

Cheese and Its Economical Uses, Farmers' Bulletin No. 487.

Cabbage in the Diet, Farmers' Bulletin No. 433.

Cereal Breakfast Foods, Farmers' Bulletin No. 249.

Bread and Bread Making, Farmers' Bulletin No. 389.

Butter Making on the Farm, Farmers' Bulletin No. 241.

Beans, Peas, and Other Legumes as Food, Farmers' Bulletin, No. 121.

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REPORT OF SCHOOLHOUSE MEETING

(Send this report, immediately after the meeting, to A. Caswell Ellis, Director of Extension, the University of Texas, Austin, Texas, and the programs and questions for the following meeting will be sent to you by return mail. Nothing further will be sent until the report is received.)

1. Name of school,.....County.....

2. Principal of School,.....

3. Postoffice Address of Principal,.....

4. Name of Chairman of Meeting,.....

5. Postoffice Address of Chairman of Meeting,.....

6. Name of Secretary of Meeting,.....

7. Postoffice Address of Secretary of Meeting,.....

8. Date of Meeting,.....

9. Subject of Discussion,.....

10. Number present: Women..... Men.....

11. Probable number that will attend next meeting,.....

12. Comments and Suggestions: (Was there much discussion? Was the meeting helpful? Will any practical movement or organization come from it? Do any wish to study the matter further? Can we help in any way?)