WHAT SHALL I DO TO BE SAVED?

A Stereopticon Lecture at the Sanitarium Parlor, Battle Creek, Mich., Thursday,
February 2, 1911, at 8:00 P. M., By,
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What shall I do to be saved from this awful liver of mine, from this
terrible stomach that is making my life miserable, from these horrible nerves?
These are questions that are being asked us every day in our offices here. Our
doctors every day are appealed to by somebody who wants to be saved from the
consequences of his own wrong-doing. Now, the majority of people believe that
no matter what a man does to his stomach, no matter what he does to his liver,
no matter how much he abuses himself, if he can only find the right doctor, or
the right medicine, he can by some sort of hocus pocus be cured of the consequences
of all his wrong doing. That man might just as well expect to be able to get
out of prison by rubbing some kind of liniment on the bars of his cell—might
just as well. People expect to be cured by something they can get out of a bot-
tle. Why, my friends, curative power, healing power is creative power. Even if
you could get the power that creates the world inside of a bottle, you could not
keep it there; the cork would not hold it; it would come out in spite of you.
There isn’t any power in a bottle, or that you can put into a bottle, that has
power to create a man or to heal a man. It takes the very same power to heal a
man as it does to create him,—exactly the same power. It takes just exactly
the same power to keep Adam alive that it did to make Adam in the first place.
It is just as great a marvel that Adam remains alive, that he lives from moment
to moment, as it is that Adam was ever created.

Life is a miracle. Every moment of life is a miracle. Did you ever
think of it, my friends!—perhaps you did not know that the blood that occupies our veins is dying, dying at the rate of eight million blood cells every second. The blood lives only six weeks. Somebody said the body is renewed once in seven years. The major part of the body, the soft part of the body is renewed very much more often than that. The soft parts of the body are renewed for the most part, about once in three months. That is what we eat for—to renew our wasting frames. A biologist has described an animal as a stream of matter passing through a certain form.

Did you ever stop to figure up how much you eat, how many pounds a day? We weighed a man a little while ago after dinner, and we found he weighed five pounds more than he did before; but I think that was somewhat of an anomalous case, perhaps. But I think, liquids and solids all together, we are about nine tenths water any way, and we must take in on an average four or five pounds a day, say five pounds. If a man weighs 150 pounds, in thirty days he eats his own weight, then. I am not talking of liquids and drinks, of course, but the actual foods he eats. A man eats his own weight every month. Some people eat more than that. A senator down at Chicago confessed a while ago that he had eaten eighty-six wagonloads more than he ought to have eaten in the course of his lifetime; so it is possible some people's stomachs are subjected to a great deal of overwork.

Now, this food we eat is for the purpose of sustaining the wasting of our bodies. The body is a furnace. Food is fuel. Four fifths of all the food we eat is burned up to keep us warm. Another fifth of it is mostly used in energy production. A very small amount of it is used for the purpose of replacing tissue. The living tissue of the body is largely composed of protein—protein and water—the live tissue of the body, the muscles and brain, the parts that think and the parts that act are composed of protein; and these parts waste very slowly. The relation of different elements of food to the body are the
are the same as the relation of coal and metal repairs to a locomotive. Now, in our foods we have starch, albumin or protein, and fats. Those are the chief food principles. The starch and the fats are fuel used for fuel, burned up. The butter and the oil and the various kinds of fats that we eat are all used up for fuel; they cannot become brain, they cannot become bone, they cannot become muscle; it is not the right sort of material for that purpose; it is burned in the body; it is converted into heat and energy. Starch, sugar and all those saccharin things, and the acids of fruits,--these are also all used as fuel; they are burned up in the body and are used to produce heat and energy. Now the protein has another purpose. The protein has for its purpose to take the place of the worn out, wasted and lost structures of the body. Here is a locomotive running along the track pulling a heavily loaded train behind it. It stops at every station to take in water and put on coal. The coal is to be burned in the furnace to produce heat to keep the people warm in the passenger coaches, and to produce energy to pull the train. Now, after the locomotive has been running about 300 or 400 miles, possibly less than that--a couple of hundred miles, it stops, is taken off the train, put into the round house, and there it is locked over, and there is a nut dropped off here, or a bolt fallen off there, or a bit of brass or copper, steel or some other sort of metal has disappeared. This is replaced. Those are the metal repairs. Now, that is the protein, if you please; the metal is the protein, or rather the protein is the metal for the body, the metal repairs for the body. I don't suppose that an ordinary locomotive, running a trip of 200 miles, requires more than ten or fifteen pounds of metal repairs. I do not know just how that is. Suppose it required ten or fifteen pounds; but it has burned up perhaps 100 tons of coal. Now it is the same thing with the body; the body is the machine. Protein is the metal repair for the body. The starch, the fats, the sugars and those things
are the energy and the heat producing elements of the food. So you see why it is that we do not need very much protein. A man sits down at table, makes his dinner out of beefsteak, mutton chops, perhaps fish, fowl and various sorts of meat—why, he is just exactly as foolish as a locomotive engineer who would fill up his tender with bolts and with bits of cast iron, or old stove covers, perhaps, or bits of iron rails, etc., and throw them into the furnace of his locomotive. He would soon have the fires choked, the grates would be choked and the draft would be destroyed.

Now, it is exactly so with the body. A man sits down at table, as I said, eats beefsteak, mutton chops, and a large quantity of that sort of thing, and he gets perhaps ten times as much protein as he needs. Now, he didn’t know how much protein he needed. The arrangement, the order of Nature is, that the vegetable world stores up energy for the animal world to use. Animals are machines for using energy. Vegetables are a wonderful mechanism for storing energy. You know about a storage battery; you have heard about the storage battery; but an animal is a different thing; an animal is a motor; an animal is a machine doing work, while the vegetable is stored up maximal energy. Now, then, feeding the body with another animal is like feeding one machine on another machine; like firing a furnace with small stoves and kerosene lamps, don’t you see; there is a little fuel in the lamp, or a little coal in the stove that has not been used; but there are a whole lot of materials there that are not fuel.

So it is important for us to study this matter of food, and to adapt to our bodies the proportions of various food principles which we require. The average man does not pay any attention to this; and for that reason we find a great many people over fat; they eat too much carbohydrates, too much fat, perhaps a good deal of butter and potatoes—too much fat building material. And we find another man with some brown rings around his eyes, and big brown spots on his hands, perhaps, and with a dingy skin. That shows he has been taking too much
protein. A coated tongue and a bad breath, dingy sclerotic and eruptions upon his skin, a scurvy skin, perhaps, or salt rheum, and psoriasis, or pimples on his face, or some other unpleasant thing—these are all indications of an excess of protein. Dr. Duncan Bulkley, of New York, found out more than thirty years ago that he could not cure people of eczema unless he made them stop eating beefsteak, and smoking cigars, and drinking tea and coffee. Now, he published that in medical journals thirty years ago, and he has republished it a good many times since that time. While not a vegetarian, or an advocate of a fleshless diet, he found that he had to take patients that had eczema off of meats in order to cure them, and the reason why was this very thing I am telling you—that the persons who lived on a meat diet took an excess of protein.

Now, you can readily see that if there is protein enough in bread, and all we need in potatoes, and if there is an excess in beans, if a man sits down to the table and eats pork and beans, he is getting more protein than he needs, for the beans already have too much protein; and when he adds meat to the protein of the beans, he is getting an excess. If the pork was entirely fat pork and had no lean meat in it, that might not be true. But if a man sits down at the table and makes his breakfast out of potatoes—a lady told me a while ago, "Doctor, what shall I do? My husband persists in having meat and potatoes at every meal, three times a day; what shall I do?" A young lady just married a few days ago came to get my advice how to manage her husband. She ought to ask my wife instead of me. She might give her better advice. I told her a story of a lady who was here some years ago and declared she could never stand this sapid diet. She said things were so insipid, no mustard, no pepper, no peppersauce in the meat, "Why, there isn't any taste to it," and when she had been here three weeks, she insisted on going home. Her husband didn't want her to come home. There was a good reason why he didn't
want her to come home. She was a terrible neurasthenia, and neurasthenic covers a multitude of sins. She finally went home, stayed a week or two, and her husband brought her back, he could not stand her any longer as a matter of fact; and she came back and staid three months, and went home well and happy, cheerful and contented, and a good natured woman with roses on her cheeks, really an entirely changed woman. Three or four years afterwards I happened to be passing through the city where she lived, and as I had to wait a little while for a train, I dropped into the house, near the station, and inquired for her. The servant girl who met me at the door said, "She is not in." There was a smile upon her face that made me a little incredulous. "Well," she said, "she isn't in, but she is close by, and if you persist upon seeing her, she is around behind the house." So I went around behind the house, and there she was up in the top of a berry tree, and her cheeks were as rosy as those cherries. She came down off the stepladder and we had a pleasant little chat, and I finally said to her, "I suppose you were very glad to get home and get something good to eat." "Oh, Doctor," she said, "don't mention it. I couldn't imagine when I got home how I ever could have liked those horrible greasy things, and those hot, peppery, scorching, blistering things,—I could not imagine how I ever could like them." She said, "The very first thing I did when I got home was to have the peppersauce and the mustard pot and the ginger jar and all those things carried out and buried in the garden." "What did your husband do?" "Oh," she said, "I brought him to it." I am just telling this story as a suggestion to the ladies when they get home. I told this lady this story. But see what a silly thing that man is doing. There are the potatoes and they have protein enough. Feed pigs on potatoes and they will thrive on them. Let a pig into the pasture to eat all the grass he wants, and there is protein enough there to make a good, big fat pig, nor a strong ox. A giraffe gets all the protein he wants in the leaves and twigs of trees, and there is a great deal more protein in the potato. The flesh of the
giraffe and the flesh of the ox are like our own flesh. It is red, lean meat; that is what a muscle is, whether it is human muscle or whether it is ox muscle, or whether it is pig muscle—it is lean meat. It has the same chemical composition exactly, whether it is an ox or a sheep or a pig or a dog or a man; it has practically the same composition as the muscles of a man; so if an ox can make muscles and can support strength, and an elephant or giraffe can get all the great strength it possesses on the low protein diet which they are satisfied with, of leaves, twigs, and grass, certainly we ought to be able to find in the natural elements of the earth and the natural products of the soil all we need, and there is plenty there. How do we know it? Because we have tried it. I never eat anything that has more protein in it than the potato or than rice. I do not find any necessity for the use of nut foods. We have them on our bill of fare,--protose, nuttolene, and all those things, but I do not recommend them to anybody because they are really unnecessary; they are only provided because of the hardness of your hearts, so to speak. It is to help people to get off the beef-steak appetite and to get into something natural. We do not need them. I sometimes order them at the table, as possibly some of you may have seen me do, but it is only to see whether they are being cooked or served in a wholesome way. Foods that are served here upon our table are not the concoctions of the cook. Our bill of fare is not made out by the cook at all. It is made out by persons who have been scientifically educated and know exactly what is wanted, who have been trained; I trained them myself, and I can rely upon them to do exactly what they are asked to do. Every article has been subjected to most careful scrutiny and most careful tests in our diet laboratory, and finally goes up to the kitchen, and the cooks are trained to compound the foods just with the same care that the pharmacist prepares medicines; so it is important to give attention to this matter, and I am going to tell you now a little about the scientific facts
that have been elicited by the researches of Pavlov and other learned men that
have a distinct bearing upon practical dietetics.

Twenty-five years ago we didn't know anything about dietetics. I didn't know anything that scared me so much as to see a real, chronic dyspeptic come into my office and sit down in a chair and look at me, and say, "Doctor, what shall I eat?" The only thing I could tell him was to eat something and if that didn't agree with him to eat something else, if he survived, and we went on experimenting upon him; so every diet prescription was an experiment upon the man, so to speak. When we began to study the gastric juice, to give test meals, I think we were among the first to do it, in the United States at any rate the very first to do it in a systematic way,—we began to find that we had been making awful blunders. Not very long ago a gentleman met us here, came to see us, who had been under the care of a great doctor somewhere, and he told him he hadn't enough gastric juice, and he had been giving him hydrochloric acid. I didn't smile when he told me about that, because I used to do the same thing myself. The first patient whose stomach I ever examined by means of the test meal, I found the lady had twice as much hydrochloric acid in her stomach as she ought to have, twice as much acid in her gastric juice as she ought to have, and I had been giving that woman double doses of hydrochloric acid every day for six weeks. It had not been accumulating during all that time, of course. She had been suffering all the while from an excess of hydrochloric acid. She had sour stomach. I thought her stomach was sour because she didn't have enough gastric juice to digest her food, and her food fermented, made acid, and that was the reason why it was sour. But now through Pavlov's experiments we have discovered that it is very rare indeed that anybody ever has sour stomach, because the food has soured in the stomach. It is only those whose stomachs are closed, who have obstructed stomachs so that food remains too long a time in the stomach, those who have dilated or prolapsed stomachs are the ones that suffer in that way.
Now, I want to tell you something about Pawlow's interesting experiments. This represents the stomach of a dog, a little different in shape from the human stomach, although it looks really very much like it. This line, you see, running across the stomach here represents an incision which is made through both walls of the stomach. The stomach, you know, is a pouch, and the portion that is cut off in this way is turned down, and the edges are brought together right along the edge here, and the mucous membrane is sewed up by itself so that there are really two stomachs. A partition is made through the stomach; the stomach is divided into a large part and a smaller part which is known as the "kleinemagen" or Pawlow's pouch. The opening in this stomach, the mouth of it, as you see here, is attached to the skin, and the physiologist uses this for his experimental purpose, while the dog uses this for nutrition purposes. The dog gets along and is just as healthy as any other dog; it does not seem to mind this little change in its anatomy at all, and the investigator has an opportunity to see what is going on all the time in this stomach by observing what is taking place in the little stomach.

The dog is given meat, for example, and as soon as the dog begins to chew, the gastric juice begins to flow; within four or five minutes the gastric juice begins to trickle down out of this little stomach; then if the dog is given bread, the same thing occurs; if the dog is given milk, the same thing happens. Any food that enters the stomach will cause this trickling down of gastric juice from the little stomach with the exception of fats. Now, if fats are put into the stomach, the stomach produces no gastric juice at all. Now, see what a practical lesson we have from that. Some of you found out long ago that doughnuts, and rich pastry, and griddle cakes, and very rich cake, and rich gravies and that sort of thing did not agree with you. Things that contain a large amount of fat, a great deal of rich cream—many of you have discovered from your own experience that they did not agree with you; that you became bilious when
you took those fat things. Now, you see the reason for it. When these fat things are taken into the stomach, the stomach will not produce gastric juice, for gastric juice is not needed for fats, and fats somehow discourage the production of gastric juice in the stomach; so the food lies there and does not digest, and begins to ferment and decay; there is no gastric juice to disinfect the food. That is one of the important functions of the gastric juice—i.e. to disinfect the food and destroy germs and prevent them from growing; and this not taking place, decomposition and putrefaction begin which continue all the way along the intestine; so a bilious attack, so-called, is simply an attack of acute intestinal autointoxication.

Well, Pawlow has made a great many discoveries here. One, for instance, was drinking water. A pint of water taken into the stomach will cause a profuse flow of gastric juice. Some of you remember that when you drink a good deal of ice water at meals you have a very sour stomach afterwards, because that large quantity of ice water causes a great outflow of gastric juice. We used to suppose that ice water stopped the flow of gastric juice, but we find by actual experiment that it actually causes a great outflow of gastric juice. It stops digestion, and stops the gastric juice from entering into the process of digestion so that it remains free and becomes very acid, intensely acid; the contents of the stomach become very intensely acid so the drinking of water in large quantities is a thing that will cause acidity of the stomach. It does not cause the food to ferment, but it causes an excessive development of the gastric juice. So people suffering from acid stomach, sour stomach, it is very evident that they should take food dry. We know now why it is that dry food will relieve sour stomach. One of the first things I did when I began to prescribe food for patients, thirty-five or thirty-six years ago was to make them take dry food and chew it well, because I found that cured more troubles than any other one
thing, and this is the reason why it cured sour stomach—because it prevented this made
great outflow of gastric juice. Pawlow maxim another interesting observation I ought to mention right here, and that is what when one single grain of carbonate of soda was added to a pint of water, then the stomach produced no gastric juice at all. Now remember one point—that plain water will cause gastric juice to flow in abundance, but one single grain of soda added to a pint of water prevents any outflow of gastric juice at all. You say, "But I don't eat soda", but you eat baking powders. Now about those soda biscuit, baking powder biscuit, griddle cakes, and all sorts of breadstuffs upon the table made up with baking powders! Every one of them contains soda, bicarbonate of soda, and every one of them is an inhibitor, a preventive, if you please, of the outflow of gastric juice; every one of them is opposing good digestion.

Now, if your stomach makes too much acid we might neutralize it chemically for the time being, by means of soda. But the average man needs all the gastric juice he has; the average man needs all the gastric juice he can make; and when the stomach is discouraged in this way by the introduction of soda, saleratus, which is carbonate of potash or soda, which is bicarbonate of soda, or baking powder, taking alkali in any of these forms, or mineral waters, for that matter—a good many people don't know any better than to take mineral waters right along with their meals. Almost all the mineral waters—I am speaking now of mineral waters, not of such waters as Poland water, for example, which is simply plain water, and Waukechun water which is also simply plain water; there are no minerals in those waters; they are simply slightly hard. But taking mineral waters which contain soda after meals simply makes digestion impossible or greatly disturb it. So we ought to stop the use of these mineral waters, soda and baking powders. One of the most harmful things I know of that is going on in dietetics at the present day is drinking large quantities of alkaline mineral waters, and the almost universal use of baking powder. Baking powder
is a very handy thing; it saves time and it saves trouble. It is just a slovenly way of preparing food which could be a great deal better prepared with a little more painstaking effort. If these ladies will go down to the cooking school before you go home, you can be instructed how to make the most delicious breads with water and a little salt, as light as the lightest baking powder bread you ever made in your life. I might mention to you here that the cake that is sometimes served on the table contains no baking powder. Isn't it light enough? There is no baking powder in it, never a particle of baking powder goes upon our table. The breads I am sure you will say are light and wholesome enough, and none of them contain baking powder. It is absolutely unnecessary to employ it. It is simply a slovenly style of cooking. So let us get along without baking powders if we can. I said something of this sort down in Austin, Texas, last fall when I gave an address down there, and the next morning I had a visit from the State agent of a famous very popular baking powder, and he begged me to put something in the paper to the effect that his baking powder was all right, but the other baking powders were bad. But I didn't find any basis on which we could compromise.

Now another interesting thing that Pawlow observed was that all the different kinds of food produce different kinds of gastric juice. He found, for instance, that when meat was taken into the stomach, the gastric juice that was poured out was an extremely acid gastric juice, a very, very acid gastric juice, so strong, so acid that if you touched a drop of it to your tongue it had the flavor of hydrochloric acid, of a very strong solution of spirits of seasalt, or muriatic acid—another common name for it. On the other hand, when bread was put into the stomach and in process of digestion, the gastric juice that flowed out of the little stomach was very slightly acid, but had great digestive power. That was a very interesting observation, wasn't it? When milk
was put into the stomach, then the flow of gastric juice was lessened just in proportion to the amount of fat present. The more fat the less gastric juice.

Now, these are great foundation principles on which we can build a great number of dietetic rules. I thought after I had been talking so much about the abuse of this dog, you would like to see the dogs. Here are some of them. They are as happy and healthy as any dogs you ever saw. They are always glad to see the master, and wag their tails and smile when they see him come in.

Another interesting thing Pavlov observed was the influence of mastication upon digestion. This is a picture of one of the Papillae of the tongue. You have to put your tongue far out and open your mouth very wide to be able to see them. This represents a cross section of one of these papillae, but see how wonderfully it is made. Each one of the little bundles of muscles in the tongue ends in a little round point in the surface. These are not the papillae, but this whole mass represents one papilla. This represents half of one. It has been cut in two so we can see how it looks in sections. Around one of these papillae is a deep trough, and we find when the food is chewed, when liquids are taken into the mouth, some liquified portion of the food drops down into this little pocket here around the papillae; and here you see are little taste buds, that come right out to the very surface and so come in contact with the food-stuff and recognize its quality. They are there for the purpose of inspecting it, and the food is inspected, and the report of what kind of food it is comes along into these telegraphic wires into the brain, and the brain is notified what kind of food is coming,—whether it is bread, whether it is beef or something else. And a report is sent to the brain that food is coming, and a notice is sent from the brain down into the stomach that food is coming, get ready to digest it. So while the food is still in the mouth, the process of preparation for digestion begins in the stomach, gastric juice pours out into the stomach.
in abundance. The amount of gastric juice produced in this way is about half the total amount that is produced; and this gastric juice that is produced at the beginning of the meal in this way while the food is still in the mouth being chewed, is the most important element of the gastric juice. Dr. Haenecke, Prof. Pavlov's assistant, told me that the appetite juice, as this juice is called, is the most important of all.

Now, in order that the gastric juice should be poured into out into this part of the stomach, while the food is being chewed, the food must be relished. If you chew food you do not like, there is no gastric juice. There must be appetite for the food. Mere mechanical moving of something in the mouth won't cause the gastric juice to flow; but if there is a relish for the food, then the gastric juice flows out in abundance. Now, the esophagus which conveys food from the mouth down to the stomach here was cut in the neck in some dogs, so the food came down and dropped out, did not pass through the stomach at all; and it is found that these dogs, when they chewed the food, the food drops out continually so none of it entered the stomach, but the stomach poured out an abundance of gastric juice. It was noticed that when the dog simply saw the food or smelled it the same effect was produced. In fact, in case of one very intelligent dog, whenever he saw the man come into the room who usually fed him, immediately the gastric juice began to flow in great abundance, because the sight of the man meant dinner to him; so the gastric juice began to flow.

Now, here is a very interesting fact in relation to this, and that is that if the dog is made angry, if it is irritated in any way, the gastric juice will not flow. There will be no flow of gastric juice at all; and that agrees entirely with Prof. Cannon's experiments,—Professor of physiology at Harvard University. He arranged a cat underneath the X ray so that he could see the cat's intestine and the cat's stomach. He gave the cat some bread and milk that had some bismuth in it, so that the food in the stomach was visible by the
X ray. Then he watched it. Pretty soon the stomach began to work, contracting upon the food, manipulating it, working it; the intestine began to contract, and the food was being passed literally down into the intestine; everything was going on finely, and the cat was purring beautifully; everything was sweet and lovely so long as the cat was purring. He pinched the cat's tail. The cat shrieked with pain, and at once the whole digestive process stopped, stopped instantly. The stomach did not move for half an hour. The food just lay there. So you see how important it is that conversation at the dinner table should be of a pleasant and agreeable character; that you should not get into a political discussion or arouse any sort of animosity, or any unpleasant or depressing emotions to be excited at the dinner table.

I remember a great mistake I made a good many years ago when we used to have mail distributed at the breakfast table. A lady sat down at the table and had been eating for fifteen minutes, was chatting pleasantly, talking, having a good time; everything was going along all right, when a letter was handed to her, she opened it, and it said, "Your baby is sick with diphtheria; come home quick." She arose from the table, rushed out the door, and she had barely reached the door when the stomach emptied itself entirely. The whole process was instantly reversed by the bad news from home.

Pulling the cat's tail made it angry, and when the cat got angry, digestion stopped. No one can digest a dinner when he is angry; no one can digest food when he is in a state of great depression of mind. A great deal of digestive disorders, in fact, come from that very thing. People do not divest their minds of unpleasant emotions, unpleasant ideas, and of unpleasant impressions, they do not get rid of those things when they sit down at the table; they do not leave all their cares and sorrow behind, but just plunge into nutrition, so to speak. Make up your minds you are going to digest that dinner no matter what happens; that you are going to have a good time at the dinner table.
table. Some time ago we had a man come here who was very melancholy, and he advocated everybody should sit down at the table with a very solemn face. "Why," he said, "you know it is a very solemn thing to eat; our bodies are made of what we eat; it is a truly solemn thing to eat." He didn't want anybody to smile, to crack a joke, or say anything pleasant at the table because it might divert him from the all absorbing topic of digestion. We had such a man I remember very well who had this obsession of indigestion so bad that he used to come around to see me after meals. He would come around half an hour after meals and say, "Doctor, my stomach is just as heavy, my dinner lies right there in my stomach like a stone; I can not endure it; can't you give me something to move my breakfast?" Well, he would come around again an hour afterwards, and we would find the digestion had gone on a little bit, the breakfast had moved a few inches, and after a few hours he would find it on the other side. He never let that breakfast get out of his sight a second. He followed it all around through the curvatures of the small intestine, and the poor stomach was in a state of stage fright all the time; it could not stand so much publicity. I sent him home. I could not spend all my time with him, and made up my mind it was a hopeless case, and sent him off. I really didn't believe he wanted to be cured very much. He devoted his whole time to following his breakfast and dinner around.

The reverse of that is the right thing. Paul gave a very good rule,— "Eat what is set before you, asking no questions for conscience' sake", and we might add, for stomach's sake. It is really better to sit down at the table and eat everything put before you, chew it well, eat it happily, optimistically, actually better than to sit down at the table and eat the very best of food heartily and hastily and with no apprehension,—a great deal better. However, the best way of all is to eat good food, and to eat it properly, under the best conditions.
Now, please notice the position of the different organs here. Here is
the liver, here is the stomach, and these lie above the lower border of the ribs.
If you find your liver wandering away off down here somewhere, it is because it
has been turned outdoors, so to speak, crowded out of its proper place. A lady
told me a while ago that she had pain in her side, in her stomach, and put her
hand away down there; and I actually found the stomach was there. The colon,
you see, lies almost straight across on a level with the lower ribs, the very
lowest ribs. The colon is not always there. Very often, in doing surgical
operations, I have found the center of the colon away down here, and its corners
dragged all out of place, and some portions drawn up, contracted, and some por-
tions dilated. The other day I found this part of the colon, the sigmoid, away
over there, enormously enlarged, and this part of the colon was contracted
through the whole length of the descending colon here. It was no wonder that
patient had autointoxication, because here was a large amount of putrefying
material stored up in this pouch which Dr. Lane, of London, calls the human
cesspool; and over here was an obstruction due to a contraction of the colon.

Now, Pavlov found some other things. He made a very interesting
experiment. This is the liver. The liver is perhaps the most wonderful organ
in the body except the brain. I don't know of any organ that does so many dif-
ferent things as the liver does. In the first place, it is a sort of rendering
establishment. I told you a little while ago that eight million blood cells
are dying every second of our lives. What becomes of them? The liver is a
graveyard of the red blood cells. It is a sort of rendering establishment.
Now, you know downin Chicago they have a place where they render all the dead
animals. Carts go around and gather up the dead cats, and the dead horses, cows,
oxen, pigs, etc., and carry them over to this rendering establishment, and
everything is utilized. The hides are made into leather and the hair into
plastering hair or something else; the hoofs into calves' foot jelly, and the
fat into oleomargarine butter. And over in London some time ago there was a man arrested for adulterating coffee, and on examination it was found that this coffee was adulterated with roasted horses' livers. So every bit is used in one way or another; and if it can not be used in any other way, then it is ground up into fertilizer.

Now, that is exactly what the liver does; it is a great economizer; it grinds up, so to speak, all the residues, the dead red cells are brought over here to the liver and are worked over. The coloring matter of the red cells is made into pigment and is used to paint the dark chamber of the eye, to keep that painted good and black, so we will get good, bright, sharp pictures, and to tint the iris and the hair; and the potash, for the red cells contain a great deal of potash—this potash is made into bile, comes out in the bile and forms a kind of lye which mixes with the fat of the food and makes soft soap out of it. It is for all the world like the soft soap our mothers use to make with the lye which came from the old leach barrel out behind the barn and mixed up with the soap grease—the same sort of process. All the potash of the red cells come out in the bile and combines with the fat of the food and makes soft soap, and this soap is soluble and will mix with water. That is the way fats are absorbed. They could not be absorbed if it were not for the fact that they are converted into a soluble soap by the action of the bile and other things. That is one thing it does.

Another thing the liver does is to remove certain poisons from the blood. The alkaline wastes of the body are removed by the liver; the acid wastes are removed through the kidneys. The alkaline wastes and the potash, the soda, and those alkalis and others are carried off through the bile.

Now, another thing which the liver does, which is a very interesting thing—it fights bacteria. There are being absorbed into the blood, as is known now, from discoveries that have been made in the last ten years, great
numbers of bacteria, millions of them are being absorbed from the intestine into the blood, and carried by this vein here, the portal vein, and distributed through the liver; the liver kills them off, takes them out and pours them out into the bile, and they get into the gall-bladder sometimes in such quantities that the gall-bladder has to defend itself; so it throws out a resinous matter to surround these bacteria and capture them, to make a fence, a wall around them, and that is the way people get gallstones. I figured up the other day and found that the crop of gallstones which America produces every year must be something like 300 or 400 bushels. Every tenth person has gallstones. I suppose probably we have got a peck of gallstones here in this room—perhaps not quite so many as that. Every tenth person that has attained adult age has gallstones. They don't very often make any trouble. Other animals besides human beings have gallstones, and they don't make very much trouble. It is only when the infection becomes very intense and inflammation is set up that there is trouble with gallstones, or when the gallstones happen to be of such size that they drop down into this little pocket and form obstruction, and then they make trouble. Or when they get further down into this duct here, they may shut the bile off entirely, so it can not flow out into the intestine, and then there is trouble.

Now, the liver has another very important function, and that is to gather up poisons and store them up in itself. For instance, suppose your house is supplied with water which passes through lead pipes. You are continually exposed to danger from that lead. The first week you lived in that sort of house you probably would get paralyzed with lead paralysis, or have some other serious trouble, if it were not for the fact that the liver defends you. All the water you drink passes through this portal vein, and has to be strained through the liver before it goes into the rest of the body. Now, the liver recognizes that lead as it passes through, and seizes upon it, stores it up in
itself; it sacrifices itself; it is the most self-sacrificing organ in the whole body, and yet there is not any other organ in the body that is so much abused. A man told me the other day that if I would just remove his old liver and put in a brass one, he knew he would be all right. He was complaining terribly about his old liver, and he wanted something done to punish it for its sins. The liver was not to blame. It is the most self-sacrificing organ in the body.

Suppose you take calomel every little while, or some blue pill, or blue mass, or calomel in some other form. The very same thing happens. That blue pill or blue mass passing down into the intestines, some of it is absorbed, and that portion that is passed down through the liver, the liver lays hold of it and stores it up in itself. If it did not, it would get into the blood, get around to the salivary glands, and you would be insalivated with mercury; your gums would become xxx sore and other troubles would occur. But the liver saves you from that by storing up calomel. Perhaps you are saying to yourself, "My blood is poor; I must have some iron." So you take some of Brown's iron bitters maybe. You see it advertised so you help yourself. Now, you go on taking iron day after day and week after week, and a certain amount of it is absorbed and stored up in your liver, and you may have a large collection of metals there. I have found people carrying around in their livers quite an assortment of common metals. If a person is poisoned with arsenic and the chemist makes an examination, he does not examine the stomach, but he examines the liver; and Dr. Doremus, the famous New York chemist—I believe his son is in the audience with us this evening—I heard him say when I was a medical student and he was my teacher, that xxxxx he knew the case of a man who had been dead for twenty years, and there was suspicion that there might have been foul play of some sort, and suspicion fell upon a man, and this man was arrested, and on his trial, that body that had been buried for twenty years was exhumed, and
that portion of it where his liver had been located was examined, and arsenic
was found present; and the man was convicted of murder after twenty years, by
the chemist's investigation; so you see how real a thing it is that the liver
stores up these mineral substances; and it does this to defend the body.

Now the liver does another thing. I might mention right here that when
a man takes alcohol, the liver does the same thing—it soaks up the alcohol like
a sponge, and holds it. When a man eats dinner and the starch he eats is convert-
ed into sugar, that sugar into which the starch is converted is all gathered up
imix by the liver and stored up in the liver. Starch is insoluble, but it is
converted into sugar, which makes it soluble. It has been absorbed and circu-
lated in the portal vein and carried to the liver, and in the liver it is con-
verted into a sort of animal starch called glycogen which is stored up in the
cells of the liver, and then is converted into sugar again little by little, by
a sort of sucking arrangement by which the sugar is fed into the body moment by
moment during the twenty-four hours, so the body is supplied with fuel.

Another interesting thing the liver does, and that is it destroys
poisons. It not only stores up poisons, but actually destroys poisons. And what
an interesting thing that is, that the liver has power to destroy poisons. If it
were not for this fact, my friends, I do not suppose there would be a single one
of us alive. We would have been poisoned long, long ago. When a man gets
an attack of typhoid fever and the bacillus has gotten into his intestine and is
growing there, and gotten into his mesenteric glands and is growing there,
and is producing typho-toxin, a deadly poison which kills in small amount,—
if it was not for the fact that that typho-toxin is all filtered through the
liver before it can get into the rest of the body, so the liver destroys the
typho-toxin, the greater part of it, it would kill the patient in very short
order. The very same thing is true in tuberculosis. The reason a man can live
so long with tuberculosis is because the liver destroys the tuberculan—the poison produced by the germ of tuberculosis; but the liver is being worn out all the time. Every man who dies of consumption, almost every one has a diseased liver. Ninety-six per cent, according to the report of the Phipps Institute, Philadelphia,—96% of all the people who die of tuberculosis have livers which are badly diseased, and 86% of them have diseased kidneys; and they really die because the liver fails and because the kidneys fail. They do not die because they have not got lung capacity to keep them alive. Many consumptives do when one lung still is entirely healthy; but the liver and the kidneys get worn-out eliminating the poison produced by the germs; and that is why they die.

So you see what an important function the liver performs—how many important functions in the economy of life. Now, there are other poisons. Typhoid fever and tuberculosis are not the only sources of poison. There are other sources. All infectious diseases are produced by germs which produce poisons which cause the symptoms of disease. But there is still another class of poisons that are now well understood and have been studied within the last few years very extensively,—poisons which are produced within the body all the time, poisons which are produced in the intestine and in the colon. Since the observations and experiments of Metchnikoff, these poisons are known to be the real cause, the principal cause of old age. Everybody will become old by and by, sometime. I got a letter today from a man in Indianapolis who gave me an account of a negro woman who died down there recently who was born in 1793—is 118 years old, and I believe she is still living. Now, she will finally die. The oldest inhabitant, the person who has the greatest vitality and the greatest vigor by and by reaches the end of his career. That was true even of the patriarchs who lived according to the Bible to be nearly a thousand years old—they finally died. There is a limit to the life of every animal. Why? Because these germs, growing in the intestine, are producing poisons and these poisons are keeping up the destructive process in the body. That is one of the functions
of the liver. Now, very clear proof of this poison-destroying function of the liver is afforded by an illustration, by an experiment which is made in laboratories and which I saw made in Pawlow's laboratory four years ago this spring when I was there. This represents the liver. Now this is the large vein that carries the blood back and passes the blood up through the abdomen and chest. The portal blood which is gathered up from the stomach and intestines is carried up through this portal vein and is filtered through the liver before it can come in contact with the rest of the blood of the body, before it can be distributed about. Now these experiments consist in joining this portal vein on to the ascending vena cava below the liver, so that the blood passes into the ascending vena cava and does not pass through the liver at all; and all this blood that comes from the stomach and intestines is passed from the portal vein directly into the ascending vena cava; it dogges by the liver and goes straight on into the circulation. Now, a dog that has had this operation performed is sick for a day or two, but he gets well and begins to eat. Everything goes along all right; the dog is just as happy as any other dog provided its diet is right. Now, a dog that has been put in this condition, whose liver has been sidetracked in this way, gets along just as well as any other dog so long as it lives on a diet of bread and milk; but when that dog is fed meat, in three days it is a dead dog. No dog has been known to live more than three days on a meat diet after having had that operation performed. Why? Because he is poisoned to death. There is a poison in meat which kills the dog when he does not have his liver to help him out. If you or I had typhoid fever, it would kill us off quick if we did not have the liver to help us out. When we eat beefsteak we are just as much dependent upon the liver to save our lives, for in a pound of beefsteak there is enough poison to kill a man—I won't say in one pound, but in three day's rations of beefsteak there is enough poison to kill a man if he did not have his liver to
destroy these poisons and thus save him from death. Now, this is a demonstration of it.

Pawlow made some other discoveries in relation to the secretions. He found that the pancreas is controlled by these psychic centers as well as the stomach; so while the food is being chewed in the mouth, the pancreas is getting ready. Now, you sometimes smell dinner cooking, and it smells so good—something you are very fond of, you say the smell of it makes your mouth water. Sometimes the sight of things will make the mouth water. Now, when the mouth waters, according to Pawlow's observation, the stomach waters, and the pancreas water, and all the digestive glands are watering at the same time. So you see how important it is that the food should be inviting to the eye, that it should be savory and pleasant to the smell; that it should have properties which will stimulated the gustatory sense, should be likeable, agreeable and palatable. I presume that more expense has been expended in connection with this institution in studying foods, how to make foods palatable while still simple and wholesome and natural than in any other way, experimentally at least. We have had experiments going on for years and years, going all the time, and a number of people experimenting all the while, to develop some new flavor, or some new process by which the natural qualities of the food may be developed.

Now, in connection with the facts I have been giving you, I want you to just glance a moment at this table of meat foods. So many people think we can not possibly get along without meat, must have meat. We are not much in favor of it here, but some of you I fear are saying to yourselves, "When I get home, I am going to have a roast chicken; when I get home I am going to have a sparerib; I am going to have some sausage or something of that kind", and I want to do my best to get you so disgusted, so thoroughly disgusted with all that sort of unwholesome and unnatural diet that you won't be
able to tolerate it when you get home. I wrote an article some time ago that was circulated in my journal, Good Health, and a lady in Win a little town in Dakota where there was one butcher shop got so interested in it she went to every house in town and read that article, and the result was the butcher shop was closed. The meat shop was shut up and the man went into some other business. I felt very proud of shutting up one butcher shop. Now, I am hoping to make converts of most of you, at any rate, so that when you go home you won't go back to the old flesh pots, not because I have any fad to support, not because but I have any theory to support; and I want you to be a follower of me because I want you to save your lives and keep you alive as long as I can. You are here to be saved, and you are getting better. A gentleman said to me today, "It is simply wonderful how much I have improved in a few days." People whose cases look yellow and hopeless come here and in a week or two their complexions are changed entirely. I remember very well a brown skinned woman who came here some years ago. She stopped in Chicago and had one of the great doctors there examine her, and he said she was suffering from poisoning; he thought arsenical poisoning, because the doctor she had been under before had been giving her some arsenic. But it wasn't arsenical poisoning at all; it was colon poisoning. The woman had very poor blood and they gave her a meat diet. She was anemic and must be fed meat; so she ate a great deal of meat which rotted in her colon, and the poisons were absorbed into her body, and she was simply stained with Brunz catechin. In six weeks she was cleared out, the poisons had all disappeared, and she went home three weeks later with plump, rosy cheeks, and happy and well.

If she had gone back to the old diet again she would have gone back to the old condition again, because that was the real cause of her trouble.

Now, note: beef juice; an ounce of it has seven and a half calories. Here is beef tea, bouillon,—three calories—just think of it. Now, one ounce of wheat flour has 100 calories in it. An ounce of butter has 264 calories. An ounce of beef tea has three calories, and besides that it has a whole lot of
poisons. The soluble part of that flesh is poison. The natives of South America dip their arrows in the bodies of dead animals to make them so poisonous that when they penetrate the flesh of another animal, the animal is killed by it.

The butcher sometimes in cutting off a steak for you, his knife slips, he cuts himself as well as the meat that he is dividing. What is the consequence? Pretty soon that hand begins to swell up, pretty soon the arm glands begin to swell, the arm begins to swell, and in the course of three or four days there is a funeral. The butcher is killed by the infection that is in the meat he is sending home to you for breakfast. A certain doctor was very much annoyed some time ago. He telephoned down to his butcher and said, "If you get any beef that contains tapeworm—you know we get all the tapeworms from beef. About nine out of ten of all tapeworms come from beef, and he said to the butcher, "If you get any beefsteak with tapeworm in it, I wish you would send it up to me; I want it."

He waited a couple of weeks and didn't get it. He telephoned again to the butcher and said, "Why don't you send that beef with the tapeworm in it?" The butcher said, "Why I sent it up last week." "Heavens", said the Doctor, "then we ate it. Why didn't you tell me?" It had come up and had been eaten without his being notified for some reason.

That reminds me of an experience I had myself. Some years ago I was spending some time at Wilmington, Delaware, and they have a market there twice a week. This was some thirty-five or thirty-six years ago, and I was making a study of cheese with my microscope. I was studying other things, and I wanted some cheese to study, so I called at the cheese market for some cheese. I wanted to get some cheese that had skippers in it, you know, the sort that Charles Lamb referred to when he bought some cheese at the cheesemongers' to take home for his sister one dark, stormy night, and the cheesemonger said, "Mr. Lamb, shall I send it home?" and she said, "No, lend me a string, and I will lead it
home." It was that sort of cheese I wanted. I didn't dare ask straight out for what I wanted, for fear the merchant would say he didn't keep such cheese; but I hinted that I would like a very old cheese, and he showed me a cheese so old it was falling into ruins very fast, and I asked him if he thought it had any skippers in it. He said, "Oh, you want some cheese with skippers in it, do you? My father is very fond of that kind of cheese. I am sure this has got skippers." I took it home, examined it very, very carefully and could not find a skipper in it; they had all escaped. The cheese got so bad they could not stand it, you see, and had left it. It was fossil cheese.

Well, now, these unwholesome things we think are so very nice—it is simply our old prejudices that we have been educated into that makes it possible for us to tolerate these things. Now look at this list. There isn't anything here that is really worth while. Here is brook trout, only fifteen calories—just think of that—fifteen calories in an ounce of brook trout; and there are more calories than that in an ounce of apple-juice. Milk has twenty-one calories to the ounce, and brook trout has only fifteen. So a glass of milk is worth trout more than half a pound of fixixx; you see. It is worth pretty nearly as much as three quarters of a pound of fixixx trout. Look at this, lobster here, only nine calories to the ounce, and all that nightmare besides. Some of you have had some experience with it. The oyster has eleven calories to the ounce,—only half as much as milk. Grape-juice has twenty-four calories to the ounce, and the oyster only eleven. So many people think they can not get along without oysters. Now, there is an oyster; how do you like the looks of him? Here is his liver; there are his kidneys; that is the brown end that some people think is so very, very nice. There is the intestine. The oyster has a fine intestine. There is the stomach and here is the intestine. Don't you remember what a nice, tasty bit that intestine is? The last time you swallowed an oyster, did you stop to think of his anatomy? Now, there is the brown end; that is the
kidneys, and isn't that good? Here is this little double part that is intestine, and my what a fine flavor it has! Here are the germs the oyster has been eating all the time. That is what the oyster lives on. If you would examine under the microscope a drop of oysterjuice you would find it like a silver mine in Colorado,—it has millions in it,—millions in it, millions of these germs; they are simply swarming full of germs, so many you can not count them, and just rushing about in the most astonishing way.

Now, Prof. Metchnikoff has shown that these germs that we swallow in oysters and in meat, are the germs that produce putrefaction of the intestine and produce old age. And here they are. Now, here are the germs that get possession of us when we live on an unwholesome diet. Here are the healthy germs that Prof. Tissier has found take possession of the intestine of the baby when it is six hours old in summer time, or twenty hours old in winter—not quite so rapidly in winter as in summer,—take possession of the intestine and protect the baby so long as it lives on a perfectly natural diet, against those putrefactive germs. There are just a few of them here. These slides represent the condition of the alimentary canal of a young infant. The first specimen shows what we found when the baby was first taken under care. In five days on the antitoxic diet that baby's flora was changed to what you see there.

Now, just look at the nutritive values of some of these various things. Here are the cereals. They run pretty nearly up to 100 you see. Then when we come to mutton, for instance, it is 28%. Here is fish, 22%; here is the banana, 25.8%—more nourishment in the banana than there is in fish, than there is in salmon, and just about the same as there is in eggs. A pound of eggs and a pound of bananas have practically the same nutritive value, you see. Here are the grape and the apple which have a nutritive value comparatively low, but
they have a nutritive value apparently low because they contain such a large amount of water. The cherry 16.8%, just think of it. Here is a pound of cherries that have almost as high a nutritive value, three quarters of the nutritive value of fish. Yet so many people think they must have meat, must have meat to be properly nourished. But when you compare the best of these meats with the cereals, you find they are very inferior in nutritive value.

So many people suffer from indigestion as the result of stomachs and bowels that are thoroughly crippled, that we have to give assistance; and these various manual Swedish movements are for that purpose. The mechanical Swedish movements are to help digestion. Your stomach has lost the power to empty itself rapidly as it should. The kneading of the abdomen helps the stomach to empty itself. The nerve centers become tired and weary so that they are not able to do their work properly in stimulating the stomach. The vibrating chair helps about that. The application of this vibration to the stomach is a very excellent means of stimulating the digestive process, the flow of juices, and the contraction of the muscles; and these manual movements are particularly helpful in contracting the abdominal muscles and stimulating the flow of blood, the circulation through the intestines. Here are some other movements that have the same effect; these respiratory movements particularly accelerate the flow of blood through the stomach and intestines, so help very much the digestive process. A good many of you are taking these movements. I am throwing them on the screen here so you can see there are many things that can be done. We want you to get all the benefit you can while here. These vibrating bars, shaking machines, and kneading machines every one has its purpose, and are wonderfully effective in helping. None of them are sure cures taken alone by themselves, but they are very valuable helps towards recovery. Don't you wish you were all as healthful as that baby? And you could have been if you had all lived in accordance with the laws of health. Aspire to be as healthful as that baby if you can, by following the laws of Nature which are the laws of God. I thank you for your attention.

v-3-19-11.
Question: What is the best treatment for prolapsed stomach and intestines?

Answer: That is almost a universal disease among civilized people, because of their wrong habits of sitting and wrong habits of dress, and sedentary life. Those three things I think are responsible, one might almost say, for the chronic disequilibrium, as the French call it, of the civilized human being. The stomach belongs two inches above the umbilicus, yet we find it in all sorts of places. Suppose this to represent in a crude way the trunk; here is the umbilicus, and here is where the stomach ought to be; the border of the stomach ought to come along about there; but instead of that we find not infrequently the stomach going away off down here like that—a very common thing. Sometimes we find the stomach as low as this point. Food comes down into this box and stays there instead of passing on readily as it ought to. Now the reason why the stomach and intestines get out of place is because the abdominal muscles, the duty of which is to hold them in place, get relaxed so that they do not perform their duty. Now, you know what would happen if you did not have any lock on your trunk, and the strap got off your trunk—you know what would happen to your trunk. The cover would get loose and everything would jostle about inside, and probably some things would jostle out. Now, the abdominal wall is the cover of the trunk of the body. When you pack a trunk to take a journey, you put everything away in its own little corner, and you pack things in snug and taut so there is no spare room in which things will shake and jostle about and get crushed. Now, Nature has packed our things in the human body or trunk.
in the same way,—the liver here in its corner under the ribs of the right, and the spleen in its corner under the ribs of the left side, and the stomach lies in front just beneath the liver; and the kidney is right in its place, and the colon has its place, and each little coil of intestine has its particular spot where it belongs; so the whole abdominal cavity is full; there isn't any loose space there at all; it is entirely filled up, and it is so full that there isn't any room for rent; for if there comes to be the least little gap anywhere in the abdominal wall, some portion of the intestine will be absolutely pushed out, and that forms a hernia. There is always a tendency of the organs inside of the abdomen to break loose; they seem to be all the time trying to get out, because if you make the slightest little weakening of the abdominal wall, there will pretty soon be a piece of intestine pushing in there. Some time ago I operated upon a lady who had a hernia upon that side; and when I got into the operation and opened up the sack here, I found her appendix, the vermiciform appendix, had actually gotten out of the body entirely, was out in this little sack outside of the body and formed a hernia on the right side. So, as I said, there is a disposition on the part of the viscera to get out, and the abdominal wall has for its duty to hold them in, to keep everything in its place and all snugly packed up together like the lid of a trunk. After you have got it all packed as solidly as can be, you strap it down and keep everything in its place so it can not move around. Now, that is the way it ought to be and the way it is in the trunk of a healthy body; but that is not true of the average civilized man. This is the situation. The average civilized man has relaxed abdominal muscles. The trunk of the average civilized woman has the abdominal organs, the abdominal wall here in such a relaxed and weak condition that it is like a flapping sail cloth—has almost no strengthen it; and the result is the lid of the trunk being all loose, things are jostling around inside. That is why things get out of
place. Now, about fifteen years ago I met a man who came here because he had a
pain in his side, and he had had an operation and it had not done any good—an
operation for appendicitis, and it didn't do him any good at all; he had the
same pain, and on examination of the case, I found the abdominal walls very
relaxed, very weak and feeble, and things fallen down; and I immediately applied
a little supporter to hold them up in position, and when he saw this supporter,
he said "Why, Doctor, what a fool I am. Just think of it. Why I have been going
around for three years with my hand in my pocket holding my stomach up, and I
never thought of having a supporter—why, Doctor, what a fool I am." Now, he
was a traveling man, and he had become so disabled that he could not carry his
valise, his bag of samples any longer, because he had such a pain in his side,
because he had to use his hands, as he said, in holding his stomach up. Now,
he put on a little supporter here, and that simply made a little pressure on the
abdominal walls, and he was able to run and hop, skip and jump, and walked
four miles the very first day, and he rode a bicycle fifteen miles the very
first day and had no trouble at all. Now that abdominal supporter did not cure
him at all. It simply applied pressure to the internal viscera which the abdominal
wall ought to apply. Now the important thing for us to know is how we get into
this miserable state of desuetude. And it is largely by our wrong habits of
sitting. You know sitting is a bad habit that civilization has put upon us. We
are not born attached to chairs. There are no chairs growing on trees. We
don't find chairs among the wild creatures. The savage reclines on a bank or
when he sits down he squats and sits down with his knees drawn up, and he
puts his chin on his knees. That is a far more healthful way to sit than
the way we ordinarily sit. Because when a man sits down and squats with his
knees drawn up, his thighs press against the abdominal walls, and so afford
support to the abdominal viscera and prevent them from dropping down. When a
person sits down in a chair in the ordinary way he relaxes. Now, when one sits up right, sits up straight, he is all right; he is not relaxed. His abdominal organs are held up in place, his chest is high, and the viscera are all held in place, and each organ remains in its proper corner; but when one sits down, relaxes, just comes down in that sort of way, then the abdominal muscles are relaxed. Now please notice. Here are two bands of muscles that run from the end of the sternum down to the pubic bone, and on this side there are muscles connected with the lower ribs running down attached to the pelvic bones, and these form the anterior wall of the trunk. When we relax see what happens. My chest drops a couple of inches when I relax in this way, and the consequence is these muscles are shortened that much, and when they are shortened that much they relax necessarily. There is a tone in the muscle; the muscula muscle is like a piece of rubber, and the tone of the muscle can take up a little slack, but it can not take it all up; so the abdominal wall becomes relaxed, and this relaxation of the abdominal muscles allows the viscera to hang down, to hang upon the membranes which support them. Now, the intestine, the stomach, and all these organs are attached to a sort of membranous fringes which holds them to the back bone. They are attached along the edge a very extensive membrane, and the intestine is all coiled along the edge of that fringe, and one side of the fringe is attached to the back bone. Now, the abdominal walls hold the parts in place; but when the abdominal muscles relax, then everything hangs on this soft, membranous band, you see, which is only intended to act as mooring ropes,—simply to retain them in position, but not intended to support their weight—just simply to act as a sort of guides to keep them from floating too far away. The abdominal walls are intended to
keep the viscera in position. But when we relax in sitting down, then everything drops down. Now, if we should lie down, it would make no difference; they would rest upon the backbone, the back of the body; but when we are standing up, then gravitation is pulling them down. Gravitation is like sin; it is all the time dragging us down; it is like sin, it is right after us every minute, never lets up one single minute. Gravitation is all the time trying to pull us down, to degrade us, to get us down into dust. Suppose you are upstairs in a house, and you step out of the second story window; you know what will happen to you. You will land in a heap, smashed and broken, down upon the street or pavement somewhere. Gravitation is always after us, and never lets up. Gravitation is after your liver, it is trying to get it down, trying to get your stomach down, and if you eat a large dinner or drink a large quantity of water, that gives gravitation an advantage; there is a larger mass for it to pull upon. We have got to fight gravitation if we expect to keep ourselves from going to pieces. We must fight gravitation. When we lie down, we do not have to fight, because gravitation does not operate then. If we lie down, lie upon the back, rest there, the organs rest just as the back rests,--just as a book rests upon a shelf; but when we get on our feet, it is like standing a shelf on end; things easily slide down unless we keep these abdominal muscles contracted to keep them from falling down out of place. This difficulty is peculiar to man, and it is not true of quadrupeds. If we should get down on all fours, we should be in a safe position, because the internal organs would rest upon the abdominal wall you see; but when we stand upon our feet, then the tendency is for things to fall down, because the standing position seems to be an abnormal position. It seems to be an unnatural position for a being constructed as man is unless he keeps his muscles strong enough and tense enough so as to keep the organs in proper position. Now, as I said before, the sitting position is not a
natural position. That is, sitting in a chair is not a natural attitude, and there are certain chairs that, like a great many other of the conditions of civilization under which we live—living in houses, for instance. The house is not a natural habitat for man; man naturally lives in the open, in the treetop, perhaps, or in the shade of a tree in the forest or some such place, but he never was intended to live in a house. A house is an artificial thing; and when we get into houses, there are dangers that belong to the house that we do not encounter outdoors, and the same thing is true of cities. Men never were intended to live in cities. When we live in the city there are certain accumulations of filth; every human being produces poisons, and the poisons are generated and accumulate around. The savage in the wilderness, when the place where he lives gets dirty, he moves on to a clean place; so he hasn't any trouble about sewage and all that sort of thing; but the civilized man forms a little group, a little circle, settled down and begins to pollute the earth, begins to pollute the air. As the circle grows and enlarges, the city gets bigger and bigger, the pollution becomes more intense, and he has to adopt the most ingenious devices to keep this filth from accumulating to such a degree that it becomes absolutely impossible to live; so it is not an extraordinary thing when I say to you that the chair is not natural; that sitting in a chair is not a natural attitude—that is not an extraordinary or unique fact; it is a very common thing. There are a great number of conditions of our civilized life that are abnormal and unnatural, artificial products, and we have got to put ourselves on guard against or else they will do us mischief; and this is one of the things we must guard against. So I am glad this question is asked, for I can tell you some things that are extremely important. Some of you have noticed that some of the chairs of the Sanitarium have a peculiar construction; have the backs made with a forward curve, and the seat has a strong inclination to the back, is pitched
a little more than is usual. Now this is not an accidental thing. It is a thing that has been purposely designed. These chairs are made purposely for the institution. Unfortunately not all the chairs you have are like this. Some of the chairs are not like this; they are passable to a certain degree, but I can hold this chair up as a model bad chair, as a chair one should never sit in. You see the back is hollow; it has a concave surface, so when you sit down the back naturally fits into this hollow. Now, if you observe my back, and now; it ought to be just like that; not exactly like it but on the same general plan. It is concave and the front of the body is convex. Now, that is the normal form of the body of the trunk; just as it is with a fine horse; so you see a fine horse has a hollow back and a convex abdomen. Suppose you saw a horse with a straight line from the root of his tail to the end of his nose; you would not want that sort of horse. But you see a great many people in just that same sort of attitude—straight back, straight lines from the back of the head right straight down the whole back, and the concave front. That means weakness; it means weakness in a horse; it means weakness in a man. It is hardly possible for one not accustomed to that sort of attitude to take it. But the proper attitude is the convex line in front and a concave line behind. When we have a concave front, that means relaxed abdominal muscles instead of stretched muscles as they should be; it means blood accumulating in the abdominal viscera, and everything heavy dragging down; so when one sits down, he ought to endeavor, if he is going to occupy the sitting position, he must keep the body erect, and the muscles taut. You see when we are standing forcibly, so the muscles are tense, everything is held up in place; and if we sit down and sit forcibly, then the same thing is true; everything is held in place; but when we stand in a relaxed attitude, as you see a great many people standing, a person stands on one foot, stands on the other foot, leans against
the wall, takes such an attitude as this, leans upon himself—when a person takes such an attitude he relaxes, and then the internal viscera are all at liberty to go down just as far as gravitation can pull them, and gravitation is right on hand to pull them down just as far as possible. You say one can not stand forcibly all the time; one gets tired standing that way. One can not sit bolt upright every minute; he gets tired of it. And that is perfectly true. That is why I say the sitting position is not natural. When one relaxes completely he ought to lie down; he ought to go into the horizontal plane; then he is safe; but if one remains in the perpendicular plane while he is relaxed, then things will go down; there is nothing to help it, nothing to prevent it. Gravitation pulls them down. However, there is a compromise that is comparatively safe, and that is to sit in such a position, in such a chair that the back is supported; sit with the hollow of the back supported so that the convex line of the front of the body is preserved, is maintained; because it is only when the chest collapses and the concave line of the back disappears—it is only then that the worst effects make their appearance. One may sit there provided he is supported in the proper position, because that prevents the shortening of the muscles of the trunk and the bulging of the lower abdomen, and so prevents prolapse of the viscera. It is such a common thing for people to maintain a wrong attitude; we see it almost everywhere. We see very often people going along the street, see a man walking along the street, and really he appears to be a sort of alderman; thinks he has got aldermanic proportions any way; you see him waddle along, and really think he is very fat. His coat is straight behind, and he really thinks he is accumulating enough flesh to become aldermanic after while. I met such a case some time ago. Maxxx I was at a medical society meeting and quite a large man, a doctor met me in the lobby of the hotel where we were stopping, between the sessions, and there were a lot of doctors about, and the doctor said,
"Well, Dr. Kellogg, how are you getting along down at your Sanitarium?" I said, "Oh, we are getting along very well indeed." "Can you do anything for obesity down there?" the Doctor said? "Oh, yes, oh, yes, we cure obesity." "Well, do you think you could cure my obesity, Doctor?" "Oh, yes," said I, "I can cure you in three minutes' time, less time; I think about a minute." "Oh, you mean by a surgical operation, cutting something off?" "Oh, no," I said, "I will agree to cure you in two minutes' time without touching you at all." He said, "That would be a miracle." So he immediately shouted to everybody in the lobby, "Look here; we are going to have a miracle. Dr. Kellogg is going to work a miracle; come around here and see it." So in about two minutes there was a ring formed in the lobby and 75 or 100 staggered around us to see the miracle performed. This doctor was going to be cured of enormous obesity in one minute or less time. So the Doctor stood up here with a pompous air,—"Now, Doctor, what are you going to do?" I said, "I am going to make you do it. In the first place, I want you to look up at the ceiling; I am not going to let you see how I do it." So he looked up at the ceiling. "Now bend over." So the Doctor bent over. "Keep looking up at the ceiling, keep looking up; look up, raise your head. Now raise your chest, raise it high; and now straighten up." There he was. All the trouble was he had been going around carrying his hips in front instead of behind. When he carried his hips behind where they belonged he actually had rooms to let. Well, now, it was really amusing. I saw at once when I saw the doctor standing there in such an aldermanic way, that the whole trouble was his hips were in front, because his coat was straight behind. That is a very common thing—to see people marching up and down the street thinking they are enormously fat, when they simply have got their hips out of place. The hips are in front instead of being behind where they belong.

Now, I have had a good many similar experiences. I am only telling you this little story so as to make it sufficiently graphic so you will remember, and
won't forget that the hips belong behind and the chest belongs in front. It is just as absurd to have people carrying their chests behind as you often see, as it is to carry the hips in front; but that is a very common attitude, you see, a very common attitude. You see a great number of people getting into that habit of sitting, because when they sit you see they sit in this position, and the back breaks down, becomes curved backward, and that throws the hips in front, you see; throws the chest behind. Now, correct sitting, keeping the chest in front all the time, carrying the chest up and the hips back, corrects the whole difficulty. So our chairs should be constructed in such a way as to support the small of the back. With the small of the back supported here, it is utterly impossible to get down, you see. Keep the small of the back up and you can not get the chest down; but the moment the chest comes down the small of the back goes back, you see, naturally does so, and the mischief is done. Now, that mischief with the rocking chair—it is not the rockers, rocking of the rocking chair that makes the trouble; it is not the swaying movement of rocking in the chair, that is not what makes the mischief; it is the hollow back of the rocking chair that makes the trouble. We must have a rocking chair constructed with a convex back so the chest is held up by the rocking chair, and then such a chair becomes perfectly wholesome, and perfectly healthy. With a good many people they may be said to be an advantage sometimes. So the sitting posture is a matter of no small importance. The reason why we have so common prolapse of the viscera, why it has come to be such a common disease, is because almost everybody sits in an improper way; children at school sit in an improper way; men sitting at their desks bend over their books; printers and seamstresses and typewritists, almost everybody you see with the chest collapsed and the viscera all dropping down, and the blood accumulating in this great abdominal region which is capable of holding all the blood in the body, until there is not blood enough to keep
the brain going and keep the spinal cord stimulated to proper activity. It is an extremely common thing. You often see a business man working over his desk. Somebody comes in, and you will see him throw up his arms, swing back in his chair, and he is really glad to have an interruption. He has to get a chance to take a deep breath every little while, you see, and he does it by suddenly throwing himself back in his chair. You know it is a very common thing to see school boys or students get down in their chair, slipping down more and more all the time, and by and by you see the feet begin to crawl up the side of the wall, and after while they get the feet up as high as the head, and while they study away. I saw in an English book not very long a picture of a student in such a position as that, and this was labeled, "The American Attitude." Now, I would not take the trouble to call your attention to this if there was not something more than mere accident about it. It is really a physiologic position for that student. The blood has run away into his abdomen here; he hasn't enough to keep his head going; so he economizes it by getting his heels as high as possible so the blood runs down out of his heels into his head, so the blood keeps him going a little longer. That is the real philosophy—that he finds he can study better with his heels up; he instinctively gets them up so he can get more blood to work in his head. Now, if the man simply knows it, all in the world he has got to do is to contract these abdominal muscles good and hard, and there is a great volume of blood stagnating there, doing mischief, and by simply contracting these abdominal muscles, lifting the chest up and taking a deep breath, and drawing these muscles in, he has thrown at once into the circulation a great amount of blood that is ready to keep the living milliam going.

Q. What is the difference between sanatorium and sanitarium. Well, sanatorium is a proper word; it is etymologically correct. But sanitarium is a manufactured word; it is an artificial word. It really is a trade word, and
properly it belongs to the Battle Creek Sanitarium. So far as I know, I originated
the word myself, coined the word about 35 years ago. When I took charge of this
institution thirty-five years ago, it was known as the Health Reform Institute.
That was its name, and I didn't like the name because I had already had enough
experience in the world to know that people didn't like to be reformed; they
liked to be informed and taught, but didn't like to be reformed. So I thought
I would get rid of that phrase, Health Reform Institute. Our journal now called
Good Health was then called the Health Reformer. I changed the name of the
journal for the same reason, and gave it the term Good Health. Well, I was
casting about for a name, and I found the word "sanatorium" in the dictionary
defined as in England a health resort for invalid soldiers; so I changed the
word "sanatorium" to "sanitarium." We didn't want the institution to be looked upon
as a health resort; I wanted it to be just what we have been trying to make it
all these years—something different from what existed before, and a place where
people would cultivate health in every possible way by every means afforded by
medical science and by modern hygiene. So that is the difference between
"sanitarium" and "sanatorium." I was very much distressed, I may say, a few
years afterwards, four or five years afterwards, to find people beginning to use
the word "sanitarium." I was down in Tampa, Florida, and I found an
illustration of it. Down there I got off a train, and there were a number
of runners there at the train, and one colored fellow took me up to the place
called the St. James Hotel; and on the way up he gave me the information that
this place used to be called the St. James Sanitarium, and I asked him why
they changed the name. "Well," he said, "because the boys didn't pronounce
the word right. Some of them called it The Sanitary. They would go to the
depot, and they would call out, "All aboard for the Sanitary," and by and by
they got to calling out, "All aboard for the cemetery," so they finally had to
change the name." Well, I visited the place, and I found it might have been called a cemetery as well as anything else. Certainly it was as nearly like a cemetery as like a sanitarium. There was not the first thing there to indicate a sanitarium. They didn't even have a bath tub on the premises, and it was a most unusual thing to call such a place a sanitarium. It was nothing in the world but a boarding house, and a very cheap boarding house at that. I found it soon became the custom, all through the west particularly, then a place could not run as a hotel, or could not be run as a boarding house, then to put up a sign, "Sanitarium", and the word has been very much abused; but the word originated on these premises, and it means properly just what we have here.

Q. What is your opinion of the raw food diet?

A. The raw food diet is all right; it is the original diet. Adam didn't have any cookstove presented to him so far as the record shows; and man as well as all animals lived originally upon food in the form in which Nature produces it. Man is now the only animal that cooks. I think somebody has defined man as the cooking animal. He is the only animal that cooks; but his digestive organs are not very different from those of other animals. The digestive organs of the monkey and of man are so nearly alike that it requires a very astute biologist to tell the difference. Present the stomach of a monkey and the stomach of a man about the same size to a physiologist, and I dare say the physiologist would not be able to tell the difference. The digestive organs of man and of the monkey are practically identical. The two animals are very closely alike in their anatomy any way. The man belongs to the same general class of creatures as does the monkey, at least, the higher apes, the chimpanzee, the orangoutang, and the gorilla. Now, these animals live very well without cookery. They live upon food which is not cooked, upon raw food. Human beings can live perfectly well upon uncooked food. I have tried the ex-
experiment myself sometimes for weeks at a time; but a man who is going to live upon raw food would not want to undertake to live upon corn nor on wheat or oats or potatoes or turnips or parsnips. Those foods eaten raw would not sustain life any very great length of time. Why? Because they are composed of materials which the human digestive organs are not adapted to digest. Corn consists almost wholly of raw starch. The protein of corn can be digested more easily when raw than when cooked, for that matter; but the starch of corn requires cooking in order that the digestive organs of human beings or monkeys or dogs or cats or other animals to properly digest them. Raw starch is not easily digested. It requires a special digestive fluid to act upon it. So cooking is necessary; but now if a man lives upon a natural diet, which is fruits, and soft grains, and nuts, then he has no difficulty. In fruits there is no starch, practically no starch in fruits. The starch has been converted into sugar and into acids in the process of ripening. For instance, an apple contains sugar. It contains acids, but contains no starch. On the other hand, a green apple does contain starch. Take a green apple, put a little piece of iodin on it, and the cut surface becomes very blue right away. It contains a large amount of starch; but the ripe apple contains no starch. Tincture of iodin put upon the cut surface of a ripe, raw apple, produces no blue color at all; there is no starch there. The same thing is practically true of the banana. The green banana contains a large amount of starch, but the thoroughly ripened banana contains no starch; so when one eats fruit, he eats starch in a state which is already digested. Fruit is a pre-digested food. It is cooked and digested in the sun. Now, the cooking process does for the grains what the sun does for the fruit. Down in Mexico they say, for example, when you ask for fruit at a fruit store, whether you will have duros, which means hard, green, unripe fruit, or "cassido in el sol". Will you have green fruit or fruit which has
been ripened in the sun. The same expression is used, I am told, among the Arabs. Fruit that is ripened in the sun is said to be cooked in the sun. The actinic rays of the sun do for the fruit what cooking does. Some of you have tried the experiment of eating green apples sometimes, and you know what the effect on your stomach was. Perhaps you lost a night’s sleep, and possibly suffered considerable pain as the result of the indigestibility of green apples. Now, those same green apples put in the oven and baked, or stewed in the stewpan, cooked in a stewpan would have been perfectly digestible, because the cooking would partly digest the raw starch. Now, actually the sun does the same thing; it converts the starch into dextrin, then the dextrin into sugar so that it becomes digestible. Now, nuts contain no starch. Nuts as a class contain protein and fat, but no starch. Consequently there is nothing there that cooking would help. Nuts are not improved at all by cooking. Raw nuts are a little more easily digestible than cooked nuts, provided they are thoroughly chewed, provided they are thoroughly masticated. Now, I am not speaking this moment of peanuts, because peanuts are not nuts. They are really a legume. They grow in pods under the ground. They are more closely allied to the bean and the pea, than they are to the true nuts. You see nuts are fruit. Chestnuts are more nearly like acorns. The chestnut contains sixty per cent of starch, so it is really like an acorn. It really requires cooking for proper digestion. Now, there is one exception to be made with reference to grains. That is, in the raw grain, in the grain in the milk state, the starch has not yet been hardened, it is still in the form of dextrin; the carbohydrates in the corn are carried up into the sap and manufactured in the leaves and carried in the sap of the plant up into the blossom, and there as the corn is ripening this sugar is converted into starch to be stored up. When you get the grain in the unripe form, while it is still in the milk state, the carbohydrates are still in the form of dextrin and sugar.
That is why sweetcorn is so delicious—is because of the large amount of sugar. Let the sweet corn get ripe and it is not so sweet; it is still somewhat sweet, but nothing like so sweet as it is when in just the right state for cooking and for roasting. So we have on the table green wheat, not quite as green as the green corn, because it would shrivel up too much; but unripe wheat is sometimes served on the table, and it is much more digestible than the ripe wheat. There are some other foods that do not require cooking. Eggs, for example, are more easily digestible raw than cooked. Meat is very much more digestible raw than cooked. If you want to eat meat in its most digestible state, you should take it while it is raw and warm, before it is allowed to get cold, immediately after the animal is killed. The way the lion eats meat is really the only proper way to eat it. The way the cat eats meat is the proper way to eat it. If we are going to eat meat, we should take it as the carnivorous animal takes it; then we are getting it in the most digestible and healthful form. I am not recommending that method of eating meat, but only mentioning it as a scientific fact that that is the most healthful way to eat it. People are benefited by the raw diet. If you will notice you will see that people who adopt a raw diet take milk and eggs and fruits and nuts and raw oatmeal or raw wheat. Now that raw wheat or raw oatmeal has very little to do with nourishing the individual. It acts like so much bulk. It is like taking so much bran. There is very little of it digested. The person who lives upon a raw diet and eats raw oatmeal or raw wheat with the food,—what he really subsists upon is the eggs, milk and other things he eats. The raw wheat and oatmeal he takes is simply bulk, like so much lettuce or bran that acts as a laxative; and the people generally who are most benefited by a raw diet are the people who have inactive bowels and need a good deal of bulk; and by this method they are really sometimes helped; but it is, of course, a clumsy way of getting relief. There is another thing to
be said about the raw diet that has not been mentioned, and that is it does not readily undergo putrefaction. Some of you know from experience that you can digest raw cabbage when you cannot digest cooked cabbage. I wonder if there is anybody here who knows anybody that can not digest cooked cabbage that can digest raw cabbage. How many of you know that that is a fact? Hands up, I would like to see. I am glad to get this information. Thank you. I saw quite a number of hands raised. Some years ago I set out to see if I could find the reason for that; and I made this experiment. I took some raw cabbage and some cooked cabbage, and inoculated each one with germs so that each one had the same number of germs; Then I put them away in a warm place, as warm as the human body is, 100°, in an incubating chamber for a couple of days, then made an examination and found the germs had enormously increased in the cooked cabbage, but had actually diminished in the raw cabbage. Now, you see the difference. The raw cabbage is alive, it is alive and the germs can not kill healthy live cabbage. They can not decompose it, at any rate until after it has had time; it takes quite a while to kill it. The cells have the power to resist the action of germs for some time, living cells; but the cooked cabbage is dead, so the germs very readily prey upon it and develop and grow very actively. So the raw diet has the advantage that it consists of live food, and this live food, while it does not contain any vitality that is communicated to the body, while it does not communicate health and energy to the body because it is alive, yet it does not so readily undergo putrefactive changes in the intestine, and so helps to get the intestine into an antitoxic or an atoxic state.

Q. How about sauerkraut?

A. Now, you know I think sauerkraut is really of great service to the Russians, people who live in a country where they can not get fruit. The Russian peasant can not get fruit, does not grow it; and the raw cabbage in the form or sauerkraut or some other way—the sauerkraut barrel is a sort of silo. The
silo of the farm is simply sauerkraut on a large scale. The fermentation that takes place is really a lactic acid fermentation,—the same kind of fermentation that takes place in the souring of milk. The large amount of green vegetables the farmer packs away for his stock is a very useful method of preserving it, because it is a lactic acid fermentation which discourages putrefaction in the intestines of animals and is a very wholesome and healthy food. I don't consider sauerkraut as a very healthy food, for it is very easy for changes to go a little too far. It is a very common thing for these fermentative changes to go so far that they become putrefactive; then the sauerkraut has a bad odor, an offensive odor, and when it gets to that state, then it is more or less mischievous, and it loses its good properties; but so long as the fermentation is a pure lactic acid fermentation, it is entirely harmless and in fact may be somewhat helpful.

Q. If one chews gum after meals and swallows the saliva, would not that help digestion?
A. It might help a little. If one has forgotten to chew his dinner, of course it would be proper for him to retire to some secluded place and do penance by chewing gum.

Q. Could one live on an exclusively raw fruit diet and be benefited?
A. Yes, that may be done. One might live, for instance, on a diet of bananas and oranges, and perhaps olives. The olive is a fruit. Oranges, bananas and olives make really a very perfect diet. One can live on that sort of diet probably for an indefinite time. Persons who have been accustomed to bread, though, miss bread. One who has been accustomed to bread misses it very much, and I could hardly say that a diet of bananas, olives, and of oranges would be a satisfactory diet. One could live well on it, however.

Q. Are dried fruits healthy?
A. Yes, they are entirely healthy, and they may be soaked up, by
soaking for forty-eight hours in cold water, almost all sorts of dried fruits can be brought to a state almost as good as fresh fruit. If you will try it with prunes, you will be surprised how nicely they return to the fresh state, and it is almost as good as the fresh fruit, and the fruit prepared in this way, dried fruit soaked up in this way has all the properties of natural, fresh fruit. The properties are all there, though it is not quite so inviting. However, I am doubtful whether this remark will apply to so-called sulphured fruits. Sulphured fruits contain sulphites which interfere with digestion, and are more or less harmful, and I think the sulphuring of fruits ought to be prohibited by law. The flavor of the fruit is very greatly impaired, and I think the time will come when this process will be prohibited.

Q. Why are bananas in such bad repute for children?

A. The bananas are in bad repute because of ignorance. I was very much surprised during the Spanish-American war to see the military authorities issuing very strict rules to the soldiers that they must not eat fruits. And many captains of coasting vessels trading in South America prohibit their sailors from eating bananas when they go ashore. They warn them against it. I knew one sea captain who told me he knew of several sailors dying from eating bananas. I said, "Were bananas the only thing they ate?" "No," he said, "they ate bananas and drank whiskey." That makes quite a difference. Now, banana pickled in whiskey is absolutely indigestible in the stomach. The reason why bananas are so hard to digest is simply because they are swallowed without mastication. The banana has nothing in it the stomach can act upon. There is not a thing in the banana the stomach can do a thing with—not a thing. All in the world the stomach can do with a banana is to pass it on to the intestine for intestinal digestion. There is nothing in the banana that requires stomach digestion. There is a little protein there, but so little that it does not need to stay in the stomach at all; so it is very necessary that the banana should
be reduced to a perfect pulp before it enters the stomach. There is no starch in the ripe banana, but there is plenty of starch in the green banana. You should be very careful in eating bananas to get ripe bananas, bananas with the black on the skin, and the pulp should be as luscious and soft as a peach, and you should be able to crush a banana perfectly with the tongue, pressing the banana against the roof of the mouth with the tongue to crush it into a paste. It needs the tongue really to reduce a banana properly. I want to suggest to you, by the way, the use of the tongue by pressing it against the roof of the mouth as a very important means of reducing different kinds of foods. The food often has little particles in it that slip by the teeth, especially if the teeth are not perfect, if there are any gaps anywhere in the arch of the teeth, be sure to make good use of the tongue in masticating the food, in crushing. So if you are going to feed banana to a child, it should be mashed very thoroughly. It is a very good thing to strain it through a colander.

Q. Does not cooking destroy food cells in the food?
A. No, it does not destroy anything in the food. There are enzymes in the food that may be destroyed in cooking, and are doubtless of some value; but cooking does not destroy the cells of the food.

Q. A popular medical writer in a popular article for Hampton's magazine speaks of urea as essential to the nourishment of the secreting cells of the kidney, and implies that a low protein diet is weakening, for it lessens the power of resistance of these cells. Is this so? If not, where lies the fallacy?
A. Well, the fallacy is simply in the statement. It is not true. Urea is an excretion. Urea is an excretory product; it is the end product of protein metabolism, speaking scientifically. When protein, that is gluten or albumin, is taken into the body, it passes through all the changes in the body that it is possible for it to pass through—the normal changes; and the end of it is urea.
Then it is ready to be cast out. That is the ashes, if you please, from the burning of food in the body. The ashes left are represented chiefly in urea. Urea is naturally of no use to the kidney. It is a diuretic; it acts as an excitant to the kidney; but it does not feed the kidney. That is simply ridiculous. That is some more of Dr. Woods Hutchinson's science, I think. Dr. Woods Hutchinson publishes a great many things which are not science at all. He made a very vigorous argument some time ago in favor of flesh eating, and one of his arguments was that man is really more closely allied to carnivorous animals than any other class. He is far removed from the herbivorous animals, and that is all true. He forgot all about the monkey. He is very far removed from the graminivorous animals, but he is very closely allied to the carnivorous length of the animals. He showed, which is a fact, that the alimentary canal, as compared with the length of the body is a very important as to what class an animal belongs to. The carnivorous animal has an alimentary canal about four to six times the length of the body. For instance, here is a dog that is three feet long, and the alimentary canal of that dog will be twelve to eighteen feet in length; that is, the intestine, the whole alimentary canal. Now, he said, on the other hand, a sheep three feet long will have an alimentary canal sixty to a hundred minutes feet in length. That is thirty-three times the length of the animal.

Now, we say here is a man six feet long, and he has an alimentary canal thirty feet long. Carnivorous animals have alimentary canals four to six times the length of the body. Here is an herbivorous animal with alimentary canal twenty to thirty times the length of the body. Here is man, where does he belong? Dr. Woods Hutchinson measured him, and he says man is six feet; his alimentary canal is thirty feet long. Divide thirty by six, and we get five; so man's alimentary canal is five times the length of his body, and that puts him right in the middle of the carnivorous class. Now, that is a beautiful argu-
ment if it were only true, but this is not science; this is nonsense; because when Dr. Woods Hutchinson measured a dog, he measured from the end of his nose to the end of his backbone; but when he measured the man, he measured him from the top of his head to the end of his backbone, and then measured down his hind legs so that he made the man twice as long as he really was biologically. If he had measured the man along with the dog, he would have put him on all fours like the dog; and when he measures him in that way, he is only three feet long instead of six; so this becomes ten instead of five, and that takes him out of the carnivorous class entirely, and puts him right along into the class with the gorilla, the chimpanzee, and all the higher apes that have alimentary canals about ten times the length of their bodies. We have got to be sure of our facts before we form our conclusions.

Q. Should drink be taken before or after meals?

A. Yes, one may take a drink before meals, and after meals, and at meals. It is only important for one to drink intelligently. Now, if one has hypopepsia, it is a good thing to take a little drink before meals a little while. Say half an hour before meals, to take half a glass of cold water. The cold water taken half an hour or so before dinner will cause a reaction in the stomach. You should not drink two or three glasses of water at a time, and should not take iced water; but take half a glassful of cold water as you ordinarily get it from the pipe. Now, if you have hyperpepsia, too much acid formed in the stomach, it is a good plan to drink hot water, because hot water produces the opposite kind of reaction. It allays irritation in the stomach, lessens the irritability of its cells, it lessens the amount of hydrochloric acid produced. If one has hyperpepsia, too much acid, and sour stomach about two hours and a half to three hours after meals, it is a good plan to have a regular habit of drinking one or two glassfuls of hot water. This will relax the pylorus, it will dilute
the gastric juice, it will relieve the spasm that there may exist in the pylorus, and so empty the stomach and relieve the stomach of any further work and worry. Persons who have hyperacidity generally have stomachs which do not empty themselves as promptly as they should. The pylorus is closed up and the food stays too long in the stomach. The drinking of hot water two and a half or three hours after meals helps to empty the stomach. Persons who have hypopepsia find it an advantage to do the same thing. The stomach is sluggish, and the food is remaining there, and drinking a glass or two of hot water two hours and a half or three hours after the meal stimulates the stomach to activity and unloads it. Hot water for both kinds of cases after meals, and hot water for hyperpepsia, and cold water for hypopepsia before meals. Now, these bananas are not ready to eat yet. If such bananas are brought to you at the table, send them back. You want a banana in which the skin is entirely brown. When the banana gets entirely ripe, you can see the four corners on this one, but when the banana gets entirely ripe, these corners disappear, and the whole skin is brown. I will remove the skin here and show you how to treat the banana. After you get the skin off, be sure to peel off those rough strings and get rid of these ends which have been sticking out into the air and have got germs on them, and be sure your hands are clean. Now, you have got a fruit that has been done up in a nice, germproof, air tight package; and if you will carefully cut off the ends, you have got something absolutely clean. Now, put it in a glass after this fashion. You see it pretty nearly fills the glass. Press the banana against the side of the glass. You see it almost has the consistency of the white of egg. Now you see you have almost a perfect pulp, and it is just as light and digestible as any food you can possibly find; but to make it perfect in feeding it to a child, it should be put through a collander or squeezed through a coarse cloth so it is a perfect pulp. There are still some little specks here that pass through between the tines
of the fork, so it is not quite perfect. A little longer beating, however, will make it. It is really surprising how nearly liquid it becomes. You see it can be readily poured out from one glass to another, and it is really a surprise to see what a change you can make in a banana, in a solid fruit, in a very short time; and you see the bulk is very greatly diminished. It is no longer solid. Eaten in this form the banana is perfectly digestible. When we have a baby that can not eat anything else, we give it banana. When we have a patient in the surgical ward that can not keep another thing on the stomach, this banana pulp affords one of the most wholesome of fruts and of foods.

Q. In what manner does the excessive practice of tobacco smoking affect the nervous system?

A. It simply wrecks it. The nicotin of tobacco is poison. But you say the smoke of Havana cigars, or the smoke of the highpriced little Turkish cigars that cost fifty or sixty cents a piece can’t hurt you. But those cigars are the worst of all. The nicotin has been exchanged for prussic acid. That is the difference. It is prussic acid instead of nicotin you are getting when you smoke highpriced cigars. It does not have so strong a flavor, it does not have so much nicotin, but it has prussic acid, so it is poisonous just the same. Prussic acid is very not very much worse than nicotin, however, just a little worse.

Q. You have stated that cane sugar is an unnatural sugar. Why, then, do you recommend the eating of raw, unripe corn and wheat, and why do you have served unripe peas, when these contain a large amount of cane sugar? Why would it not be better to wait until these are ripe and their cane sugars are changed into starch?

A. I never said cane sugar was poison. Please don’t understand me to say that cane sugar is poison. Cane sugar is not poison. It is really a food.
I have simply stated that cane sugar is not the best food; it is not a natural sugar, not the best form of sugar; so in eating cane sugar we ought to limit its amount. I am only making these remarks because the idea has been propagated by newspapers and by commercial writers that sugar is an extremely wholesome article of food, that it requires almost no digestion; that it should be eaten very freely, and is the best thing in the world for children; and all that is simply nonsense. The natural sugar of the body is fruit sugar, which is found in fruits, and malt sugar which is formed by the conversion of starch through the action of the saliva. The amount of sugar contained in unripened wheat or corn, peas, etc., is so very small certainly you may be sure you are not in danger of getting any injury from it. The same is true of parsnips, beets, turnips, cabbages—they all contain a little cane sugar; but cane sugar will never do anybody any harm in that dilute form. It is the concentrated form in which we eat it, heaping it in the coffee in large quantities, and piling it upon oatmeal, taking it in the form of candies—these are conditions that do harm.

Q. What ground have you, on the basis of this wide distribution of cane sugar, for saying that invertase is not an enzyme, but has to be especially made on account of the eating of cane sugar?

A. I have never said invertase is not an enzyme; it is an enzyme, but it is not present, according to the physiologists. I do not know anything about it by personal experience, but I can give you good authority. Roger, for example, tells us that the enzyme which digests cane sugar is not present in the intestine when the cane sugar is taken nor until three or four hours afterward.

Q. Would confinement in an office heated with a gas stove cause nervous troubles?

A. Yes, it would cause general deterioration of the health, because of the poisonous matters thrown off by the gas.
Q. What is the cause of high blood pressure?

A. The need of blood. The hungry tissues are calling for more blood, and the arteries being partially obstructed, the heart is urged by the nerve centers which control it to increase its activity so as to furnish the proper amount of blood and increase the blood pressure. The condition is exactly the same as the water pipes of your house being obstructed. You have got your own water system, and your pipes get obstructed so you don't get water enough in the third story, and you tell the engineer to put on more pressure, to make the pump work harder. If twenty pounds won't bring the water up to your third story, you tell him to put on 25 lbs. or 30 lbs. or 40 lbs., until you get the water as needed. It is exactly so with the body. When the arteries of the brain begin to deteriorate, to get obstructed, and to shrivel up through arteriosclerosis, the brain calls for more blood, and the heart is stimulated to put on more pressure on the arterial system until the amount of blood is increased. The blood pressure never is any higher than necessary. It is just what it has to be. Now, what we need to do is to remove the causes of this blood pressure, and not take some drug to lower it. The same drug that weakens the heart, lowers the blood pressure, makes you think you are better, whereas you may be worse instead. It is generally understood now by intelligent, scientific physicians that the use of pressure lowering drugs is a dangerous thing and never to be resorted to except as a temporary expedient in some emergency, and not relied upon as a method of cure.

Q. What causes hay fever?

A. It is a special susceptibility, and added to that the pollen of certain plants irritating the nerves of the nose.

Q. Why does the Salisbury treatment of ground meat and hot water cure disease if meat is injurious?
Now, the only reason why the Salisbury diet of ground meat and hot water has ever cured anybody is because that miserable diet, wretched and unnatural as it is, was better than the diet the person was taking before. A diet of beef and hot water is a great deal better than a diet that includes meat and all sorts of pickles, and all kinds of condiments, and the different varieties of whiskeys, coffees and things without the hot water. A man on a meat diet without the hot water would certainly get sick in a very short time. The hot water is the only redeeming feature of the Salisbury regime. With the hot water, the poisons of meat are washed away to some extent. A person has to drink a great deal of hot water. But I have seen most disastrous results from the Salisbury treatment. I am not speaking from theory, because I tried it. When Salisbury brought out that method of treatment, I was a young physician in charge of the Sanitarium here, and I didn't know very much—don't know very much yet, but I didn't know one tenth as much then as I do now; and I didn't know any better than to try the Salisbury treatment; and we ate several oxen a week here, in carrying on the Salisbury treatment. I nearly killed my wife with the Salisbury treatment. I should have killed her entirely if she had not rebelled and would not take my medicine any longer. Mrs. Kellogg had sour stomach. She had this difficulty hyperacidity to a very extraordinary degree. It was, indeed, the worst case I ever had to treat. I didn't know this, when I married her, however; but I should have married her just the same if I had known it; but I discovered it very soon after I married her—that she had this difficulty, and I began to treat her for it. Pawlow had not made his experiments at that time, and we did not know the influence of fats upon the gastric secretion; did not know the relation of meat to the gastric secretion as we now know from Pawlow's experimentation; but we did know this, that when a person had a sour stomach and took meat, he was more comfortable on a meat diet than on any other diet he could take. But we didn't know why. Pawlow has shown us the reason why. It
is because the meat absorbs the acid gastric juice just the same as soda would; it neutralizes it. The acid enters into combination with the meat, makes a chemical combination with it and so relieves the stomach from the irritation arising from the free acid present. It had the same effect soda had. We knew that, but we didn't know that while meat was absorbing the acid, and giving the patient temporary relief, it was stimulating the stomach glands to make more acid, more acid, more acid so it was making the case worse all the time. I began giving Mrs. Kellogg Salisbury steaks pretty soon; I found she could not eat anything but Salisbury steaks, and could not eat so much. By and by as a result of this diet her clear, white skin and rosy cheeks disappeared, and in their place was a leather colored skin. Her skin was yellow and tawny as leather, and the rosettes were all gone, and she lost her flesh and became a nervous wreck; and by and by she said, "I am going to stop eating meat. I don't believe in it anyhow, and I am not going to eat any more if I die. I abhor and abominate this flesh, and I will not eat any more. I will eat a crust of bread or something." Well, she began herself experimenting. I don't deserve any thanks for her being alive. She began experimenting, began living on zwieback, and found that she could barely get along. Her stomach was sour, but still she could live. And by and by I dix succeeded in discovering a method of making what we call malt honey which is simply starch digested; and we gave her malt honey mixed with fats; and I didn't know then exactly why it agreed with her, but it did. It was because the fat prevented the acid from forming in the stomach, while the malt honey, being already digested, passed quickly out of the stomach, went on at once; so the stomach was given a chance to rest; and the result was that in eight months she gained thirty pounds of flesh, and she got her health again; and by a little further experimenting in the same way, she succeeded in getting entirely well. You could not induce Mrs. Kellogg, after her experience, to
eat any more Salisbury steaks, I can assure you. Now, I began looking around, and found it was true of other people. I remember one patient 45 years of age, a gentleman from the South who came here and had a stroke of apoplexy a couple of days afterward and died, and he had been living on Salisbury steaks for three years. He had produced arteriosclerosis by this method of diet. It is a very dangerous thing and an unscientific thing, and at the present time I do not know of any medical textbook that recommends it or gives any countenance whatever. It is an out of date method. Dr. Salisbury himself died prematurely after living on Salisbury steaks. The proof of the pudding is the eating of it. Dr. Salisbury tried it and it didn’t work with him. I might say the same thing with reference to the fasting fad. Dr. Dewey, who recommended fasting as a panacea for almost all kinds of human ills, himself died of apoplexy when still a comparatively young man. It won’t do to follow every fad. It won’t do to follow as a rule of life anything that does not have sound science to support it, as well as exact experience. Experience is often a misleading guide. You can not always get at the truth from simple experience, because you do not get enough of it. It takes an enormous amount of experience to get at the truth; but if we have a scientific fact, or a body of scientific facts combined with sound experience, we may get at the truth sometimes quite quickly.

Q. Is not experience the mother of science?

A. Of course, inductive science is one form of science; but we must have the fact established as a sound, scientific fact before we can be sure that our experience is correct. For instance, I might tell you a little story. A doctor wrote an account of his first experience in a medical journal. He went into a town on the frontier a young doctor just out of college. He was very much distressed, because he felt his inexperience very much, and he was afraid he would have to call in consultation some old doctor, and the old doctor would,
by his long experience and wisdom, show up his ignorance and leave him in a very bad situation. He pretty soon got a case of pneumonia, and the patient began to look pretty bad, and it looked as though the patient was going to die, and the people by and by asked to have a certain doctor, an old doctor come in in consultation. So the old doctor came in. The young doctor stood there trembling and shaking with fear for fear the doctor would show him up. He looked at the patient a little while, and finally turned to the young man and said, "Doctor, have you ever tried the skin of a black cat in such a case?" The doctor said, no, he had not, and began to feel better. "Well," he said, "I think I have been called rather late, but I think if you could obtain the skin of a black cat and put it on the chest of this patient while it is still warm, the patient may possibly pull through." So a black cat was found and skinned, and the skin applied, and the patient died just the same. The doctor came in again to see the dead man, and he said, "Well, I think if I had been called a little sooner, and if the cat had been a little blacker, that the patient would have lived." Now, he knew that from his experience. He had tried it a good many times, and he was sure from his experience that the skin of a black cat was a good thing in pneumonia. Now that is a crude illustration, but it is true of nearly every drug in the whole materia medica. Dr. Dudley is president of the American Medical Association, and in his presidential address he said there are only two drugs out of the thousands and thousands of drugs that are known—there are only two drugs that ever cured anything—quinine and mercury. Those are the only drugs he believed in. Mercury to cure a nameless disease, and quinine to cure malaria. Now, as a matter of fact, what he said of the rest of the drugs was equally true of them. If anybody ever gets well of any disease, it is the power in his own body that cures him. The curative force is in the body; it is not in the medicine. Quinin kills the parasite of malaria that makes the mischief; but the body
itself has to destroy the last parasite, and that is true of the other disease also.

Q. What is the cause of stomach ache?

A. That reminds me of a story. A woman at table was asked to take a glass of wine offered by a preacher and she declined. The preacher said, "Didn't Paul say to one of his disciples, take a little wine for your stomach's sake?" "Yes," she said, "but my stomach don't ache." Well, stomach ache is generally due to the accumulation of gas in the stomach, distending it, and a hot application is one of the very best things for drinking hot water and applying fermentations.

Q. What causes ingrowing toenails?

A. Ingrowing toenails are generally due to shoes with tight toes! You desire, perhaps, to make your feet look smaller than they really are, and the effect of the pinching toe is to crowd the flesh up over the edge of the nail here. The flesh is crowded up over it, and by and by it gets to growing down into it, and that makes the ingrowing toenail.

Q. What is the cause of a deficiency of hydrochloric acid in the stomach?

A. It is a worn out stomach generally, that has been overstimulated by flesh food, and by mustard, pepper, peppersauce and things of that kind until it is tired out, wornout, and degeneration has taken place. An overworked organ always degenerates sooner or later. Overwork always leads to degeneracy.

Q. What is a nutmeg liver?

A. It is a liver that is congested in a peculiar way, because of a diseased heart generally.

Q. Is it injurious to use the eyes for reading before breakfast?

A. No, if it was, I should have lost my eyes entirely. I got my
breakfast at half past three o'clock today. I have been in the habit of eating my breakfast about the middle of the day for a great many years, and I still have my eyes.

Q. Can a dark room be rendered wholesome to live in by means of reflected sunlight?

A. Not entirely, because the direct rays of the sun are necessary to disinfect the rooms. I think by and by we shall have our houses made of glass so the sun's rays can be let into every part of the house. I understand they are doing that over in Germany now—making brick out of glass; so the time will come when we can have glass houses.

Q. What is the best remedy for an attack of headache?

A. The best way to cure headache is to cure it before you have got it. You want to cure it before it comes. Headaches are nearly always due to the absorption of poisons from the intestine.

Q. What would you feed a child between the ages of two and ten?

A. The best diet for a child is fruits and cereals, and if milk agrees with the child, milk. Milk and cereals, fruit and fresh vegetables. The child can eat what adults can eat after it has teeth, only it should be taught to masticate very thoroughly.

Q. Doesn't a person's appetite tell one what to eat?

A. Yes, if he has a natural appetite, but not if he has an unnatural appetite. Be sure your appetite is natural before you take it as a guide.

Q. What is your opinion in regard to the use of thyroid extract to reduce weight in cases of obesity?

A. There are two kinds of obesity. There is one sort of obesity in which the obesity is due to over-eating; another sort in which it is due to heredity; and a third sort in which it is due to deficient oxidation. In the
third class the skin is hard, it looks almost dropsical, and the skin is pale. Such a person may be benefited by the use of thyroid extract to some degree. The thyroid gland has become deficient in activity. But the rosy cheeked obese people, the people who have a hereditary tendency in that way, who are large eaters, such people will not be benefited at all by the use of thyroid.

Q. Is it injurious to take common baking soda for sour stomach?

A. No, if you take it two or three hours after meals, and take it with a considerable quantity of water, it does not do any harm, and it may even do good; but you should not stop at that; you should remove the cause. A person suffering in that way should take two or three tablespoonfuls of olive oil before each meal, should keep the bowels active so as to avoid the absorption of poisons which irritate the stomach and are largely responsible for this hyperacidity.

Q. Please tell me why I should avoid drinking coffee and eating meats. I want to live right.

A. Well, the reason why you should not drink coffee or tea, or eat meat is because you want to live right, and it is not right to eat meat, and it is not right to drink coffee. Coffee is a poison. There is more uric acid in one cup of coffee than in five cups of urine. Think of that. That will help you to cut off the habit of drinking it coffee and the appetite for it. There is more uric acid in one cup of coffee than there is in five times the quantity of urine. That is a fact. If you will look in any physiology, you will find the amount of uric acid present is about six grains in a pint and a half, and that would be about four grains in a pint. That is sixteen ounces of coffee has four grains of uric acid in it. That would be about one quarter grain in an ounce, wouldn't it? And in a cup of coffee there are four grains, and in a strong cup of coffee there is more than that of uric acid. The caffeine which is found in coffee is practically the same thing as uric acid.
Q. What is the cause of eczema?

A. Eczema is generally caused by intestinal autointoxication.

I have pretty nearly finished these questions but have not got quite to the bottom.

Q. Will drinking a large amount of water cause bloating?

A. Yes, it will, because drinking a large quantity of water causes an excessive flow of gastric juice, and the gastric juice causes the pylorus to shut up so the food and the gas can not pass out of the stomach downward as it should; so the stomach swells up with gas, and there is a great deal of discomfort.

I hope you are all of you getting the benefit of this lovely fresh air. When you go to your rooms tonight, don't forget to open your windows. If you need more blankets, call for them. Have your windows open, and the fresh air blowing in all night. I woke up this morning and found my bed covered with snow. In fact, the snow drifted in so there was snow beneath me, snow above me, and snow all around me. I find myself that I can sleep twice as fast in cold air as I can in warm air. I thank you for your attention.

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v-3-29-11.
LECTURE 22.

bread 24.
calorie 1.
diet 20.
memory, loss of 15.
sciatica 23.
stomach, 1pw motility 22.
vitality, low 7.
water drinking 18.

Feb. 9, 1911
QUESTION BOX LECTURE

At the Sanitarium Parlor, Battle Creek, Mich., Thursday, February 9, 1911.

At 8:00 P.M., By,

J. H. Kellogg, M. D.

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Question: Please explain the term "calorie."

Answer: Count Rumford a few years ago made some experiments to establish the value of the heat unit. Other experiments were made before his time to determine the heat unit. A heat unit is the amount of heat required to raise a pound of water one degree of temperature. This method is used to determine the value of different coals. For example, here is one kind of coal a pound of which will raise fourteen thousand pounds of water one degree in temperature, or fourteen hundred pounds of water ten degrees of temperature, or 140 pounds of water 100 degrees of temperature; it is all the same thing. Now, a calorie is simply a heat unit. It is the French heat unit. It is the amount of heat required to raise a kilogram of water one degree Centigrade in temperature. Now, a kilogram of water weighs as much as 2 1/5 pounds; and one degree Centigrade is equal to 1.8 degrees Fahrenheit; and if you put those things together, it makes almost exactly four; so one calorie is equal to four heat units, B. T. U. A calorie means that if we should take the food that we eat—for instance, here is an ounce of butter said to have 264 calories, to be worth that. Here is an ounce of pecans, or pine nuts, equal to 200 calories. Here is an ounce of starch, of flour equal to 100 calories. Put that ounce of flour in the furnace and burn it and it would produce heat enough to raise 400 pounds of water one degree in temperature. That is what it means—100 kilograms one degree Centigrade. Now, if we put that food into the body it is burned in the body. Food is fuel; food
is fuel. The resemblance between food and ordinary fuel is absolutely complete. Put bread into a furnace and it will burn. Put it into our bodies and it will burn. You say but we do not see it burning; but we see the consequences of it. Feel of your flesh and it is warm; put your hand on your cheek, and it is warm. When the blood squirts out of an open vessel, it is warm. The temperature of the body is 102°, 103°, 104° for example, in some places. The liver, for example, has a temperature of 104 or 105°. So the temperature of the inside is considerably above the temperature of the outside. What keeps this temperature up? Fuel; the burning that is all the while going on within the body. This burning is different from the ordinary burning. The ordinary burning we call flame or combustion; but there is a wet combustion also, the kind of combustion that takes place inside. When I was down in Porto Rico last winter, I saw the women washing clothes at the banks of a stream, kneeling down upon their knees beside the stones, and they floated the clothes out in water, then brought them up and rubbed them on a stone. And after rubbing a little while, they took these clothes that looked still rather murky and stained, and spread them out on the grass, and the sun is very hot there, and every little while a girl came around with a stone basin in her hand and some water in it, and sprinkled the water with her hands, and in the course of twenty-four hours those clothes were bleached out as white as snow. But the clothes had to be washed a lot. Now, why was that? It was the oxygen that is in the solution in the water—about four per cent of oxygen in the water,—entering into combination with the combustible materials that stain the clothes, under the influence of the sunlight; it was wet combustion. Now, it is that same kind of combustion that is going on in our bodies. It is in that same way that food is burned. When it is appropriated in the body, it is first assimilated. This process of heating and assimilation is really a sort of transfiguration. The food we eat today is walking around and talking tomorrow, thinking and acting. It is a marvelous thing, this transfiguration.
ation of food, making it alive—a dead potato, for instance, made into live brain. It makes a difference what we eat. It makes a difference what we talk about, how we talk, how we do, how we walk. It all depends upon how we eat. There is a very ancient proverb, "As a man thinketh, so is he." The old Germans have a proverb, "As a man eateth so is he." Put those two together, and we have a new proverb, "As a man eateth, so he thinketh." Two things equal to the same thing are equal to each other, you know. So the calorie is the means by which we measure the value of the food. Now, we see the importance of that. Here is some oatmeal. Now, the dry oatmeal is worth about 110 calories to the ounce; then we make that oatmeal into gruel, and an ounce of oatmeal gruel is only equal to eleven or twelve calories; so there is a great difference between oatmeal gruel and oatmeal, isn’t there? Oatmeal gruel is nearly all water, water that does not count at all. It is simply the pickle for the oatmeal. Oatmeal mush is about three quarters water; so we have to divide the value of the oatmeal in a dry state by four. Of course, the nutritive value of foodstuffs in the body is not quite the same as the value that is obtained in burning, because the combustion in the body is not quite so complete as the burning. This is particularly true of protein. Starch is completely burned in the body; fats are completely burned in the body; but protein is not completely burned in the body; it leaves the body in the form of urea, and this urea is capable of still further oxidation, though not in the body.

Q. What is the matter with a man who can not sleep at night until he has a ham sandwich and a glass of milk?

A. Now, I think that man would have to be examined with the X ray to see what is the matter with him. He must have a very queer kind of stomach. But I must say a word more about that. This story reminds me of a man who came to my backdoor some time ago and wanted a ham sandwich. I said, "We
haven't such a thing in the house, but we have got something better. We have protose sandwiches." He didn't know anything about that, but he was willing to try it under the circumstances, so I let him experiment on a protose sandwich, and he found it so good that he came back the next day for another. He was quite willing to take all the protose sandwiches we were willing to give him. Now, you see, it wasn't a ham sandwich he was longing after at all, but a protose sandwich; it was food he wanted, for he was really hungry. **\textit{He misinterpreted the want.}** Instead of food, he said sandwich, and ham sandwich. That was a mistake. Now, so with this gentleman. He was mistaken. It was not ham sandwich and a glass of milk his body was calling for in order that he should sleep. What his body want is to get the blood out of his brain. Now, the blood is the water that turns the wheels of the brain, and that is the grist if you please, the product of the turning of the wheel, of the working of the mill. Blood is the water which turns the wheel you see. The activity of the brain depends upon the amount of blood in it. I think Mr. Beecher said he would not give much for a man that wasn't capable of getting hot headed sometimes. A man that didn't have enough spunk in him to feel the blood rushing up into his head, he didn't think he would ever amount to very much. The activity of the brain depends upon the amount of blood in it, because the blood is the stimulus to the brain cells that creates the brain work. Now, when the brain gets to going so fast it won't stop) like Artemus Ward's mule--perhaps you remember his story. He told a very interesting story about his mule one time. He said he had a mule, and when he wanted it to go it would not go; and when he wanted it to stop it would not stop. He finally ended up the story by saying, "My mind is my mule." Some of you have had that very experience. A mulish mind that would not slow down and stop--and he didn't know how to put on the brakes.
Now, all that is necessary is to get some blood out of the brain, and one way of doing that is to put your feet in hot water which draws the blood down to the feet and you go off to sleep. In Germany they put on wet stockings and some dry stockings over them, and that gets the blood down into the skin of the legs, and so relieves the brain. This is a sort of bleeding of the brain, you see. Now, the Germans have another way of doing it. They put on what they call a Neptune's girdle, or umschlaag. That was not originated by Priessnitz, although he originated a great many of these hydriatic processes; but it was an old fashioned remedy that has been in use for centuries among the German peasantry. One end of a towel is wrung out very dry from cold water, and this is wound around the body and the dry part outside of it; the towel is quickly warmed up and the patient then goes off to sleep and sleeps sweetly, because the blood he has in his brain is drawn away into the abdomen by this process which naturally causes contraction of the blood-vessels, and afterwards relaxes, reddening the skin, just as happens to your hands when you go out to snowball. First your hands are white, and pretty soon they get red. It is the same thing with your ear when it has been frosted. Now, the same thing happens to the skin over the abdomen, and not only to the skin over the abdomen, but this moist bandage acting like a poultice affects the blood cells inside the abdomen. The blood vessels of the liver, the stomach, the spleen and all of these internal organs are dilated and filled with blood. Now, these vessels in the abdomen are capable of holding half of all the blood in the body, so when they are filled with blood the brain is relieved, don't you see. Now, there is another way of doing that, and that is to apply an irritant of some sort to the inside of the stomach. A ham sandwich will do it, don't you see? The ham sandwich irritates the stomach and draws the blood down into the stomach and so relieves the brain, but that is not a good way to do it. When you put the wet stockings on your legs and you
draw the blood down into your legs in that way, when you take these clothes off in the morning, that is the end of it, except that they carry off a lot of effete matter along with them. But when you put the ham sandwich into your stomach, you get something more than the derivative effect, and you give the stomach a job of work when it ought to be asleep with the rest of the body. The stomach needs rest and sleep just as much as your liver, and just as much as your head or heels. The whole body needs to rest, and when we put a ham sandwich into the stomach, or milk, or anything in order to produce sleep, it is a very poor sort of remedy. It is a temporary expedient which may be of some value in some cases; but it is a very doubtful sort of remedy.

Q. What causes bleeding from the nose?

A. Bleeding from the nose is generally due to chronic nasal catarrh which has caused a little erosion in the mucous membrane of the nose, so the blood breaks out. If there is to be a little running of blood today, there will be a breaking out, and always in the left nostril. I think that confirms my theory. In this particular case it is due to erosion in the nose. See a nose doctor and have it attended to.

The thing that is the matter with that man is that he has a congested brain, and instead of putting a ham sandwich into his stomach, the thing is to put the ham sandwich on his feet instead, and put a poultice on his feet—that is a common thing. Mustard on the bottoms of the feet is a very common remedy, or anything else that produces a derivative effect; that is what he wants.

Q. Kindly say how many calories Dr. Kellogg consumes in twenty-four hours, and what proportion of protein, fats, and carbohydrates.

A. I make my protein just as low as I can. I have eaten once today. I generally eat once a day—eat dinner, and I do not eat so much as my neighbors. I eat one meal a day. I find it quite enough for me. If I lived outdoors, was
sawing or chopping wood, I would eat more. The great tendency is to eat too much, especially for sedentary people who sit around the house. Some people keep themselves sick by eating too much. Some of you have perhaps heard of a certain English nobleman who recovered from consumption because he was sent to prison and kept in prison for three years, and the simple fare upon which he was kept cured him of his consumption. I made up my mind some time ago that I would not wait to be sent to prison in order to return to Nature in diet. In England at that time the prisoners were not fed any meat at all. I think my ration ought to be about 1600 or 1800 calories, but I don’t think I eat that much.

Q. If a person’s vitality registers low, what does it indicate and what is the remedy?

R. Now, we haven’t any register of vitality. I wish we did have, but we haven’t any means by which we can bring a man up to an instrument and find a record upon the instrument of how much vitality he has. I wish we did have some such instrument; but there are several ways in which we can get very important indications. I received a letter from the superintendent of a large boys’ school down in Pennsylvania just the other day. He wanted me to give him some tests that he could apply to his students to know how their vitality stood. And I gave him a few. One was coated tongue. If a man has a coated tongue, that is an indication of low vitality. Why? Why because there are germs growing on his tongue. I remember the first time I mentioned that here in the parlor, a look of incredulity went over the faces of everybody present. That was something more than forty years ago. Everybody looked incredulous. The idea of a coated tongue meaning germs on the tongue—how absurd! So in my office I had arranged some bell jars inverted, with potatoes that had been properly prepared for potato cultures; and whenever a patient came in with a coated tongue, I would
scrape off a little of that coat and put it on the wet cut surface of the potato, then I would ask the patient to come in again in a couple of days. In a couple of days that man would come in, and I would let him look at that potato, and there was a coat on that potato just like the coat on his tongue, and it would smell just as bad and sometimes worse. It had the same kind of flavor his bad breath had. He could see his own germs growing, transplanted from his tongue. I got a good, strong sniff from one of those potatoes one time, and it actually made me sick. These germs that will grow under favorable conditions sometimes grow faster, and develop greater virulence. That is one indication of low vitality. Under ordinary conditions the tongue is clean, because the saliva keeps it clean. The blood contains substances known as alexins and poisons which have the power to prevent the growth of germs; and these alexins are in solution, and they are poured out into the mouth with the saliva; so while they don't kill the germs that are present in the mouth all the time, we take them in from the air—they prevent their growth and development; but when a person's vitality is lowered, then these alexins are not present; then the saliva no longer inhibits the growth of germs, and they develop, and over night you find your tongue completely coated, and that is the reason why we have a coated tongue in fever, because in fever the vitality is lowered. The resistance is lowered, or you would not have fever. When you max take cold and have a coated tongue, your vitality is lowered a little. When one overeats and has a bilious attack, his tongue is coated, his body is flooded with poisons, and that is why there is lowered resistance with coated tongue. Another evidence of lowered resistance is pimples on the skin, a scurvy skin, a skin in which there is an eruption, an eczematous eruption; this is an evidence of lowered vital resistance, because a healthy skin keeps itself well. Now, here is an apple tree. It is well nourished, properly pruned, taken proper care of, and that apple tree has a glistening
bark, and every leaf is glossy, and the limbs are all in perfect appearance of health; but let the tree get diseased; put too much manure about the tree so that it has too much protein, and it soon gets to be a sick tree from a high protein diet the same as people do. The horticulturists know all about that. You can find plenty of experiments recorded in the Experiment Station Record, which is sent out all over the United States, by the government, every month—you can find records of the experiments that have been made with orchards to show that a high protein diet for trees produced disease; the trees become sick, and you find mold and fungus of various sorts growing upon the tree because it has lost the power to resist the encroachments of these fungi. Now, our skins are covered over with germs completely; the entire surface of the body is swarming with germs. You can scrape off a little of the scurf from your skin, give it to the bacteriologist, let him cultivate it, and you would be amazed to see how many kinds of germs there were there. The skin is covered completely with death dealing bacteria. These bacteria get down under the skin and grow and they produce poisons which are capable of producing death. That is why the surgeon used to have so much trouble. The thing that the surgeon is most anxious about when he is going to do an operation, as I was operating yesterday, I removed a big tumor from the abdomen, and the thing I was most anxious about of all was that there should not be any germs left on the skin. So the patient was completely covered up with the exception of a small surface on the abdomen here, and that was thoroughly washed, then painted over with tincture of iodin.

What for? To kill the germs of the skin. The surgeon finds iodin one of the very best things, because it penetrates the skin very deeply, and permanently destroys the germs. If we didn't do that, and didn't destroy the germs on the skin, and some of these germs got inside, they might easily destroy the patient's life. That is what used to produce peritonitis and so much mischief after
operations—was the germs on the patient’s skin and on the surgeon’s fingers. Then, in order that my germs should not do any harm, I put on long rubber gloves, so that there will not be any of these germs at all coming in contact with the patient’s tissues. The patient is getting along all right, it may be, normally, and everything lovely, and the patient will make a good recovery, because we didn’t get any germs inside. But in the old days skin germs would get inside, and there would be dreadful trouble. Now, the condition of the tongue, then, you see, is a very important indicator, and the condition of the skin is another important indicator. When we have pimples on the skin it is because the skin has lost its power to fight off the germs successfully; they have taken root, and are growing and getting down deeper into the tissues, and get down deeper and deeper, and certain particular germs that are very virulent get to growing; then there is not only a pimple, but a boil, and there are other germs still more virulent, and they produce something worse than a boil—an aggregation of boils, which may often lead to fatal results. Erysipelas germs are always present on the skin. Then there are other germs that are much more virulent, and if our resistance is lowered, they may get hold of us at any opportune moment and carry us off. That is the unfortunate thing that happened to one of our doctors a little while ago. A doctor came in contact with a patient that had very virulent germs, and his resistance was low, he had been losing a lot of sleep, working all night till three or four o’clock in the morning, and his vitality was down so low that he hadn’t power to resist. His blood instead of putting up a great fight as it ought to, and getting the leucocytes away up to 300% or 400%, there was no effort at all on the part of his blood to make a defense of any sort at all; so the germs just grew, and grew and grew, got into his kidneys and blood-vessels, and simply carried him off. It was a dreadful tragedy to us, but everything possible was done, but the power of the body itself
was not there to react and to make resistance. That is the thing we depend upon all the while, my friends, to keep us alive,—is the resistance of our bodies, our ability to fight. It is the same thing that protects the country—the ability to keep our enemies off. The physical body is in just the same situation as the body politic; it must have power of resistance. Now, another indication of low resistance is decay of the teeth. If you find your teeth are decaying too rapidly, that is an indication of low resistance, and you must find out what is the matter and correct it right away; because it is not only the teeth that have this low resistance, but your blood has low resistance. That is the reason why the teeth have low resistance,—because the blood has low resistance. The old prophet said, "The blood is the life." The modern pathologist says it is the blood that cures. It is the blood that heals; it is the blood that creates. I would like to illustrate to you how the blood creates; but here is a chasm here. Here there has been a cut in my hand, and that represents it. Now, the blood forms a clot in there, and if you examine that clot through a microscope, or if you could wash it so as to get the color of the blood cells out of the, you would find it to be full of little strings; there is a perfect network of strings here, like the wire used in the building of a bridge, and little bits of fibers running from one side to the other from the coagulation of the blood; it is all full of fine threads. Now, pretty soon you will see creeping out on these threads, starting out from one side and creeping along there, some white blood cells; and pretty soon there is a string of them there; the white blood cells have filled the space in there, and they begin to build, and they begin to build tissue, and pretty soon they begin to build blood vessels, and by and by they build nerves, until that place is all filled in with tissue. It is a most wonderful process, this process of creating and healing and building as carried on by the blood. Now, any indication of low resistance, then, means
that the resistance of the blood is depreciated. So it is important to keep the blood up. How are you going to do it? Keep poisons from entering the blood. Tobacco lowers vital resistance. There is the opsonic index test. Dr. Wright of London originated the idea of an opsonic index. He takes out of the body some blood, separates the white cells from the red cells, gets them all separate by themselves, keeps them warm, puts them on a slip of glass under a microscope where he can watch them, and he sees them wriggling, working about, swarming around there, and he watches them to see what they will do. He puts them away in a little tube in an incubator, puts some germs with them, puts them away in an incubator at the temperature of the body, watches them for fifteen minutes; then he takes them out and finds those white cells have captured some tubercular germs, and each one has captured so many; and in that way he establishes a coefficient of the opsonic index, so it is a figure which indicates how much resistance a man has against tuberculosis. Some time ago we had some tests made. I might mention that Dr. Wright himself tested a man and he told me about a man he tested, a man that smoked, and he found that man's opsonic index was zero. Think of it, my friends,—zero,—he absolutely hadn't any resistance at all, against tuberculosis. The man was suffering from tuberculosis, had it already, and he kept on smoking, and in three weeks he was dead. Down at the Phipps Institute, in Philadelphia, the records there show that smokers are more than twice as liable to tuberculosis as people who do not smoke. The old idea that smoking is a sort of disinfecting process is entirely a mistake. Smokers are twice as likely to die of tuberculosis as the people who do not smoke. So that is a good thing to put in your pipe and smoke if you are a smoker. Some time ago the theory was given out that we must eat meat in order to have high resistance against tuberculosis; and some doctors in the institutions for the treatment of tuberculosis said they set their patients to eating meat in great
quantities. Do you know where that idea came from? It was from an old notion that dogs and other carnivorous animals were not subject to tuberculosis. That is where it came from—that dogs and cats were not subject to tuberculosis, because they ate meat. Down in New York a man has been investigating lately, has been studying cats, and he finds that one third of all the cats in New York City have got tuberculosis, and the dogs are just as bad off. Don't forget that. When the family cat begins to pine away a little and loses flesh, it does not seem to be very well, does not have a very good appetite, that old cat has got tuberculosis, and when you take her up in your lap and fondle her, just as like as not you are getting it, because she licks herself and so she covers herself all over with tubercular germs; then when she shakes herself when she gets dry, she shakes those germs off into the air, and when you take her up in your arms, you get them on your clothes and your hands, and get them on your handkerchief, then put your handkerchief upon your face; so pretty soon you are getting those germs right into your own body—the feline tuberculosis, if you please, which is the same disease. Now, that notion has been found to be absolutely false. At one time they said goats' milk would cure tuberculosis, because goats did not have tuberculosis. Now, the reason why goats did not have tuberculosis was not because they were not subject to it, but because they lived outdoors. They are a hardy animal, and neglected, not kept shut up in stalls; but when you put them indoors and subject them to the same treatment as you do the cow, they get tuberculosis. Goat's milk of goats kept indoors is no less likely to have tubercular germs in it than the milk of cows that have been kept indoors. Tuberculosis is a house disease. A monkey in the woods does not have tuberculosis, but put him in a cage and he gets it, because his resistance is lowered by the indoor and unnatural life. The theory was that people who have tuberculosis should eat a great deal of meat, and that people who eat meat are not so likely to have tuberculosis. That has been entirely disproven, as I
have told you; for recent investigations have shown that great numbers of cats
and dogs are subject to tuberculosis, more subject to it than human beings are
even. One third of them all are found to have tuberculosis now in the cities,
and the statement is made that in other large cities the situation is just the
same. I thought I would have an investigation made here at the Sanitarium; so
I had one of our doctors—I visited Mr. Wright in London myself four years ago;
and another of our doctors visited him, and we had one of our bacteriologists
get a thorough course of instruction in the technique of the opsonic index; and
we studied into it thoroughly; then we had it applied to a large number of our
helpers here, and we found that the longer they had been without meat, the higher
their opsonic index was. My opsonic index was 200, which was quite high enough.
One hundred is the normal; that is the top; but I found I was double proof against
tuberculosis, which was very gratifying to me, because I was supposed to have
tuberculosis when I was a boy. I am sure I didn't have it, but I was supposed
to have it, and it was prophesied I would die of tuberculosis before I was
twenty, and if not then, before I was thirty, and certainly before I was forty.
But here I am almost sixty, and haven't got it yet; and the bacteriologist says
I can not have it; so the prophets are going to be disappointed this time I
guess.

Q. To what causes can loss of memory be attributed?

A. The loss of memory is generally due to what is called brain fog.
Brain fog is not the word at all. There are two ways to get fatigue. One way is
to get out and work hard; and another way to get fatigue is to sit down and eat
a big dinner. A big dinner will make you tired quicker than the work will,
because it fills your body with an excess of materials that are unnecessary.
The late Dr. Herter of New York, one of the most eminent, scholarly and scientif-
tic men this country has produced within a century, made an investigation of
the poisons produced within the body—skatol and indol which give the bowel discharges their characteristic bad odor—those substances are known as skatol and indol. Now, he took these substances, skatol and indol, and sent some up to Dr. Lee of Columbia University, and asked Dr. Lee to investigate them to see what their properties were as regards fatigue, and Dr. Lee, who has been making experiments upon fatigue—that has been his specialty for a great many years—found that skatol and indol produced fatigue quickly; so they are fatigue poisons. Now it used to be supposed that fatigue poisons were produced in the muscles only; but now it is known that fatigue poison may be produced in the intestine and that putrefactive processes going on in the intestine are sources of fatigue. So an inactive state of the bowels may cause fatigue, you see, and a man who has brain fog is simply a man whose brain is poisoned. A man can't remember, maybe simply because his brain is poisoned and he is weary. It is one of the most common symptoms of neurasthenia; and that kind of loss of memory disappears very quickly with the return to a normal state again. A man with a clean tongue and a sweet breath will not be associated with that kind of loss of memory. There is a kind of loss of memory that comes from depreciation of the brain structure as the result of changes in the blood veins,—arteriosclerosis, hardening of the arteries, and that is a condition which may come, I was going to say physiologically; it really can not come physiologically, but it generally comes on in advanced age, at seventy-five or eighty years of age; but sometimes comes much earlier than that. This condition may cause a depreciation of the brain structure, so memory will be lost to a greater or less degree. That is the common cause of loss of memory in old age.

Q. How long does it take to cure autointoxication, and what is the treatment?

A. The cure depends upon several different things. In the first place,
it depends upon how much vital resistance is left. If the liver and kidneys are pretty nearly worn out so that they can not destroy poisons, then it will take a long time to get the patient into a normal state again. If a person has not had auto-intoxication very long, it makes a difference, and they get well quick; but the man who says, "I have had a coated tongue for twenty years"—that is what a man said to me the other day,—a man said the other day that he had had a coated tongue for twenty years, and he seemed to think it could not do him any harm because he had had it so long and had got used to it. That is a vital delusion. I said to a man today, "Do you smoke?" "Oh, yes, I have smoked for forty years." He has got used to it, don't you see? That is a terrible delusion, my friends. Suppose somebody should come in and say, "Friend, your house is on fire", and you say, "Well, how long has it been on fire?" "Well, I have been seeing the smoke out here for the last two or three hours." "Oh, well, if the house has been afire so long as that, I guess it will get used to it."

Now, a poison is a thing that destroys like a fire, and the man that is smoking is simply burning his house; he can not appreciate it, but it is burning every day. Every cigar he smokes, every cigarette, every pipe, he is simply burning up his own vitality in that smoke. The very same thing is true of the man who is suffering from inactivity of the bowels, and has a coated tongue. There is a fire burning in his house, and by and by his blood vessels will be poor, shriveled, decayed structures, incapable of conveying blood to the hungry tissues.

How to cure auto-intoxication? Live right. The antitoxic diet—that means don't eat anything that rots. That is what Col. McClure, of McClure's magazine says. I was talking with him the other day when he was here, and he said, "When people ask me why I don't eat meat, I say I don't eat anything that rots." "I want a clean tongue, and a clear skin, and a sweet breath, and I don't want anything rotting down in my alimentary canal." Some people are going around with a whole menagerie of dead things, a whole menagerie. I have seen people sit down to a
bill of fare that was a regular zoological collection, swallow the whole thing, and carry around those dead corpses for a week or two, perhaps, some of them, and it is no wonder people have bad breaths, and stinking skins. Dear me, I have seen people whose bodies sent off an emanation that was almost--well, I have been reminded several times of an experience I had down in Naples about thirty years ago. I was riding along one of the streets of Naples, and I passed a tannery, and there was a terrible stench in that tannery, and my chaperone said to me,--an Italian guide,--he said, "Sir, this bad smell which you feel comes from that tannery." It was a smell which one could feel. It made his nose tingle. Well, I have encountered just such skins as that, which sent off an emanation, a putrefaction that fairly made one shiver.

Q. If a person's pulse is 57 in the evening and 102 in the morning, what does it indicate?

A. I should think it would indicate he had been waked up very suddenly, scared out of sleep, the temperature being normal. He is simply excited, and has not got settled down into the normal state yet.

Q. What is the symptom of too much acid in the stomach?

A. Now, I should have to answer that question about as I answered a man some time ago. A lady asked me, "Doctor, I am afraid my baby has worms. What is the symptom of worms?" My reply was, "Worms." Poor babies are often dosed and dosed and dosed with drugs to kill worms, when they haven't any worms at all. The only absolutely reliable symptom of worms is worms; and the very same thing is true with reference to the state of the stomach. The only real proof of it is to get some of the gastric fluid and examine it, and find out if it is too acid. By means of a test meal we can find out whether the stomach produces too much acid or too little, and it renders great service in that way.

Q. Will the drinking of a large amount of water cause bloating?
A. No. Water is one of the best things in the world to cure bloating. What does cause a bloating condition? I suppose it means dropsy in this case. It is common salt that causes dropsy. That was not known until comparatively recent times; but within the last ten years that fact has been discovered—that dropsy is due to common salt; and I am sorry I have not a blackboard here, but I think I can make it plain to you in a word or two. The biologists tell us we were once sea animals; I don't believe it, but some of them think that, and the blood contains just about the same amount of salt as sea water does. That is a curious fact that is true any way; the blood contains about the same amount of chlorid of sodium that sea water does; so they say we came up out of the sea. We are still water animals, but we live on land. Claude Bernard called attention to the interesting fact in his book on some American fishes that all life is under water. That is true in the case of all animals, and all life is not only under water, but under salt water. And the salt of the blood is about seven parts in one thousand parts. We must know this thing—that the blood will not tolerate any more than that—just seven parts in a thousand and no more. If it gets more you get so thirsty that you can not stand. And you have to drink, and if there is any more salt, it is pushed out into the tissues. You drink water, then it is carried up through the kidneys, or into the skin, or is pushed out into the tissues. Sometimes the kidneys get diseased, and when they do they can not carry off the salt; and when the kidneys get diseased in such a way that they can not carry away the salt; then the salt accumulates. It can not accumulate in the blood, however, so it is pushed out into the tissues, but the tissues will not tolerate a solution stronger than seven parts in a thousand. That is one part of salt to 143 parts of water. The blood pushes salt out into the tissues, and it has to send more water along with it to keep it in solution, don't you see; and as the salt accumulates in the tissues, water accumulates,
and when the man whose kidneys are diseased takes an ounce of salt, he has to take 143 ounces of water along with that salt; and that 143 ounces of water, which would be about nine pints of water, are added to his weight, don't you see, along with the salt. One ounce of salt is insignificant in weight, but nine pounds of water has to go along with that salt, and that is how dropsy is produced; and that is why people sometimes accumulate water so rapidly. Sometimes even when they don't drink, the water is taken in with the food. There is a good deal of water in the food, and the water may even be absorbed from the air. So the drinking of water in such a case might seem to be the cause of bloating or dropsy, whereas it is not the water at all, but the salt. If the water is taken without the salt, it encourages the action of the kidneys and helps to carry the salt away. I remember a case when I happened to be a private student with the senior Dr. Austin Flint of New York, the grandfather of the present Dr. Austin Flint; there were several of us who were private students with him, and he was telling us one day about a patient he had had that he had had a great deal of trouble with, a patient who was suffering from dropsy, and he said he gave that patient all the medicines he knew of, but they did no good; he tried all sorts of treatment, and the patient did not get any better. It was the custom in those days to prohibit the drinking of water; it was supposed to be very necessary, because the patient had too much water already, and to drink more water might cause the patient to fill up and explode, and it never would do to give him more water; so water was prohibited. So the Doctor said, "We finally, finding we could not do the patient any good—the patient had Bright's disease,—with anything we could do for her, we said, 'well, she wants some water; let her drink. She is going to die any way." So that woman began to drink, and she drank quarts and quarts, and she began to get better the moment she began to drink, and in the course of a week or two the dropsy disappeared, and
and the woman escaped with her life. That was a good lesson. I never forgot it, and it has been my custom always since I began practicing medicine, to give patients with dropsy all the water they want to drink, and to encourage them to drink; then to make them sweat by hot blanket packs, the wet sheet pack, electric light baths and other means of perspiration.) I knew a poor old gentleman who came here about thirty-five years ago, an ignorant farmer who came from the north woods of Michigan, and he had Bright's disease and was very dropsical. When he came here the first thing he called for was a hot box. He said, "I want a hot box. I want a place where I can be put in and get so hot I want to sweat for twenty-four hours. I have such a hot box at home, and I go into that hot box, and it has saved my life a good many times", and he said he sometimes lived for three days in that hot box, and it really had saved his life; there is no question about it. His instinct had led him to that curious method of self-treatment.

Q. You have spoken several times about taking a moderate meal a day. Do you advise other middle aged people to follow your example?

A. No. I advise other people to follow my example only in moderation. Every man is a law to himself. I am thinking all the time I ought to eat a little more, I ought to eat a little more than I am eating, yet I find my weight keeping up to my normal mark. I weigh 145 pounds net ordinarily, and I weigh a little over 150 pounds just as I stand here now, and I think I weigh enough. I weigh certainly fully as much as I ought to weigh, yet I eat very sparingly. I have eaten today four rice biscuit, two and a half pats of butter, two servings of potato soup and tomato soup--I took three soups for dinner, and a vegetable of some sort; and that is my whole ration today. I ate a small saucer of malt honey; and that is every morsel I have eaten today; and I think if I were working hard outdoors I think I would eat twice as much, I am quite sure I would; but it is the greatest mistake in the world to eat more than you feel a though
you ought to eat. You think, "Well, now, it is mealtine, and I must eat."
It is the most ridiculous thing in the world. Would you say, "It is drinking
time and I must go and drink?" There is just as much sense in saying, "It is
drinking time, and I must go and drink as it would be to sit down at the table
and eat because it is mealtine. People ought to be gotten out of that idea.
When you eat he should feel hungry, should feel a keen zest for food. As Mr.
Fletcher says, he should whinny like a horse; your appetite should be whinnying
like a horse when you want something to eat. Some time if you will take the
trouble to wait until you feel really hungry, have a real, good appetite, you
will know what it is to apperciate food. A man said the other day, "I would
give anything if I could have the appetite I had when I was a boy." The only
reason he does not get it is because he does not give himself a chance to get
it. If he would just wait for his breakfast until day after tomorrow morning,
he would have the appetite he had when a boy. There is not the least bit of
danger. I know some people who are actually afraid they would starve to death
over night. I knew a man who made his wife get up in the night and cook a big
dinner for him at midnight every single night all his life. He is dead and gone
now so his wife does not have to do it. He was over in Kalamazoo, not far away
from here, and I confess I felt relieved when he died. I said, "Thank the Lord
his wife can have a good night's sleep." Don't tell anybody I said that; they
will think I am hard hearted. So many people are dependent upon it. I knew a
good old gentleman who used to come home at night—he's son was telling me this
story,—he came home one night quite late, and his wife had retired upstairs,
and he went into the pantry to look for some pie and didn't find any pie; so
he called out at the foot of the stairs, "Mary, Mary, where's the pie?" Mary
said, "Oh, John, I am so sorry, but there doesn't happen to be any pie in the
house tonight." So he went back to the pantry and hunted for cake but didn't
find any cake, and he came back to the stairs again and said, "Mary, where's the cake!" And Mary said, "I am so sorry, John, but there isn't any cake either." He shouted out, "Mary, what would you do if somebody should be sick in the night?"

Thomas K. Beecher said when he was a boy his good aunt was making some mince pie one day. She had already made several, and she was making some more, and he had been out in the dining room eating mince pie, and he came in and was feeling sick at his stomach, looked quite pale, and she said, "Thomas, you look sick; there is a mince nice mince pie in the pantry."

Q. How can one get rid of gas in the stomach caused by low motility?

A. Well, raise that motility. One good way to get rid of it is to go downstairs and lie down on that kneading machine and let those machines knead the stomach and stir it up. Another very excellent way is to lie on the face over a pillow and take deep breaths; then the pillow will push hard upon your stomach, and it is like taking a water bottle and squeezing the sides of it, so you will help the stomach a whole lot. Every breath you take gives the stomach a little boost and helps things along. People who have very low motility do very well to lie down for half an hour after meals upon the stomach; and with such people, if the food is retained in the stomach a long time, it is a very good plan at night to sleep over a pillow. People who suffer from heaviness of the stomach which is often associated with slow motility may do that with very great advantage.

Q. Is there anything a person with weak digestion can do to put on weight?

A. Yes, there is one thing you can do that will be sure to reach the spot where you want it to go, and that is malt honey or maltose that you find at the table, and malt sugar. Maltose and malt sugar are already digested, and every particle of them will be absorbed; but they ought to be taken at the end of the meal. Eat your regular rations, and add a little malt honey, a
quantity of it. And a very good plan is to take half a glassful at night on
go to bed—half a glassful of malt honey. Stir it up with some water, make
it liquid, and drink it off. Perhaps you would want a little seltzer water or
siphon water with it. A little siphon water added to it makes very delicious
mead; so I can recommend this very heartily as something that will be perfectly
assimilated, every particle of it. A short time ago I gave malt honey to one
lady as a prescription, and she liked it so very well she ate heavily of it, and
gained ten pounds in a week, and another lady gained thirty pounds in sixty
days. I see some ladies over here saying, "I won't eat malt honey, then." Well,
if you are ever-fleshy already, it is dangerous, and you better not.

Q. Does yogurt cheese produce inactivity of the bowels?
A. No.

Q. Tell us how to cure sciatica.

A. I am glad to tell you that. Sometimes you will get an awful pain
in your sciatic nerve, an awful lumbago and feel as though you are going to die
of it. I will tell you how you can almost certainly cure it, if it is an acute
attack. Have some water put in a tub about six inches deep; get into the water
and sit upright with the legs extended in the tub, and get the water as hot as
you can stand it, and then put in some more hot water, and some more in a little
while, and keep the water running in. Have a thermometer alongside of you so
you will feel safe. You want to just feel as though you were being scalded.
See that the temperature does not get above 120° or 122°. It will seem rather
painful, but just let the water go until you are fairly parboiled, and almost
certainly in five or ten minutes all the pain will be gone. Now, you go back to
bed, and if it is a very bad case it will come back after two or three hours.
Repeat the bath if necessary two or three times a day. It is a marvelous remedy.
I have **some** cured some cases that did not seem to yield to anything else at all
in that way, that had been kept under treatment for weeks—-I have seen it yield
in a day or two to that sort of treatment. Heat kills pain. There is wonderful power in heat to kill pain of almost any sort; but remember, if you have got a big pain, you must have a big application of heat. That is the reason why you get into the bath tub. If there is a little pain, you put a fomentation on; but sciatica is a big pain, and you have to get into the bath tub and get all the heat you can possibly stand. That usually works out very satisfactorily.

Q. The Osteopath claims the vertebrae of the spinal column may become displaced without the knowledge of the patient and cause trouble. Do the vertebrae themselves ever get displaced in this way, as from one side to the other?

A. Yes, I have displaced mine many knowingly. I have displaced mine just now. Now, I have displaced it the other way. The vertebrae are getting displaced all the time. They are constructed that way so that they can slip around; otherwise we could not bend over. We would simply be stiff like brooms, and we could not move if the vertebrae did not have opportunity to slip around. There is an enormous amount of humbuggery about osteopathy. The secret of the success of osteopathy is that everybody enjoys having his back rubbed. It makes one feel good to have his back rubbed. Did you ever rub a cat's back and notice how it enjoyed it? See it put its back up and beg for some more? So the dog,—Aristotle says, speaking about massage, rubbing, how much good they are, —he says, rub a dog's back, then pick him up by the tail, and let him go, and see how he enjoys himself. (So osteopathy is as old as Aristotle at least; it is not a new thing.)

Q. Somebody asked me the other day about bread, what kind of bread is best, and I said that there was only one kind of bread that I could recommend, and that is water bread; that ordinary raised bread, I think, should be condemned. This is a loaf of bread. I see a frugal housekeeper saying, "Just look at him; he is wasting a whole loaf of bread," and it seems a wicked thing to do, doesn't
it? Now, when you can take a loaf of bread and make a baseball out of the inside of it, that sort of bread is a very questionable article of food. This is some of the bread that is getting ready for you to eat tomorrow, for breakfast. By breakfast time it will probably be in better shape than it is now. Now, you see, I have got a nice [illegible] ball here. I have often made a ball out of the inside of a loaf of bread, that I could throw right against a stone floor, and it would bounce back intact. This bread is already stale. The bread that is used in the Sanitarium is always kept for twenty-four hours before it is brought to the institution at all, so it is not the sort of bread you get from a baker's wagon. The bread you get from the baker's wagon was baked the same morning. This bread has been baked thirty-six hours, so it does not make a very solid ball; but you just get the bread as it comes from the baker's, tear out the inside, and see what a fine baseball you can make with it. Why, it can be shot through a house with a cannon and probably would not hurt the ball at all. This is only an illustration of what happens when you chew it up. It goes down into the stomach in little balls as a sort of Gatling gun fired into the stomach. Every one of those little bullets is going into the stomach to lie there for hours and hours undigested. Now we are going to have some moving pictures.

I thank you for your attention.
Baths- Methods of Priessnitz and Kneippe I.

Colds, exercise after I, 2.

" due to infection 2.

Raising temperature increases vital resistance (Illus) 2.

Shivering to get warm (Illus) 2, 3.

(Sir McCormick"

Shivering-exercise 3, 4.

Christian Scientist requested to sit in draft 4.

Stomach dilated, milk in 4, 5, 6, 7. (Illus)

Candy-chocolate 7, 8.

Intelligence in eating 9.

Care of automobile I0.

Reducing cost of labor I0.

Gas in stomach I0, II, I2.

Milk diet I3.

Sciatica I3.

Bankrupt in health I4, I5.

Kidneys, cleaning the I5.

Olive, green and ripe I6.

Less protein with advancing age I6, I7.

Throwing away life (Illus) I7, I8.

Eating cigars I8.

Blood pressure I8.

Meat-eating and character 23.

" " " cancer (Exper) 30, 31.

The house we live in 31.

Autointoxication and cancer 31.

Enlarged liver 32.

Restaurant fare 32.

Discipline the appetite 32, 33

Feel the appetite "whinny" 33.

The fat of the land 33.

Hotel fare 35.

Eggs, yolks of 36.

Sugar 36.

Bathing 36, 37, 38.

Extract of sedentary horse 37. Hide-bound horse 38.

" " " man 37.

Baldness-Senility 38.

Wild rice 39, 40.

Cucumbers 41.

Sprue-Strawberries and cucumbers 42.
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appetite 8
auto-intoxication 27.
baths 1 & 36.
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dilated stomach 4.
distilled water 34,
flesheating 19.
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hydrochloria 17.
meat eating 19.
sciatica 14.
stomach, dilated 4.
tobacco 18.
vegetable diet at restaurants 32.
water, distilled 34.
At the Sanitarium Parlor, Battle Creek, Mich., Wednesday, February 15, 1911,

At 8:00 P.M., By,

J. H. Kellogg, M.D.

Question: What would you say to the idea that after taking a bath you put on your clothes immediately with little or no rubbing or drying?

Answer: Now, if this were added, "and go out and take a run in the open air until you get dry and warm", then it is all right; but if you say, "and sit down until you find yourself shivering", then that is all wrong. Pastor Kneippe, the famous German empirical water cure doctor, required all his patients to dress without drying the skin. Priessnitz, I understand, did the same. The skin was vigorously rubbed after a very cold bath; then the patient put on his clothes and went out for a walk until he got dry; so now I don't see any particular harm in that. It is not a thing I would recommend. (It would save a lot of trouble for the bath attendants. I really do not see any particular harm in it, because we would get to perspiring on a warm day or a cold day, and it would not do us any harm. When one is perspiring, his skin is just as moist, perhaps more moist, than though he had taken a warm bath or a cold bath; so the warm, moist skin does not involve the taking of cold provided one is careful to take exercise.) Exercise is always an antidote for a cold. That is cold, and exposure to cold. Boys never take cold when they fall through a hole in the ice when they go skating. Did you ever hear of such a thing? A boy is always ready to go back the next day, and you never heard of a boy complaining of taking cold because he fell through the ice. Did you ever hear of such a thing? I never did. Boys don't take cold in that way, because when they get out of the water, they
have to make a great struggle to get out, and when they get out, they scurry off home as fast as ever they can go, and they don't have a chance to get chilled. Why, a man goes out sleighriding and gets so cold he freezes an ear or frosts his toes, and he does not take cold. A cold is not the result of simply exposure to cold or to moisture or to chilling; that is not the sole cause of a cold; it must be something more. A cold is an infection. People only take cold when they are in contact with bacteria which are capable of producing the phenomena we call a cold, which is very closely allied to an influenza. Getting chilled simply reduces the vitality a little. When the temperature of the blood is lowered a little, the vitality, the resistance of the tissues is somewhat diminished. Raising the temperature increases the vital resistance. That was very well illustrated some time ago by an experiment made by a German physiologist who took a rabbit that had two very long ears and inoculated both ears with pus so that erysipelas was set up in each ear. One of these ears he surrounded with a doubled wall sack through which he had hot water circulating continually, so that one ear was continually under the influence of hot water at a temperature of 120°, while the other was exposed to the air. Now, the ear that was under the influence of the hot water swelled more rapidly, the disease advanced more rapidly than it did in the other ear; it swelled larger; but it got well two days quicker. That is the difference. The vital action and reaction was greater, but it was hastened to a conclusion. That is the advantage of a poultice; that is what a poultice does to a boil; it simply stimulates the vitality activities and hastens the natural process. Another word about exercise and taking cold. An eminent young man gave an account—I think it was Sir McCormick who made explorations in the Arctic regions, and he gives an account of sitting down one day on a block of ice when the wind was blowing at the rate of sixty miles an hour, and shivering himself warm. Now, that is the physiologic way to do it.
He didn't take cold. When a man finds he is taking cold, he soon begins to shiver. Now, that shivering is Nature's method of compelling you to take exercise. When you are shivering, every muscle of your body is contracted, every single muscle. There is a mechanism in the body, a shivering center which compels a man to work maximally whether he wants to work or not. Here is a man sitting down on a bench, and he feels a little chilly. He has been moist, and now he is getting cold and chilly, and he says, "Well, I ought to get up and take some exercise so as not to take cold. I ought to get up and walk around here, swing my arms, stir myself up, excite my circulation so that I would not take cold. But, oh, well, I am tired; I guess I won't trouble; I will get cold this time; so a lazy spirit keeps him on his seat, and pretty soon he begins to shiver. Then he says, "Oh, I have taken cold already," and he gets to shivering more and more, and more and more. Now, that shivering is not a thing to be alarmed about. The thing to do is to take right hold and help it. Just go right at it and shiver just as hard as ever you can, when you find your teeth chattering a little, go at it and get the thing over with quickly, and it will warm you up. That is Nature's method to compel you to exercise when you don't want to exercise; and the exercise has the effect to raise the temperature of the blood, and so antagonize the cold. So you see Nature is a wonderfully beneficent mother, isn't she? She always takes better care of us than we take of ourselves. She gives us a great deal better care than we give ourselves. The shivering is not a thing to be alarmed about; it is a thing to be welcomed and to be encouraged. So when you find yourself in church and somebody opens a window so that the cold falls down the back of your neck, you say, "Oh, dear me, I am going to have a cold." You need not have a cold. All you have to do is to just set the muscles of the neck to going, and the preacher will think you are approving of what he says. Now, don't set it going this way; that isn't it. Just set
the muscles going good and hard this way, and you will be all right. Now, if you feel a chill around your limbs, all you have to do is to set the muscles of your legs up; contract and relax. Your neighbor sitting right next to you need not know anything about it; and you are running a race to catch a train, don't you see, and he does not know anything about it. You can make your legs do much work in ten minutes as though you had been running two miles, by just simply making the muscles relax and contract; and you can not take cold. It is worth while to know this, because someone may get caught in the cold somewhere, and the wind blowing on them, and they would say, "Oh, dear, I am going to take my death of cold; I will never get out of here in the world." I read a story of a Boston gentleman today. He found himself taking cold when attending a religious service, and he immediately arose and said, "Excuse me, I would like to know if there is a Christian Scientist in the audience." After waiting a moment, a tall, rather thin faced lady, over in the corner got up, "Yes, I am a Christian Scientist." "Oh, all right, won't you kindly change seats with me. I am taking cold. The wind is blowing on my neck." Well, now, if you haven't got any Christian Scientist to change seats with you, simply set your muscles going, set them right up hard like that, and you can not take cold under those circumstances; you can not take cold; you are no more likely to take cold than if you were taking a run out in the brisk, winter air. I see some of you trying it here now, and you see it works. Set up your muscles good and hard, for a minute or two, and you will find yourself breaking out into perspiration. I have been showing you how to do it, and I find myself perspiring now.

Q. Is hot milk injurious to a person with a dilated stomach?

A. Milk, as a rule, does not agree with people with dilated stomachs, and "there's a reason", as the newspapers say. (Applause). And the reason is that this dilated stomach is generally a stomach that makes too much acid, and
that is why it is dilated. A stomach that makes too much acid excites the pylorus so much that it shuts right up tight and won't let the food go through.

Now, here is a little picture of the stomach as it is understood nowadays. This is the up-to-date stomach. The stomach stands erect. We used to think the stomach was horizontal, but we know better now, because with the X ray we can look right in and see the stomach at work. I have seen several stomachs digesting dinners within the last two or three days. It is a very interesting sight to see the stomach at work upon its dinner, kneading it, manipulating it. If you want to have a picture of your stomach to take home with you, you can get it. Dr. Case, of the X ray department, will be very happy to give you a picture of your stomach to take home with you, or a picture of your heart, a picture of the colon—these internal viscera cannot many of them be pictured more accurately with the X ray than it is possible to picture them when they are right before your eyes, with a photograph, because we can see the inside as well as the outside, and we can see form and consistency. Now, here is the stomach. In this part is where the gastric juice is made, and it comes in contact with the outer mass of foodstuffs, and liquid is formed and passes down here into this part which is the pyloric portion of the stomach. We really have two stomachs; a man has four. Man has two; and yet the goat has to chew very thoroughly and masticate very thoroughly. Notwithstanding the fact that he has four stomachs, he takes pains to fletcherize and some of you don't. Now, here is the stomach. The gastric juice that is formed liquefies the foodstuff, and this liquid food comes down here, and this part of the stomach contracts, just as you compress an atomizer bulb and force out through the pylorus here the liquid part of the food. Here is the muscle which contracts to close the opening, and when the contraction becomes strong, it forces the liquid through this little opening, and it goes down here into the intestine and here it finds an alkaline medium. Then the acid strikes
the mucous membrane here, and as it strikes the mucous membrane, and as soon as it strikes the mucous membrane, the door shuts up again. (It is like the farmer's gate, you know,—you drive over something on one side and open the gate, and when you get through you drive over another little lever and close that gate behind you. Now, that is exactly what happens here. The food passes out of the pylorus, and when that food comes in contact with the mucous membrane it, a little ways below the pylorus, instantly the pylorus contracts, shuts up again until another quantity is accumulated. Now, when the gastric contents here are very acid, the pylorus here shuts up so tight that it can not be made to open, and the food can not be forced through without great energy, without great effort on the part of the stomach; and the result is the stomach becomes gradually dilated until I have seen stomachs that had that shape as the result of long effort to open the pylorus—ineffective efforts. I had to operate upon a case of that kind three or four weeks ago in which the stomach was away down almost filled the whole abdominal cavity. (I have frequently operated upon stomachs which held more than a gallon, and one stomach that held six quarts; so you can see how enormously the stomach becomes enlarged. The operation consists in bringing the intestine around here, and making a hole in the bottom of the stomach so that the liquids can come right through down into the intestine by another route. Now, the dilated stomach, as I said, is generally a stomach in which there is too much acid; so when milk is taken, as an article of food, this excessively acid gastric juice with which it comes in contact, forms large, tough, hard curds. Now, some of you are familiar with the curds that are formed in cheese factories. Cow's milk makes very large tough curds. This is not true of the natural sustenance of an infant. Mother's milk does not form these hard tough curds. But it is cow's milk which contains a large amount of casein, and the greater amount of acid in the stomach, the tougher and the harder these
curds are. So milk in such a case is likely to lie in the stomach in the form
of hard, tough curds that are very slow in liquefying; and so milk does not
agree, because when you swallow milk, you swallow along with it a quantity of
germs. You always get germs in ordinary milk. Sterilized milk works better than
ordinary milk, but not perfectly. So when the curds are large, a large mass
will form of curds, and the germs will be already inside of these masses, and
by and by will get down into the pylorus, and into the intestine, and are so
long delayed that the germs grow and multiply and produce putrefaction, and the
curds decompose, and that is the reason why persons who have dilated stomachs
generally when they use milk have a coated tongue, have a bad taste in the mouth,
have inactive bowels, autointoxication, and general discomfort. I recall a
lady who came here some time ago after having been on a milk diet for a month.
She was brought here, and I really thought the woman was going to die. Her
skin was the color of leather; and I never saw such a bad tongue. Her breath
was something awful. I had seen her before when she was a very, bright, hand-
some looking woman; but she came here a skeleton and with the skin saffron color,
the color of leather; and it really looked as though we could not do anything
for her. She had been on a milk diet exclusively for six weeks. I took the
milk all away—no milk at all, but put her on a diet of fruits, cereals, and
malt honey, an antitoxic diet, and in six weeks more she was quite herself again,
had gained thirty pounds—gained ten pounds in one week, and went home with rosy
cheeks and bright eyes, and a very happy looking woman.

Q. Would you advise chocolate candy or chocolate drink as being healthy?

A. No, candies of all sorts are to be avoided. Why? Because the
cane sugar of which these candies are made is an irritant to the stomach, and
causes gastric catarrh, which is one of the most obstinate diseases we have to
deal with, and very difficult to cure.
Chocolate contains theobromin. Theobromin is a poison, and the same kind of poison that is found in coffee and tea. And it is just as bad. So if you are going to discard tea and coffee because of the uric acid they have in them, you should discard chocolate for the same reason. The chocolate, perhaps, is not quite so bad as cocoa. Cocoa, chocolate, tea, coffee, tobacco, whiskey, are a little coterie of poisons which are doing an immense deal of damage, and ought to be eliminated from the bill of fare.

Q. Why does one's appetite vanish on the appearance of too liberal a quantity of food?

A. That is purely psychic. Farmers know that it is best not to feed their horses or cattle too large a quantity of food at once. The cattle do better and eat more if they have a little at a time. I sometimes advise people who have too big appetites—a favorite prescription of mine for a great many years, when a man was inclined to eat too much, was to have all the meal brought and put right at the plate, right before the patient at once, the entire meal so he could see what a prodigious quantity he was intending to eat, and it generally has a deterrent effect. When the food is taken a little at a time, one loses all track of it unless he is counting his calories, and don't forget to do that. There is a beautiful song, "Count your blessings, count them one by one." Somebody has written a parody of it, "Count your calories, count them one by one." I think we shall have to have it sung here once in a while to remind you of it. It is not so much the amount of food as it is the value of food one should consider. Suppose a man had a piece of property for sale, and a man should say, "How much do you want for it?" "Well, I want ten thousand dollars." "All right", he would say, "I will bring you up a couple hundred bills." Now, it would make a good deal of difference how much those bills were worth, wouldn't it? If I should bring 200 bills that were worth five dollars apiece, that would be ten thousand dollars, you see, wouldn't it? But suppose
half of them were hundred dollar bills and some of them were thousand dollars apiece and some of them five thousand dollar bills—you would have some thousands of dollars wouldn't you? But if they were one and two dollar bills, you would be some thousands of dollars short. So, some dishes are worth 25 calories, some 200 calories, some 100 calories, and the value of each particular article of food must be considered. While you are here, it is a very excellent thing for you to count your calories, even though the doctor doesn't require you to do it, because you get accustomed to the values of the food, and you learn the slice of bread is 100 calories, and you learn very soon about what it takes to make a hundred calories; so you go on with the different articles. You learn a little pat of butter is about 100 calories. So you can learn in a little while how to estimate the amount of food eaten. The estimate should be made in portions or in calories. I am sure we are making some progress, for I made a letter just yesterday from a man away off down in Missouri asking me how many portions of food he ought to take for a day. He is getting scientific you see. It is a good deal more important to know how to count your calories, to reckon the thing up, how to estimate a bill of fare,—it is worth a great deal more to the average man, even more than to know how to work out the most abstruse problem of algebra, or analytical geometry, or calculus,—it is worth a great deal more to the average man, is a matter of a great deal more importance. We generally eat in a haphazard sort of way. Nobody would ever think of feeding a horse or cow or a pet canary or a lap dog as he feeds himself. Why, the food is carefully measured out for the canary bird, isn't it, and the dog is fed on bread and milk, which is carefully portioned out to him, and the amount that is fed the horse, and the amount that is fed the cow is carefully measured out. No farmer would feed a cow or a horse as haphazardly as he feeds himself. The time has come when we have got to begin to be intelligent about these things. The man of
the future is going to know the value of every article he puts into his stomach; he is going to consider the interests of his bodily machine just as he takes care of his automobile. I think the automobile is a very good thing for teaching people the importance of giving good machinery good care. Men are taking an interest, even if they do not have to do it, in conserving the tires of their automobiles, in reducing the consumption of gasoline, and the consumption of oil, and the lowest limit, and keeping the cost of repairs down low. Now, it is a good thing. People are considering that about machinery, and are getting a little wise about machinery. Now, apply that very same principle to the body, or the corpomobile, as Mr. Fletcher calls it that we ought to be most of all interested in—apply these very same principles—reduce the cost of labor. Now, it makes a great deal of difference what kind of food you eat. Protein, for example, that people think is so very important,—protein takes several times the amount of labor to digest it that starch requires,—it requires a far larger expenditure of energy to digest beefsteak—that is why the dog lies down behind the stove after he eats a good, big beefsteak—he has used up his energy. That is why the anaconda swallows a sheep then goes off into a hollow log and stays there six weeks. That is why the business man, after he goes out and gets a great, big beefsteak, comes back and can not do business the rest of the afternoon, has to turn things over to the clerks, gets out of patience, and can not make any important move in business after dinner. I knew of a judge that actually could not do any business on the bench after dinner until he learned how to eat, and he found out how to eat in a little vegetarian restaurant, and he immediately discovered he could do just as much business after dinner as he could before when he ate right.

Q. What is the cause and cure of an excessive belching of gas?
A. The very same thing we are talking about here. It is the stomach
that retains foodstuffs too long, so the pylorus shuts up too tight, so that there is gas accumulating in it that is excreted from the blood, generally not from fermentation, and by and by the stomach gets to working so hard to get that gas out that it won't go through the pylorus, that it goes up through the mouth, comes out of the cardiac orifice, the upper orifice of the stomach; and you say it must be you have got fermentation. That is the greatest mistake. It is not fermentation at all. But you may have an awful time. It may begin after supper and last until ten or eleven o'clock, belching of gas after supper. I will show you how it is done sometimes. Now, I am swallowing my stomach full of air. If I keep on, by and by it will all come rushing up. But it goes down first. These people who have such long spells of the raising of gas from their stomach are in the meantime alternately swallowing air and discharging it. They are cribbers, what the farmers call cribbers, you see. Away out west they call a horse that does that sort of thing a stump sucker, because he gets hold of a stump with his teeth and hangs right on, shuts his teeth up tight and draws the air down. You see he shuts his teeth up on the stump tight and pulls down his diaphragm, and holds his chest tight, so the air can go into his chest, so it goes down into his stomach; and by and by it will come roaring up again. I remember very well a man we had some years ago that used to spend almost his whole night at it, and the man who slept next door to him came to me and quoted a text out of the Bible. He said, "That must be David in the next room", and he read a text out of the Bible that talked about the voice of his roaring in the night. He said it was so in the next room, and he wanted me to do something to stop that man's roaring in the night. There was such a tremendous roar as the gas would burst out of his stomach. There is a great number of people who have this habit of swallowing air. And they don't know it. It is the hardest thing in the world to make them believe it. A lady some years ago was very much
troubled in this way, and she could not be made to believe it. I labored with her for a long time. I was compelled to practice on it until I could do it myself in order to show how it is done, and show her that I had discovered her trick. She really did not know she had a trick. You say, "Now, I think I may be suffering that way; I am not sure but I have got it myself. What shall I do to get rid of it?" You need not hold up your hands; I will tell you about it. Now, the easiest thing in the world. The horse can not swallow the air unless he gets hold of a stump, or the manger, or something, gets a grip on something and hangs on tight with his teeth; he has to shut his teeth. So all in the world you have to do—is it as it was with the old Quaker. He said to a man who was accustomed to drinking and thought he could not stop drinking, he said, "Why, friend, it is just as easy as to open thy hand. When thee is bringing a glass of whiskey to thy lips, just before it reaches thy lips, just open thy hand." Now, that is the whole thing. All you have to do is to keep your mouth open. When you have that disposition, don't shut your teeth. You can not swallow air without shutting up your teeth. Keep your mouth open. Take several large breaths first, shut the teeth, and that raises it, and in a little while the thing will pass over. Drink a little hot water, perhaps. Pretty soon I shall be demonstrating this phenomenon, I expect, for when one has swallowed a few gulps of air he feels tension in his stomach, and he thinks, "Now, then, there is gas in my stomach," and in the effort to get it off, he swallows some more air down, and so it keeps getting worse and worse. I have met a great number of persons who suffered dreadfully from this thing and were at once relieved when they found out the real cause of it.

Q. What strength of solution of hydrochloric acid will annihilate the bacilli in Tissane?

A. It is not best to try it. I don't think anybody knows. We can
make an experiment perhaps and find that out. Tisane should be taken before the meal when there is no hydrochloric acid in the stomach. That is the reason why it is ordered to be taken at eleven o'clock, and at five o'clock, and at bedtime,—so there will be no hydrochloric acid in the stomach.

Q. Is there any virtue in the milk diet?

A. Well, there is virtue and there is mischief too. I just told you of the case of a lady who tried the milk diet and it nearly killed her. On the other hand, there are many people who seem to thrive on the milk diet. There are some people who have been apparently relieved by the almost continuous milk diet, by taking a glassful of milk, or half a glassful of milk every half hour during their waking hours. I have known people to take fifteen or twenty, which is more than that; I have known people who have taken six or seven quarts a day of milk. This milk is a large part of it carried off through the bowels entirely undigested, so it is really not at all a natural process, and it is not to be recommended.

Q. Tell us how to cure sciatica.

A. If you have got a real, sharp sciatica, I can tell you a remedy that will almost certainly relieve you. If a hot fomentation does not relieve it, if it is not relieved by bricks hot enough almost to set the flannels afire, or by dipping flannels in water and putting them over the part,—if it is not relieved by ***a simple means of this sort, then a hot half bath is the thing. Draw water into a tub to the depth of four or five inches as hot as you can endure. Sit in the bath with the limbs extended. Then add some more hot water, and a little more, and a little more and keep on until your legs are nearly parboiled. Have a thermometer and watch the temperature to see that it does not get up much above 120°. 130° would not endanger your life, would not scald the skin probably, for a short application, but you better stop somewhere
about 120°, and I think you will want to stop somewhere about 115°. But after
five or ten or fifteen minutes, get out, wrap up in blankets, and the skin will
be a cherry red glow, and the result will be almost entire relief from pain. Try
it again three or four hours afterward, and repeat it three or four times the
next day, and once or twice the next day, and in three or four days you will be
well. Perhaps the first application will relieve you perfectly.

Q. If a man thirty years of age should lose his hydrochloric acid,
can he ever regain it?

A. If a man thirty years of age loses the fortune his father left, can
he ever regain it? A man left his son a million dollars, and when he was thirty
years of age he had squandered it all. Can he ever get it back? That is a
problem, isn't it? It depends entirely upon his ability. It depends upon the
ability of the young man to earn and save, and to do business. It depends
entirely upon the ability of the body to repair itself, to recoup its losses.
The question of vitality is almost perfectly analogous to the question of finance.
A man is born with a certain capital. Now, if he uses up that capital, it is
gone. There may be perhaps a certain amount of entailed property that he can not
spend, that he has still to live on. He spends every dollar that he can lay his
hands on, and only lives on the entailed property, and he finally gets down to
a point where he can not do business in a very big way. He can not sow his
wild oats as broadcast as he formerly did. He has got to go slower, and after
while he will probably get to the point where he will have to stop altogether.
That is the situation with vitality,—exactly the same thing. We are every one
of us born with a bank full of health; we have a big bank account of health,
and we draw upon it, and draw upon it, and draw upon it in the most reckless
sort of way, then by and by we wonder why we are bankrupt in health. Simply
because we have been spending, and spending and spending and never stopping to
think at all of conserving health, or economizing health--we go on as long as we feel well, as though we had an inexhaustible capital of health, whereas it is limited, extremely limited. Let me call your attention to the kidney, for example. The kidney is an organ that filters out poisons from the body. The liver destroys poisons, the blood bathes the tissues, washes out the poisons, then this blood comes along to the kidneys, and the kidneys filter the poisons out and carry them off. That is what the kidneys are for. Now, did you ever have a filter? If you did, you know that once in a while you have to take that filter apart and clean it out. But you can not treat the kidneys that way.

When the kidneys get to the point where they have to be taken out and cleaned, that is the end of you. The physiologists of the Rockefeller institute tell us that they have achieved a surgical technique which is so perfect that they are able to remove the kidney of a cat, put it in cold storage for a month, then put it into another cat and make it grow fast and do its duty all right. They have not reached that point with human beings yet. If the time ever comes when a man can hire somebody to supply him with one of his kidneys, then find another man willing to spare one of his, then get a brand new pair,--if that time ever comes, men can keep right on living. But I remember just now the Rockefeller Institute experiment did not turn out just that way. The cat that had the new kidneys given to it in this way got along all right for six months, and then died of Bright's disease. The kidneys did not like their new neighbors, you see, so they went to pieces. Every organ of our bodies is exactly adapted to all the other organs of the body. You can not improve upon Nature's arrangement. So we must take care of the vital stamina that comes down to us, perhaps, through a long line of ancestors. The cause of gas in the bowels is usually fermentation, yeasts and bacteria decomposing the food and converting some portions into gas.
Q. Why can't we have green olives instead of those nasty ripe ones?

A. Now, I want to know how many of the people here relish good, ripe olives—hands up? How many relish green olives? I see we have a lot of sinners here, haven't we. I didn't suppose we had so many unregenerate people here. Now, the green olive is not food at all; the ripe olive is food. The green olive is not food. You might just exactly as well eat a green walnut as a green olive. It has no food value at all, whereas a ripe olive is a nourishing food. If you go down to the Mediterranean and take a trip across the Mediterranean, you notice the Greek sailors there sitting down on the deck, and making a meal out of black bread and ripe olives. If you tried to eat any of those ripe olives, I am sure you did not relish them, because they are very bitter. Over there they eat the bitter and all and seem to enjoy it; but in this country, we take the bitter out. The ripe olive is food, but the green olive is absolutely indigestible, and of no account. We do not feed you green olives for the same reason that we do not feed you wood, hay and stubble as some people think we do.

Q. Can a case of melancholia be cured?

A. Generally yes. Melancholia is generally due to chronic toxemia. If the case can be gotten hold of before degeneration has taken place, before the nerve centers have undergone degenerative change, before degeneration destroys them, the patient will get well.

Q. How may the declining years of life, the hardening of the arteries, the wearing out of the kidneys, the lungs, and the liver, and the weakening down of the perspiratory function of the skin, affect the demand for protein in food?

A. The general failure of all the vital powers, the failure of the poison-destroying function, the filtering function of the skin and kidneys, when they begin to fail, how does this influence the protein ration? That is, shall we eat more protein as we get old, or less? Less, by all means less. That is not
a new idea at all. When the venerable King William was eighty years old, his doctor said to him, "You must eat no more meat", and for the last ten or twelve years of life he did not taste meat. I think Emperor William is not very much of a meat eater. There is a little sanatorium at Dresden where methods similar to our own are employed—water treatment and physiologic measures. The last time I was in Berlin, I found that Emperor William's family were all down at Dresden, at this water cure; and I was very much pleased also to find that Emperor William had a Battle Creek Sanitarium electric light bath installed in his palace and patronized it, and also from other sources I learned that he was very much given to hygienic methods. I find he is really quite a model man in some ways.

Q. What is Dr. Kellogg's blood pressure?

A. It is 105. I believe it got up to 112 the other day, but I am not sure but it was my spirits rising somewhat perhaps that made it go up.

Q. About what is the normal for the age of sixty, seventy, eighty, and 100 years?

A. The normal blood-pressure is from ninety to 110; that is the normal blood pressure no matter what your age is. If you have got a blood pressure of 140 no matter how old you are, it is abnormal; it means degeneration. I met a case the other day of a boy of seventeen with a blood pressure of 160—just think of it—a boy of seventeen. A boy of fifteen died some time ago with arteriosclerosis as a result of smoking. If there are any smokers here, I hope you will take note of that. A single cigar raises blood pressure twenty points in thirty minutes. Nobody can afford to smoke unless he wants to do as a man down in Indiana did a while ago—he got a fortune, and he went down through the middle of the street throwing twenty dollar bills in all directions, scattering them down the street. Anybody that wants to throw away his life and his health
and his stamina in that way, smoking is just the thing for him; I don't know of any better way.

Q. What is the effect of chewing? Is it as bad as smoking?

A. It is just the same thing. It doesn't make any difference how you get it in, whether you smoke it or eat it; it doesn't make any difference; it is all the same thing. I knew a man that didn't smoke or didn't chew, but he used to put a cigar in his mouth, just in the corner of his mouth, and before night the cigar disappeared; generally two cigars disappeared in that way every day; it all went down. He didn't really appreciate it. He just kept munching on that cigar until it gradually disappeared, and it went into the stomach, the whole thing. He prided himself that he never expectorated.

Q. What would be the effect of tobacco on a low blood pressure?

A. The effect is to raise it always, raise the blood pressure unless the heart is too weak to respond; then it would simply have the effect to lower it. The ultimate effect of tobacco is to lower blood pressure. For instance, here is a man with a tobacco heart. His heart may become so weak his blood pressure will be low because the heart is poisoned and not able to do its work. A person who has high blood pressure is by and by going to have low blood pressure. You don't need to worry as long as your blood pressure is high—that is, if it is clear up to the top you do not need to worry much about it; but the thing to worry about is when your blood pressure has been up to the top and is coming down without anything being done to remove the cause of it. That means your heart is getting weak; the pump is wearing out, and it can not keep up the pressure, can not keep up to its duty, you see. That is what that means, and it is a most significant thing. Then the feet begin to swell, the memory begins to fail and the character begins to change, and a great variety of disturbing symptoms come in as the result of the secondary low pressure. That condition is
almost incurable. It is incurable. All you can do is to help a person over for a while.

Q. What is the cause of asthma and the best way to cure it?

A. Autointoxication is the principal cause of asthma,—poisons absorbed into the blood and thrown off through the lungs irritate the bronchials and cause them to contract, and set up a spasm there so when the air has been taken in you cannot get it out again. Now, we used to guess that, but since an instrument known as the bronchoscope has been discovered, it is possible to put a tube down into the patient's lungs and see the contraction, and that has been seen and described, and the picture is very clear; that is the thing that happens.

Q. A woman who is not feeling very well for two or three days finds on the third day when rising that she has lost the use of her hand. What is the cause?

A. There is high blood pressure, and what is called a partial stroke of paralysis—a very common thing. However, it happens sometimes simply as the result of lying on the arm and compressing the nerve so the nerve is temporarily paralyzed; but it will speedily recover.

Q. Are the common brands of grape juice wholesome?

A. Since the pure food law has been enacted and is gaining coming to be enforced, most of the grape juices on the market are pure. But some of them contain benzoate of soda. But if they do, the fact has to be stated on the bottle. If you find grape-juice that has benzoate of soda in it, reject it.

Q. Somebody wants to know about meat eating.

A. There is a great deal of curiosity to know whether I take my own medicine or not. Now, I am proud to say for myself and all my colleagues that we patronize our own principles. We eat what we recommend other people to eat, and we take our own medicine. If any of our doctors get sick, they would not think of taking a drug. The last thing in the world a doctor in this house would
think of doing is to take a drug of any sort. He would feel ashamed if he is not able to relieve any symptom he may have at all without a drug. I met a doctor today and he was telling me how beautifully he relieved a patient. The patient had profuse perspiration, and he gave the patient a dose of medicine, and half an hour later the patient was relieved. He said, "What would you do?" I said, "Why, I would give the patient hot sponging, and in five minutes he would be relieved. That would stop it right away. There is nothing in the world so effective and so potent as these natural agencies that are divinely appointed to aid in the regulation of the functions of the body." Now, about meat eating.

I just ate my breakfast just before I came in. I just came from breakfast here, so I am giving you an early lecture today. Absolutely not one morsel of food have I eaten since yesterday until I ate my breakfast since seven o'clock tonight. My breakfast consisted of a plate of soup I did not eat at all, and one slice of bread, two small sandwiches, a Colax biscuit—I always eat a Colax biscuit because I eat sparingly, and I eat so sparingly that I don't get bulk enough in the food I take. It took me some years to find that out; so I ate a cake of Colax, and I eat a cake of Colax at every meal I take. And I had a small serving of potatoes, and a little cup of lemon jelly, and a few string beans in salad, and some lettuce; so I had a pretty good meal, you see, but I didn't eat very much protein. There were no eggs, there were no nuts, there was no protose, there was no nuttolene, there was no milk; there was a little bit of cream, and I had coffee. I feel perfectly satisfied. In fact, since I swallowed that air, I feel as though I had eaten too much. (Now, I am not recommending any of you to adopt my plan. The most of you are too thin, and you need to catch up; you have been getting behind because your digestive organs do not make the most of their chance. My stomach makes the most of its opportunities, don't you see, for it gets out of the food I eat every particle of nourishment; and it is what we digest rather
than what we eat that counts. It does not take such a very large amount. It is
surprising how little it really requires to keep a small man like me going,
especially when I do not work hard. If I were digging ditches, and working hard
outdoors with my muscles, I should require probably twice as much food as I
eat; but a man who does not work his muscles does not need a bit more food than
a loafer. I am not making this statement at random at all. Dr. Benedict of
Middletown, the very eminent assistant of Dr. Atwater, who worked out those
elaborate tables of food values that are published by the Agricultural Depart-
ment, and who is now in charge of the Carnegie nutrition laboratory, at Boston,
associated with Harvard University—Dr. Benedict made this experiment. He put a
man in an iron box where he was sealed up hermetically. I know all about it,
because I was in there myself for ten hours, in the same box, sealed up tight
with sealing wax, just as you would seal up a document, absolutely sealed up
hermetically tight; and I was in there for ten hours, and he put me through the
same sort of test. He had a man in there with a bicycle, and a couch, and he
made him work on the bicycle and measured the amount of heat that came out from
his body, radiated from the surface of the body and carried off by convection,
and the heat that came off through his breath,—measured every atom of energy
produced in the body at that time. Then he had him lie down during a certain
number of hours, and measured the amount of energy thrown off during that time.
Then he had him sit up and study German physics,—he was an American, and he
made him study physics in German. German is hard enough anyhow, and physics
are hard enough, but put the two things together, and you have got a pretty
hard thing. And he worked with all his might at that, and the amount of energy
thrown off was measured. Then he had him loaf, just simply sit in a chair and
doze and not do anything, and he found he threw off from his body just as much
energy, and his weight diminished just as fast when he did nothing at all but
sit there in a chair and just loaf, as it did when he was studying just as hard
as he could make his brain work. The brain activity requires almost no energy at all. So you see a man that is working at sedentary employment, the important thing for him is to study his diet, not with reference to supporting his brain so much as to keep his blood in order. He is likely to eat enough anyhow; there is not much danger about that; he will take enough; but the thing is to keep his blood clean, keeping the alimentary canal clear, keeping his tongue nourished, clean and his breath sweet; then his blood will be * maxximum *, and will nourish his brain as well. A large part of the food we do not digest, especially when we do not exercise, becomes poison in the body, poisons the brain, stupefies the intellect, paralyzes the energies, changes the character of the man, makes him irritable when he ought to be sweet; makes him cross and ugly and irascible when he ought to be ** amiable.** I remember a gentleman from Chicago who found that out; for he came here, came into my office one day, and said, "Doctor, I am the biggest fool in Chicago. I own one of the biggest breweries in Chicago, and I had a man in charge of my brewery, the finest foreman you ever saw, and I was just such a fool. He did some little thing, and I got angry at him, swore at him, and he said, 'Here is my resignation.' Why," he said, "I only paid him $7,000 a year, and I can not get another man to fill his place for $20,000; and it was just simply because I was such a fool and hadn't any control of myself. What can I do to get control of myself?" That man was eating great, big beef-steaks for breakfast every day, and I didn't blame him. Lord Byron said, "When I eat meat it wakes the very devil in me." That is what Lord Byron said, and most people think he had one. And he said, "I have to starve him out." He said that to a poet friend of his sitting at the table with him; and his poet friend was carving a beefsteak and gritting his teeth—it was a little uncommon tough; and he said, "Don't it make you feel ferocious to eat beefsteak?" "Well, no," he said, "I hadn't thought of it." Lord Byron said, "It does me; it wakes
the very devil in me." That man was poisoned, and he was not morally responsible, perhaps, because he didn't know any better. But when one's eyes have been opened, he has been enlightened, knows how to be sweet, to keep his temper, to keep himself in such shape that he can maintain his self-control and his mental and moral poise,—why, my friends, a man hasn't any business to go down groveling with the wild beasts that live upon the bodies of their slain brethren, as Ovid says,—he hasn't any business to do it. If he does it, he gets the character of those creatures. Liebig made a very interesting experiment. He gives an account of it,—with the bears of the bear pit at Geissen. It was noticed there that on the days when they had meat for a few days they were so cross they could not do anything with them; they could not be approached by the keepers; but when they had been living on bread and other food without meat for a few days, they were so docile, so tractable that they would wrestle with the keepers, and play all sorts of tricks, and amuse the people greatly. The keepers used to amuse themselves by changing the character of those bears. Liebig says they used to amuse themselves by changing the character of those bears by changing their diet. I think everybody knows it makes a difference what an animal eats about his character. Most parents know it makes a difference what their children eat. A good old doctor told a man once who was planning about his boy, he said, "Sir, you will find that cow's milk is a great deal better than cow's hide for managing boys." A bread and milk diet, in other words, was a good deal better than the beefsteak diet or the cowhide without it.

Q. What is aspirin?

A. It is a coal tar product.

Q. What is its therapeutic value?

A. It relieves pain. It is prepared with salicylic acid. Dr. Haig thinks it is a remedy for uric acid diathesis. Personally, I don't have any faith in it for that purpose.
Q. What is the relation between high blood pressure and the heart beat?
A. The heart beat is generally slower with high blood pressure, unless the blood pressure has been high and is coming down and there is secondary low pressure; then it is rapid.

Q. What is the cause and cure of neurasthenia?
A. Auto-intoxication is the cause. The cure is to clean up, clean out and keep clean, as a certain doctor said.

Q. How should children between six and eight years old be fed?
A. They should be fed on an abundance of fruits and grains and fresh vegetables and nuts in moderation.

Q. Do you recommend the use of milk by them?
A. Yes, milk may be taken in moderation. Cream with a little water is better than milk. Diluted cream is much better than milk. The hard curds formed by the casein of cow's milk are objectionable.

Q. Do you recommend wool underclothing?
A. No, cotton is to be preferred, with woolen over it.

Q. What is the course of sarcoma in a child two or three years old?
A. It is generally a very rapid course. I do not know that I can say more than that about it. It develops rapidly, and the child begins to grow weak, lose flesh, and is rapidly carried off. Fortunately it is very rare in young children, although sarcoma is a malignant disease of the young, while carcinoma, or true cancer, is malignant disease of old persons after forty years.

Q. Is it necessary to have an operation for hernia?
A. It is the best way, and the only effective way for cure.

Q. Will the rupture return?
A. No, not when the operation is properly done.
Q. Which is the more effective for slow motility, the sinusoidal current applied to the abdominal walls, or the intragastric?

A. The application of the current to the inside of the stomach is more effective.

Q. Why do you serve green bananas?

A. Because the chef is not doing his duty. It is the chef's duty to see that those bananas are ripe before they are brought to the table. The skins ought to be black or dark brown or purple. The banana is not really in proper condition for eating until the skin is black. If bananas are brought to you in any other way, please send them back and ask them to please bake them. Baked bananas are entirely wholesome. Green bananas ought never to be eaten unless they are cooked. If they are baked they are entirely wholesome, but not so palatable as when they are ripened in the natural way. If you are tempted to buy bananas at an Italian fruit stand on a street corner, which I am sure you would not do, do not do it. Those bananas are ripened in a peculiar way. Instead of being hung in a warm place in a shed, they go to bed with the vendor.

Q. What kind of treatment and diet would you advise for an enlarged liver?

A. Enlarged liver is due to intestinal autointoxication almost invariably. Sometimes it is due to alcoholic intoxication, but even then the real cause may be intestinal autointoxication which has been produced by the alcoholic intoxication. Whenever the liver is enlarged, it is crippled, no matter what the cause of the enlargement, it is a crippled liver, and it needs to have an easy time; so the diet must be strictly in accordance with the rule of antitoxic diet.

Q. My eyes are so weak they water considerably. What can I do to strengthen them?
Q. Bathing the eyes with very hot water is an excellent means of relieving chronic conjunctivitis; but it is very often the case that there is some difficulty with the muscles of the eye or the optics of the eye, so you ought to consult an oculist for the examination of your eyes first to see if there is something that can be corrected with glasses.

Q. If the doctors are so busy one can not get an intelligent explanation of the different tests, what would you do?

A. I should lay right hold of the doctor bodily and say to him, "I want you to stay right here now until you tell me what this means", and if you can not succeed with your doctor, lay hold of me, and I will agree to help you out. It is the duty of the doctors, and I am sure it is a pleasure too, to tell the patients all about these various tests, because every one of them is important and every one of them is significant. There is not a single one of the tests made that has not in it something of value for you that you ought to know about, and you ought to know about it today, and then you ought to have another test in a couple of weeks, and the doctor ought to be able to show you that you have come up a little, that you have progressed. If he can not show that to you, you ought to get right after him and say, "What does this mean, Doctor, what does this mean? Here I am going down. My blood was 95 when I came, and now it is only 85. What does it mean. I hold you responsible for this thing. I will have another test in a couple of weeks, and I want you to see that it is coming right up to par." That is what we are for. I am afraid you are too easy on us. Get right after us, make us do this, and I assure you we delight in co-operating with you in your efforts to climb up.

Q. How would you compare coconut cream with dairy cream in calories, digestive and nutritive value?

A. I don't know as I know exactly what is meant by coconut cream.
If it is cocoanut cream prepared from fresh cocoanuts by breaking up the cocoanuts and extracting the juice with hot water, allowing it to rise to the top and skimming off the cream—that is the way they do it in the tropics—it has about twice the value of ordinary thick cream.

Q. What is the cause of cold hands and feet?

A. Spasm of the blood vessels, of the small blood vessels. This is not because the heart is weak or because the circulation is weak; it is because the vasomotor centers are excited by poisons absorbed from the colon, and causing spasms in the arteries of the hands and feet. That is why they are cold. You say, "I thought exercise was good, and I went out to take exercise for my cold feet, and they got colder with every step." You have had that experience. It is probably that you have got an enteroptosis; the bowels are dropped down, and they pull upon the nerves and irritate the nerve centers. If you will lie down somewhere and cover your feet up, they will get warm quicker than if you take exercise. But you must put on an abdominal supporter and hold up this pendant abdomen, make a little pressure upon these congested viscera, and that will allow the blood to circulate down in the feet and relieve the tension on the nerves.

Q. Is it sanitary to have the dust lying in panfuls about the Sanitarium?

A. By no means. I should be very glad to be introduced to any such situation. If you will send me word where you find it, we will see that it is attended to right away. I think on the whole, that we are quite free from dust here, especially at this season of the year. We have really no excuse for dust. I assure you we are interested in that question.

Q. What is auto-intoxication?

A. Well, I believe I have spoken on that subject several times here in this parlor, I presume in the presence of this audience, at any rate a con-
siderable number of you; but I am going to speak about one minute to tell you what autointoxication is. When a baby is born it hasn't a germ in it. It is absolutely aseptic, clean, pure and sweet. But in six hours in summer time, and twenty hours in winter time, that baby becomes completely infested with germs, and its alimentary canal just swarming with germs, billions of them; actually billions of them are found in the bowel discharges; but there is another word to be said about that. These germs that swarm into the interior of the baby a week old are friendly germs; they are germs that have taken possession of the baby; they have preempted the baby, so to speak, to keep out or to kill the disease-producing, poison-forming germs, to drive them out of the intestine, and they do it quite effectively so long as normal conditions are maintained, so long as the baby continues to nurse its mother and it is brought up in the natural way and is not allowed to creep around the floor and get infected with the dust that has been brought in from the street, the powdered up droppings of animals brought in and deposited on the floor by the father's feet—if that baby is allowed to creep around in that and put that filth into its mouth and infect itself—if the baby is kept clean, in other words, it remains healthy, it remains well, and everything goes well with it; and if the bowel discharges of such a child are put away in a bottle, there is no decomposition; there is no putrefaction, because there are no germs to produce putrefaction there, and there are friendly germs. Some of you remember, perhaps, that Mr. Dooley wrote a little article some years ago about Christian Science. It was really a very amusing article, and if you have never read it, it would be worth your while to do so. In the course of this article, he gave a description of how he visited various doctors, and one doctor, he said, thumped his brisket, punched his stomach, and said, "My friend, the weeds are getting into your posy garden." Now, that impressed me very much. At the time Dooley wrote that, we didn't know anything about these friendly germs; but
he had formed the interesting conception that the alimentary canal, when it was healthy, was like a posey garden, full of flowers; and that is the actual fact. These friendly germs that grow in the intestine are called the normal flora of the intestine, the normal flora, the normal flowers, if you please, the normal plants that grow there; and when disease-producing and putrefaction forming germs get in, then the flowers wither, and they are overwhelmed with these rank growing weeds, and the child's stools become putrid, the breath becomes bad, the tongue becomes coated, the child becomes nervous, the bowels become inactive, and the child does not sleep, ceases to gain in flesh at the rate of an ounce a day as it ought to do, begins to pine away, gets rickets, scurvy, eczema, and a great variety of other things that babies suffer from, and very likely dies at an early day. That is what is the matter with us, because the weeds have gotten into our flower gardens, and that is what produces auto-intoxication. These germs that form poisons are the unfriendly germs which produce an alkaline medium, and when the stools are alkaline, that means putrefaction always, because when there is alkalinity, there is putrefaction, and when there is no putrefaction, there is an acid condition produced by the acid-forming germs; so long as these acid-forming germs are present in sufficient number, the putrefaction germs cannot grow; hence the necessity for an alkaline condition. Now, auto-intoxication is a state in which the poison-forming germs have gotten possession of the body, and the flowers have withered and shriveled up and have been overrun by the disease producing germs; the weeds have gotten into the posey garden. Now, when that state of things is present, we see symptoms of it,--brown circles around the eyes. Why? A dingy skin. Why? A dingy sclerotic. Why? Great brown spots--look at your hands and see if you do not see some great, big brown spots on your hands--just look at them. If you don't want anybody else to see them, look at them when you go to your room. What is the cause of those spots? This
coloring matter is produced by a pigment known as Brenz Catechin, described by Dr. Combe first—he was one of the first to describe it in this connection, rather, of Lausanne, Switzerland—one of the greatest physicians who lives on the face of the earth at the present time, a man of international reputation, and he receives among his patients the members of royal families from all over Europe. He has a hotel at Lausanne, constantly filled with people who come there to be examined and told that they have got autointoxication, and he does his best to help them out of it, but in a very ineffective kind of way, because he hasn't any sanitarium in which to keep them. They get the best they can at the ordinary hotels; but these places are managed somewhat in their interest. Now, this is because of this coloring matter. But that isn't all. There is that coated tongue. What does that mean? It means the blood is poisoned until the saliva has become contaminated and depressed and is not able to prevent the growth of bacteria in the mouth; so you get up in the morning with a coated tongue just like the green mold you have seen growing upon a wall over night sometime; that yellow colored tongue is just like the brown and yellow mold you sometimes see. This is produced in the same way. Spores from the air have been received upon the tongue, and the warmth and moisture there, and the saliva which is not capable of inhibiting the growth of germs furnish the conditions which permit the germs to grow there. Now, this is autointoxication. And when the body is saturated with these poisons a continual deterioration takes place.

It has been recently discovered by the great cancer laboratory of Liverpool, where researches have been carried on for many years, and a book has recently been published by the director of this laboratory which shows that these poisons produced in the colon and disseminated into the tissues—poisons resulting from the decomposition of flesh, are the actual cause of cancer, and has proven it. He has taken a woman that had cancer, had a large cancerous ulcer, then healed up the ulcer so there was no cancer there, then he has produced these putrefaction
products, touched the surface at various points, and produced new cancers, and he shows the pictures of them through the microscope—cancers actually produced by cholins, creatins and other products of putrefaction of flesh. That is the cause. I think he has proven his case absolutely. The book is just out, and I went through it the first night after I got it because it was of such extreme interest. My attention was called to it by one of the pathologists of one of the large hospitals of Philadelphia, and it absolutely fits in exactly to the facts that we know in relation to the degenerating influence of flesh eating and of putrefaction processes. When the blood is flooded with these poisons that come from putrefaction going on in the colon, that is generally chronic auto-intoxication, and every function in the body fails; every tissue in the body deteriorates and degenerates; the brain is damaged, the arteries become hardened, arteriosclerosis results, and apoplexy is the final catastrophe; the kidneys are overworked through filtering these poisons out, and they become irritated and inflamed, and by and by Bright's disease is the result. The liver becomes overwhelmed with these same poisons, and after while the liver becomes enlarged; then it shrivels afterwards, and then abdominal dropsy comes, and the heart is weakened in its effort to force the blood through these hardened arteries; so after while the heart begins to fail, the feet begin to swell, and then comes the final scene pretty soon. (Don't wait, my friends, until the roof of the house is falling in. Why can't we get people interested in conserving the house in all its beauty, and not wait until the walls are tottering, the pillars falling in, and the whole house falling into ruins? The house we live in is the most precious thing we have) (When we find these symptoms of chronic auto-intoxication, of premature senility coming on—that is what Dr. Ross of Liverpool has shown to be the preparatory condition for cancer, is premature senility; and Metchnikoff has shown that premature senility is the result of intestinal auto-intoxication; so we have there another proof that cancer and auto-intoxication have a very close relation.
Q. Why is a person more nervous at night than in the day time?

A. I find I am very much less nervous at night than in the day time. I get keyed up so high in the day time it is very hard to keep still; but I can keep still at night, that is, moderately still. I am sometimes quite surprised to find myself out of bed; but I generally manage to keep in bed at any rate. I do not understand why anybody should be nervous at night. It may be because you ate too big a supper. If you want to be quiet at night, it is a good thing not to eat any supper at all; to go to bed with a clear conscience and a quiet stomach if you want to sleep well.

Q. Would you consider 150 calories of protein daily sufficient for a person five feet five inches tall?

A. Yes, that is more than I eat; but I am only five feet four inches tall, and I get along with about 125 calories.

Q. What treatment and diet would you advise for enlarged liver?

A. I advise an aseptic diet, and fomentations over the liver, the moist girdle to be worn around the body all the while to keep the vessels of the liver dilated. The liver is contracted, and we must keep the vessels dilated, and that we will do by the moist bandage around it, and it has the effect to reduce pain.

Q. When I go back to Chicago and eat at restaurants exclusively, how can I continue on the vegetarian diet?

A. I don't see any great difficulty. There are plenty of vegetables in Chicago. One does not have to eat everything that is upon the bill of fare of a restaurant. If you go to a first-class restaurant you can find an abundance to make out a good bill of fare. I will tell you all the difficulty in this diet question, the whole thing is with your palate; the whole thing is with your tastes. Get yourself disciplined to the point and get yourself hungry enough so that a crust of ordinary bread will taste good, and you won't have any diffi-
culty in finding all you want at any good restaurant. One ought not to eat un-
til he is really hungry. Mr. Fletcher says one ought to whinny, to feel his
appetite just whinnying before he eats at all. I think that is a good way to
express it figuratively. One ought to feel such a desire for food that anything
that is wholesome will look as though it is perfectly delicious, that you can
eat a piece of zwieback and relish it the way you used to relish mother's mincepie,
and you will be pretty nearly in a safe state so far as your appetite is
concerned. So get the appetite disciplined to wholesome, simple food, to be
contented with a small amount. A man asked me how I got along traveling in
Egypt and other places, and I told him I lived on the fat of the land. The
fat of the land grows upon olive trees and almond trees. That is where you get
the fat of the land. I didn't refer to the fatted calves, but the fat of the
land, and there is plenty of that. I always take some almonds in my bag, or
Turkish hazelnuts, and I could always get some bread and fruits of some kind.
When I couldn't get any other good fruit, I could always get good dates and figs.
Now, if one is a little used to it, dry bread, with some raisins or figs or
dates, and a handful of nuts, makes a splendid meal,—everything you could pos-
sibly need. Bread is the staff of life; the nuts are the beefsteak and the
butter, the entrees and things, and the fruit is the dessert; so what else does
one want? You have got the whole bill of fare there, and you have got it in ori-
ginal form. It is not second-hand at all; you have got it with all its pristine
virtue in it.

Q. What are the ill effects of excessive salisxiss upon the stomach
and upon the system in general?
A. Well, it is not so much the salisxiss in the stomach as a bad effect
upon the system in general, as it is that the condition of the body is the cause
of the excessive amount of salisxiss hydrochloric acid. The excessive amount
of hydrochloric acid in the stomach is likely to lead to ulcer of the stomach by its excessive digestive action. Lowered states of the body,—there are anti-bodies which antagonize this condition of the body; these so-called anti-bodies are deficient, so the gastric juice is likely to attack the stomach and the mucous membrane, especially when the gastric digestion is continued for too long a time, as the result of swallowing food that has not been thoroughly masticated.

Q. Could not olive oil be more easily digested if it is emulsified?
A. Yes, all fats are more easily digested when emulsified.

Q. I heard before coming here that distilled water is very injurious?
A. Yes, it is very injurious; I think it is very injurious—when it is applied in the way in which the experiments were made upon which that statement was based. This was the experiment. A drop of blood was taken out of the bloodvessels, put under a microscope, and a drop of distilled water allowed to mix with it, and the bloodvessels all swelled up and burst. Those blood vessels are like a salt water fish; so that is what you should expect. Put an oyster in fresh water, and it swells up to double size. That is what the oystermen call giving the oyster a drink. That is the reason why we do not recommend people to eat them—because they have been up there in fresh water streams where sewers were emptying close by, and they have taken a great drink of sewage, and swallowed it. The same thing happens to the blood. It is accustomed to a liquid which contains seven parts of salt in a thousand parts of volume; so the blood cells swell up and burst; but now if you take that distilled water and add just a little salt to it—no lime remember, and no potash, nothing of that sort, but just a little chlorid of sodium—seven parts in a thousand,—add that to the blood and there is no swelling up at all. It is the absence of chlorid of sodium which causes this pernicious effect. Now, when distilled water is taken into the stomach there is always present in the stomach and the intestines
serum from the blood which mixes with that distilled water so it can not possibly come in contact with the blood in such a way as to do it any possible harm. Distilled water, or good ordinary drinking water is just as good; xadmm it is not necessary to drink distilled water. Ordinary water as you find it in ordinary wells, that is moderately hard water, is perfectly wholesome.

Q. How can the Battle Creek idea be carried out when traveling and living at hotels?

A. Eat the best they have got; tell them you live on the top shelf and to send the best they have got. Eat that, and you will get along very well. You can always find potatoes; you can always get bread; you can always get apples. If you can not find anything else, you can always find prunes; and if you get in some little, out of the way place, some little inn where I found myself once in the Alps where there wasn't a thing but some soup made of some weeds in the garden, and some bread, you must be prepared for such an emergency as that with a little something in your handbag to help you tide over. It would be perfectly wholesome and proper to fast for a day, and then you would have a nice, keen appetite; your appetite would be whining for something real good, and you would find you would not suffer a bit. It does me lots of good to lose a meal now and then.

Q. Have been a non flesh eater for about ten years. Don't use any alcohol or tobacco, and take a cold water rubdown every morning, yet when facing the least breeze, my eyes water terribly. What is the cause and what can I do to relieve the trouble?

A. Bathe yourx eyes with very hot water every day, two or three times a day. That will help it some. See a doctor and see if there is not some abnormal irritation of the mucous membrane of the eye. You have probably chronic conjunctivitis.
Q. Is phosphate of soda a good laxative?

A. No, it is not a good laxative. All these saline laxatives are harmful and produce catarrrh of the stomach, and colitis.

Q. Would you consider the eating of six yolks of eggs daily too much for one with low nutrition?

A. They might be taken under certain circumstances with some possible benefit, but the cases must be really very rare in which they are needed. I think protein from the vegetable kingdom is much to be preferred.

Q. Are pine nuts good for slow digestion?

A. Yes, if thoroughly chewed, but one should not take them too freely if he has a deficiency of hydrochloric acid. Be careful about chewing.

Q. Why can't we have green olives?

A. There is nothing to prohibit anybody from eating green olives, or any other green thing they delight in, and eat it in their rooms; but at the table we really don't patronize things of that sort, because it sets a bad example.

Q. What effect has sugar on the kidneys?

A. None, unless there is a large amount of sugar in the urine. In that case, the kidneys are overworked, become irritated by and by and break down with Bright's disease when the patient does not die of some other trouble.

Q. When one has good health, how often should he bathe?

A. It is a good plan to bathe every morning. It is a sort of eye opener. The rest of the body needs a bath much more than the hands and face. You wash your hands and face every morning when you get up, don't you? The rest of the body needs washing a great deal more than the hands and face do. Your hands and face are in contact with the air and the sunshine, and get disinfected, and you have a chance to rub some of the dirt off; but the rest of the body is protected by this artificial skin that we call clothing. The wearing of clothes, as I often say, is the dirtiest habit we have. The wearing of clothes
is a dirty practice; there is no question about it. It retains the dirt in contact with our skins. Just think of it. The first day there is an education upon the skin of something like a pint, even if you do not work, never take any active exercise but simply sit in an office, the ax invisible perspiration amounts to a pint and a half in twenty-four hours. If you exercise a little it may be three times that much. A person working hard musccularly will sweat out through the skin three pints of liquid in one hour's time, and along with this liquid that comes out from the skin there is a considerable amount of effete material, waste material. Don't you remember the old family horse you took out in the spring, took him out for a drive, and the first time, his back was covered all over with white frost when he got back, and he dried off? What was that white frost? It was extract of horse. It had a strong flavor and a very unpleasant odor, and smarted when it got into your eyes; and if you had to carry off the horse, you know how it felt in your nose. But after driving that horse out every day and putting him through his paces, driving him several miles, he doesn't have any such perspiration any more. There would be no frost left behind. The perspiration would be limpid. The first specimen of frost was extract of sedentary horse; but you see now you have got an active horse and a horse that takes outdoor exercise. Now, a man sits down in an office and sweats his brain instead of his body, and the perspiration comes out upon his skin, and that is extract of sedentary man, and it leaves a layer of frost on his skin, and the next day he goes on, don't take a bath, and there is a second layer; then a third and a fourth, until by and by he has varnish all over him, and the pores are obstructed so that the water can not circulate out, and; but the skin breathes as the lungs do. One fiftieth of all our breathing is done by the skin, and when the skin is obstructed in this way, that portion of the breathing does not take place; poisonous matters are retained in contact with the
skin, absorption goes on, poisonous materials are taken into the blood, the brain is contaminated, and the beginning of disease is laid simply by neglect of the skin. When a horse gets hidebound, you know what the veterinary surgeon says about it. He says, "This horse is not healthy; he is hidebound." And many a man is hide bound. That is why men get bald; the scalp gets hidebound. You find a baldheaded man always has a hidebound scalp. When the skin of the rest of the body loses its natural elasticity, it is the beginning of decay; that is one of the first evidences of senility. Look at your hand and see if it is all wrinkled. If your hand is all covered over with little fine wrinkles, that means old age is coming. That is senility. You better get the skin limbered up; go to work and groom it, exercise it. It is not to be clean altogether; it is the gymnastics of the skin, and it is to dilate the vessels, and to contract the blood vessels, and give them the power to regulate themselves by this morning gymnastics, so that when the cold wind strikes you, your blood vessels can shut up and keep the heat in so it doesn't get out; because it is the heat you lose that gives you a cold, and not the heat running in, or cold getting in; it is the heat getting out that lowers the blood temperature and gives you a cold.

Q. I have been eating only two meals a day for some time. Can I change to three without harming myself?

A. Yes, if you are careful to eat the right kind of food, but you will find it is difficult to get three meals in. I have gradually got down to one meal and a half, and if I don't get more than one meal a day, I am perfectly contented. If I eat my dinner at one o'clock, I don't want anything more until the next day, and I find it a very convenient thing; I don't have to spend so much time sitting around the table. It is quite an economy.

Q. If one has no free hydrochloric acid in his stomach for more than a year, can he get it back again?
A. Yes, if there has been no degenerative process there is a possibility of his getting it back again.

Q. Why do we have factory canned fruits and vegetables here when they are supposed to be unhealthful?

A. I am not sure we do. A great share of our canning is done in our own factory under the supervision of our own people, and with a great deal of care. I think all our fruit is canned there, and a considerable part of our vegetables. I hope this year we will be able to put up our entire supply.

Q. Are apples a good food when the stomach contains no hydrochloric acid?

A. Yes, that is just the time to eat apples. The apple has malic acid in it, and that will help to keep the germs out, and it won't give you hyperacidity of the stomach if you eat apples when you have got no hydrochloric acid in the stomach; so you are exactly adapted to apples. But be careful to masticate thoroughly. If you can get into the habit of chewing that apple all up until it goes down into the stomach a perfectly smooth pulp, then scrape it on a knife for a while until you get the habit, and you will find it quite an improvement.

Q. Can you have the same results from sinusoidal electric tub bath as the Nauheim bath in heart disease?

A. I am inclined to think on the whole the effect is better, because the electricity acts upon the muscles, and there is a tonic effect in addition to the stimulation of the surface circulation which is the chief effect of the Nauheim bath; in fact, that is all the effect.

Q. What is the difference between wild rice and ordinary rice for table use?

A. Wild rice grows in the borders of the shallow lakes of Minnesota
and Dakota, and some also in Michigan and over the South; but it is not gathered except by the Indians. So far as I know, the Indians of Minnesota and Dakota are the only Indians that gather this rice. The wild rice is perhaps more nourishing and wholesome than ordinary rice for the reason that it has not the tendency to render the bowels inactive, having a little more residue left, and contains a larger amount of protein.

Q. If one has too much acid in the stomach, will fruit sour when eaten?
A. No, but it will add to the acidity of the stomach sometimes, and disagree on that account.

Q. What is the cause of the fingers getting numb without any apparent cause?
A. It is the beginning of senile change. That is one of the evidences of beginning arteriosclerosis. It is because of autointoxication, according to Combe.

Q. Does broken flaxseed used as a laxative food ever give bad effects?
A. I know of none. I have no doubt it is entirely wholesome and harmless.

Q. What will make you sleep?
A. Get into a bathtub of water. That is the way I do when I can not sleep—just get into a tub of water and go to sleep. After fifteen or twenty minutes you can not keep awake; you will have to go to sleep. So be sure the tub is not so long you will be in danger of drowning. You say the room gets cold and I am likely to get cold. Just leave the hot water spigget running just enough to make up for the loss of heat.

Q. What would you advise in a case where a person twenty-one years of age has been on diet for hyperhydrochloria for four months, has been using yogurt tablets for some time and still complains of bad breath and coated tongue?
A. I advise him to come to see me and I will look into the case and find out what is the matter, and we will correct that condition if it can

nily certainly be corrected. There is not the least doubt about it; it can be corrected.

Q. Is there any danger to the eye if it with the face is washed for two or three minutes in hot water and then immediately the same length of time in very cold water? This treatment has been recommended to produce a healthy reaction in the face.

A. No, it is an excellent plan, an excellent means to strengthen the eyes. The water must be very hot.

Q. Are green cucumbers injurious?

A. No, green cucumbers are perfectly wholesome. The only thing that is bad about the cucumbers is saturating them with vinegar and eating them with pepper and salt. It is the concomitants that are bad. When I was in Egypt some years ago, I saw a native mother with a baby astride her shoulder and she was eating a cucumber rind and all, and every little while she passed it up to the baby and the baby took a bite, and the baby looked to be perfectly healthy and I suppose was in the habit of it. I had a letter from our Dr. Mortensen who is now abroad visiting the bee hives of Europe, stealing honey, and he told me he had just met a doctor over there from the Malab Archipelago, and this doctor had had a great deal of experience in treating sprue. Sprue is the very worst form of intestinal auto-intoxication that we know anything about, one of the very worst forms of chronic intestinal auto-intoxication, and a very intractable kind of bowel trouble in which the patient becomes emaciated and run down, loses flesh and by and by dies if something is not done, and this doctor had had a large experience out there, and was a very scientific man, and he told him that they cured sprue by feeding their patients on strawberries and
cucumbers. There is not the least bit of harm in the cucumber if it is thoroughly masticated; but to swallow the cucumber whole, forgetting to fletcherize it—then there is likely to be trouble. I think I have reached the bottom of the box. I thank you for your attention.

v=3-23-11.
WHY EAT FLESH?

A Stereopticon Lecture at the Sanitarium Parlor, Battle Creek, Mich., Thursday, February 16, 1911, at 8:00 P. M.

By,

J. H. Kellogg, M. D.

I came very near letting you off tonight. I was in the operating room five minutes ago and have been standing at the operating table for six hours and a half, so I have had an excellent preparation to lecture.

I suppose you have seen a spectacle of that sort more than once in riding through the country. Perhaps some of you lived in the country in your childhood, and you know why this cow is hitched up to the tree in this particular way. Here is a rope around the animal's horns, and here is a pulley and chain you see, and the rope is being pulled to pull the head down so the animal will have no chance at all for its life, will have no chance to defend itself against the assassin who will attack it a moment later. Here it is killed and hung up to a tree. Its throat has bee cut, and now it is being disemboweled. This is copied from a farmer's bulletin, and the farmer is instructed just how to do it. These are not pictures prepared for this special purpose, but they are copied from a farmers' bulletin, prepared to show the farmer how to assassinate an ox, just exactly where to put his knife into it to do the thing most effectively, and how to cut it up, how to take the head off, and all the other different murderous operations; then finally how to get it up into the tree out of the reach of the cats and the dogs, so that it might cool a little and be prepared for other carnivorous animals to consume.
I think it was Ellen Richards who said not very long ago that the trouble with our business men, our public men in politics and business that are dropping out so fast, is not the great business that they do; it is not the hard work that they do; but it is the big dinners that they eat—the dinners and not the worm; and one of the most harmful elements of these big dinners is the beef.

Now, we don't do it in that clumsy way any more. The farmer very seldom kills an ox. It is less trouble to buy some meat from the village butcher; so he sends his fat cattle to Chicago, to Kansas City, Cincinnati, or St. Louis, or some other place where killing is done by machinery and by wholesale. Down in the great Abattoirs, the yards of which you see a picture of here, there is a pool of blood sufficient to float the Great Eastern, or the greatest warship afloat. Here are the cattle being chased into pens. They are driven into these pens. I understand they had for a great many years down there an old ram they called Judas, and it was his duty to start the procession, and he would lead the sheep around into the killing place, then he would pass out by a side door, and went around for another lot. That was his regular business that he had been educated to do. He was a partner in the killing business. Now, after while they are coaxed down into a long procession here, each one into a little space by itself, and here stand men whose whole duty it is to stun the animals by a blow upon the head at a vulnerable point. The animal is stunned, and while in this stunned condition, the door is drawn up, the animal falls down, then it is skinned and disemboweled, and of course it never comes to. Well, I say never comes to—not until it wakes up after some reincarnation. Mrs. Dewey was telling a story of a Hindu prince who complains because the Anglo-Saxons are more and more making cemeteries of their stomachs, and every tooth is a tombstone. You never thought of that before, did you?
That is quite a picturesque idea. I think Charles Lamb originated the idea of
the stomach being a tombstone when he wrote his essay on roast pig. It was rather hard on the pig, he said, but the pig had some compensation in the fact that he had such a fine sepulchre. And Mr. Armour says that nothing gets away but the squeal. Even, for instance, the intestines and the entrails of the animal, and the offal is all served up in one way or another, as tripe or sausage.

Here are some sheep, poor, innocent animals. You have, of course, looked into the face of a sheep. Did you ever notice its beautiful, gentle eyes, and did you ever stop to think that behind an eye there is a mind? Wherever you see an eye there is a mind. There is a thinking mind behind the eye. The eye is the means of expression, the means by which the brain looks out, the mind looks out. When you go down the street and you see a pair of eyes looking up to you, a dog's eyes, perhaps, looking up to you, the dog is sizing you up; he is forming an opinion of you. Here is a mind; these lower animals have a mind; they are not inanimate things, they are beings. I think most people look upon animals as simply things, just as they think of potatoes, cabbage, and vegetables and things of that sort. Beef is only a French word which hides the name of the animal we are acquainted with, the patient ox. The patient ox has character; he is patient, he is industrious, he is faithful, he is honest, and yet we knock him in the head, assassinate him, creep up behind when he is not looking, bear him to earth, then sit down and pick his bones. What worse could a lion do, or a leopard, or a hyena, or any other carnivorous beast? Here is the wheel, the great wheel of destiny. It comes over here, and down in this pit stands a man, and he catches the hog by the leg, attaches that chain to his hind leg, then the wheel lifts him up, and as it comes over here, another man stands over here, and with a long knife thrusts it into his throat, opens the large arteries there, and the blood gushes out. Then it gets up here, and the chain is caught, and carried along on this thing here—here is one going down, you see, and it goes down a little ways and it is dipped into a scalding vat, and you can see the
pigs at any time wriggling in the scalding vat, struggling and kicking like a lobster thrown into a pot of boiling water. The animals are hardly dead before their bodies are opened up and they are disemboweled, and all this is done to minister to the abnormal taste. That is why I am showing you these pictures; it is not to put the horrid pictures into your mind or try to bring them in there; they are very powerful pictures; but consider, if we demand flesh food, as Ovid says,

"If man with fleshy morsels must be fed,
And chaw with bloody teeth the breathing bread,
What else is this but to devour our guests
And barb'rously renew Cyclopean feasts?"

These animals are alive; they are beings; they are not merely inanimate things. But there is a penalty for this wrong doing. It is an unnatural thing, altogether an unnatural thing. Flesh is an unnatural food. It is unnatural for many reasons. First, because there is an aversion to it; the getting of it is a horrid thing. Now, contrast this method of getting food that we have been looking at for a moment, and all the other unpleasant processes that are connected with the preparation of meat for the table in the kitchen and the meat shop, etc., contrast that, if you will, with a visit to an orchard, or a group of schoolboys going through an orchard or out nutting on an autumn day. How those boys delight to climb trees and shake down the nuts, crack them open and eat the meats—how sweet they are. Sweet as a nut is a common saying; and the orchard—is there anything more delightful than to get into an orchard and see the great peaches hanging down, the luscious pears, and reach up for them? There is no bloodshed there; there is no pain, there is no misery; there is no distress; there are no pangs of remorse; there is no sentiment within one which says, "Don't do it;" which makes one feel ashamed of himself that he has done it—to coax a sheep to come up to you very gently, and pat it on its head, then
suddenly cut its throat when it is not looking. It does not come very far short of actual assassination. It is the same kind of spirit that creeps up behind a man and thrusts a knife into him from behind; it is the very same sort of spirit. Now,

Now, the taking of food in the natural way, the food heaven has prepared for us, reaching up for it and taking it down as it is hung out for us, beautiful and graciously hanging down from the laden boughs, and we reach up for it and take that sun-kissed, heaven-blessed food and nourish our bodies with it,—that is the natural process, and that food we take from the fields, the herb, the seed of the herb, and the fruit of the tree which you find, by the first chapter of Genesis, was intended for man's sustenance,—when we take such food, we find it complete; it is complete. In a kernel of corn there is everything a human being needs. There is food for the muscle, the protein, and there is starch, and oil for the fat, and there is lime for the bones—it is all there, everything is there; but when one eats the flesh of an animal, he gets only the protein. If he eats the lean meat he gets no fat; if he eats the lean meat he gets food for the muscles; if he eats the fat and the lean meat, he gets food for the fat and the muscles, but of the carbohydrates he gets none. The carbohydrates, the starch and sugar which are absolutely essential for life, is not there; and the lime is not there, for it has been concentrated in the bones; so if you want to get the corn all back, you have got to eat the whole hog. Now, then, if you had to eat the skin and the core of an apple when you ate it, had to swallow every bit of it in order to get the proper sustenance for your body, you would think it was something of a hardship. If when you came to eat corn, you had to take not only the kernels of corn, but you had to eat the cob too, and grind it up, you would say that must be a very unnatural food, if one could not get sustenance from it without going through such hardships as that. That is true when you come to the animal;
you must eat the bone. Otherwise you have no lime at all, because the lime is in the bones. In the bones we have two thirds of the entire weight of the bone is made up of lime, of mineral matter; whereas of the flesh, there is only about four grains of lime in a pound,—just think of it. We need a very considerable amount of lime to keep the body supplied. Dr. Sherman, of Columbia University, of New York City, tells us,—he published a lecture not very long ago, published in a paper that one half of the people of the United States are suffering from lime starvation. That is why our teeth are decaying; why our bones are softening; that is why we have so much disease of the bones, rickets, tuberculosis and other things.

Well, just a word about that. Now, I want to show you a few other things to complete this impression. Here is a diagram showing the liver, and this is intended to show you how the food substances which are dissolved in the alimentary canal, the intestine, and taken into the blood are all carried up through the liver to be filtered, examined and inspected before they are allowed to pass on into the rest of the body. The liver is a sort of sanitary inspector, a pure food bureau, if you please, where all the foodstuffs have been thoroughly inspected, before they are digested and assimilated, served out to the body, they pass through the liver for careful inspection, and it takes out the lead and the arsenic and the benzoate of soda, and the mustard, pepper, peppercorn, the ginger, and the horseradish, Worcestershire sauce, etc.,—the liver takes these things out; it must do it, because they are poisons. If they are allowed to pass on into the arteries, they cause arteriosclerosis, degeneration, apoplexy and Bright's disease, and a hundred other troubles that some of you know something about; and that is where you get it. Now, what happened to the dog that had an operation performed by which this portal vein which goes straight along up into the liver was joined to the vena cava so that the blood instead of going up through the liver went right straight into the general blood stream?
and so passed on into the rest of the body? I saw this operation done in Pawlows laboratory—the arteries tied so the blood could not get through the liver for filtration, but had to go through this long opening, which was made, and passed into the general circulation. The dog got along all right for three days. He was fed on beefsteak. At the end of three days, he was a dead dog. Now, another dog that had the same operation was fed upon bread and milk, and he lived right along, as happy and cheerful and enjoyed life as much as any dog can, and remained healthy indefinitely, just as long as any other dog, if he did not eat meat; but as soon as such a dog eats meat, it is a dead dog; because it has had this operation performed so the liver can no longer filter out the poisons from the food which result from the eating of meat; so that the poisons are allowed to pass straight into the body; so the dog begins to get sick at once, and it is only three days before there is a dog funeral.

Now, there are a whole lot of people going down the same road as the dog did, for the very same reason; they have got crippled livers, while the liver is not entirely out of use, it is more than half out of use; it is a liver that has been spoiled with intestinal auto-intoxication. Anybody that has had auto-intoxication for twenty years, anybody that has had a coated tongue for twenty years, anybody that has been subject to continuous bilious attacks, and has had to take purgatives and laxatives, blue mass, blue pill and all that sort of thing—anybody that has been going on for a maximum series of years in that way has certainly got a badly crippled liver. Not infrequently we find the liver is shrunken. Very often we find it enlarged. This all means different stages of disease. Now, as the result of the inefficiency of these crippled livers, here is another evidence of the crippling of the liver—a dingy skin, and brown big spots on your hands and on your face, and a brown circle around your eyes, a dingy skin, the loss of that fair, clear, transparent skin you used to
have when you were boys and girls. There is no need to have lost that. You
ought not to have lost them; there is no reason why you should lose them. I
It is only because the liver has become crippled, so you can not filter the
poisons out, and they have accumulated in the blood, and deposited in the
skin and are irritating the brain, hardening the arteries, making all
sorts of mischief in the body; and here is one of the poisons that do this work--
uric acid. Here are some crystals of uric acid; here is another one, here is a urate deposited, and here is some urinary indican, that is the indican
you see mentioned on the reports. Here are some casts. By and by the kidneys
get so irritated by this long continued irritation, and damaged, that they become
inflamed and the epithelium is thrown off, and that is what is known as casts,
because they are in long shreds and have the form of the tubules, the little tubes
or pipes that run through the kidney.

This is a stomach, you see. You notice it is away down at the bottom
here. There is no acid, and the stomach is really worn out. It is not much
more account than a pocket in your pantaloons; it is just simply a pouch. The
food drops into it, and it has great trouble to get it out, and sometimes it has
to be washed out.

Then this is the meat eater's stomach at the end, after years of abuse,
and it has been excited too much, and after while it gradually begins to fail,
is worn out more and more, and more and more, and then the mischief goes on
fast when you get to that point when the stomach gets to the point shown here,
because there is no gastric juice there to disinfect the food, and the germs
have come in along with the beefsteak, and the meats of all kinds, and there is
nothing at all to hinder them, so that is one of the natural consequences of
flesh eating, you see.

And another consequence—we are going to show you a few of the delec-
table things you eat. For instance, trichinæ—beautiful, aren't they? Aren't
they charming little creatures? Perhaps you have got some twinges in your chest muscles or somewhere else, or in your back muscles, and you have gone to the doctor, a medical man to have him give you treatment for this muscular rheumatism which you have been trying to get rid of and can't. Just as like as not there are some of these encysted trichinae, trichinae surrounded with little cysts of chalk deposited in the cysts. A German doctor some years ago wrote an article for a medical journal in which he claimed muscular rheumatism was generally due to trichinae. I suppose that is the reason why they passed such a strenuous law against American pork, and recommended the United States government to have some inspectors on hand wherever pork was killed, to inspect the pigs, and the United States inspectors found two per cent of all hogs that were killed had trichinae in them. Dr. Janeway, of New York, who died the other day, was demonstrator of anatomy in Bellevue Hospital Medical College when I was a student there 36 or 37 years ago, and he said to me that one out of every seventeen, that is six per cent, six out of every hundred of the bodies that were dissected there in their anatomical laboratories have these trichinae, and he told us to look out for them, and one out of every seventeen had trichinae in their muscles—that is six out of every hundred. A curious thing isn't it—only two out of every hundred hogs have trichinae, and six out of every hundred men. More men and women have trichinae in their muscles than the hogs. We are worse off than hogs are, in that particular. Why is it, why? We think it is a terrible thing for hogs to have trichinae. Why? Because we like them better without trichinae; but we have got more trichinae than the hogs have. We have nothing to brag about on that particular. We have three times as many. Now, why is it that three times as many men have trichinae as hogs have trichinae? It is because there are more than three times as many men who eat hogs as there are hogs who eat men. If there were as many hogs who eat men as there are men
who eat hogs, the hog would undoubtedly be just as bad off. Here is another trichinae picture, and you see these great, big, wriggling, scrambling creatures under the microscope, but very small naturally. They are only about one one hundredth of an inch long, perhaps not so large as that. They develop in the alimentary canal, and one trichina in an alimentary canal, in a few days will produce a thousand trichinae, and they bore their way into the blood vessels, get into the blood stream, and are deposited in the muscles, and produce this muscular pain, and the patient thinks he has rheumatism. Or while they are boring in there, the doctor thinks the patient has typhoid fever, or winter cholera, or something else. So the patient does not get treated for the right thing. Dr. Osler says in his latest book on medicine that the great majority of cases of trichinae infection pass without observation, are treated for some other disease, sometimes for spinal meningitis.

Now, here is another beautiful creature, graceful, isn't he--such a long, slender, graceful body, isn't it lovely? That is a tapeworm, and some of you have got it. I do not know which ones, but among the several hundred people about here at the Sanitarium at the present time, there must be some that have these parasites infesting their bodies. They are getting to be very, very common; so common that we can see peddlers on the street corners selling tapeworm medicine, and doctors have to go on a regular hunt for them. I remember a small boy who came here some years ago, a little fellow four or five years old, and he was very much noted because he had a tapeworm, and the doctors had not been able to get it. His father and mother brought him here and stayed with him to see if we could not catch that worm. A number of prominent doctors in different parts of the country had got after it, and it had dodged them all, and the little fellow was very much noted because the tapeworm had become somewhat famous, or infamous, in the neighborhood where he lived, and everybody would shout out when
they saw him, "Good morning, Tommy, how is your T. W.?" Well, we got after
that tapeworm, and I am glad to say we caught him. The great trouble was to
kill the tapeworm without killing the boy. It takes just as big a dose of medi-
cine to kill a boy's tapeworm as a man's tapeworm, and it had made the boy very
sick, a day or two. Just think of a man going around the house with such a beast,
perhaps thirty or forty feet long, and wriggling around inside of one's anatomy,
stealing its life, a parasite living off its host, an unwelcome lodger. These par-
asites produce poison, and they produce poisonous substances which make the man
sick. That is why the man with tapeworm is often thin and poor. It is not
because he eats so much of his dinner—he could not eat a very large quantity
but it is because it produces such a large amount of a poisonous substance
which is absorbed into the body of the man and makes him ill. So it is not a
very comfortable thing to have tapeworm. Now, beef is always liable to tapeworm.
We get tapeworms from beef nine out of ten. There is a kind that comes from the
pig, but it is generally the rare beef you eat. Roast beef, bologna sausage, and
things of that sort are always liable to contain tapeworm. I remember the last
time I ever prescribed scraped beef for anybody, or rather I remember when I
stopped prescribing scraped beef and rare beef. I used to prescribe a good deal
of meat. I should think for twenty or twenty-five years I prescribed meat for
people to eat. I thought there were certain cases in which it was necessary, and
it was only when we found the true conditions for which we thought meat was
necessary that they were actually made worse by meat, through the discovery of
Pavlow, of St. Petersburg—when we discovered that we thought it was time for us
to stop. I stopped prescribing rare meat before that time. Meat was so much
more easily digestible than rare than cooked that we used to prescribe it very
rare. We had a lady here who had a very sour stomach, so I gave her rare ham-
burger steaks. She seemed to think she could prepare steaks at home as well as
here, so she went home to cook the steaks herself, and it didn't cost so much
to do it that way. I could not meet her argument, so I had to let her go.
After she had been home about three months, she wrote me she had a bill of
$46.75, or something like that, a bill against me personally. Well, I was not
very particularly pleased with that. I went on to finish up the letter to see
what the grounds were, and she said, "You are the cause of my having a tapeworm,
for you prescribed rare meat for me, gave me tapeworm, and I had to employ a
doctor, and it cost me $46.75, forty dollars for that doctor's services, and
75 cents for medicine to kill the tapeworm, and now I want you to pay the bill."
Well, I confess I felt pretty solemn about that. I didn't care so much about
the money, but the idea that I had to pay $46.75 for a tapeworm after I had been
talking about tapeworms for all these years. It looked as though the tapeworm
was going to get even with me. I thought it over for a couple of days, and I
found a way out. I decided to try it to see how it would work. So I wrote her
and I said, "it was just three months ago that you were here, and you were here
about six weeks. We have a record of it. You have the doctor examine that
tapeworm and tell him to look at his teeth and see how old he is, and if he will
certify to its age, and the age falls within the time you were here so as to prove
that the tapeworm was born here within that time, I will pay the bill." I never
heard another word from her. I got out of it that time, but I thought that was
a close call, and I would never run any more chances of that sort.

Now, we sometimes see a nice piece of beef hanging up in the market,
and it looks so nice and pink. What is the matter? That animal had consumption
before it died. That is why it is a little pale. Sometimes it is a very dark
red. That is the color you see here. That means it had fever. Sometimes it
is yellowish, and that means the ox had jaundice. Did you know that these
creatures have jaundice and gallstones and bilious attacks, and autointoxication,
headaches, and all that sort of thing. I have seen an old ox going along and 
acting certainly as though he were having a sick headache. Now, just think of 
eating such an animal. How do you feel yourself when you have got a headache?
Don't you feel mean? Doesn't another creature feel just as mean under the same 
conditions? When I was up in Portland, Oregon some years ago, the health officer 
of the city heard I was there in town, came up to my hotel and asked me to go 
with him to his office to see a quarter of beef, a forequarter of an ox he had 
just recently condemned; and there was the inside of the chest of that ox covered 
all over with great masses of tubercles, like bunches of grapes lying around 
inside, in enormous masses. Here is a cow with lumpy jar—a great, big ulcer. 
They cut off the head, of course, but the rest of the body goes right along as 
prime beef, choice steaks, the finest kind of cuts, and you have eaten it lots 
of times. This end, of course, they have cut off and it goes over to the oleo-
margarine factory to be made into oleomargarine butter. This whole slaughtering 
business is most delightful, isn't it! The idea of killing animals and flesh 
eating can not possibly be separated from ideas that are repulsive and loathsome 
and hideous and inhuman. Here is a portion of the kidney of an animal affected 
with tuberculosis. Here is tubercular ulceration of the intestine. These are 
tubercular ulcers inside of the intestine of a pig. What do they do with that 
pig? They simply cut off the ulcerous piece and send the rest along. That went, 
perhaps, into bouillon broth, or Armour's Extract of Beef. That is what the odds 
and ends go into. A man that worked there in that factory told me some years 
ago—he recognized his friend, you see; Bologna sausage differs from pork 
sausage only in the fact that pork sausage is made of pork, while Bologna 
sausage is made of beef and almost everything else. In San Francisco some years 
ago, a butcher made a reputation for having the finest sausages in town. He 
took the premium at a fair for these sausages. Everything went very well, and
he had an enormous trade, and the trade grew to such an extent it finally worked out his ruin. The neighbors noticed along about three o'clock in the morning there was a tremendous caterwauling in the neighborhood. They made an investigation, and found the streets were full of boys bringing in stray cats to this butcher. That is why his Bologna sausage had such a fine, feline flavor, you see.

Doesn't that look better? Wouldn't you rather promote into your anatomy, wouldn't you rather transmute into human flesh and muscle and brains and ideas, wouldn't you transfigure, if you please, these fine, refined and delicate and luscious products of the vegetable kingdom, all the luscious fruits, and the lovely grains, and delightful fresh vegetables, and the appetizing things that mother earth naturally serves up for us? Isn't it a more sensible and rational thing than to go down on all fours and gnaw bones with the dogs? Think of these things. I thank you for your attention.

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v-3-24-11.
ARE WE TOO MUCH CIVILIZED?

Stereopticon.
A Lecture at the Sanitarium Parlor, Battle Creek, Mich., Thursday, February 23, 1911, at 8:00 P. M. By,
J. H. Kellogg, M.D.

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A man wrote a book not very long ago entitled "The Cause and Cure of Civilization." Probably the greatest evil with which we have to contend at the present time is too much civilization. New Yorkitis and Chicagoitis and similar maladies seem to be a very contagious epidemic. Civilization is a good thing. There is no question about that. Its value is beyond any possibility of estimate, but it is not an unmixed good. There are certain deadly evils connected with our modern civilization which are almost incalculable in the extent of mischief which they do. We were all born wild, every one of us. Some seem to be born more wild than others; but we all have to be tamed. If we had been dropped into the forest when we were born and left to grow up with the squirrels and the ground hogs and the other creatures of the woods, we would be just as wild and savage as any of them. There isn't any doubt about that. The consequences of civilization are to a considerable degree hereditary; they are transmitted, but the culture of civilization is not transmitted. The habits of civilization are not transmitted. We have to be taught and have to be trained from the cradle up; and it takes a long, long time to tame a boy so as to make him comfortable to live with in a civilized state. I am sure this remark must be a great comfort to some of you, because you can see it explains some of your wild pranks when you were urchins which your parents could not account for.

We are all born wild, there isn't any doubt about it; and civilization, education, parental care and training are simply methods of taming. Just think of the little
baby, how much attention the mother has to give to that child during the first few years of its life, to bring it within the same of conventional usage of various sorts. It takes an enormous amount of careful training to accustom us to the civilized state. Probably most of us are pretty nearly spoiled in taming. We get gamed too much. I am sure I was tamed more than I ought to have been; and I dare say that happens to almost everybody. This process of taming or civilization is carried to such an extent that it dwarfs and depreciates if it does not altogether obliterate some of our finer faculties and instincts. Some time ago I had a visit from a noted preacher—I do not dare mention his name because he is so well known. His name is familiar to every one of you. He had a lecture appointment here in Battle Creek some years ago, and the next morning he came up to my house early, and he said, "Doctor, I lectured here last night, and I stayed over night especially for the purpose of coming up to see you; and now I want you to tell me what to eat." He said, "I have been in the habit for a good many years of making sport of you, and I will make this confession right at the start; but some months ago I was down at New York and met a friend of mine, and we got to talking about you, and I was expressing my views about your notions about diet, etc., and he said, "But Dr. Kellogg works like a horse.""

Now he said, "That made a great impression upon my mind; I have been thinking about it a good many times since, and I have a matter under consideration with reference to my future work which demands of me all the energy that I can possibly put into it; I have before me the next ten years the opportunity of my life. I have got to write two books a year, and I have got to give a sermon every Sunday, and I have got to write an article for the newspapers every week, and I have just got my hands full of work, and I want to get the most out of myself, and it impresses me it must make a difference what a man eats, and the remark that man made that you work like a horse impressed me; and that is why I am here.
That is the way I want to work. Now what is the secret? Why is it you can work like a horse?" "Well," I said, "it is simply because I eat like a horse." "Oh," he said, "You think then a man must eat a great deal if he wants to work hard?" "I didn't say anything of the sort," I said; "I only said a man must eat like a horse; I didn't say he must eat as much as a horse, but like a horse. A horse uses horse sense in his eating, and you don't. Most people seem to have lost their horse sense. For instance, here you are a zippy college graduate, a classical graduate, and a theological graduate, and you have been a public teacher for many years, and yet you come here and ask me what to eat! Never a horse nor a cow or a sheep came to me with such a question as that. A horse has horse sense and he knows what to eat, and does not have to hunt up somebody to tell him." Well, now, that is one of the things that we have lost in civilization. I must just tell you a word further about that. After some conversation about that matter, he found I didn't eat any beefsteaks, told me how much he thought of beefsteaks, and wondered if I didn't enjoy beefsteaks as he did, and said he said, "I don't see how in the world I could ever get along without a juicy beefsteak," and I finally said to him I hadn't the slightest desire to make a potter's field of my stomach. He sprang to his feet, and he smote his hands, "Doctor, I am a fool, I have been a fool all my life." Well, he said a certain kind of fool; I won't mention what sort of fool he said he was, because I was surprised to hear a clergyman making such a remark even about himself; but he said he was an awful sort of fool and had been all his lifetime, and he never was going to eat any more meat as long as he lived; and I guess he hasn't, for I see he is making good; he is making good. He was put into a very hard place where very few men succeed, and several men tried it and they had all failed; but he has made good. Some of you perhaps have heard Dr. Hillis in Brooklin sometime, if and thought he preached a good sermon; it was because he stopped eating beefsteak.
Now, civilization had destroyed our instincts,—those keen, fine faculties which the Creator gave us to direct us. A horse turned loose in a forest does not have to hunt up a professor of botany to tell him what is the proper food for him to eat. Just think of such a thing. A wild savage, an Indian turned loose in the forest in a strange land, is not in danger of getting poisoned. If he gets hold of a new plant he nibbles it in a most gingerly fashion, just takes a little taste of it to see what it is like. If he finds it is bitter, if he finds it stings, if he finds it smarting, has an astringent, puckering flavor, he throws it away, because those are signboards which Nature has put upon certain things saying, “Beware; this is a poison; beware of it.” Now, what does civilized man do? He has gone and gathered up those signs, gone into the forest and hunged up all those signboards, those poison-warning signboards, warnings and poison indicators of poisonous properties, gathered them all up, put them into boxes on the table, and when there comes along a nice, simple, wholesome food like a potato, for example, he picks up the pepper box and sprinkles some of that poison onto it, puts the poison into it. The savage does not do such a thing as stinging that. When he finds something that has got the sign of pepper in it, he passes it by; he knows that it is a poison and it is a poison. The oil of cayenne is almost as poison as prussic acid. It is the greatest good fortune in the world that the merchants adulterate pepper. If they didn’t adulterate it, it would kill us off faster than it does. Now, Prof. Voix, of Paris, has found out that pepper has six times the power of gin to make gin liver—just think of it—and yet there isn’t a temperance pledge in the world which includes pepper. Why, it is more important, if we are going to keep the liver up to its work—it is more important to avoid pepper than to avoid gin, if you are going to protect your liver.

I don’t know of any community that ever started out right except the wonderful little community down at Oberlin, Ohio that started out sixty odd
years ago to set a model for the world. They had there a dietetic creed that was really straight away back in the thirties—just think of it,—or the forties,—away back there in the forties—no tea or coffee on the table; no mustard, pepper, peppercorn, ginger, or any of those things; no beefsteak, no alcohol, no tobacco except for medicine. In those days tobacco was supposed to be a very good medicine, and when a man needed an emetic, he could take a little tobacco to clear out his stomach, and it was allowed; it was in the textbooks on materia medica; but it was cast out of the materia medica long ago. But today you can not find a single materia medica, a scientific textbook on materia medica in the world that has tobacco in it. And in less than twenty years of the present time, alcohol will be cast out also. You won't find alcohol in the materia medica twenty years hence; for doctors are finding out that alcohol is a poison as well as tobacco. Well, as I said, civilization has smothered out instincts so that we tolerate things that are most unclean and most unwholesome. Those of you who have traveled on the continent of Europe, you have some conception of that more than we have perhaps in this country. A man goes out west for example, to make a new home. He clears a place, builds his cabin, then digs a hole behind his cabin to put filthy water into; slops and filth of all sorts go into that hole; and a few feet away he digs another hole, and that is to get water out of; and what goes into one hole comes out of the other. It is great economy, you see, a regular circulation. That is the way he begins to cultivate disease. Now, a savage in the interior of Africa would not do such a silly thing as that. Instinct tells him to boil his water. The natives of Africa never think of drinking without boiling the water before they drink it. They have learned a few things by experience; or rather instinct has taught them that perhaps, taught them to avoid these evil things. Down in Chicago the authorities every summer still have to warn the people about boiling the water.
And there are only a few of them that will do it. By the way, some of you perhaps have noticed that the newspapers recently announced a telegram from Washington, just yesterday I think it was, an announcement from the national department of agriculture, the United States Department of Agriculture, warning everybody to boil their pork, to cook the pork thoroughly, notwithstanding it has been inspected—that is what the official announcement says—withstanding the same government inspection, or local inspection, you must cook your pork, because there are so many vermin there that the inspectors can not find them all even if they tried with microscopes. So you must cook it. Cooked trichinae are safer than uncooked ones. Stewed tapeworm is much healthier and safer than raw tapeworm, don't you see. The raw tapeworm will lay hold of you and make a lodging house of you and stay there, live with you and raise a family, and you will find it awfully hard work to oust him; he won't pay his rent; you can not get rid of him. Now, trichinae will treat you in the same way; they will climb up into your muscles, make little nests until you are just all full of trichinae nests, just all full—till you are fairly worm eaten, and you have got to carry them around with you just as long as you live; so remember, it is not simply a crank crying in the wilderness, like Dr. Kellogg, that is warning you about your pork; the United States government has sent out an official warning to the people of the United States to beware of pork. And what will the farmers say to old Secretary Wilson? What will they say? I suppose they will protest from every quarter—"My pork is all right; my pork is all right and hasn't any trichinae in it." But you can not trust any pork. The pig has lived with human beings so long that he has become inoculated with human diseases. If a man dies, a rat eats him and gets trichinae; then the rat dies, the hog eats him, and gets trichinae; then the hog dies and the man eats him and gets trichinae; so one scavenger eats the other and passes the parasite around. Haven't we come to
a strange pase? Haven't our instincts become terribly obliterated when we can tolerate such things in ourselves?

Now, the instinct which demands fresh air has been marvelously stifled. Why, I have seen people so excited it almost made a riot when somebody opened a window to let a little fresh air in. There is plenty of fresh air here, but it is too warm. We have a great volume of fresh air coming in through the openings underneath the windows, and a large fan that is blowing the fresh air in here, and there are plenty of openings, so we have plenty of fresh air. The house does not have any impure aroma at any rate. Now, the difficulty is that we have gotten into an unnatural environment. The race began outdoors. The first baby was born outdoors, and it was perfectly safe for that baby to live outdoors, because of its normal climate in the tropics; the atmosphere was so kindly, and the air was so congenial that there was not a bit of danger of taking cold. They didn't need any clothes other than what nature gave to them. A temperature of 86° is a neutral temperature for the body and the body requires so far as warmth is concerned; so far as protection is concerned, the body requires no clothing at all at a temperature of 86°; and in many places in the tropics that temperature is maintained. But the atmosphere of the world changed. Palms once grew at the poles. Lieutenant Shackleton, when he was down at the Antarctic region exploring about found four little pigmy penguins lying around there; but he found the skeletons of penguins that were taller than men when they stood up, giant penguins that formerly lived in that region when the palms and the ferns were growing to gigantic stature in that then tropical region. The tropical climate moved toward the equator unfortunately. The same thing is true at the north pole—great deposits of coal up there where there were once enormous tropical forests, and the tropical climate moved south. Man seemed to have a natural instinct then, as he does still, to stick to the soil. We somehow love to stay by the soil; we have a liking for the old country I shall never forget my first trip
to Europe. I was going into New York over the Lehigh Valley railroad, and early in the morning, about four o'clock, we were passing through the mountains, and the train stopped, and I got out and looked at the scenery a little while, and an Irishman passed, and he shouted out to me, "Ah, you are going back to the old country, are you?" He mistook me for a countryman and thought I was going back, and he was sorry he was not going along too, he said.

Well, the human race, at least a part of them, remained at the north, tried to remain at the north, until it got so cold they had to dig a hole in the ground or find a hole and move in, and this is the way they began to move into caves, and the cave man was driven into the cave because of the change of climate; and unfortunately we never got out of that cave; we are still in the hole. After while we began to get a little more civilized and to build a roof over the hole; then man had a house with a cellar; he had one story above another, but he was still living in the hole. We have improved the cave, made it beautiful, decorated it, made it air tight; but we are still troglodytes—we are living in the same old style of our ancestors of prehistoric Europe, and that is why we are degenerating; that is one reason why we are degenerating. We have got to get out of the cave, and got to get out into God's sunshine, if we are ever going to stop this degeneration which is going on, which is fading out our faces, and bleaching our hair prematurely, and hardening our arteries, and killing us off with consumption. Tuberculosis is recognized everywhere throughout the civilized world as a house disease. There is never such a thing as tuberculosis among outdoor animals. Even dogs, lions, cats, and goats shut up in houses, shut up in pens, get tuberculosis; but you never found such a thing outdoors. Cows get tuberculosis when they are shut up in stables. Turn them outdoors and they get well. Down in Massachusetts they used to kill the cows as soon as they got tuberculosis. They didn't bury those cows—yes they did; they sent them down
into the markets in Boston, and the people came and bought them and buried them in their own stomachs. Leonardo da Vinci originated that idea, the great Italian artist, more than 200 years ago. It was not my original idea at all. Leonardo da Vinci was going by a butcher shop one day, and he said, "Man is truly the king of beasts; he destroys more lives than any other creature. We make burial places of our bodies." That was Leonardo da Vinci; so Charles Lamb, I think, must have borrowed the idea from the great artist; for when he wrote his essay on roast pig, he expressed great sympathy for the pig, but after all he said, the pig had the compensation that he had such a fine sepulchre—such a fine sepulchre.

You will remember, perhaps, the story Herodotus tells of one of the Roman generals who went into Western India, and he found there a people that had no cemeteries, and he found they had there the horrid custom that nobody ever died a natural death. They had the horrid custom, when they found the parents were not likely to live very long, or had outlived their usefulness—they called the whole family together, and somebody very kindly stepped up behind and ended the career of the old patriarch; and then they had a great feast. And if anybody got sick, they were taken care of in the same way. The Roman general was very much horrified when he found out the fact—no cemeteries, and he inquired how they disposed of their dead, and found that they simply had a feast when there was anybody about to die; and he expostulated with the old chief, offered him a large sum of money if he would reform this practice; but he declined, and he could not understand why there was any objection to it. He said to the Roman general in apology, "How could we offer our parents greater respect? How would we do them greater honor than to present our bodies to be their tombs?"

I have searched high and low for a pig cemetery in the United States. I have not been able to find one anywhere. The American people offer their bodies to be the tomb of the American hog. How could we offer any greater honor?
Well, our instincts, as I said, have become perverted, terribly perverted, so that things that ought to be repellant to us, that ought to be loathsome and horrible and vile and contemptible, are commonplace and even are considered in every way proper and agreeable. Plutarch, the author of Plutarch's *Moral Lives*, the world's model biographer—no one has ever professed, I guess, to write anything that was better than Plutarch wrote. Plutarch wrote also an essay against flesh eating. I hope I am not hurting anybody's feelings by my remarks. But Plutarch said, "If you will eat flesh, then let every man who wants a sheep for dinner kill him with his own hands, sit down and take off the skin, then disembowel him, then dismember him, and then prepare with his own hands these severed limbs for his feast—if he will eat flesh."

Now, how many of you, my friends, how many of you if you had to prepare meat yourself, if you had to go out in the back yard and catch the sheep, bring him up, cut his throat, stand by and assist in the preparation of the slaughter of that animal,—how many of you would want to have meat? I think a good many of you would feel as little Mary did. She had a little lamb, and it was a cute little fellow, and they used to play together in the yard, run all about the house—this is a true story; it is not the fable of Mary and the little lamb that followed her to school one day; this is another story. And she tied a pink ribbon around its neck, and they were great playmates, good fellows, fine companions. The lamb would run all over the house, and it was almost the only playmate the little girl had. By and by the little fellow grew up, got plump and fat, and the father said to himself one day, "Why, he is in mighty fine condition; he would make a nice roast for dinner, wouldn't he?" So, while Mary was visiting the neighbors one day, the lamb was killed and served up on the table for dinner, a portion of him; and the father cut off a piece of roast lamb, passed it to the little girl, and she declined. "What, Mary, don't you
like roast lamb!" She looked into her father's face with the tears running down her cheeks,—"Oh, Papa, I can not eat Nannie." The little girl could not eat her friend. The father had obliterated his normal instincts to such a degree that his feeling toward that lamb was just that of a lion toward a lamb—it was simply the feeling of a wild beast. He simply desired to eat that lamb, just as a lion would, or a leopard, or a lynx, or a wild cat, or any other carnivorous creature—a wolf, perhaps.

That is abnormal; that is an acquired appetite; it is absolutely abnormal, as you see; it is repugnant to our natural senses. Now, there is nothing repugnant about reaching up and picking a luscious pear off a limb. There isn't anything repugnant about that—it is a normal instinct. There is nothing repugnant about shaking a tree and collecting the golden nuts in the fall, and cracking them, taking out the delicious, golden meat inside—there is nothing repugnant about that. That is a natural human instinct.

Well, so we have acquired a vast number of instincts that are abnormal perversions; and that is why we are going down, down, down so fast. We must get outdoors, we must get out of the hole, if we would cure consumption. We are trying to do it, and we are making a little headway against this awful disease, because we are learning to sleep outdoors at night or to sleep with the windows wide open. Why, I remember a time when people were actually afraid to open their windows, afraid of night air; when night air was looked upon as deadly air. That was when we didn't know it was the mosquito that carried malaria; it was supposed to be something wrong in the air. The word "malaria" means simply bad air, you know; and it was supposed the night air was bad, something dangerous. Now we know that malaria is brought about by only one cause, the mosquito which is abroad at night, and that the air near the ground is dangerous only because the mosquito is near the ground. When I was visiting Rome some years ago, I
noticed in passing along the Appian way some very tall pedestal tombs, and on
the top of these tombs were little houses, and people climbed up there twenty-five
or thirty feet on ladders, and built their little houses on the top of the great
tombs. And I looked out over the Campagna and found houses built away up in
the air on the framework of trestles, and my guide told me those people had
built their houses up there to get rid of malaria. Malaria was very common
there. They didn't know it was the mosquito. Now we know there is no danger
in night air. We simply screen the air to keep the mosquitoes out, and that is
all that is necessary to protect us against any evil that may be in the air
at night. That is the only difference in the salubriousness of night and day air.
One New York doctor considered it positively dangerous to breathe
air that had been outdoors at night; so he advised everybody to open the doors
and windows wide in the day time, and then before the sun went down, to shut
the sleeping rooms up tight, to shut the bedroom door tight, shut the windows
all up tight; when at bed time, open the door slip in quickly, so as not to let
out any of that good, beautiful, lovely, salubrious air and not let in any of
the deadly night air. He figured out that there is oxygen enough in there to
last a man a month and ridiculed the idea that anybody would smother over night.
He argued that we only use one cubic inch of oxygen at a breath, and that is
only 15 to 18 cubic inches a minute, and there are not less than 400 cubic
inches of oxygen, or 350 cubic inches of oxygen in every cubic foot of air; so
you see there is air enough in a room, oxygen enough to last a man a month, a
month of nights at any rate. Now, he didn't recognize the fact that the reason
we need fresh air is because we pollute the air. Every breath we breathe out
spoils three cubic feet of air; and we are polluting the air. We need fresh
air to wash away the dirty air that we have soiled with our outgoing breath.
It takes more than a thimbleful of water to wash the dirt out of a stained nap-
kin. It takes more than a quart of water, because the process of washing is simply a process of diluting the dirt. We dilute the dirt in a table napkin with a barrelful of water, and there is some dirt there yet; we dilute that with another barrelful of water which dilutes it still more; and then another barrelful of water which dilutes it still more. It is exactly so with the air. The air that goes out of our lungs is saturated with poisonous matters, and it takes three cubic feet, or three quarters of a barrelful of air to dilute it enough so it is no longer dangerous; the dirt must be diluted that much so it will not be dangerous any longer. That is why we need ventilation. Our houses ought to be ventilated automatically. We ought to have ducts on the inside of the house that will go out to the open air from every room, or from every story at least. If the house is small, from each story will be sufficient. Then letting the fresh air in there, the warmer air of the house will pass up the duct, so the house will continually breathe. The fire place is a ventilator. On the outside wall, however, it won't ventilate unless there is fire in it. On the inside wall it will always work, because it will be always warmer than the air outdoors; so there will always be an ascending current.

There are many other things in which we have departed from normal ways. We are content to wear clothes, for instance, day after day, day after day. I know people who never think of changing their stockings more than once a week, and some people wear them all winter, actually; and underclothes. It is impossible to wear a garment two hours without soiling it; so certainly a garment that has been worn one day is absolutely unfit to wear another day unless it has been cleansed, at least exposed to the air and the light so that it may be disinfected. If one wants to keep the skin thoroughly healthy, he has got to have clean clothes every day. Wearing clothes is the dirtiest habit we cultivate, any way, because it keeps the skin covered, and the excretions that are coming out from the skin all the while are retained in contact with the skin; they are
xaxai collected, the clothing takes them up just as blotting paper takes up moisture; and the clothing holds them right there in contact with the skin. It isn't any wonder we have skin diseases. If you go into Africa where you find people going about with very little clothing mostly, their skins are fine as silk. I met in Cairo a few years ago a good many people from the nile, and with the skin black as soot, but as fine as the finest silk or satin—beautiful skins, without the slightest defect of any sort—no pimples, no sort of eruptions of any kind—clean, fine, polished skin. But I have got a few pictures here I want to show you. We must get away from these pervertions of civilization and get back to the natural life if we expect to save ourselves from race deterioration. We are going down hill very, very, very fast.

Arteriosclerosis has increased 300% in ten years—just think of that. Here are just a few of the dangers that come from civilization, and we will look at them a few moments and see some of the ways that we can avoid them. That is where a good deal of disease comes from. There could not be a better scheme for spreading disease than a common towel, or a roller towel of any sort. You never should have such a thing in the house school or factory, or any other place. The individual towel is essential to individual safety. That is the wrong way. Here is the right way—individual towels and individual soap for everyone. The soap is not so dangerous as the towel, because the soap is itself a very good antiseptic, and I am not certain that any disease has ever been traced to soap. There is a good deal said in advertisements about soap made from pure materials and all that sort of thing, but I don't think there is much in that, because the process of soap making is such as to sterilize and disinfect everything, and soap itself is antiseptic.

Water that comes from an impure source is a most subtle method of introducing germs into the body, because when we take water into the stomach it does not provoke the flow of gastric juice unless we take a pint, or a con-
siderable quantity. If we take half a glass of water, for example, it passes into the stomach, there is no gastric juice to disinfect the germs; they pass right along with the water into the intestines and carry the germs into the intestine, and the disease producing germs find in the intestines conditions favorable for their growth. The stomach is a place unfavorable to the growth of germs when gastric juice is present, but favorable when the gastric juice is not present. The intestine is a very favorable place for the growth of typhoid fever germs, cholera germs, putrefactive germs, all sorts of unfriendly germs. Ordinary milk is a very, very filthy food. Commercial milk contains often as high as three or four or five or six or eight or ten million germs in a quarter of a teaspoonful. Most state governments permit commercial milk to contain a million germs to the teaspoonful. That is, ordinary commercial milk that will pass muster; milk is called pure milk when it contains only one million germs to the teaspoonful. What would you think of water that contained so many germs as that? If water had a million germs in a teaspoonful, it would be condemned; you would be looking around to see who had broken into your well or your water pipe; but milk is permitted by law to contain a million germs to the teaspoonful. So-called certified milk may have as many as fifty thousand germs to the teaspoonful. So you see it is a very difficult thing to get clean milk. It is almost impossible. I heard of a man some time ago who got some milk that was absolutely clean, and it kept that way month after month; that milk was in a clean bottle, without a germ in it, and the milk was just as perfect at the end of six months as at the start. If you get milk absolutely clean, it will keep indefinitely. It is a hard thing to do. Well, then, let us sterilize the milk. Sterilize the milk and kill the baby. Babies are made weazened and made scorbutic, get scurvy, get rickets, by sterilized milk, because the process of cooking destroys some subtle elements in the milk that are essential for the well being and good nutrition of the child. If a child is fed on sterilized milk, it must have the
juice of an orange or of a lemon every day; it must **have** some kind of fresh fruit juice. It must have the juist of some fresh, living food. I might mention incidentally here that that is the reason why some people have seemed to be benefited by the raw meat diet. It was not the nitrogenous part; it was the rawness of the meat; it was not because it was flesh, but simply because it was raw, and it was better than a continuous diet of cooked food. We should take something raw at every meal, and invalids particularly need **something** to know that thing,—to take some raw food at every meal, because uncooked foods, fruits and vegetables, contain enzymes, subtle substances which are of great use in the body, and which are lacking in the invalid body; so don't forget to eat something raw. Call for lettuce tomorrow morning, get some lettuce for dinner, and eat salads. If you haven't any digestive trouble that prevents your taking salads, use some at every meal. It is a very great advantage.

Here is a simple sterilizer,—simply a boiler with hot water and salt in the water to make a saturated solution of salt; then you put the bottle in there and it will sterilize it in such a way as to kill germs, and you can keep it six months in such cases, if it is well sterilized, with a saturated solution of salt. If you take this bottle right out of that salt water, it will snap, crack and go to pieces, because it destroys the annealing, it is so hot; so you must take it off the stove and let it cool gradually; then it will be all right. After it has been boiled, slip a cork that has been boiled into the top. I have kept milk in that way six months perfectly fresh. Cow's milk is not a very good article of food any way.

Here is one way in which germs are carried about. Coins in traveling from one pocket to another, in traveling from one hand to another, or from one mouth to another, for they often get into mouths, collect germs. There is no doubt that disease is communicated in this way.
Just think of what happens in every town. There are at least a few houses in most towns of this sort where there are contagious diseases, filthy diseases, vile, immoral diseases. The milkman stops at those houses just the same as he does at every other house. Did you ever stop to think of that? The milkman stops there, the iceman stops there; he takes money out of those houses; he makes change for those houses, dollar bills, and silver money—makes change of various sorts, and puts it right into his pocket and sets it in circulation. There is a continuous stream of infection going out from every such center.

It is a strange thing that any civilized community will tolerate the presence of such plague spots. If every minister, if every doctor, if every right minded citizen would cry out against it, the brothel could be obliterated from every community in short order; it would not be tolerated; but as it is, these things are traveling about from house to house; they get into the pawn shop and perhaps next time get into some domestic circle that is perfectly sweet and innocent, and they carry contagion along in the same way. Second hand clothes of various sorts, old pipes, handkerchiefs, spittoons,—these are all sources of communicating infection.

Here is another common source of infection—the common hair brush and comb. A good many scalps have disease. Baldness is due to a parasitic disease in a great number of cases, and is communicated from one scalp to another by the common hair brush—parasites that get down to the root of the hair and destroy the hair. That is one of the bugs that lives in the scalp. I don't know as I need to mention the name of it. Some of you have seen it in works on biology. There is another disease that is not produced by bugs but by a vegetable parasite. It is the tinea capitis, it is termed, a parasitic disease that is very hard to cure. The X ray is about the only means of cure. By the appli-
cation of the X ray to that boy's scalp, the hair would come out in a few days, and when the new hair came in after six months or so, the disease would be left out.

I found a little fellow down in Chicago about twelve or fourteen years ago whose head looked just like that, only worse. He hadn't any hair at all on his head, but just a great sore all over his head and face, and he was such a miserable little fellow I felt pity for him, wrapped a blanket around him and brought him home, and set a nurse to working with a pair of pincers pulling out his hair. At the end of six months he blossomed out with a fine head of black curly hair, the handsomest little chap I ever saw; and now he is a fine boy fifteen or sixteen years old, and I feel very proud of him; but we had an awful struggle when he was a little fellow with this parasitic disease, which is extremely hard to cure; and it is carried in the public brush and comb as well as by other means.

Did you ever stop to think about it--what a dangerous thing dust is? There are some creatures who have not lost their instincts as we have who appreciate it better than we do. Did you ever notice, for example, when a housekeeper comes around with a broom, how the old house cat always gets up, sneezes and goes out? The old house cat always gets up and goes out of the room. You know that. He has got sense enough to know that dust is dangerous; but the housekeeper does not appreciate it; and she goes on breathing that dust. Where does that dust come from? It came from the street--the dried up, pulverized droppings of animals going along the street; that is what that dust is composed of; and it is brought in and deposited upon the carpets from the shoes and clothing of people who go into the house without wiping off the filth gathered up on the streets. But in winter time we do not have the dust, and that is one of the beauties of winter. The door mat, and the rubbers left at the door, and other measures
should be adopted everywhere, and people should be required to get their feet clean before they come into the house. A missionary told me not long that over in China or Japan, when you go to the door of a house, you are never permitted to wear your shoes inside; you must take them off at the door. It would be insulting to go in with the shoes on. It would pollute the house. The Chinese and Japanese in this respect are far ahead of us in keeping clean. They do not saturate the floor and the carpets with the filth and dust of the street.

A small boy in Detroit some time ago was selling peaches, and they seemed to be beautiful peaches. A gentleman stopped to examine them, and he explored a little bit and found they were nice peaches only on top, but down in the bottom the peaches were very miserable specimens, and he said to the little boy who was selling peaches, "Why is it you have all the nice peaches on top here and the knurly ones in the bottom?" "Oh," he said, "it is for the same reason that your house has a brown stone front, while the back side is chiefly swill barrel.

We are not always so particular about the back side of the house as we ought to be. Here are heaps of filth lying around cultivating flies. The flies collect on the dirt and the filth, and they bring it into the house and deposit it on the food and everywhere about, and the baby gets its share of it. The little folks playing about the floor scrape up the dust with their fingers, put it into their mouths, and the soiled fingers go back to the carpet, rake up some more dust, and that is the way they get bowel troubles of various sorts; that is the way they become infected in a variety of ways. The handkerchief is another means of infection. The handkerchief becomes infected through the nose, then it goes into the pocket, the pocket gets infected, the hand gets infected, and then it dries upon the handkerchief, and when the handkerchief comes out it is shaken out again, and the germs fall into the air; and so the infection travels about.
The individual communion cup is one of the additions to our modern civilization. The old communion cup which was passed around from one to another sometimes communicated disease. It is not so dangerous, perhaps, in that sort of a group, or an assembly, as it might be in some other places; but it is a source of infection, and we have many sources of infection that are really too numerous to mention; to undertake to enumerate them all is more than we could possibly do.

The drinking glass is used for a great variety of things, and the drinking cup is used for all sorts of things. An individual cup is of some value even in the home, but in a public institution or a public drinking place, a cup that is used by everybody becomes a means of conveying disease. Cups that have been used by all the children promiscuously in a school have been examined and have been found to be smeared with diphtheria germs, and with tuberculosis germs, and with typhoid fever germs, and various other sorts of germs.

I am not recommending this particular brand of flakes, but you notice they are put up in beautiful little packages; but here is bread coming into your house, and look at it—a boy with his dirty hands delivers it, it is exposed to flies and to dust; it is not done up in nice paraffin paper, inside of an air tight wrapper, but comes in in a shape that is certain to bring in more or less infection with it. Here is another place where disease may be communicated. The cleansing of the drinking cups at such a fountain is a very superficial matter. They are rinsed off with a little water, and the same water in has been used over and over again, so it gets to be pretty thick in the course of the day. Some clerks doubtless give more attention to the matter, have more cleanly instincts than others; but there are other things to be mentioned at the soda fountain, and one is the poisons that are presented in these various drinks. Coca Cola, for example,—a single cup of Coca Cola has more poison in it, has more uric acid in it than the same quantity of renal secretion, twice as much.
So far as uric acid is concerned, there is twice as much in a cup of Coca Cola as there is in the same quantity of urine; so there is nothing very much to recommend this except the fact that people who eat it think they feel a little exhilaration after it. It is a mild stimulant, and these evils ought to be as little as possible.

The gymnasium, indoor gymnasium and outdoor gymnasium, sports for boys and girls, the public playgrounds--these are things we ought to encourage. The immigrants to this country, many of them, are deteriorated people. They do not come up to the highest type, as you can see by some of these faces here. They generally improve after they get over to this country and have some advantages that they do not enjoy at home. In many European countries employees are treated more as animals than like normal human beings with divine rights.

Here is somebody trying to drive off flies, to keep the flies away from the food. That is not the way to do it properly; it is one way, but there are better ways to do it. Tanglefoot is another way to do it, but there is still a better way to do it, and that is to barricade with mosquito netting and screens; wire screens will protect the child. Here is the fly outside, and the child is perfectly safe behind. The house is barricaded against flies. If you have a few flies in the house, catch them or drive them out. In our operating room, once in a while a fly gets in, and we let everything stop. The moment a fly comes buzzing around my operating room, if I am doing an operation, business stops at once; the patient is covered up, and not another thing is done until that fly is exterminated; because the fly is carrying deadly germs on its feet, and if it happens to alight somewhere, you don't know what is going to happen next. I remember very well some years ago a man came to me and said he was hard of hearing, and he was a good deal distressed about it; his circumstances were quite peculiar. He was an old bachelor about forty-five years old, and was
keeping company with a very charming young lady, and it was very inconvenient he was so hard of hearing. In the summer time the windows were open, and he suffered a great deal of inconvenience because of hardness of hearing. He was explaining to me the peculiarly delicate circumstances under which he was placed, and I explored that man's ear, and to my astonishment I found a grub worm nearly an inch long; and he then remembered he had had a little discharge from his ear, and a fly had been buzzing around his ear very persistently, once lit upon his ear, and had deposited eggs in his ear, and one of them had developed into a grub an inch long; so you don't know what is going to happen when a fly comes along; he is going to put a punctuation mark on that bit of bread you are just going to swallow, and you don't know what is in it—maybe typhoid germs, dysentery germs, or a number of other germs.

Here is a man spoiling his eyes. That is another of the evils of civilization. We have learned to read, and if we don't read right we ruin our eyesight. Go into the public schools, and you find here and there a case of eye disease among children ten or twelve years of age; but when you get up to the high school, you find ten times as many children suffering from diseased eyes in the high school as in the lower grades. Here is the light coming over the left shoulder as it ought to. Why is it best to have the light come over the left shoulder? Because if you are writing, the light then will shine right upon the work you are doing, but if it comes over the right shoulder, your hand will be in the way of the light, and your work will be interfered with. That is the only reason for that. Now, it is not a good plan to try to read in that way, holding the book in that position. That is not a good position. There should be a rest here, because the blood is being sent down the arteries here with each beat of the heart, and the arteries are filled with blood, and have a tendency to straighten the arm. Try sometime to hold your finger up so and watch it
watch it from one side, and you will see that at each heartbeat the finger is thrust forward; so in holding the book in this way, the book at each heartbeat will be pushed away from the eye, and the eye must adjust itself to that change of distance. The eye must make a little adjustment, and the eye will be wearied in this continual readjustment made necessary with the continuous beatings of the heart.

Here a little girl had a sore eye, and she rubbed her eye with the hand and finger. That is a very bad practice. Soiled fingers very often communicate dirt to the eye and it should be forbidden.

Here are some disinfectants that may be used for keeping things clean. One needs to know and thoroughly understand the methods of keeping clean. The bath tub in every house—how can we get along without the bathtub? Yet there is many a house that does not have a bathtub. Our modern houses generally have a bathtub or something of the sort that will take the place of it, although many communities that claim to be civilized haven't yet learned the value of the morning bath. It is not simply a matter of cleanliness, but a matter of educating the skin to compensate it for the wearing of clothing, which we should get from exposure to the air and the sun and light, which we do not have because we wear clothes, and especially the wearing of dirty clothes. I was down at Chicago yesterday, and I wore a dark suit, and I was positively uncomfortable, felt smothered all day. I wore leather shoes, and my feet felt smothered. I didn't know I could be so uncomfortable. On the way home I could hardly resist the impulses to pull my shoes off on the train they were so positively uncomfortable. I had not appreciated the great advantage I was enjoying in wearing cloth shoes instead of leather shoes. I have noticed this winter—I tried the experiment of wearing summer clothes all winter, and summer shoes, and for the first winter in thirty years I have had absolutely warm feet every minute
of the time. I had always had cold feet all winter all my life time, as long as I can remember, and I have had to wear good, thick, warm gaiters to keep my ankles warm, but this winter I have worn cloth shoes, and as I said, for the first time I have had warm feet all winter long. When we wear light colored clothing, the light penetrates to the skin and helps to keep the skin in normal, healthy condition.

I had a letter from Mr. Fletcher yesterday, and he says he has adopted the practice of wearing white clothes, and he finds it of great advantage. It is not a fad; it is an advantage. Ladies have the advantage of us in that respect, because they find it more convenient to dress in white clothing than men do. I was glad when I was down to Chicago in the fall to find Marshall Field and Co. had put in a stock of white overcoats that they called Polar overcoats, and I have been wearing a light, white overcoat, and I found it the warmest overcoat I have ever worn---one thickness of loosely woven wool, long fiber, and I think it is a cheap coat---cost me twenty dollars, and I have found it the most comfortable overcoat I have ever worn. It looks as though the world is beginning to be sensible; I see people beginning to think about living naturally and to co-operate with Nature, to conform to the order of the universe rather than to the orders of society. We have become too tame, so we are led to do most anything the fashion mongers say we should do, or that Mrs. Grundy says we should do; and we forget Dame Nature is the queen of all and that we ought to follow her behests instead.

If we cannot get access to a bath tub easily, a small dish will make a good substitute.

In the market you will find all kinds of decompositions and putrefactions taking place. Here is a cold storage turkey that has been dead for three years and neglected to be buried; is all ready to plant autoinfectica-
tion in your alimentary canal that will raise a luxurious crop of headaches and of arterial degeneration, arteriosclerosis and Bright's disease, and all sorts of troubles. These facts have come to be so patent, so well known at the present time that governments everywhere are warning the people against cold storage meats. It was formerly supposed that cold storage preserved meats in perfect condition. It was found they were more tender when they had been kept for some time in cold storate. Mr. Armour's manager told me years ago that he kept his Christmas beef for three months. It is put down in the market, of course, as prime beef, beef that has been kept until it is far advanced in decay. It was not known at that time that this tenderness was due to putrefaction, because the meat had no taint when it was kept in cold storage; it smells all right; but within the last two or three years it has been discovered that putrefaction goes right on. Meats that are in cold storage, unless absolutely frozen up hard and solid,—the putrefaction process goes right on; down close to the freezing temperature the putrefactive process proceeds without interruption, but it is a different class of germs. The germs that grow at this temperature do not produce volatile poisons, hence there is no warning of their presence; there is no smell of putrefaction, of decay, so there is no means of finding it out except with the microscope, by microscopic examination, and that is the reason why the flesh is tender. A gentleman here from Chicago some time ago told me that he had found in his warehouse some ducks that had been in cold storage for 22 months, and he asked the man who owned what he was going to do with them, and he said he was going to sell them. "Well, who will buy such a thing?" "Oh, they are fine." And he found some turkeys that were actually putrefied to such a detree that they had a most loathsome odor and were falling to pieces. "Well, what are you going to do with these?" "Oh, it is no trouble to sell these. There is a restaurant man down here who always buys this sort of turkeys,
geese and ducks, decomposing fast, and he says they go with his customers very well. He just puts in a little more pepper and flavoring, and they go along all right. Nobody knows the difference."

Now, there is the cook too. When you are going to employ a cook, it is necessary that you should have the pedigree of that cook, to have an investigation of the cook. Metchnikoff tells the story of a woman who was cook at a restaurant, and a large percentage of the people who came to her restaurant, and there were great numbers of them, and the people who worked in that house,—a large percentage of them, after that woman came there to act as cook, had typhoid fever. On investigation it was found that the woman herself had had typhoid fever twenty years before, and she had not gotten rid of the germs, but still carried them with her. And she was a typhoid carrier and had been since that time. A woman was found in New York not long ago who had been carrying around typhoid fever germs with her for fifty years, and her career could be traced by funerals from house to house where she had been; she had carried typhoid fever into every house she had lived in. It was found in the case of the cook that the bowel discharges always contained great numbers of typhoid fever germs, and the urinary discharges; and the skin of the body becomes soiled in various ways, and the hands become soiled, the tissues become soiled; and Metchnikoff has become so thoroughly aroused with reference to dangers of this sort that he keeps upon his table a little silver dish, and an alcohol lamp, and he sterilizes all the objects on the table before his own eyes, everything he eats so as to make certain that he does not get inoculated with parasites of any sort. That is perhaps going somewhat to an extreme, but it is a matter that needs to be looked into.

Sometime ago I did an operation upon a man's gall-bladder. I had to remove the gall-bladder, and on examination in our laboratory, there were typhoid fever germs found in the interior of those gallstones. The man had
had typhoid fever sixteen years before, and he still had typhoid germs with him. The gall-bladder seems to be a special hotbed or incubator for typhoid fever germs, and they get into the gall-bladder, live there sometimes as long as the individual lives. It has been found, however, that yogurt bacteria will eradicate these typhoid fever germs, because they are anaerobes, and it is possible by an antitoxic diet to get rid of them.

Here is a baby creeping around the floor gathering up germs. A baby should never be put upon the floor unless there is a clean sheet put down on the floor under the baby, so as to keep it from picking up these dirty germs and putting them into its mouth and so infecting itself. Here is a piece of rubber on the floor; now it is in the baby's mouth, now on the floor again gathering up germs; so it isn't any wonder that such a baby gets cholera morbus, which is simply a disease produced by these germs that have been swallowed and are growing and multiplying in the interior of the little one.

Here is a public playground. Every city ought to have one so that the little ones should have an opportunity to get fresh air and outdoors. Here is a bottle of soothing syrup. You know the deadly effects of this horrible disease. Many drugstores absolutely refuse to keep it on sale, and many respectable newspapers and magazines no longer publish the advertisements of this death-dealing nostrum. It is no wonder, indeed, that the little ones have such a terrible fatality,—about one fifth of all who are born die during the first year,—when we consider the multitude of means by which their lives are endangered.

The old housecat is by no means an innocent party. Probably the house cat has no malice herself toward us, but if a neighbor's children have got scarlet fever, the old house cat is sure to feel a call to make a visit of condolence to the neighbor's cat, and she goes over there to visit the neighbors' cat which perhaps has been inoculated with these scarlet fever germs, and it
inoculates the neighbor's cat which then goes back home carrying the infection. The children handle it and fondle her about, and get infected from the cat.

If you are going to have poisons about the house, they must be labeled and stoppered down carefully in such a way that nobody is likely to get inoculated.

I want to show you one splendid face to look at to finish with tonight—Leonardo da Vinci, 1452 to 1509. He was the man who invented the idea that our bodies are burial places when we are meat eaters.