

Question Box Lecture at the Sanitarium Parlor, Battle Creek, Michigan,

March 26, 1917, at 8:00 P. M. by J. H. Kellogg, M. D.

Q. Do adenoids affect the mind?

A. There isn't any doubt about it. That is one reason why it is very important to give attention to this matter. As soon as it is discovered that a child has adenoids, the case should have immediate attention. This is generally a very much more serious question than is supposed. In adenoids there is a swelling of the mucous membrane of the back of the throat all around and of the vomer or septum of the nose so that the nasal cavities are very largely closed up. This leaves very small openings for the air to pass through. A large part of the cavity is closed up leaving only narrow openings. In addition, hanging down from the vault of the pharynx are masses of granular structure similar to enlarged glands that sometimes form in the throat and that closes up the nose almost completely so the air cannot get through. Recently there has been discovered another very important thing. Up in the base of the brain there is a little body known as the pituitary gland and that minute little body has control of the nutritive functions of the body. It controls growth. It controls the processes of tissue formation. When this gland is affected in a certain way, it will cause the bones to grow in an irregular fashion. There is a hormone, perhaps several of them, subtle substances formed in the tissues that regulate the growth of the cells so that when the growth of the bones is disturbed in a sudden way, the bones grow too fast. Giants are generally persons who have a diseased condition of this gland so that their bones grow enormously long. Sometimes the growth will affect only one bone or group of bones. Sometimes it will affect the lower jaw so that it will

project way out in front. Sometimes it will affect the hands and feet so that they will become twice as large nearly as they ought to be. Sometimes it produces an enormous growth of fat. Certain people suffering from irregular development of fat are affected in this way. When the fat accumulation comes in this way, it is generally irregular. It will be an apron of fat in front. I recall a case in which an apron of fat formed a fold that hung clear down to the knees. I remember another case in which a mass of fat formed that hung down from the back of the neck, much like a camel's hump. Sometimes great lumps form on the sides of the hips so this pituitary gland has some very important functions. In many cases there is an extension of the pituitary gland up into the nose so in cases of adenoids it often happens that there is a disturbance of the growth of the child. The growth of the adenoids disturbs this gland so that the child with adenoids won't grow properly. When the gland is affected in certain ways, there will be an arrested development. The child will always remain an infant in many particulars. It will grow up to the age of nineteen or twenty in appearance although, perhaps enormously over fat, it will still have the appearance and in many respects only the development of a child of four or five years of age. When the adenoids are removed this gland will be stimulated to activity and this disturbance if its function will be removed and at once the child will begin to grow and will take on a very rapid and vigorous growth and the mind which has been infantile will begin to expand and develop in a normal way so that the removal of the adenoids sometimes seems almost to work a miracle in a child. It really is a form of miracle in the influence of adenoids upon the health and development. Every child who has adenoids should have attention. At the present time quite a large proportion of the children of our public schools are suffering from adenoids as a result of infection from neglected colds in many cases or perhaps from bad food and general neglect of hygiene.

Q. Does the Sanitarium treat all cases of goitre successfully?

A. The Sanitarium does not claim to offer any panacea for any disease. Goitre can be treated with success if the patient will co-operate with almost unvarying success in not only here but in other places also where goitres are treated successfully. Of course, in some of these cases surgical operations are required for removal of the enlarged glands which have undergone perhaps cystic degeneration. It might be that a person who had a goitre removed went home to the place where he formerly lived and got a new infection from the same source. It is known that this disease is probably due to infection. Dr. Gaylerd, a government expert who has been studying this matter, is convinced that it is due to infection received from the body through drinking water. It has been noted that in the waters of certain lakes and rivers the fish have goitres and are very subject to them in certain localities. When you get home it will be a good thing to find if goitre is common in your community, whether the fish in the water supply are suffering from goitre and to investigate your public water supply. Allow the water for six months to pass through a little tank in which some fish are kept and see whether the fish develop goitre or not. If the water is goitreous water, the patient fish will get goitre. If the fish do not get it, it is pretty good evidence that the water is all right. I am glad to say we have tested our water here in Battle Creek in that very fashion and we know that it is free from this tendency. If you have once had goitre and gotten over it, take care not to expose yourself again to the causes of goitre. In some parts of Switzerland goitre is very common. In a place known as ^{Leukerbad?} Leiterbad many people have goitre. When visiting that place a-number ^{more than} thirty ^{of} years ago I saw numbers of people going around the streets with goitres so long they had to have bands around their necks to hold them up. Women suffer from goitres more than men ordinarily but in that locality men are affected as much as women are and sometimes you might see people on the streets comparing their goitres to see who had the biggest one and rather proud of their

superiority in that particular. In this locality I have mentioned there has been a very great study of what cause the goitres. It was found that people who went away from these regions and recovered sometimes returned home and the goitres returned so a study was made of the water supply used by these people and it was found that there were certain wells the water from which would always produce goitre in people who drank it and in fishes that were kept in the water for some length of time and other animals get goitre when supplied with that water. Other wells in the very same locality would leave the drinkers of the water entirely free from goitre. The wells that produced the goitre are known as goitre wells and the people who use the water are very certain sooner or later to get goitre. Sometime ago one of these goitre wells was studied and it was found that the water from it and another well close by that did not produce goitre/^{came} from an entirely different strata. The water from the goitreous well was found to come from an old sea bottom where there were great numbers of fossil fishes. I cannot say that this is a disease that flesh eaters are especially subject to because people have goitres that are not flesh eaters. It is probably an infection as Dr. Gaylord and a number of others maintain.

Q. Are kohlrabi and cauliflower wholesome foods?

A. They are good for supplying bulk but supply very little nourishment. One would have to eat about half a bushel of cauliflower a day to get a square meal and a day's ration. A half bushel would hardly supply the number of calories necessary for a day's ration.

Q. What is the cause of high blood pressure?

A. That is an interesting question and is getting to be more interesting all the time. The reports sent to my office each day from the blood pressure department surprised me very much the other day when I received in one day the reports from twenty-three people who had been examined and who had a blood pressure over 144 which is above the normal. All but three or four of the twenty-three persons had a blood pressure above 160 and more than two-thirds ^{of} the total number had a blood pressure above 170. Disease of the blood

vessels of the heart is increasing throughout the whole United States at a marvelously rapid rate. The number of persons who die every year from disease of the heart and blood vessels, that is, the number per unit of population per million, is three times as great today as it was thirty years ago. If it had been as great as that in a thousand years, it would be an eminent thing because it would mean that if it kept on at the same rate and was not stopped in some way, it would by and by become a terrible menace. This thing is really happening today. Increase of heart disease and disease of the blood vessels is really going on at such a rapid rate it is really becoming a menace. There are many causes nearly all of which are increasingly prevalent among the American people. The principal causes of high blood pressure are all increasing at a rapid rate. Smoking is one of the causes of high blood pressure. You say Dr. Kellogg has a prejudice against smoking. I admit that I have. Tobacco smoke is extremely repugnant to me. I think the majority of people who have healthy noses have a prejudice against smoking. Smokers noses necessarily have deteriorated. They have gotten into the condition of jerked beef. They cannot smell anything. They are dried out and well cured by the long stream of smoke that has been poured through their nostrils for years and years and years until they have not the keen sense of smell they ought to have. The tea taster is not allowed to smoke. Why? Because his sense of taste would soon deteriorate to such a degree that he could not tell the difference between a cheap Ceylon tea and the finest variety of fragrant Japan tea so he is not allowed to smoke and the same is true of every person engaged in an occupation that requires a keen sense of smell, he is not allowed to smoke. The smoker does not find tobacco disagreeable. It is agreeable to him but there are a great number of people who have a sense of smell which is not vitiated and to them it is very disagreeable. I would like to know how many people there are in this audience that find the odor of tobacco disagreeable and recognize it as a disagreeable thing. I see more than half the people here agree with me and have undegenerated noses. We are not all degenerates at any rate. I am

glad to see there are so many people here who have a prejudice against tobacco as well as myself. I am going to give you a fact now, not a prejudice at all but simply a scientific fact. Dr. Janeway, formerly of New York, who I believe smoked himself, though I am not sure about it but I knew his good father did not; almost all doctors of New York do smoke so I take it for granted that he himself smokes but perhaps he doesn't. He is now at Johns Hopkins University, the head professor of internal medicine in Johns Hopkins University Medical College at Baltimore. He has written a book on blood pressure. It is the most comprehensive and scientific treatise on the subject published in the English language. Dr. Janeway in this book makes the statement unqualifiedly that the smoking of one cigar raises the blood pressure twenty points in thirty minutes. Now you see there is the proof. Nobody can get away from that. If any of you are smokers, you can get the proof any time you want to. Have your blood pressure taken. Go out and smoke a long nine cigar and come back and have it taken again and you will see just where you are. If you keep on smoking it may keep right on going. There is no reason why it should not. You cannot tell just where it will go to in the end but it will keep on rising till it gets so high it cannot go any farther. Then it will begin to come down and your feet will begin to swell and you will begin to lose your memory and will begin to lose your amiable disposition and your wife will wonder what is the matter with you and by and by there will be a funeral. Every man who smokes dies of smoking if he doesn't get killed by accident or die of something else. Now it is true that the mortality reports of the United States Government do not put down a large number of people dying from the use of tobacco, nevertheless it is true that a large number of people, a large number of the men who die of heart disease and disease of the blood vessels, really die of chronic tobacco poisoning. How do I know that? By and by the Government is going to start some enlistment stations. In fact, they are doing it already. I

understand Mr. Roosevelt has called for half a million men to go to Europe with him and when these enlistments get to going after a pretty lively fashion, you will begin to see the papers making reports. The recruiting station at Detroit has recently examined one thousand men and they found that seventy-five per cent. of them were suffering from tobacco heart. When they come to examine them for volunteers for the army, a large proportion of these who volunteer are not accepted. They are young healthy looking men that are met perhaps on the street and invited to come into the recruiting station and they get them in there and examine them and find they have got rapid heart, hearts that palpitate, irregular repeating hearts. In other words, they have poisoned hearts and they are rejected. There are more men rejected for this one thing, tobacco heart, than for any other one thing at recruiting stations so it shows it is getting to be a very general thing throughout the country. Why shouldn't it be? There is no heart poison that excels tobacco in its virulence. Nicotine is one of the most deadly of all known heart poisons. There is hardly any poison that exceeds nicotine in its activity except prussic acid. It takes only twice as a large a dose of nicotine to kill a man as of prussic acid. A drop of prussic acid will kill a man and two drops of nicotine will kill a man. A frog is a pretty tough creature to kill. When I graduated I put myself under the late Dr. Janeway and asked him to give me a special course so I worked in his special research laboratory in New York for some months after my graduation in order to learn things that were not taught in the medical school.

in order to learn things that were not taught in the medical school. One of the things he made me do one day which I did not enjoy at all was to take frog and cut off its head behind the ears with a pair of shears. I felt like an executioner. It was really a very distressing operation for me, but I cut its head off behind its ears and thought that would kill it quickly. I was very careful to cut it clear down and get the head clear off as close to the front legs as I possibly could. The Doctor said, "Put that frog down on the table". I did so. "Now" he said, "Tap the table". I tapped the table and the frog leaped into the air six or eight feet away from the table, out into the room. And that frog went jumping right out into the air. A dead frog. I was surprised of course. He said, "Step up behind the frog and stamp on the floor", so I did and the frog made another jump and we chased that frog all over the laboratory. Every time I stamped on the floor that dead frog jumped. The frog was not dead of course. I mention this to indicate how hard it is to kill the frog. The frog's ~~heart~~ heart kept right on beating the whole afternoon. I turned the dead frog over on its back after the doctor's direction and I tickled one of its hind legs and immediately it came up with the other hind leg and tried to rub it off. I put a little acetic acid on one its legs and it immediately came over with its other leg and rubbed it off. I put some on the middle of its abdomen here and both legs came up and rubbed it off. Then the doctor had me make another experiment that was really very striking. He had me hold one of its legs down then put a little acetic acid up here on the thigh of the other leg. The frog tried to raise the opposite leg and couldn't do so, so it twisted up the other leg and scratched the thigh with the tips of its toes on the foot of the same leg. Afterward I made another experiment. I took the frog and I made a solution of nicotine and ~~some~~ ~~of~~ ~~it~~ and ~~some~~ alcohol v-ik.

I took a dose including one-fourteenth of a drop of nicotine solution. I got a good large live frog and I held its mouth open and injected that solution ~~fixid~~ of nicotine down its throat. The frog was quiet for just a second and then reached out its hind legs as far as it could uttered a great croak and commenced a convulsion and the frog was dead. Its heart had stopped beating. When it was laid down on the table it was absolutely dead, I tapped the table as hard as I could and it never stirred. The frog was absolutely dead. Deader than as though I had cut its head off behind its ears. So you see how dangerous smoking is. You see what nicotine will do for the heart. It is more deadly ~~thm~~ to the frog than cutting its head off. So there can be no doubt about tobacco being a heart poison. When the frog's head was cut off and its heart was lying there in its body it continued beating the whole afternoon, but only one-fourteenth of a drop of nicotine was squirted down a frogs throat the frog made a great croak and its heart ceased to beat forever. Nicotine is a heart poison. There is no question about it. And every man who uses it habitually suffers damage to his heart and the damage is so grekat that if ~~thm~~ he continues for five or ten years a damage is done to his heart that can never be repaired. I don't mean to say it will kill him right off, but it will shorten his dayss. He has used up some of his margin of safety, some of his capital of strength, of vitality that is given him to stand throughout his life. Tobacco raises blood pressure. A good many years ago, we used to use alcohol when we had a severe operation and the patient had to be some time under the anesthetic and when the ~~pt~~ patient suffered from shock as the result of the operation, we used to inject alcohol under the skin, but we found that alcohol was a heart poison like tobacco, that it increased the shock and did not help it at all. It did not raise the bleed pressure but lowered it, and it was a depressing agent. So we had to have some other remedy. By and by the discovery was made that a drug known ascaffeine would raise v-ik.

now

pressure. So for many years whenever we ~~had~~ have a patient that shows any symptoms of shock after operation we inject caffeine under the skin. I was talking some time ago with an eminent surgeon who is a smoker and a man who has got high blood pressure and asked me about what he better do for his health, and I talked with him and talked about tobacco and we began to talk about other things, and I asked him a question. "Doctor if you had a patient suffering from shock and with the blood pressure low, what would you give him?" "Oh, we should give him caffeine of course". "How much"? "Oh, I think I would give a couple of grains", that is the medicinal dose". "Doctor, do you know how much caffeine there is in a cup of coffee. "Caffeine is the active principal of coffee and it is the caffeine that people drink coffee for". A great many people drink coffee because they have headache if they don't drink it. They are regular coffee toppers. I said to the doctor, "How much caffeine do you think there is in a cup of coffee"? "Well, there cannot be very much I wouldn't think". The doctor was a fairly shocked, startled when I told him that an analyses made of coffee by Doctor H. W. Wiley showed that there were four grains of caffeine in a cup of coffee, two medicinal doses. In a single cup of coffee there is as much caffeine as the doctor would give as two doses if he had a patient suffering from shock or the patient had fainted away. Every person who takes a cup of good coffee as you would get at a first-class hotel drinks four grains of caffeine or two pressure raising doses. I have many times seen after giving a dose of ^{caffeine} the blood pressure go right up within a few minutes 20 or 30 points, then what happens, to the man or woman who drinks coffee. Every time he drinks a cup of coffee it raises his pressure some people drink two or three cups of coffee and that would be 8 or 10 grains of caffeine. I met a while ago a doctor with high blood pressure almost 300. I said "Are you a smoker"? "No," he said, "I don't smoke". "Well, how about drinking alcohol". "No, I don't drink at all". v-ik.

"How about coffee". "Well, I confess I do take a good deal of coffee. This was a southern doctor practicing down in Louisiana and he had an extensive road in the country to go over as the people are very hospitable and whenever the doctor comes they have the coffee pot always ready and the doctor must have a cup of coffee, of course. And he was in the habit of making forty or fifty calls a day, as he had a very ~~xxx~~ extensive practice, and he got a cup of coffee at every place he went and he finally discovered that on the days when he didn't make so many calls as usual he didn't feel very good. So he got into the habit of carrying caffeine pills around in his pocket so when he didn't get a cup of coffee every half hour or every fifteen minutes he swallowed a pill, and I found that doctor was taking fifty or sixty grains of caffeine every single day of his life. It wasn't any wonder he had a blood pressure way up, was it? We had a lady patient from North Carolina here some years ago. I found ~~wh~~ she had a blood pressure of 310. "I said to her, "Where are you from, what state"? She ~~xxxx~~ thought a moment and then said to her doctor "Why doctor, what did I tell you yesterday was the name of the state where I came from". The doctor said "You said you came from North Carolina". The state of that woman's mind was such that she could not remember the state from which she came, this was the result of high blood pressure. I told you how it affected the memory. I said to her, "You never used tobacco did you"? I had occasionally found a person whose ~~wh~~ ~~in~~ childhood had been spent in such surroundings that they got in the habit of taking tobacco, either in the form of snuff dipping or cigarette smoking or something else. She said, "Oh, no. I don't use tobacco in any form. I said "Are you a very hearty meat eater"? "No, we don't care very much for meat at our house". Then I said, "How about ~~in~~ coffee". She said "Oh, I drink coffee." I said "Rather strong"? "Well, fairly strong I think". I inquired, "How do you make it, for example, how much do you use"? "Well, I take one and a half cupfulls of Java and

5. 12

half a cupful of Mocha and I make three cups of coffee. You know, Doctor, my husband is an Englishman and Englishmen always like things very good, so I make my coffee pretty strong. I make it that way half and half of Mocha and Java". I said, "Your husband is very fond of Coffee? I suppose he drinks two cups and you drink one.". "No, he takes one cup and I take two". You can see about how much caffeine that woman was getting. She was getting a dose of caffeine every single day of her life, taking it every day, and it was boosting the blood pressure right along. Every coffee drinker is boosting the blood pressure and preparing for a trip to the Battle Creek Sanitarium if he finds out in time to get here. Uric acid raises blood pressure. Uric acid is a poison which chemically is almost exactly the same as caffeine. Caffeine is a dry methyl xanthin and uric acid is dioxid xanthin. These are two chemical substances. They are both xanthin. Xanthin is the thing that does the mischief. Caffeine is one kind of Xanthin and uric acid is another kind of xanthin, but the affects on the body are just the same because they are both xanthin. When the uric ~~acid~~ acid is taken into the body it produces just the same affect as the caffeine. It raised blood pressure. I suppose when they have a patient with low blood pressure we might inject uric acid instead of caffeine. So rations of uric acid have been used medicinally and were used one hundred or two hundred years ago as medicine but it is not so used at the present time. How much uric acid do you suppose there is in beef steak? for example. Bear in mind the fact that two grains of caffeine will raise blood pressure. How much uric acid is there in beef steak? "Oh, not a very much", the doctor I was telling you about said, "Oh, not very much". There are fourteen grains of uric acid in every pound, as much as in three or four cups of coffee. I was talking with a doctor the other day and he said "For Heavens Sakes. I have been in the habit of eating three or four pounds of beef every day of my life." I met a doctor in Chicago some time v-ik.

13

ago who confessed to me that he had eaten eight pounds of ~~6.~~
beefsteak at one meal. It was at a beefsteak contest. They had their
hands tied behind them and went at the meat as a dog does only with their
teeth. They gnawed the meat off the bones with their teeth. He said,
"Before I got through that dinner I could scarcely move my left shoulder
at all and when I got up the next morning it was so stiff I could not use
it at all. I always get an attack of rheumatism every time I eat a lot
of beefstak. But I like Beefsteak. I would rather have beefsteak than
the luscious pear you ever saw in your life!" ~~And every time~~ In every pan of wheat bread
there are 7 grains of uric acid. There are people who are eating good
big beefsteaks for breakfast, roast beef for dinner and meat for supper
and there is uric acid in every morsel of it and pretty soon the blood
pressure goes up. They don't know but I am telling you so you will know,
and then you won't do it any more, of course, after you know. Now, there
are three things that raise blood pressure. Smoking, coffee drinking and
meat eating. These things are increasingly ^{prevalent} frivolent. The people who
have high blood pressure are coffee drinkers, smokers or meat eaters and
people who do not indulge in any of those things do not get the high blood
pressure. I can say that with a good deal of confidence because I am old
enough to have high blood pressure according to the rule ~~max~~I believe
the Life Insurance people give. The blood pressure for a person may be
determined by adding one hundred to his age, so my blood pressure ought
to be one hundred and sixty-five. My blood pressure is 110, and I never
found it above that or below; but twice, once it was 112 and once 115.
I never drank a cup of coffee in my life and I never smoked a cigar and
I haven't eaten a pound of beefsteak in more than fifty years. It was
51 years ago that I stopped eating meat. I have not been exposed to
~~max~~ these three causes of high blood pressure so I still have the same
blood pressure I had when a boy. I A man is as old as his arteries. If
you keep your arteries young you keep yourself young. The blood pressure
does not go up with age only when you begin to suffer the degeneracy
v-ik. deterioration and the condition of the tissues which comes from old age.

cultivating high blood pressure. And old age is coming prematurely. It may not come until you are sixty years ~~ma~~ old, but it ought not to come until you one hundred years old. There is no reason why you should have high blood pressure because you have lived a certain number of years, the only reason why you get high blood pressure is because of the degeneration of the arteries. The real reason why people get this high blood pressure is because the arteries are hardened. When there are poisons circulating in the blood the wall of the arteries become thickened becomes more and more and more until they get so small it is difficult for the heart to get enough blood through to keep the brain active and the rest of the body healthy. The blood is the life. Every organ, every tissue, every cell of the body ~~map~~ depends upon the blood for its life, for ~~a~~ its activity; and the heart is the pump that supplies all the organs and if there is any organ that is not getting enough blood it immediately complains to the ~~max~~ brain and the brain speaks to the heart and says to the heart "Hurry up, work harder". If you find the water pressure is low you go to the telephone and call up the superintendent of the Public Works, and say "What is the matter with the water pressure, it runs so slowly here I can not get water enough to wash my face". So the ~~calls~~ calls up the man at the pumping station and he says "Get your pumps to going, get up more pressure. The Pressure is ~~is~~ too low". The engineer says "We have got ~~i~~ on the normal pressure ". Well,"he says ~~q~~ "Mr. So-and -So, the President of the village, his wife has called me up and says they do not get pressure enough!"

17,362

Well, but Mr. Seand so, the president of the village; his wife has called me up and says they haven't got pressure enough. So never mind, put on some extra steam pressure. We must see that she gets the water pressure increased right away so the water pressure perhaps ~~was~~ ^{is} 120 pounds already but he puts on more pressure until it gets up to 160 pounds. Then the water comes all right. There is no trouble at the pumping station but the water pipes in the house have got stepped up and they require more pressure to get the same amount of water through. That is what happens in the body. The brain begins to fail because of lack of blood because the arteries are closed up on account of the walls being thickened. There is a lining on the inside of the blood vessels. When there are circulating through the blood all the time poisons like caffeine, nicotine, poisons from lead pipes, from typhoid fever, colon poisons, from scarlet fever poisons; when these poisons are circulating through the blood for a long time, this mucous membrane is irritated. It becomes thickened and keeps getting thicker and thicker all the time until by and by the lumen of the artery becomes narrowed down to a very small caliber. That is the way we get high blood pressure by the arteries becoming so small they won't allow enough blood to pass through. By and by the heart gets tired out. It cannot keep the blood pressure up and then it begins to fail. The blood pressure begins to go down, then the feet begin to swell, then the memory begins to fail because all the organs are getting ^{small} too/a supply of blood and the urine becomes scanty because the kidneys do not get blood enough so that they can take the poisons out and keep up the secretion. Every function of the body begins to fail and keeps on failing until the life by and by fades out so this is an awful disease and it is coming to be a national disease and the thing is bound to go on increasing just as long as coffee users continue their poison habit and just as long as smokers continue their vicious habit and just as long as alcohol is used. So long as people insist on carrying about in their colons putrefying

material that ought to be dismissed from the body and absorbing these horrible poisons into the blood, just as long as this goes on the blood pressure is going to increase and the number of people who die of heart, kidney and blood vessel disease is going to increase. One who has high blood pressure must remove the cause. You say, but what is the hope for a person who has high blood pressure? The hope lies in this fact that not all the arteries become diseased in this way. If one has high blood pressure in whom this condition has begun, perhaps advanced quite a little ways, he may by a special means increase the size of the arteries that are not yet spoiled and increase the activity. To illustrate, when you came here your skins were pale, almost bloodless. When you took a bath you didn't get much reaction. The cold water made you shiver, and you didn't enjoy it but after a few days you began to get a better reaction and you noticed that the skin began to get a better color and your bath attendant noticed that. That is because your circulation was improving, your blood vessels are getting larger and more active and you are getting the blood into the skin, relieving the internal congestion and if you were to have your blood pressure taken, you would see that it is lower and if this is continued from day to day and month to month, the frictions of the skin and the warm baths which dilate the blood vessels and various other means, wonderful things can be done for persons who have gotten high blood pressure and whose cases have been given up as practically hopeless. There are some other things that will help to lower blood pressure besides removing all the causes. A warm bath will also lower blood pressure. Did you ever hear of a person fainting away in a warm bath? Anybody might do that easily if he made the bath warm enough and stayed in it long enough. Why? Because the warm bath dilates the vessels of the skin and the skin is capable of holding two-thirds of all the blood in the body and if you keep a person in a warm bath so that the blood vessels of the skin become dilated enough, it will fill the skin so

full of blood that there won't be a drop of blood left inside to keep the brain active and the heart going as a person will faint away as you see the warm bath is a powerful means of increasing the circulation of the blood in the surface vessels and of lowering blood pressure. When one faints away, it is because his blood pressure is too low and the warm bath will lower the blood pressure so much that a person might actually faint away. A person with high blood pressure doesn't want the warm bath carried to the extreme but there is a wonderful power in it to lower blood pressure. There is another great area of blood vessels in the body which can be used to lower the blood pressure. The muscles which constitute one-half the weight of the body have such a wonderful ramification of blood vessels that they are capable, when active, of holding one-half of all the blood in the body. Idle muscles contain very little blood indeed but when the muscle is active it may have ten times as much blood going through it as when it is idle so you see what is the effect of exercise. Muscular exercise increases the flow of blood through the muscles from two hundred to one thousand per cent. so exercise is a marvelous method by which we can increase the flow of blood through the muscles and so lower the blood pressure by opening up the channels, the blood vessels, that are being contracted. Exercise may be voluntary or automatic. Many persons who have high blood pressure have weak hearts and cannot take much exercise. If they could take exercise freely, it would be the very best thing in the world for them. If one with high blood pressure could exercise freely enough to make himself perspire, to get the skin warmed up, he would have an increased blood supply to his muscles and his skin both and that would lower blood pressure wonderfully but he cannot take exercise. His heart is weak and he gets short of breath and it may be the disease has gone so far that it has begun to affect his joints and he has got rheumatism. I have devoted several years to perfecting an apparatus to meet these conditions and it is what we call our automatic

19

exercise apparatus. The patient lies in a chair and electrically all of the groups of muscles are set to work, one after another, so fast that you cannot count the changes, each muscle getting a good vigorous contraction and, in order to make the muscles work, sand bags are weighted upon the muscles. On the abdomen a strong man may have seventy-five pounds of sand so that every time the abdominal muscles contract, they have to lift that little lead of sand so the muscles are made to do actual work and that increases the circulation of the blood. We find that, after the automatic exercise, the blood pressure may have fallen ten or fifteen points. Sometimes it falls even more than that and if this is repeated every day it continues to fall a little. There is another very important area of blood vessels in which the blood may be accumulated and which may be opened up, the large vessels of the abdomen, the splanchnic vessels. In a healthy man these vessels are capable of holding all the blood in the body. One does not usually get high blood pressure until after these vessels have become affected by the disease and have become contracted. The vessels of the liver, the stomach and all the internal organs become contracted and then generally high blood pressure appears. A person may have some of the blood vessels of his brain diseased and not have high blood pressure unless the disease has also extended to these large vessels of the abdomen because they are so large and so many of them that, unless they are affected to a considerable degree, the pressure will not rise for they will afford space enough for the blood to pass through. We may dilate these blood vessels by a fomentation. A fomentation to the abdomen will dilate these vessels considerably. A moist abdominal bandage will dilate the vessels and an application of the arc light or actinic ray. Anything that causes dilatation of the ^{vessels of the} skin will dilate the vessels beneath in the viscera as well.

One of the most valuable means of dilating these vessels is known as diathermy, a form of electricity which is used for sending the wireless messages across the ocean and by means of which the wireless telephone has been used in talking between New York and Honolulu. The wireless current is used for medical purposes. Five years ago I went to Berlin to study this current which had just come into use and brought back with me instruments for applying this current to the body. It carries wireless messages of healing into the secret places of the body. It is really a very wonderful thing. In the body this wireless current is converted into heat so you can apply it over the body in such a way that you can apply the equivalent of a fermentation to the very center of the body, to the kidneys, to the spleen, to the liver, to the brain or any part of the body where you want the heat applied and by this means we are able to dilate these large vessels of the abdomen and to lower the blood pressure, sometimes as much as twenty points in a single seance of ten or fifteen or twenty minutes. The cold bath also has the effect to dilate the vessels and has a more permanent effect than the warm bath. The best means of getting good results from the baths is to apply a warm bath for a short time to dilate the vessels of the skin, then a short cold bath which will have the effect to produce reaction in the skin and permanently fix the blood in the skin. Then there is another thing of value and that is the actinic ray of the sun or the electric light. This ray falling upon the skin will produce a dilatation of the vessels that will last for months if applied in such a way as to produce sunburn. If one gets the skin tanned all over, the blood vessels are dilated and remain dilated for three or four months. You get the effect of a mustard plaster or a fermentation but instead of passing off in the course of a few days or a few hours, it will last for months. We find wonderful results in the summer time in our outdoor gymnasium. When the weather is a little warmer you can get very close to Nature in the outdoor gymnasium so that the sun

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can get next to the skin and dilate the vessels and this is a wonderful advantage for one who has high blood pressure. One important thing in relation to diet is restricting the diet very largely to fruits and vegetables for the reason that cereals as well as meats contain an excess of acids which have a tendency to raise the blood pressure so the diet ought almost to be confined to fruits and vegetables. Use potatoes instead of bread. Instead of cakes, pastry and things of that sort use fruit. Make the diet consist almost exclusively of fruits and vegetables and use them freely. Use a great deal of bran to make the bowels move not less than three or four times a day and if it is four or five times it will be better than three times. I must say one word more. The great difficulty we have with persons who have high blood pressure is to keep them under training long enough. A man begins to feel a little better when he gets his blood pressure down from 200 to 180. He could see a funeral procession going down the street with his blood pressure at 200 but when it gets down to 180, he doesn't see anything at all but that long procession of orders coming into his business for goods, for steel, for groceries or something else, and he cannot get any sight of the funeral procession at all and he wants to get back to his business. The majority of business men have really got a mania for business, a mania for work. There is one text that is always in the mind of the modern business man and that is the scripture, "Diligent in business, serving the Lord," as though diligent in business was the one particular way in which a man could serve His Maker, but that is really serving the Lord of the business. A man who has high blood pressure must make up his mind to devote himself to the business of getting his pressure down and he has got to go about it with the same businesslike perseverance, energy and system that he would go about building up his business. He has got to apply business principles, principles of efficiency, of thoroughness and perseverance. They have all got to be applied to lower his blood pressure. I am sure I do not

exaggerate when I say that the average man with high blood pressure, say at 180 or 200, can multiply his life expectancy by four or even more if he will systematically go to work to bring his blood pressure down just as low as it can be gotten. Sometimes it can be gotten down very near to normal and while he is doing that he must not undertake to do anything else at all. He must dismiss his business as though he had been sent to prison for pro-German sentiments or something of that kind as though he had been interned somewhere. He must desert his business and pay attention to himself. I have in my office a thousand times pled with a man to save his life when he had a chance, to just give his attention to this thing. I have pled many times with tears in my heart and in my eyes and say hundreds of times to a man to forget his business and to attend to himself while he still had a chance and seen him go out of my door and as he walked out I felt my heart going way down into my shoes. I knew I would never see that man again. He would say, "Doctor, I must go home to attend to my business but if I don't get along all right, I will come back." But he never comes back. The undertaker gets him a long time before he ought to. I want to say that the man who has high blood pressure has a serious proposition on his hands and he has got to go to work systematically to build himself up. A judge I remember just now said, "Doctor, I have got a term of court meeting in a couple of weeks and I must attend to it. I believe I can do it. I am feeling very well. My blood pressure was 180 when I came. Now it is only 160. I think I will be all right. You know I am going to take home some of your feeds and get your literature and I am going to read it and study it and I am not going to smoke any more and I have cut out beefsteak and am going to live right up to the Battle Creek idea and I think I will be all right." I said, "Well, I am awfully sorry, Judge. You ought to stay right here." A few months later I was in the southern city where this Judge came from and as soon as I landed there I inquired about the Judge. The answer was, "Oh, why, haven't

you heard? Why, he came back and opened court and went on fine for a couple of weeks, then all of a sudden he had a collapse in court. Well, he is through. His wife took him to his old home but he has had a stroke of apoplexy that has used him up. He will never do anything any more. We are awfully sorry for he was a very useful man here." That man just simply threw his life away. That is what the man who has high blood pressure usually does. In nineteen cases out of twenty he does it. In spite of all the doctor can do, he cannot make the man understand that he has got a serious proposition on his hands. When the doctor said to him, "You can multiply your life expectancy by four--as it is you have but three or four years ahead of you and you might just as well have fifteen or twenty years before you if you will only walk carefully, if you will go right to work to co-operate, to fight this old enemy that is after you and get your blood pressure down to the lowest possible limit. Do just what you ought to do and do it all the time systematically. No matter how well you feel you can just as well live fifteen or twenty years and if you don't, you have but a very short time. You can't make some people believe it because they don't suffer pain. If that man had an ingrown toe nail and suffered pain every time he took a step, he would have it attended to but because it doesn't give him pain, he doesn't use common sense. He says, "Don't you think I can get along?" Here is a man in a condition that will allow him to live two or three years at the very most. Say to him you can multiply your life expectancy and make it ten or twelve years just as well as two or three if you will do certain things but it will take you three or four or six months to do it. But he says, "Now don't you think if I spent a couple of weeks here then I will get along all right?" "Yes, if you will go somewhere else where you will have the same things done for you." He says, "No, but I mean to go home and take up my business. Don't you think

I can get along all right?" Now see how much that man expects. He expects to get eight or ten years of life just for two or three weeks' trouble or effort. You can't get things so cheaply as that. Don't you pay more for a sealskin coat than for a woolen blanket? Don't you pay more for a fine house than for a shed? Everything worth while comes with a price. I offer you health to buy. I offer you five years or ten years if you will buy it. If you are willing to pay the price you can have it but you can buy health with money. Generally you can. A little money will buy a great deal of health and you can add a great deal of health to the money by persevering, earnest, thoroughly co-operative effort.

Q. Will worry and over work cause a bad condition of the stomach?

A. Yes. Worry will paralyze everything. It is a short circuit in your mental operation. You cannot do business properly. You cannot do anything properly. Worry paralyzes just as fear does.

Q. Explain the reaction balance, acidosis and bases.

A. People who have high blood pressure should select a bases which furnish alkalies that neutralize acids which give rise to blood pressure while acids have the opposite effect. Now you can balance up. If you are carefully you can take some foods out of the acid column if you eat enough out of the other column to a good deal more than to balance it up.

Q. Why does one who eats plenty not gain at all in weight or strength even though he eats enough and has a coated tongue all the while?

A. Auto-intoxication is what is the matter. He won't gain any flesh until he gets rid of it. I remember a lawyer from the South who said, "I don't feel clear in my head. I have a large responsibility on my shoulders and I am a lawyer, have a large corporation and I lost a case

from my firm by a stupid blunder I made. It cost them a big sum of money just because I was not in my proper state of health. I just made a stupid blunder because my mind was not clear." He said, "I don't think I am gaining a bit and I am just as thin as when I came." I said, "How much are you eating?" I figured it up with him and found he was eating 4500 calories a day, double what he needed to eat and he was eating 3000 calories of fat and five or six hundred calories of protein and he wasn't gaining a bit. I cut him right down, cut his bill of fare right into two in the middle. In two weeks he came back and he had gained ten pounds.

Q. What should be the blood pressure of a woman sixty years of age?

A. The same as the blood pressure of a woman twenty years of age. A woman sixty years of age has no right to be old but ought to be just ready to begin to enjoy life. Mrs. Kellogg is sixty-five years old and I am sure she enjoys life more than she has ever done before. She has rosier cheeks than ever and enjoys splendid health.

Q. What do you think of the milk diet alone?

A. The milk diet is not the thing but the milk regimen is the thing. The milk diet often does not work well. It produces biliousness, coated tongue, etc. In the milk regimen the milk is accompanied by fruit, bran and other things that will be certain to create activity of the bowels and by that means the ill effects of the milk are prevented. It is very good. It produces a rapid gain of flesh and has many other advantages.

Q. Is it a good plan to eat only when hungry?

A. No one should ever eat except when hungry with the exception of persons in a state of serious disease. If you do not feel hungry at breakfast time do not eat just because it is time to eat. Wait until you get hungry. Eat a quantity of fruit perhaps and bran. It is necessary for the majority of people who have abused their digestive apparatus until it has become so infirm it has to have some extra lubrication. I bought a new

automobile the other day and my chauffeur said that it takes two gallons of oil for every hundred miles you run your old car. This car runs a thousand miles on a gallon. I said I guess I will save enough to save the interest on a new machine. That is the situation with a lot of human automobiles or corpormobiles that have gotten out of repair. There is trouble in the carburetor. The alimentary canal gets choked up and they have got to keep on supplying oil. That is the reason why the prescription for paraffin is usually a permanent prescription. I prescribe paraffin with the expectation that the patient is going to use paraffin the rest of their life. We are very fortunate in having discovered that the place of the lubricating mucus can be supplied to some extent at any rate by this harmless mineral oil.

Q. Is sulphur beneficial to a person having auteintoxication?

A. Generally such a person produces as much sulphur in their colon as the colon can make any possible use of. There is no advantage in the use of sulphur. It is medicine and is not altogether harmless.

Q. What causes gallstones?

17,369 A. Germs. That is the one cause of gallstones, germ infection. An English doctor got very curious to find out the cause of gallstones fifteen or twenty years ago and he made some experiments on dogs. He opened the gall-bladder of a dog, put in some beads and left them there for six months. Then he opened the gall-bladder at different intervals and found the beads just as they were put in. Then he opened the gall-bladder and put in some beads and along with them introduced a small quantity of infectious material from a dog's colon. He put it right in along with the beads and in three months he had some good big gallstones there. Examination of the gallstones has shown that inside of the gallstones there are always to be found bacteria. Sometime ago we had a case in which a lady had had typhoid fever some fifteen years before and she had gallstones and the attacks came on after the fever. Examination of the gallstones showed typhoid fever germs in the middle of the gallstones and we knew what produced the gallstones in that case. The gall-bladder becomes in-

fect. In most cases here we find the ileocecal valve incompetent. The fecal matter backs up into the small intestine and the infection gradually works its way up to the gall-bladder and that is the real cause of gall-bladder trouble or gallstones.

Q. What is the effect on a person poisoned by drinking water from a lead pipe?

A. High blood pressure, sometimes wrist drop or paralysis.

Q. Can the secretion of the thyroid gland be restored?

A. Perhaps to some degree. It can be economized at least.

Q. Are the intestines liable to become so accustomed to bran that is necessary to take continually a larger and larger quantity?

A. No, because bran is a natural substance and supplies the body in a certain amount with all it requires. It is the same thing as it is with the use of water. One does not get so addicted to the use of water that he has to drink more and more and more. Water is one of the necessities of life and the same amount of water will always produce a certain effect. The same is true with reference to bran and the same is true of paraffin oil. The effect is the other way. Persons who at first had to use large quantities of bulky material, bran, etc., and paraffin, after while may diminish both so that they take less and less. I know, for instance, a person who formerly had to take sometimes two-thirds of a tumblerful of paraffin oil at a dose and after while it was diminished so that the person now can get along very well with a tablespoonful of paraffin twice a day and much better than formerly.

Q. What diet is recommended to increase the blood pressure?

A. Anything that increases blood will increase blood pressure.

The milk regimen is a good thing.

Q. What are the symptoms of tapeworm?

A. There is just one symptom of tapeworm and that is tapeworm.

Question Box Lecture at the Sanitarium Parlor, Battle Creek, Mich.,

Monday, April 9, 1917 at

8 P. M.

by J. H. Kellogg M. D.

Forty years ago last October, I walked into the door here my predecessor having walked out the night before. I found twenty patients here but eight of them left the next day because they found a small boy for Superintendent. The idea has been growing not only in Battle Creek but all over the world. What sort of idea? It is that nature or the great power within and behind nature is the supremely wise; is the all-healing power. Christian Science throws a great share of its influence and success to the fact that it does recognize the idea that there is nature a healing beneficent power, always at work in our behalf. Where the Christian Scientist makes the mistake is by saying, "I have control of that healing power. I am it. I can do it myself for five dollars a minute or for one hundred dollars a seance. I will do it to you". That is where Christian Science goes beyond the limit. The great healing power that is abroad in all the universe is the real thing that restores the sick man to health no matter who deals with him, ~~no~~ whether it is the Christian Science or whether it is a doctor, who administers drugs or the doctor who believes in the laying on of hands or the doctor ~~a~~ who applies water, diet, etc. The Battle Creek idea differs from many medical theories and methods in this way. The Battle Creek idea says that the doctor knows very little about the patient after he has found out all he can and he is not wise enough to undertake to perform himself any of these healing processes. He knows so little that the best thing he can do is to sit humbly at the feet of nature and to learn and v-ik

to help nature and co-operate with nature and let this great natural power that is in everyman everywhere present, let it work out the cure. A great many more people get well without the aid of doctors than with the aid of doctors. In fact I have heard it whispered about that sometimes patients get well in spite of the doctor and I am sure that must be true because I know I have done a great many things to people as a surgeon which certainly would have killed them outright if it had not been for what nature did after I got through. If it was not for this great healing power to restore the injury that ~~patients~~ surgeons inflict, no surgeon would ever dare to do an operation of any sort. It would certainly be fatal. This is almost equally true of the physiotherapist. When a doctor orders a cold bath for instance, it might work the ruin of the patient if it were not for the power within that reacts to the cold bath. What is the purpose of the cold bath? It is not to make you comfortable. You do not enjoy it a bit. What is it that is beneficial? It is the re-action of the body to the cold bath. It is what the cold bath causes the body to do. What the cold bath causes the body to do is to arouse itself to resist the influence of this attack of cold water. If the application were continued, it would kill the man. Nothing accomplishes any good to anybody if it is not powerful enough to do some harm; if it were not ~~properly~~ properly done. I must except bran, because I do not think it does any harm at all but it does not attack the body. It only tickles. The cold bath is certainly different. You have heard about the water cure, haven't you? They used to practice it in the Phillipines. For instance, put in a teaspoonful of water to a man's mouth and make him swallow it until he is brim full and running over and if he didn't swallow, he would choke to death and the only way to get rid of the water is to swallow

and perhaps you have heard what they used to do at Sing Sing years ago. They would bind the man down so he could not move, then let one drop of cold water fall on his forehead and another and another. It will give him such a terrible pain after while he will feel as though his head is going to burst and the pain will get worse and worse until finally he will actually become unconscious; go in a collapse, and if he would keep on he would die from the distress from that continual & dropping of just one drop of cold water. So it is the fight the body sets up, not what the doctor does not what the bath attendant does but the fight the body sets up to resist the attack that is made upon it. That is what we call-reaction. It is simply the body fighting against the thing you are doing to it if the action is beneficial because it causes the body to rouse itself, to rouse its power and in the re-action which is created to warm up the skin. When the cold water is applied the whole vital machine is started off in a state of new and vigorous activity. It is a good deal like giving an automobile a push, if you can't get it out of the rut away it will go. Some of you have been stuck in the mud sometime and got some farmer to come and help you out. I remember once I got stuck in the mud way down in Old Mexico beyond where the roads were so rough that a ride in a wagon was like taking a trip in a sailboat on a choppy sea. The wagon was rolling in that fashion all the while. We got into a bad rut and our mules went on a strike and along came a farmer with a big load of hay and four little oxen pulling it. We finally succeeded in persuading him to let one the yoke of oxen come back. The oxen pulled upon their heads entirely. He hitched those oxen on and I never felt so ~~happy~~ happy in my life, I think, as when I saw them start off and lift our big heavy coach and six mules that were all on strike, they pulled them all right up the hill. They had certainly wonderful power. It made up feel awfully

good. I thought, "That is exactly what I try to do for sick folks". We find a sick man way down in a rut and we have to boost him out. That is what treatment does. The cold bath gives a little jostle loosens things up perhaps and massage gives another little lift and the electric light bath gives another and when you get up in the dining room that gives you a big boost and so the whole ~~is~~ scheme is simply to help nature. But nature is doing the work. The effect of treatment is simply to wake up an activity here, another there, to stir things up when they are stagnating but it is nature all the time. The great beneficent healing power within us that does the work and Christian Science hasn't got any monopoly of it and cannot get a corner on it. That is where the Christian Scientist deceives himself if he is honest and where he deceives others folk if he is not honest. Perhaps he is sometimes but as a matter of fact, a whole lot of people got well long before there was any such thing as Christian Science and people keep right on getting well without the aid of doctors. Some time ago I read an epitaph on a man's tombstone that he died without benefit of ~~surgery~~ clergy, another man who died without medical assistance. Some people perhaps have died with medical assistance.

Q. Can one have gall stones if ~~xx~~ the gall-bladder has been removed?

A. Why, certainly. He can have gall stones which had ~~xxxx~~ kept about ~~his~~ his person when the surgeon did the operation. He may have had some in his liver that the surgeon left behind.

Q. What will relieve sick headache?

A. I don't know anything that will give so much relief to sickheadache as to have it stopped so you don't have it any more. The Sanitarium is a cemetery for headache. More than a

million headaches have been carried here. People have come here and left their headaches. I wish you could see those headaches. They would be packed all about the room here. People came here flaunted with headaches. Headaches all day long and all night long. They had to fight it all day long and had to fight hard to keep their mind concentrated on what they were doing. It is the hardest kind of work to keep above it, to keep out of it, to think clear and to see clear. I know how to describe it because I have had it myself. I suppose I had inherited it from my mother and have got to have it all the rest of my life. I used to say to myself "Oh, if I could only have one day or week before I die with a clear head, without a headache, what a delightful thing it would be". But my headaches have all disappeared and I do not have them any more and I am busy all the time telling other people how to get rid of headaches. Everybody's headache can be cured. Nobody needs to live with headaches. I have been looking for the exception and I have yet to find it in which a headache is not directly or indirectly due to toxins. I can go to a drug store and I can get medicine and make you swallow it and it will give you an awful headache, the worst you ever had, but you do not always have to go to the drug store to get something to make your headache. It is generally a home product, as a matter of fact, manufactured right on the premises. It is these poisons produced within the body, in the colon absorbed into the blood, coming in contact with the delicate cells of the brain that addle the brain and produce this distressing, misery one calls headache. Get rid of the poisons and the headache will disappear. The next thing is to keep rid of them. I believe that every single case is curable. I don't believe at all a person has headache because his ancestors had it. I don't believe a person is condemned to die with headache, that there

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is no way out. I remember the first patient I had when I came into the institution here forty years. A man about fiftyfive years old with wrinkled face, looking like an old man. He said, "Doctor, I have had sick headache ever ~~since~~ day of my life for ~~many~~ twenty years, and once or twice a week I get an awful one. Life is hardly worth living. I don't suppose you can do much for me. The Doctor says nothing will cure these headache, that there isn't any remedy for them. I have come over here to see what you can do". In those days, Doctors did not send patients here. When patient came here they had to run away from the doctor. The Doctor said to everybody, "Keep away from that old water cure. You don't want to go there. That is the last place in the world for anybody to go to"; and of course, water cures were and unpopular in many respects because they were carried on in an unscientific way and the doctors had not found out that we were trying to do things scientifically here. It took at least twenty years of my experience here after taking charge of the institution to live down the reputation of the first ten years this institution had established because of the prejudice created by the fact that the work was done empirically instead of scientifically. I undertook to re-organize the work and put it on a scientific ~~basis~~ basis. It was originally called the Western Health Reform Institute and I changed the name to the Battle Creek Sanitarium. I hunted about six months to find a name and finally manufactured one. I found the ~~word~~ word Sanitarium in the dictionary and I said "I will change it and make another one out of it". I thought we would always have the word Sanitarium for our own. I did not like the word Sanitarium because it says in the dictionary that this meant in England a house resort for invalid ~~soldiers~~ soldiers and I didn't like the idea of having a place called a Health Resort. It was not ten years before the word

was being attached to every medical boarding house all over the United States. If a place started a hotel and couldn't make it go they put out the word Sanitarium. Down in Tampa, Florida, thirty years ago and negro boy asked to show me to the hotel and I let him show me the way over to a place because it was called the St. James Hotel and used to be called the St. James Sanitarium. I asked him why they changed the name and he said because the colored boys didn't know how to pronounce the word and they got to shouting out "All Aboard for the Sanitary". Then by and by some new fellows came on and they shouted out "All aboard for the Cemetery". So they had to change the name. There are a great number of doctors imagine the Sanitarium is the sort of thing they are acquainted with; that they have seen called a Sanitorium. They do not know that there is surgery done at the Battle Creek Sanitarium, that we undertake to do things here in a thoroughly scientific way but they are gradually finding out and the public are gradually finding out. The principle upon which we work here is we think there is a great all healing power that is a broad in the Universe that is healing everything that can be healed whether it is a wounded deer, a wounded bird, an insect or a sick man. This great healing power is just as much interested in one as it is in another. A good many years ago when we were just starting alone here we had a sign up "Keep off the grass". One morning I was called to see somebody and I was in a great hurry. I didn't see anybody looking and I skipped across the lawn to save a little distance

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and a little time. I thought nobody saw me but when I got up on the porch and looked, I could see every step and the grass was trampled down. I felt very cheap to think I had left such footsteps on the sands of time. I said, "I am a very bad kind of offender to violate my own law". It worried me all day. I dreamed about it all night at least I thought about it in the middle of the night. Next morning when I got up and came down to the Sanitarium the first thing I did was to look for those ugly footsteps and to my great delight and surprise, they were all obliterated. Every little blade of grass I had trampled down had been lifted up again and was standing up there as straight as could be. I said, "Just think of it. Here is the healing power in the world that thinks enough of those little blades of grass to lift every one of them up, to restore them and they are all looking as healthy as ever". You know it put a great hope into my heart. I have a thousand times sat in my office and a man has sat in the chair opposite me telling me one symptom after another and my heart kept still working and thinking and thinking and he was expecting me to cure him of those awful troubles and how on earth was I ever going to do it. I just knew I could not and it just used to make me shiver and shudder as people would tell me awful tales about their stomach, nerves and distresses of various sorts. But when the idea dawned upon me that I didn't have to cure anybody at all, there is a great healing power, all powerful, omnipotent that had the same power to create a man and to maintain him, that it was that power that healed, that all I had to do was to get in line to keep in touch with this great healing power. The Christian Scientist thinks and does a good deal of good by teaching people that idea, but the Christian Scientist does not go far enough. They stop with the psychic side. The man must get in harmony with his thoughts or with his mind but when it doesn't make any difference what he eats. That is a great

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mistake for the man must get his stomach in harmony as well as his mind and must get his whole body in harmony. He must make his whole body harmonize with the great biologic law, a great biologic principle. He said we must get in tune with the Infinite. That idea is good, and there are thousands of people that see these good and beautiful things in the Christian doctrine and they are so good and so sweet to them that they overlook a whole lot of other things that are perfectly ridiculous, and even unethical but nevertheless, they get a great deal of good out of it. I have never yet met a Christian Scientist that did not assure me he got a great deal of good out of it, and I generally found if I had an opportunity to talk with their friends, and they told the same story that the man since adopting Christian Science had become a great deal better mentally than before, that he is much more agreeable, does not disturb people anymore as he used to. That is all good but when the Christian Scientist says, "God is in me; God is everywhere and I am God - Mrs. Eddy almost said that - "God created me and God is in me and I can create. God is the healing power and is in me and I can heal". That is where the Christian Scientist makes a mistake. There is a great healing power abroad, but the Christian Scientist, as I said before, hasn't got any corner or monopoly on it and can't sell it for dollars. He can not manipulate it and control it. It is working entirely independently of any demands of theirs, working for every body and everything that needs help. The Battle Creek idea is simply to get in harmony with that great power in everything that pertains to our lives and health. To live right, to live biologically to live naturally and in doing that we put ourselves in tune and a little time. I kks

and that is the best thing we can do.

Q. What shall one do who has been on the Sanitarium diet for hyperacidity for three months and still has much acid? Do cereals generate acid?

A. You simply have not got well yet. That is all. A person who has a stomach that has made too much acid for a long time cannot expect to get a new stomach right away. The effect of treatment is not to antidote symptoms but it is simply to remove the causes of disease and to gradually agitate and strain the body back into normal condition again. What is hyperacidity anyhow? Too much hydrochloric acid. Hydrochloric acid is necessary. The normal stomach makes about half an ounce of hydrochloric acid every twentyfour hours. You can buy some muriatic acid at a drug store and if you put a drop of it on a piece of zinc it will bite a hole right through it. The stomach makes a tablespoonful of that powerful acid every twentyfour hours and it is used in the digestion of food. Without it certain kinds of food could not be digested at all. This acid combines with the food. That is the reason why you do not feel injury from it. It combines with the food just as it combines with soda and makes salt. Common salt won't do the carpet any harm but if you put the soda with the acid, it neutralizes. It won't do any harm. The protein of the food combines with the acid just as soda does so that it is no longer irritating and ~~is~~ that's the way in which it aids digestion. It combines with the protein and helps digestion of protein but it does not combine with starch and it is not necessary for the digestion of starch and does not help in its digestion at all. So when one takes food containing a large amount of starch and a very little protein, very little acid combines with it and if one before has been in the habit of eating a great deal of protein, for example, or a great deal of

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nitrogenous food, his stomach has gotten into the habit of making an enormous amount of hydrochloric acid. A great deal more than is necessary. He changes from that diet to a farinaceous diet and do things of that kind and there is a lot of acid left over and it is this that comes up in the throat and makes so much burning. There are these things that cause the stomach to make acid. The acids of fruits will cause the stomach to make more acid. When you put acid into the stomach it makes the stomach make more acid. Beef tea, bouillon and broths has that effect. Drinking a glass of water will have the same effect too. I remember a lady who knew she had the worst stomach that ever was. She said my stomach is so bad that even water scours on my stomach. When the stomach makes too much of this acid, there is hyperacidity and the stomach has to be trained back to be a normal stomach again. When you give it normal food there is more acid than it can utilize so this surplus left over gives a person distress. There are certain animals that always have this very acid gastric juice. A dog, a lion, or a cat, for example, always has normally a large amount of gastric acid, because meat is the natural diet of these animals. Animals that naturally do like meat have a large amount of acid because the acid combined with the meat and it is necessary to digest the meat. The meat cannot be digested without it. In other words, when a man has been living on a dog's diet a long time, he gets a dog's stomach you see. A dog diet makes a dog's stomach and makes the dog's gastric juice. When a person has got that kind of stomach and he changes his diet, that is the first thing necessary for a change of stomach. A baby does not have that kind of stomach. A baby taking milk does not have any free hydrochloric acid in the stomach at all. Milk combines with it and also milk prevents the stomach from making too much acid. By and By you begin to feed the baby meat

and then the baby's stomach begins to make more acid and the more meat the more acid until if the child has eaten a great deal of meat, by and by it will have a stomach that will work just like a dog's stomach; make juice just like a dog's stomach. If you put that person back upon a biologic diet at once his stomach begins to make trouble. You say to him, "Why not keep right on eating meat"? He says, "It makes the stomach make more and more acid and by and by the stomach glands will be worn out entirely and it stops making any acid. The gastric glands can make about so much acid in the course of a lifetime. Every organ of the body can do a certain amount of work. Each one of the four million kidney cells, for example, make one half ounce of urine in a lifetime of sixty years. That is all it can do. It has got to the end of its rope. We understand that much. It has not had a chance to do as much as that. It is like an automobile tire, that is guaranteed for five thousand miles. When the five thousand miles have been run you do not expect to get much more out of that tire. You have got your five thousand miles out and that is all you can expect. So you do more with extra care and it might do less with bad usage. The same is true of every one of those stomach cells. One can make a certain amount of gastric juice in the course of a lifetime. Each one of the cells in the stomach can make a certain amount of gastric acid and when it has done its job whether you are twentyfive years old or a century old that cell won't do any more. When one eats a great deal of meat, that is not natural for a meat to eat, and makes the stomach do the work of a dog's stomach produce gastric juice that is two or three times as acid as it ought to be. It will wear out soon. I have seen the inside of stomachs whose glands were all gone entirely. Normally the stomach is lined with ~~krikkks~~ little cells that makes gastric acid.. I have seen a stomach

without glands. Such a stomach is not any more active than a pocket. The stomach cannot do a thing with the food that comes into it. It is a bad thing to have a stomach making so much juice because it is going to be worn out by and by. That is the reason why we find a certain number of patients whose stomachs makes no gastric juice at all. The first thing to be done then for one who makes too much acid, is to train the stomach back into the normal kind of activity to make it make gastric juice that is not so acid. The first thing of all, the starting point, is to give the stomach the right kind of food that will not overstimulate it, that does not require so large an amount of acid and food that is natural to man, that will be carbohydrates or food containing a considerable amount of starch. At first there will be some acid left over and the patient will have a great deal of discomfort. We endeavor to help our patients by giving a little soda and fats to protect the stomach and persuade the stomach to make less acid and in various ways we relieve the man. One of the best means is to put the patient on a milk diet. This is particularly good for the reason that the casein of the milk protein will neutralize the acid. Also the milk containing lime which neutralizes the acid and the fat in the milk persuades the stomach to make less acid. If you put a person on a milk regimen and he takes a glass of milk that will neutralize the acid in the stomach and in half an hour he takes another glassful, that will neutralize it again and so it keeps it used in the same neutralized condition all the time and gives a sore stomach a chance to heal and gives the stomach ~~glands~~ glands an opportunity to get over the irritation which causes them to make too much acid. I met a lady the other day who had been on the milk regimen for about three weeks, I think. When she began her stomach was producing one hundred and thirtysix percent of all the gastric juice v-ik produced was acid at the end of three weeks. All her symptoms had

disappeared and examination showed that the free hydrochloric acid was .078 or a little more than half what it was to start with. The lady was relieved of all her symptoms. The stomach had been trained to the normal regimen again.

Q. Is walking good for a weak nervous person?

A. Yes. But the amount of walking must be regulated according to the person's strength. A person who is too weak to stand up should not try to walk, of course. A person who is just strong enough to stand up and walk a little should not undertake to walk half a mile. The amount of walking must be regulated to the individual's condition. We find that one of the great mistakes of the so-called rest cure. The patient is put to bed, kept there a few weeks and pretty soon could not walk. He considers the rest cure a pleasure. The rest cure should involve complete rest for not longer than ~~at~~ a week and at the end of that time regular systematic graduated exercises must begin which will lift the patient each day a little higher and higher until he becomes strong enough and live

The patient is put to bed, kept there a few weeks and very soon cannot walk. He naturally considers the rest cure a failure. The rest cure should involve complete rest for not longer than a week and at the end of that time regular systematic graduated exercises must begin which will lift the patient each day a little higher and higher until he becomes strong enough and able to live in the perpendicular. If we can get him so he can be comfortable in the horizontal we must gradually get him up so he can live in the perpendicular plane; then he will be of some use to himself. We find automatic exercises very good for this purpose. Electrodes are placed in contact with the muscles of various parts and the muscles are caused to contract successively by the electrical current. The succession is so rapid it seems to the patient that the muscles are all contracting at once. By this means one can do in thirty minutes the same exercise as though he walked three miles and he hasn't made any effort at all. That is very useful for a nervous patient because it makes his muscles work and enables them to grow strong and vigorous without using any brain energy at all. The nervous system that feels weak is not weak because he really is weak. I remember many years ago when we lived in an inflammable building there was a little smoke in the basement and somebody shouted fire and there had been a woman on the third floor who got out of bed and hurried down stairs who had not walked before for two and a half years. She said she was not able to walk. She was lying in bed and was not strong enough to walk. The next day she was walking all over the house. The automatic exercise strengthens the muscles and builds the body up so that walking becomes easier without taxing the brain and the nerves at all and in that respect it is a very useful thing. Massage does not strengthen the muscles at all. It does not cause them to grow. The only thing that will make the muscles grow is actual muscular work. The thing of first importance for a person is to find out how much work he ought to do. Forty years ago there

was not any means of knowing. One of the first problems I set about was to devise ways and means for measuring a man's strength. I worked ten years on an instrument that we call a dynamometer. With a big fat man you could not tell what his strength was so we had to have a dynamometer. I finally later devised an apparatus and worked out averages so that we have a chart we call the strength graphic and the moment you look at it you will see how your strength stands in relation to a normal man. I did not really appreciate how useful it was. One day I got a letter from the United States War Department and they said we have seen one of your charts that you make up there and it occurred us that every man who comes to West Point to get a training as a soldier ought to have that kind of chart made so for many years every man who has entered West Point has had a chart made with our dynamometer. If you go to Annapolis to be trained as an officer the first thing of all will be to measure you with the Sanitarium universal dynamometer to see how far you can walk and what your strength is. Every student there has to be measured with this apparatus and has to have his chart made. If he does not come up to a certain standard then he cannot attend any of the ball games, cannot have any of certain privileges until he has worked hard enough in the gymnasium to bring himself up to that standard. Then he is allowed to those other privileges. Every one of of you ought to have a strength graphic made. Otherwise you do not know how you stand in relation to the average man or woman and it is really an important thing to know. After you get the strength graphic it is possible to tell how far you ought to walk, how much exercise you ought to take and how you stand in relation to the average person of your height. Sometimes one side of the body is very much weaker than the other side. This dynamometer takes the strength of each of the principal groups of muscles of the body. I found out that every man was right handed is left legged and nobody ever knew that before. Every left handed man is right legged.

If a man wants to push with his right hand he has to balance himself with his left leg and vice versa. In walking the right arm swings as the left leg goes forward and then the left arm and the right leg. Those of you who have not had your strength graphics obtained speak to your doctor about it and ask your doctor to make an appointment for you. Do not get away without it. You want it done and in two weeks you want it done again. The other day I found a man who gained 500 pounds in three weeks. Isn't that worth while? It is far more important to gain in strength than it is to gain in weight.

Q. Would it be possible to have a diseased gall-bladder and have no pain either in the vicinity of the gall-bladder or anywhere else?

A. Certainly it would be. Probably the great majority of people who have gallstones do not know they have them until by and by suddenly something awfully serious breaks out and the undertaker gets them before the doctor has had a chance. If you have gallstones or gall-bladder trouble you should have it attended to because it is really a serious thing. It will make trouble some time.

Q. What can one do who has poor blood and circulation and is very nervous?

A. What he wants to do is to get better blood and get better circulation, get better nerves and fortunately all of these things are obtainable. In fact, they can be purchased on the market. The Battle Creek Sanitarium is a place where such things are for sale. Here is good blood. How do you get it? You have got to work for it. You have got to pay the price for it. You cannot get it for nothing. I do not mean you have got to pay money necessarily but you must pay the price in effort and with intelligent study and the proper effort you can obtain good blood, good circulation and good nerves. It is simply a matter of scientific training of the body to make better blood and scientific

training of the heart and blood vessels to circulate the blood better and a scientific training of the nerves to do their duties better. They do the best they can under the circumstances as a rule.

Q. Which are most liable to high blood pressure, men or women?

A. I think more men yet I confess it is almost a toss up between them. The men smoke and the women drink coffee and they are both pressure-raising drugs. A single cigar will raise the blood pressure twenty points in thirty minutes. Dr. Janeway of New York who is an authority on things of that sort, the best authority perhaps in this country, now at Johns Hopkins University, - Dr. Janeway publishes that statement that one cigar will raise the blood pressure twenty points in thirty minutes and a cup of coffee will do the same thing.

Q. What diet is recommended when a person suffers from gas in the bowels?

A. The difficulty is there is delay, stagnation some where and that is what makes the fermentation. The thing necessary is increased activity.

Q. Explain the cause and cure of high blood pressure.

A. Blood pressure is never higher than it needs to be. Blood pressure is produced by the heart which is a pump and pumps the blood into the arteries like pumping blood into a tank. As you compress the air in the tank you have a pressure there. It is like putting water into a rubber bag. You stretch the bag and if you cease letting the water in and release the pressure, the water will spurt out. The arteries sometimes get contracted. If there are poisons in the blood these arteries will contract. Tobacco and coffee and other drugs including poisons absorbed from the colon

such as mustard, pepper, peppersauce, ginger, and those hot things cause the arteries to contract and then the heart has to work harder to get the blood through so the pressure rises. When the arteries are poisoned in this way the arteries get permanently contracted so they are too small all the time and the walls get thickened, hardened and chalky and then the person has permanent high blood pressure. If one only has contracted arteries the difficulty can usually be overcome. In cases in which the arteries are hardened there is usually at the same time some contraction. The high blood pressure can be lowered some and the condition can be improved and generally it can be improved very, very much. I have in mind a good many cases in which the blood pressure has been cut right in two in the middle. Every single point you can get the blood pressure down means adding to your length of days. I believe the average person suffering from high blood pressure can have his life expectancy increased three or four times by learning how to care for himself by proper treatment, to get the high blood pressure down and then how to keep it down. It is one of the most important things we have to do here is that very thing.

Q. Is pyelitis curable?

A. In many cases it is. In some cases it is not curable.

Q. What is the cause and remedy for 110 percent. of white cells in the blood?

A. The cause is you have an extra good body. You have splendid health. Your body is making a splendid defense. That extra 10% percent. of blood cells is provided by Nature to help you fight off the germs that are attacking you all the time. If a person's bowels are a little inactive Nature immediately provides more white blood cells to fight off the poisons absorbed.

Q. A person 75 years of age with 75% of the normal hemoglobin - is this abnormally low?

A. Assuredly it is. Anything below 95 is abnormally low.

Q. If constipation is the cause of intestinal autointoxication, how do you account for one having it who has never suffered from constipation but has the very opposite condition?

A. The fact is the great majority of people who suffer from constipation do not know it. The colon is the garbage box of the body. It ought to be thoroughly emptied and disinfected every day. You can never keep the garbage box clean if it is not emptied every day and disinfected. That is the way it must be done. That is exactly what Nature has provided for, that the colon should be emptied after every meal. The remains of the previous meal are dismissed after every meal. The taking of one meal sets up a peristaltic movement. Breakfast, for example, when dinner is taken the remains of the breakfast are moved over into the colon and when supper is taken the remains of the supper are moved over into the colon and the remains of the breakfast which have gotten down to the lower end of the colon by that time are moved out. That is the normal rhythm and the undigested remnants of the breakfast should be dismissed before bedtime. The next morning before breakfast the remains of the dinner of the previous day should be gotten rid of and after breakfast or dinner of that day the remains of the supper of the previous day. That is the normal rhythm but there are many persons whose garbage boxes are not taken care of in this normal and physiologic way. Nature pours out a lot of disinfecting mucus all over the whole mucous membrane and the colon which follows right along behind whatever is passing through it so that everything is carried away and the colon is left absolutely clean. Take into your mouth anything no matter how dirty it is and after while your mouth will be perfectly clean. This lubricating mucus comes out underneath v-m

everything and floods it off and carries it away and that is the way the body keeps itself clean. A great many persons have so neglected their garbage boxes that they are brimful all the time and running over. They have been abused so long that they have lost the power to produce this lubricating and cleansing mucus and this decomposing material adheres to the mucous membrane, becomes dry and adhesive and the whole colon is packed full of this putrid material and the colon is in a horrible condition. It soon becomes irritated and Nature pours out a serum to dissolve some of it and carry it off and that makes diarrhea. People who have diarrhea are practically always constipated but the constipation is high up and is the worst kind of constipation. The intestinal contents, the fecal matters, are packed into the colon so that the whole colon is filled up and it never at once is emptied at all. That is the advantage of bran. It produces the right kind of stimulation of the intestine so that it can act properly.

That is the great advantage of bran. It produces the right kind of stimulation of the intestine so that it can act properly and then if paraffin is added, it takes the place of the normal lubricant and the two together make a very happy and efficient combination.

Q. What causes dandruff?

A. It is sometimes due to certain germs that get to working in the skin.

Q. What causes albumin in the urine?

A. Albumin is due to the fact that the kidney is being broken down. The cement substance of the kidney is being broken down. The kidney is made up of little cells connected by tubes which are held together by cement substance. When the body is allowed to get into a disordered state so that an excess of acid is produced in the body, this acid which is injurious to the tissues is eliminated through the kidneys and in passing through the kidneys it dissolves some of this cement substances so that it appears in the urine, and that is the albumin in the urine. Put a kidney in a very weak solution over night and in the morning the water in which the kidney has been placed will contain albumin which has been dissolved out of the kidney. So the presence of albumin in the urine is evidence that the kidney itself is being broken down and dissolved.

Q. What care should be taken by one who has perforation of the drum of the ear?

A. Go to a specialist. Sometimes an artificial drum can be used which is of great service.

Q. Can one be cured of slight curvature of the spine when 35?

A. Yes, if it is slight, it can be cured.

Q. Can an aged lady of 75 years, recently become blind with cataract, be successfully operated on?

A. Oh yes, many such persons are successfully operated on.

Q. What is the function of the thyroid gland?

A. To keep the blood clean and pure, to take care of the skin, to maintain the activity of the skin. If one has a dry skin, it means the thyroid gland is shrinking.

Q. How soon could a man be about after operation for appendicitis?

A. A New York surgeon sometime ago published an article entitled "An Inch and a Half Incision and a Week and a Half in Bed". In other words, the appendix was removed through an incision an inch and a half long and the patient stayed in bed ten days. I think I have occasionally had a patient who get up in a week after the operation. Generally a couple of weeks.

Q. Is corn ~~brant~~ good food?

A. It is mixed with other foods but not by itself. It should not be used as a staple article of diet because it does not contain any lime and is deficient in vitamins.

Q. Is one with astigmatic eyes likely to have the eyes injured if glasses are fitted too strong?

A. Yes. The eyes must be properly fitted if glasses are worn any length of time.

Q. How many calories should a man forty years old, living sedentary life, eat daily?

A. If he weighs 250 pounds and is six feet, six

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inches tall, he will need about 3,500 calories. A man of my size would need about half that much.

Q. What causes leukemia?

A. There are several different varieties of this disease. The cause is not certainly known.

Q. What causes pains in the back of the neck?

A. It is most generally a neurasthenic pain. It is a symptom of neurasthenia, chronic toxemia. A wretched feeling all through the head is due to these poisons. Get rid of the poisons and the pain disappears.

Q. Can soda be used for hyperacidity?

A. It may be used as a temporary expedient but we must remove the cause and train the stomach to make the right amount of gastric juice.

Q. Is it advisable to use an enema habitually?

A. It may be used a long time without harm provided care is taken to avoid hot enemas. If the temperature of 80° or less is used, it has a tonic effect which is generally beneficial.

Q. My dietitian told me it would be unwise to take meat entirely away from the diet of a neurologic boy of thirteen.

A. I would like to have that dietitian reported to me because it is necessary for me to sit down and give her some valuable information. That dietitian was not instructed in that way and cannot give one atom of scientific evidence that such a thing is necessary. On the other hand, a great abundance of evidence is accumulated within the last twenty years that shows that ~~the~~ meat introduces is extremely bad for children. It ~~introduces~~ putrefactive germs into the colon. It introduces wild bacteria, meat bacteria which ~~are~~ are extremely damaging. More than twenty years ago an experiment was

made in an orphan asylum in New York City. The boys and girls were placed upon a vegetarian diet and the improvement in those boys and girls was marked and was so wonderful that it was published in the medical journals as a very interesting thing. A couple of weeks ago, I received a letter from the Superintendent of a large reform school where 840 boys are confined and being trained back to good citizens. The Superintendent wrote to me and said the Board of Trustees have requested me to write you and get some suggestions for substitutes for meat for our boys. So I wrote him, I thought the best thing would be to send him a dietitian. I received a day or two ago, a letter stating that the Board of Trustees had passed resolutions inviting me to send a dietitian to establish a vegetarian dietary for their boys. Their 840 boys are going to be fed right and the dietitian will soon be on her way there, ^{to} teach those boys how to live biologically. Why is he doing that? Because observations have shown that it so wonderfully changed the temper and disposition of the boys to put them on a natural diet. Meat is just as bad for boys as it is for dogs. A man came through the town here some years ago with forty performing dogs. He came along the street and all the dogs walked along behind him. They were the most good natured lot of dogs I never knew in my life. They were the most amiable creatures you ever saw. I said to him, "You must have quite a butchers bill to pay every day to feed so many dogs". "Why, no, he said, "it doesn't cost me a cent". I said, "Don't you give them any meat at all"? He said, "Never a bit". I said "Why not"? He said, "Because if I feed them meat I cannot teach them a thing and they quarrel so I cannot get along with them. They never get any meat". I said, "What do you give them"? "Why, we give them cornmeal mush, oatmeal mush, bread and potatoes". I said, "And never give them a bit of meat"? He said, "Baron Liebig v-ik

the great chemist who originated agricultural chemistry more than one hundred years ago, called the attention to the influence of diet upon characters. He found in Germany where he lived, he had a bear pit, he reported that the keepers of those bears had noticed the effect of diet upon them. The bears were well trained, were very amiable creatures and used to wrestle with him and play in various amiable ways with one and other, and the keepers found they could change the nature of those bears by feeding them on meat for two or three days. He used to amuse the people of the town by changing the diet and character of the bears within a few days. I used to have a pet bear. I set out many years ago to see what I could do in reforming these wild animals. I didn't know anybody else had tried the experiment. I recently learned that the same experiment had been tried by an Englishman who found eagles hawks and wolves and all kinds of wild animals, carnivorous animals, got along perfectly well without meat if fed on some cooked foods. In India men travel about with trained ~~the same as~~ tigers. They get them when they are very young and bring them up on bread and milk and rice. They never give them any meat at all and these tigers are so tame the men who have them let them run loose right around the town and they are just like kittens, as long as they are fed on a diet of bread and milk. I had a big bear and he was a noble great fellow. He would stand up and wrestle just like a man, and the men about the place used to have a great deal of sport with him. I had him in a yard with several dogs and had a donkey. The donkey and the bear very soon became fast friends and they used to stand up and wrestle together. Sometimes you would see one hundred people watching those animals perform. The bear was very kind to the dogs and he played with them as though they were his own cubs. The man who had charge was taken sick and another man came in who didn't understand the situation and he thought that bear ought to have some meat of course and those dogs so he gave them some meat and

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withint a week's time that bear became so ferocious he broke loose, got out of his ~~xxxx~~ yard and it took twelve men to capture him and one of them got quite badly hurt and he had to have the bear shot. Now, do you know what became of him? The butcher down town said, "Let me have him". So we sold him to the butcher and the butcher sent me back the skin and he hung up the carcass in his store and advertised that he had bear meat and the people of the town carried my noble bear in their own stomach. We furnished a sepulcher for him, the leading citizens of Battle Creek. The butcher never said a word about the two dogs that the bear ate up during the week when he was on a wild spree.

Q. What is the cause of appendicitis?

A. Appendicitis always begins in the colon. It is colitis in the appendix. It comes from the colon.

Q. How many the blood be enriched by eating food that contains iron?

A. Bran contains more iron than any other food.

If one will take a heaping tablespoonful of bran three times a day, he will get more iron than the body can possibly appropriate. The body uses each day ten or twelve miligrams of iron. A gram is 16.4 grain and a miligram is one thousandth part of it, and that represents a fraction of a gram which corresponds with the miligram. A little less than one seventh of a grain of iron is the full compliment for a days ration of iron. A tablespoonful of bran three times a day will give you two or three times as much iron as you can make any use of and in the very best form.

Q. Will eating bran cause intestinal indigestion?

A. No, it will cure things up and if you keep on a few days there will be quiet along the Potomac and you won't have any more trouble.

Q. When going on a trip, what laxative should one

take?

A. When I travel, I always carry a supply of Laxa biscuit and paraffin oil. This is an emulsion of paraffin oil in the form of paramels. You do not know there is any paraffin in it at all.

Q. Is a blood pressure of 150 dangerous?

A. It is not the pressure but the thing that makes the pressure that is dangerous. The high pressure is not dangerous. It is never any higher than it needs to be. When the blood vessels are strong enough to resist the pressure brought to bear upon them until they become weakened by disease, and that is where the danger comes.

Q. I have tried neutral baths for insomnia without success.

A. The trouble is, the bath is not given right. The fault is not in the bath but in the giving of the bath or else you eat too much supper. Go without your supper or eat nothing but fruit. Then take the neutral bath right and you will soon go to sleep. Sometimes you need to stay in it quite ~~awhile~~ awhile. For the last thirty years, I think at least one-third of all the days I have lived, I have taken a neutral bath before I went to bed, sometimes for one hour, sometimes for two hours and sometimes all night. When I have but a very short time to sleep, I get into a tub. You can sleep twice as fast in a bath tub as anywhere else and the sleep that follows after a neutral bath is so delightful and refreshing it is wonderfully recuperative. The neutral bath must be taken at a temperature not colder than 92° and not warmed than 97°/ It must be taken long enough so you get really sleepy. When you get out of the tub and get into bed do not get chilled. That is what spoils the bath. Wrap up in a dry sheet at once and roll right into bed and you won't wake up till morning.

I thank you for your attention.

HOW TO LIVE ONE HUNDRED YEARS.

A Stereopticon Lecture at the Sanitarium Parlor, Battle Creek, Michigan,

Thursday, April 12, 1917, at 8:00 P. M.

By

J. H. Kellogg, M. D.

Psychologists often sit down at the feet of a cockroach to see how it studies and learns and they apply the laws which are found to be universal throughout the whole animal world to human intellectual development. If this is true with reference to the development of minds how much more true it must be in relation to those purely animal functions in which we are all on the same plane. In matters pertaining to the organic functions of the body we stand upon exactly the same plane as the lower animals. Man's blood circulates, his heart contracts exactly as a rabbit's heart does or a horse's heart and so on the plane of nutrition we are on an exact level with all the rest of the world. It is evident then if we must go to the animal world to learn about the laws of intellectual development, we certainly ought to be content to go to the animal world to learn about nutrition, the laws of digestion and the laws of dietetics, if you please.

We have about 120 young ladies, high school graduates, who are here in our School of Home Economics studying dietetics. I talked to them this afternoon and I was conscious all the time that I knew very little about it. I have been making a study for some weeks back to see if I could not add a more valuable member of the family to our faculty. I have been corresponding with a man with reference to getting a chimpanzee for I think he would teach us more about dietetics in six weeks than I could in a whole

year. The chimpanzee has not wandered so far away from the normal path of life that he has got lost in the wilderness, so to speak. You see a chimpanzee eating and you know what is good for a chimpanzee to eat because when he gets a thing that isn't good he throws it away. If you put something into his food that is not good for him, he recognizes that his food has been meddled with and has been poisoned and it is rejected. Offer a chimpanzee coffee at the close of his meal and he will probably toss it in your face and give you a very impressive lesson. Offer him a beefsteak and an apple and a pear and he would toss the beefsteak to the dogs and eat the pear himself. You could not seduce a chimpanzee into eating raw beefsteak. Show him the body of a dismembered animal and the poor fellow will nearly die of fright. He would shake, shiver, and shudder at the awful sight but you and I become so hardened, so calloused in our natural instincts, so brutalized, so carnivorata, to produce a new word, that our instincts are not disturbed. I know people who would look at the corpse of a dead animal reeking with blood and disemboweled and actually smack their lips and set their mouth watering at the sight of the sight and desire to make themselves a sepulchre of that dead creature. One day I was walking along the streets of Chicago with a gentleman and we saw a great fat ox going along the street and I was shocked to see him smack his lips. I said, "Why, what are you smacking your lips for? What do you mean?" "O", he said, I was thinking how I would like a piece of him for dinner." I said, "Why, my soul, I shall expect pretty soon to see you taking a bit off a sheep or off some other creature like a wild beast." The chimpanzee hasn't got that. He has his natural instinct yet and that is why we can learn from him. These creatures that are still following the biologic life while man has wandered away and when you see a man sitting at a hotel table eating you could not form the smallest idea of what is proper for a man to eat by the way he eats or the things he eats. I asked the man from Chicago what he ate and he said, "Oh, I eat anything

they bring me. Whatever comes along I eat whether it is a beefsteak or yellow dog." The idea is the stomach can be entirely ignored that we can eat whatever we find on the bill of fare, that whatever is polite to eat without any reference to what our bodies require is proper. That is not so of the chimpanzee. The wise old ape eats what is proper and good for him to eat. He obeys the great biologic law which God has implanted in him. That law rules him and he has not yet acquired such an intellectual development that he can get away from it. It shows him the right road and holds him there but man has broken away and he has nothing to guide him at all. He has is simply ruled by fancy, fashion, custom or habit. He eats what he has been taught to eat without any reference to his biologic needs. The first principle of longevity is to live the simple life and the more nearly one can live in the way marked out for him to follow, in the way in which biologic law will lead him, the longer he will live, the more efficient will be his life and the more healthy and comfortable will be his living. We are sick because we have wandered into devious paths. We suffer because we have cultivated disease. "Whatsoever a man soweth, that shall he also reap" is a cosmic law that is absolutely universal in its application and inescapable. If we sow disease we will reap disease. If we sow health and long life, that is what we get. It is by living the simple life that man may be happy and live out the greatest measure of human existence. This thing comports only with obedience to biologic law. The simple life is a biologic natural life, a scientific life. A baby brimful of vitality with wonderful possibilities ~~of-fo~~ has a power to live 150 years but almost from very infancy its parents begin to cultivate disease. They pervert it, cultivate in it unnatural habits and introduce it to an artificial life and not the simple life or biologic life at all but to an artificial life that leads it to an early decline. It will early begin to suffer from

disease, get adenoids and get infected, get bowel troubles. The baby does not have a fair chance. There have been people who have lived the simple life and I will show you some samples of such people of great antiquity. These are all authentic pictures. They were made from portraits mostly. There is power in the human frame to extend its existence properly to 150 years. It was Lord Bacon, I believe, who made the estimate that a man ought to live 150 years because an animal usually lives six times as long as it takes the animal to reach maturity. It takes a man about twenty-five years to mature, hence he ought to live to be about 150 years of age. If a man lived as intelligently and sensibly, naturally and biologically as an elephant does, we should live 150 years but as Old Seneca said, "Man does not die, he kills himself by unbiologic living." Here is the most wonderful authentic case on record, that of Old Parr. In Westminster Abbey there is a stone in the aisle on which is recorded these words: "Here lies the body of Thomas Parr who died at the age of 152 years and nine months." I read those very words myself from the stone over his grave. He was a peasant. His diet was buttermilk, potatoes and black bread. That is what he lived on. He visited London, was invited to go to the home of the Earl of Arrondale. He lived with him a few weeks and he said fed him so highly that he got an attack of indigestion and died. John Harvey, the man who discovered the circulation of the blood, made a careful examination of his body after his death and he reported he did not find a single hardened artery in his body showing that he might have lived for a considerable number of years more, but he died prematurely. He did not die of old age but killed himself like the rest of us. His son, Young Parr, had his portrait painted at 113 years of age. Old Parr was so sturdy that when 130 years old he worked with a flail in the harvest field. When he was 115 years old he could swim the swiftest rivers in England. He was arrested for being the father of an illegitimate child

when he was 110 years old. It is claimed that Henry Jenkins lived to the age of 169 years. I cannot swear to that. The proofs are not absolute with reference to it but the ~~reference~~ records show that he was a very, very old man who lived far beyond a century and it is possible that he was 125 or 130 years old if he was not 169 years old. You have heard of Louis Cornero, a man who was broken down in health completely when forty years of age and was given up to die by his doctor.

April 12, 1917, Cont.
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He must have thrown away a prodigious amount of vigor and vitality that might have been used to extend his life. He made a complete revolution of his course of life. Cut out the meats and thing of that sort, lived a very simple life on abstemious fare and here is his picture at 100 years old. He was an architect, an engineer and an inventor. He became so study and well that when seventy-five or eighty years of age, he could swim, run, jump and was as lively as a boy and was far more vigorous than at thirtyfive or forty years of age. He took pains to chew his food and Fletcherize long before Fletcher did. Peter Zartan was said to have lived to be 185 years old. I don't believe it but very likely he was in 135 or 140. I saw an account some time ago of some people in Bulgaria, a couple, who had celebrated the 100th anniversary of their wedding. The man was 121 and his wife 120 and the Governor put them on a pension so they did not have to work any more the rest of their lives. There is Leonardo da Vinci one of the great men in the world of art who lived long ago, 1452 to 1519. He lived the simple life and was one of the great artists of his time. He was a vegetarian with the rest and never could be induced to touch meat. He required his pupils to live upon the same simple ~~xxx~~ natural ~~xx~~ fare he chose for himself. He abhorred the idea of killing. You know he was the author of that wonderful picture "Mona Lisa" that has attracted so much attention. Now there has been in every modern times men who have lived the simple life. Wendell Phillips was a man who lived an extremely simple, natural, biologic life. We had the honor to receive a visit from this silver tongued orator one of the greatest Americans has ever seen. We had the honor to have him as a guest many years ago. He said to me, "Doctor Kellogg, I have v-ik

not eaten flesh in fiftyfive years. He said, I have on a few occasions when other food was very scarce and traveling away from home, tasted a little fish but aside from that I have taken no flesh at all in more than fiftyfive years". Certainly he had not suffered at all because he lived the simple life. You recognize that splendid face, do you not? Horace Gredey was a vegetarian too. During the most brilliant part of his career while he was stirring the whole world with his splendid editorials in the New York Tribune, he was a vegetarian and was in sympathy with the vegetarian movement during his life. John Bigelow was one of the noted men of this country for more than half a century. He was Minister to Berlin when the present Kaiser was a boy and his son, Mr. Poultney Bigelow, who is still living on the Hudson was with him. He has written a very interesting story of the childhood of the Kaiser because they were in a private school together for several years and he was well acquainted with him. He shows very clearly how the later career of the Kaiser was foreshadowed in his early days. John Bigelow for many years before he died at the age of 94 was a flesh abstainer. I learned this from Mr. Gifford Pinchot . He told me some three years ago that to his knowledge, Mr. Bigelow had not eaten meat for fourteen years. I have since learned from his son, Mr. Poultney Bigelow, that on a few occasions, he did take a little meat but it was on the rarest occasions that he did so. Then his son, Poultney Bigelow, writes me that he himself is a very strict vegetarian and has been so for a great many years so they are men outside of the Battle Creek Sanitarium, other men beside Dr. Kellogg and his colleagues who believe in the simple life and Mr. Edison is one of those. When I was last in Paris, I saw in a newspaper one morning a message that had come by wireless. Some paper had a correspondent on board ship with Mr. Edison who had an interview with him and sent it in by wireless, and Mr. Edison told about his simple habits of life. That

was about the time a great railroad man had passed away, one of the great railroad Kings of the country. Mr. Edison referred to him and remarked that he ate about one-third as much food as this man had been in the habit of eating. He said, "When I was a boy I once went hunting in the mountains of Eastern Tennessee and we found the country very barren. Hardly a thing was growing there. We met a farmer setting at his door and we said to him, 'My friend, what kind of crops do you raise here'? He said, 'Law son, when the rabbits go through this country they have to take a lunch along'". He said, "That is the way I treat myself so if a germ gets into my colon it is in the situation of those rabbits. If it hasn't brought a lunch along, it will starve to death". I would not say that his habits are ~~alike~~ altogether ~~exactly~~ exactly what I recommend, for to tell you the truth, he does chew tobacco. I am very sorry he does but you will find it out if I do not tell you so I might as well tell you. He occasionally smokes a pipe but in diet and other respects except that he ~~is~~ does not take the amount of exercise he ought to take, he lives very simply and eats particularly very very simply indeed and chews his food very thoroughly. Here is another man I can present to you as a model, Dr. Stephen Smith, who passed his 94th birthday recently. Three years ago when he was approaching his 92nd year he was appointed a member of the Board of Commissioners of Charities for the state of New York. He has been a member of that Board continuously for forty years and was appointed again for a term of eight years. They do not think that Dr. Stephen Smith will ever die down in New York. He has lived the simple life and that is why he is alive. He never smoked, never drank, always took pains to eat very simple food. I asked him once what preserved his life to such a great age and he said it was the fact that he was an invalid when he was a boy and had been all his life. He was so feeble he could not eat ordinary food but has lived on bread and milk all his lifetime and that fact has enabled him to extend

his life to this great limit.. He has not yet reached his limit. He is the most active man on the State Board of Charities, a member of every single standing committee of the Board beside a member of several special committees and until recently he has been traveling all over the state of New York. Dr. Stephen Smith was one of the principal surgeons of the Civil War. He wrote the text book which was the manual and the guide for surgeons in the Civil War. He was the first Health Officer of New York City and organized the Health Department of that great Metropolis. At the present time he is President of the Tree Planting Association of the State of New York. His sister ~~was~~ here is six years older and died a very short time ago at the age of one hundred years. Every summer, Dr. Stephen Smith goes to Skaneateles, New York, where he has a farm and he plants his own potatoes and chops his own fire wood and does everything about his place. Here is the face of W. D. Simmons. To look at it you would know he is a leader, a Captain. Mr. Simmons did not look like that when he first came to Battle Creek. When he first came here about a dozen years ago, he was a broken down man. His friend, Professor Irving Fisher, an old school mate, had been here and had been renovated and resurrected and he heard that this man was broken down and he urged him to come here and he came and studied everything about the place very minutely and became convinced that it was scientific and sound. He sent for his wife and children and his wife learned how to cook. In about six weeks he was home and found himself climbing right up toward health so rapidly that he was tremendously enthusiastic and began sending his various Lieutenants here one after another. One of them said that Mr. Simmons came to him and he told him that he must come up here and I said I couldn't get away. He said, "You have got to go". So I had to come or lose my job. He said I must get converted against tobacco, beer, and beefsteak and I had got to live the simple life and that is the reason I

am here. As the result of the new life he experienced in adopting the simple modes of living and following the biologic law in his eating and general habits of living, he got such a reinforcement of vigor and vitality and efficiency that he has been able to quadruple and sixtruple his business since here although at that time he had more than he could do. I am an accident in this picture but I persuaded Mr. Luther Burbank to stand still with me at the Panama Pacific Exposition a couple of years ago with a photographer concealed a short distance away and in that way I succeeded in getting his picture.

He is another man who lived the simple life who is in sympathy with it thoroughly because he finds in his study of plants that there are great biologic laws that apply to these plants and it didn't take five minutes to convince him that there are great biologic laws that apply to human beings. When I visited his place he insisted that I should come into his office and sit down and we talked three hours and he said, "Dr. Kellogg, I want to have this chat with you because in the first place I want to tell you that I would have been dead if it had not been for you and for your Battle Creek ideas. I was in such bad shape a few weeks ago I got hold of some ideas and followed them and they did me so much good, I think they saved my life". So he pumped me for three hours steadily and we had a very delightful time. He lives the simple life and that is why he is study, strong, active, vigorous and vital although he ~~has~~ ~~gsk~~ is getting somewhat on in years. I said to him one day, "Do you believe it would be possible if we ~~ga~~ could get men and women to live biologically and live up to all the principles we now know about Eugenics and healthful living, to create a new human race? "Why certainly", he said, why look at the new flowers we have and the new kinds of horses and the new races of dogs, chickens and all kinds of animals. Why shouldn't we have a new human race as ~~wk~~ well. Why certainly".

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"How long would it take", I said. "Well, it would take six generations". The first two or three generations would not show much change. Then in the fourth ~~and~~ and fifth generations you would see such marvelous transformations it would hardly be believed". So it is a thing the race as a race must take hold of . Individuals cannot experience this thing. Each individual can do his part but the race as a race must take hold of it and Mr. Burbank predicts that in six generations we will have a new human race just as we have new races of horses, cows and chickens. And the new race will be as much better than the present race as the splendid horses we have today are superior to the poor runts we got from the Shetland Islands and some other places. We have become terribly degenerated because of our neglect of biologic law.

It is because of these neglects that we wear out our organs prematurely. An eminent French physiologist said, "A man is as old as his arteries." What is true of the arteries is true of every organ of the body. It may be just as well said, "A man is as old as his kidneys." When the kidneys are worn out we cease to live. The kidneys carry certain poisons out of the blood. We used to determine the efficiency of the kidneys by examination of the urine. Now we determine the efficiency of the kidneys by examination of the blood. The examination of the urine shows what the kidneys have done but the examination of the blood to determine the amount of poisons which the kidneys ought to remove which have been left in the blood determines what the kidneys have not done, and that is a point of greatest interest to us. By the delicate methods developed within the last few years we are able to tell just how much uric acid is left in the blood, how much urea, creatin, creatinin and other poisons that ought to have been eliminated so we can tell how old the kidneys are. Anybody can find out what the kidneys capacity is by allowing a few drops of blood to be drawn out of the veins with a very fine needle and you know just where you stand. Gin is a poison and wears the kidney out. A man who has used gin all his life dies an early death because his kidneys are worn out. At the top of the kidney is the suprarenal capsule which has the wonderful property of being able to destroy poisonous pigments. There are several poisonous pigments formed by putrefaction in the colon such as Brenzcatechin and mercaptan and several other poisonous matters which tint the skin which make brown patches on the skin and dark circles around the eyes. That is because the suprarenal capsules are worn out. A man can live so long as they organs are able to do their work efficiently but when the kidneys fail a man must die. When the suprarenal capsules fail he gets a dingy skin, begins to lose his dingy complexion, blots

appear upon the skin but I have seen many of these spots fade out, almost disappear, and we have found ways by which we can actually take them off which is sometimes a very pleasant thing for the ladies to learn about. By the application of a little carbon dioxide ice for a few seconds to each one of these spots they can be made to disappear. Then the thing is to keep them from coming back again. That is the important thing because it is not the color of the skin that does the harm but the poisonous properties of this coloring matter affecting the brain, the nerves and every organ of the body. That is what does the real harm so man is as old as his kidneys. It may also be said a man is as old as his arteries or a man is as old as his heart or a man is as old as his thyroid gland. The thyroid gland destroys these poisons that make one grow old. When you see a person getting old, the skin dry, shriveled up and brown spots coming on the skin you notice a hollow place over the breast bone. That is evidence that this gland is shriveling up. This condition can be ameliorated somewhat by the use of the dried thyroid of the sheep. Man is as old as his lungs but is very rare indeed that the lungs get worn out to such a degree that a person cannot live because there is such a great margin of safety in the lungs. We have a lung capacity of 230 cubic inches. We only use 25 or 30 cubic inches at an ordinary breath but when the lung capacity is gradually reduced by tuberculosis or by some other cause, it may possibly be so far reduced that some acute condition may cause death so that one may die of lack of lung capacity but such cases very rarely occur. The man who has tuberculosis does not really die for lack of lung capacity but rather because the poisons produced by the germs wear his kidneys out. He dies of kidney or liver trouble and a man is as old as his stomach. When the stomach is worn out you are an old person. The small intestine is the dining room of the body and the stomach is the kitchen. We could get along without the dining room

and without the kitchen for a while if necessary, but that is not a very good way to live. A man is as old as his heart. These poisons of tea, coffee, alcohol, tobacco and the poisons absorbed from the colon not only destroy the arteries but also the heart muscle itself and set up chronic inflammation known as myocarditis. In this disease the muscles gradually wastes away and becomes displaced by scar-like connective tissue so it has a feeble beat and the pulse becomes rapid and the person finds himself short of breath. If he hurries a little bit he gets out of breath. That condition cannot be entirely cured but can be helped. Some of the heart muscles are still intact and can be educated, strengthened by carefully graduated exercises and by removing the causes of the condition, by getting rid of the poisons, the heart can be improved very, very measurably indeed. I do not think we know yet how much improvement can be secured. I often think if we had a fair chance we might be able to do a great deal more but the trouble is, when one comes here suffering from this disease and begins to feel a little better, he wants to hurry home again. He is like a drowning man who has been pulled up so that his nose is half an inch above the water line, so that he can breathe but he is likely to go under again very quickly so we never have a chance to see how much we can really do for people. National preparedness depends upon personal preparedness. If the United States should pass a law prohibiting the raising of tobacco or the manufacture or sale of tobacco in any form, it would do more to prepare the country for war or for peace than anything else the Government could possibly do. It would do more to economize food supplies if the Government would absolutely prohibit the raising of tobacco or the use of grain for the making of beer. Most beer is made from corn and from glucose and there is just enough barley used to ferment it. It is the alcohol into which the starch is converted without being converted into sugar and an enormous waste

occurs in this way every year. That would be another way in which to prepared the country for war. Brillat Savarin was the first man who published a book emphasizing the importance of chewing the food very thoroughly. I met Captain Diamond when he was 115 years of age and was still lively as a cricket. He had been a vegetarian for more than 50 years. He died in San Francisco two or three years ago. Here is Abraham Lincoln and Sojourner Truth. I knew Sojourner Truth and she was a favorite with Abraham Lincoln. She was one of the famous orators of the Anti-Slavery agitation before the Civil War. She was one of the pioneers and one of the great orators in that Movement. She had no education, was born a slave. She was a woman who had native power and native wit and she ^{could} get interest any audience, had a wonderful voice and wonderful power of speech. She lived in Battle Creek and I had the honor to be her doctor when she was 112 years old. She told me one time, "Lord, child, I never tells my age. I am looking for a chance, you know." She had two daughters living here, one eighty-five, the other ninety when she was in the city. One thing I felt particularly proud of - she had a very ugly sore on her limb that extended clear around the leg. It was a varicose ulcer and nobody had been able to heal it. She told me about it and I suggested I believed I could do something for it but she said, "Oh, no, you couldn't do anything for me. I am too tough. I have to have a horse doctor to treat me" so she employed a veterinary doctor in the town to treat it and he put on some horrible linament and made it so bad she finally sent for me to come to see it. I found it an awfully ugly looking thing. I saw that nothing but skin grafting was going to help it. I rolled up my sleeve and with a pair of forceps pinched up a piece of skin on my arm, clipped it off with the scissors, patched it on to the wound. You can imagine a couple of ^{weeks} years later when I took off the bandage to find a nice new patch of white skin and in a few weeks the ugly sore was entirely healed. Sojourner said to me,

"I was afraid when that healed up it would strike in". Six weeks later the poor lady had pneumonia and died and I am afraid she thought it was because that ugly sore was healed. She lived the simple life all her life. Her diet was potatoes, corn meal and other things. Abraham Lincoln's sister-in-law became a voter at the age of 103 years. Here is an old Indian who was still living a short time ago at 128 years of age, chief of the Chippewa Indians for more than a century. If he had not smoked he would probably have lived a half century longer. But it is bed time and I will let you go. I thank you for your attention.

END.

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THE WASTE OF FOOD.

A Stereopticon Lecture at the Sanitarium Parlor, Battle Creek, Michigan,

Thursday, April 19, 1917 at 8:00 P. M.

By

J. H. Kellogg, M. D.

Sometime ago I received an article from the editor of the American Journal of Forestry published by the association that is especially interested in the conservation of natural resources asking me to write an article on the conservation of food. I wrote an article in which I told them some of the things I am going to tell you and, as I expected, the article did not appear. I did not expect it would appear. Nevertheless, I had an opportunity to send a little light into Egypt and I thought it was all right to send it along. In the first place we are wasting an enormous amount of food because we do not know the difference between good food and bad food. The average American eats about two-thirds of a pound of meat a day. If you figure in the fish and the chickens along with the beefsteak, mutton chops, pork and so, the average American eats a pound of meat a day. He can drop that pound of meat right out of his bill-of-fare entirely and be better off without it than with it. If he didn't have anything at all in its place but dropped it right out, he would be better off without it than with it as it is thrown away. Now see how we make that out. The idea has prevailed probably originating with cannibals is the one thing needful to give a man strength. Our forefathers were cannibals. Down in the South Sea Islands there are people who eat other people when they get a chance. Sometime^{ago} we had a young man here

who was native Maori. His grandfather, he told me, had eaten missionaries. That was the recommendation he brought with him from New Zealand. He was a great big, handsome fellow, a splendid specimen of a man and he would not eat a missionary for the world but his grandfather did and he said I asked him if he could tell me why he would do such a thing as that. He said his grandfather said, "Why, I ate a missionary so that I would be wise and good like him." The old gentleman was in serious earnest about it telling the thing that was way down deep in his heart. Sometime ago in one of the Sandwich Islands there was a suit. A man claimed a certain piece of property as his and his title was disputed but he stoutly contended that it was his and when asked to present his evidence in court he gave various items of evidence about occupying the property so long a time, etc. and finally gave as the convincing proof that led the judge to decide in his favor "I ate the former owner". When he ate that man he swallowed everything that belonged to him. He got his property, his strength, his vigor, his valor, his vitality, everything and that is the reason why the cannibals chief when he kills another chief always ate him. Sometimes he shut him up and fattened him up for a while if he was rather lean but it was the custom of those people to eat their enemies so that they might be possessed of everything that pertained to those enemies. They carry this settled belief so far that in some of the South Sea Islands they have most extraordinary customs. They believe the first borne is not worth raising so the first borne baby is always killed and the mother eats it so that the other babies may have the benefit of all the strength, vigor, and vitality which she gave to that one. It is not a matter of veracity at all but it is the ceremony, a serious belief with them. They do it as a duty to the children that are coming along later. Some how or other when we were cannibals we imbibed the idea in order for that ~~whenever~~-a man to be strong he must eat a strong animal so there is a great preference for beef. If a man is weakly the doctor says "more roast beef". I remember once sitting in the office of Dr. Lawson

Tait in Birmingham, England, the great English surgeon, thirty years ago when I spent a few months with him to acquire his method in abdominal surgery and I used to sometimes look after his dispensary work for him. I remember an old lady who used to come regularly every week. She was anemic, thin, poor and Dr. Tait always said to her, "Eat more beef, more beef, more beefsteak, more roast beef". She said, "Well, doctor, I will try." Finally she said to him, after he had impressed upon her very forcibly that she must eat more beef, "Why, Doctor, I haven't eaten anything else for a month" yet she was getting more anemic all the time. Somehow we have that notion. We have found out that this extra meat we eat is all unnecessary. Dr. Chittenden of Yale University many years ago made an experiment and I am going to tell you why that experiment was made. This is private history that is not on record, has not been published. Mr. Horace Fletcher about twenty years ago began to take pains to chew his food and he discovered after while that when he chewed his food he ate less and less until by and by he ate not more than one-third of what he had been accustomed to eat. He dropped off the surplus fat, he had got rid of the symptoms of Bright's disease, rheumatism, etc., that he had had and was able to get a life insurance which had been refused him for a number of years and he didn't do a thing but chew but he observed that the more he chewed the less meat he ate. He ate less of everything but particularly ate less meat until by and by he got to the point where he could scarcely taste meat at all. Professor Irving Fisher repeated these experiments about ten years ago with a dozen college men in Yale University. He told these men he wanted to experiment upon them and he would do it at his own expense, he would furnish them a boarding house, rent a place, hire a cook for them, a caterer and all he would ask of them was that they should chew their food. They could eat anything they wanted only they must chew everything very thoroughly. They agreed to it.

They were working their way through college and were glad to earn their board in such an easy and agreeable manner. I happened to be in New Haven after this experiment had been going about six weeks and I visited these young men at their boarding house and was there at a meal with them and noticed the pains they took in the thorough mastication of their ~~af~~ food. These young men, their strength, vigor activity, physical and mental, and their endurance was tested. At the end of the examination week when they were working extra hard, some of them sitting up nights, they would test it again and were all stronger than at the beginning. They had more muscular endurance, more mental endurance and were more vigorous in every way with the exception of two than they were at the beginning of the experiment and these two who had not improved so very much were the only two who had not stopped eating meat altogether. All the other had given up the use of meat voluntarily. Professor Fisher asked, "Why did you stop eating meat"? The invariable answer was, "I didn't like the taste of it in my mouth so long". You see there was an instinct that finally told them it was not good. When they get the meat in the mouth long enough to get really acquainted with it, they found out what it really was. When the instinct had a chance to act, it did act and reported this was not good food so that all but two or the twelve men stopped the use of meat. Mr. Fletcher by this fact acquired the notion that there was an enormous waste of energy and a waste of money in consuming so much protein; so much meat that it was unnecessary wasteful, foolish and was in every unwise and undesirable. About this time he became acquainted with our work here at Battle Creek. He met a gentleman from Battle Creek in London and this gentleman told him what he was teaching was nothing new. "Why, he said, "I have been hearing this the last twenty years and more". "How is that"? "Why, he said, "Dr. Kellogg at Battle Creek has been talking to us about chewing every since I have know him there for more than twenty years". So Mr. Fletcher thought

it would be a good thing to come here and fifteen years ago Mr. Fletcher arrived here in Battle Creek to investigate Battle Creek and see what we were doing here. He thought he had made an original discovery and here we had been doing the same thing for twenty-five years, and he wanted to see about it. One day he said to me, "Dr. Kellogg, I am going to give you a secret in part. You are absolutely right in teaching that we ought to eat meat, that it is unnecessary, harmful, wasteful, unwholesome and unnatural. I know you are absolutely right. He said, I am going to make the scientific world prove it for you. What I am going to do is to go x down to Washington, in fact I have the arrangements partly made, already and I am going to get General Wood who is a friend of mine and a brother of Roosevelt to lend me sixteen soldiers to experiment on and I am going to take them to New Haven and say to Professor Chittenden there 'Now then, I want you to experiment on these men and found out how much protein a man has to eat, how much is necessary, settle this question of prtein because it is an important question. Professor Chittenden has agreed to it if I will meet the expense of it'. The experiment was carried on for nine months. Mr. Fletcher said, "The ~~xxxx~~ result of that experiment will be to demonstrate that the things you are teaching here are absolutely right and it will demonstrated in a scientific way by scientific men in scientific institution and the world cannot call it in question any more". I said, "That sounds very good but I am ~~ix~~ afraid you will not be able to carry it ~~xxxx~~ through". He said, "Yes I will. They have agreed already", and sure enough it was carried through. A year later Professor Chittenden announced to the world the discovery that it was necessary to eat only one-third as much protein as we had been taught and that there was protein enough in our ordinary food and that the use of meat and other things of that sort was entirely unnecessary and was a wasteful practice. Professor Chittenden's results

were called in question somewhat so he repeated these ~~xxxxxxx~~ experiments upon dogs. He also experimented upon others besides the sixteen soldiers. He went into the experiment himself with three other college Professors. One, his assistant, Professor Mendel and two others one of whom had neurasthenia and the other rheumatism and when they got through with the experiment they had no neurasthenia and no rheumatism, got well of them inspite of the fact they smoked and kept right on smoking. I do not offer that as a comfort to you smokers but to show you that the man who had rheumatism found the meat was doing him more harm than the smoking did, so it was a bad practice. Therewere also six of the leading athletes of Yale gymnasium who went into the experiment. They all increased in vigor. The soldiers doubled in their course, vigor and vitality. Although they were soldiers, they were sedentary men, most of them in the army offices. I do not think any of them ever ~~sa~~ saw any actual service. Some of them were probably like a certain Surgeon General we had here once on a visit about thirty-five years ago. I asked his advice about cutting off a leg. He got me in the corner and said, "Now Doctor, don't ask me any questions please because I entered the service so high up that I never had any practical experience". He had never seen a leg cut off in his life and didn't know anything about it. These men I suspect were that kind of soldiers so they improved wonderfully under the regular life at Yale. They were watched by detectives to see ~~that~~ that they did not eat a thing but what was given them. They did not have a chance to over eat once. Their food was measured out to them and made a little less and less every day. They were carefully weighed to see that they did not lose much in weight, but they all increased in strength, vigor and vitality and came out in splendid condition. The athletes doubled in strength. They were tested with the same denonometer with which some of you have been tested. It is in use at the Yale gymnasium and by the United States Government at Annapolis and at West Point and at v-ik

the Military School in the Phillipines; the same denomometer that is made in our own Machine Shop. It has been used by the Government for a good many years. They were tested and their strength was found to be doubled notwithstanding the fact that they had cut the protein down to one-third what they had been ~~xxxxx~~ accustomed to. They had cut it down so low, they could not eat anyme at at all except just a little fat bacon which had no protein in it. These experiments were made fifteen years ago and Professor Chittenden~~k~~ kept on cutting his ration ~~xxxx~~ down until he got it down to one ounce of protein a day. That is about one-fourth of what the average man eats; that one-fourth of the average consumption of meat ~~xxxxxxx~~ throughout the United States and he eats so little protein that he cannot take it in the form of meat still he is not a vegetarian and he does not want anybody to think he is so he eats about that much fat bacon every

Still he is not a vegetarian and he does not want anybody to think he is so he eats about that much (illustrating) fat bacon every morning for breakfast and he cannot be classified as a vegetarian as long as he eats bacon. Of course, if anyone is going to eat meat, it is better to eat the fat meat a great deal because it won't digest very well probably so it won't have any particular effect, at any rate it won't rot. That is what happens to lean meat. It rots and that is what ^{as} does the harm. It is not so much what is in the meat ~~but~~ what happens to it in the processes which it undergoes in the body. Prof. Folin, another eminent physiologist, Prof. of Chemistry in the Harvard University also studied this question and he stated before a large audience of professional people "We have thoroughly demonstrated by our experiments that so far as protein is concerned, nobody ever needs to give the matter any thought at all except avoid eating too much because all foods contain a sufficient amount. The only danger is in eating too much. There is never any danger of eating too little". He made an experiment upon himself and for three weeks went right on with his work and worked hard and did not eat one particle of protein for the entire time. He ate food which contained no protein whatever, simply sugar, starch and fat, that kind of food and absolutely no protein and he did not lose anything in weight, lost nothing in strength, went on with his work for three weeks perfectly well so it is scientifically known at the present time that the amount of protein necessary is so small that meat could be dropped out of the dietary of the American people absolutely and nobody would suffer. Nobody would be any worse off. Sometime ago we had a beefsteak strike and thousands of people ~~in our villages and cities found~~ signed pledges that they would not eat any meat until the prices came down. They made a boyco't against the packers and the cattlemen. There were many thousands of people who entered into this compact probably at least seventy-five or

one hundred thousand people. I want to ask you to produce one single word that was ever published in any newspaper in which there was sympathy expressed for these poor men who had to work so hard and didn't have any beefsteak. Nobody ever even suggested that those men were going to suffer at all but the papers were full of encouraging remarks of this sort. "Oh, well, if you don't eat beef, eat beans. That's all right." There are plenty of beans and there were plenty of lecturers on the streets of New York, Chicago, and other large cities telling the workmen, "You don't need any meat anyhow. Beans are just as good" and nobody suffered. There was no report of anyone who suffered from anemia because he didn't have beefsteak or of anyone fainting away because he didn't have beefsteak for breakfast. There was not a single casualty of any kind reported in any paper I am quite sure because I engaged clipping agencies in different parts of the country to send me every single newspaper clipping that referred to this thing in any way at all so I had a chance to look it up quite thoroughly and I kept watch of it. It was an experiment on a large scale of very great interest. There were hundreds of thousands of laboring men who suddenly without any tapering off process at all, without any instruction as to the substitution, etc., suddenly stopped eating meat and went right on about their business. The only thing that happened was that they enjoyed better health than they did before. At the present time it is reported by papers that in these European countries where they are suffering from scarcity of food and are obliged to cut out the meat almost entirely, in Germany I understand the meat is practically excluded from the bill-of-fare, a little meat is furnished once or twice a week and that is all they can have. It is said that the death rate has come down remarkably except, of course, on the battle fields. It looks as though they were saving almost enough lives at home to make up for those lost on the battle fields

by the wonderful advantage of living a more simple life and living in a more natural way. We are talking in this country about the preparedness of war and the President is exhorting people everywhere to raise more food, to plant more corn, more potatoes and raise more food. There is one thing I hope the President won't overlook and that is the pigs are eating up our corn at an awful rate. There would not be a particle of danger of starvation in this country if all the pigs of the country would die tomorrow. If we should wake up tomorrow morning and find all the pigs dead we would have so much food that we would not know what to do with it positively. We have ^{fifty} ~~fifteen~~ million pigs in this country. There are probably more than that but in 1910 the number of hogs to be exact was forty-seven million. We have half as many hogs, four legged hogs I mean, as we have people. Everyone of these hogs eat twice as much corn as any man can eat so those fifty million hogs are eating as much corn as one hundred million people would require. Ask the farmer how much corn he gives the pig today and he will tell you about eight or ten pounds of corn a day. The average man could not eat over two pounds of corn a day. I remember a medical student here some years ago who when someone was making a remark of this sort said, "Oh, I could eat two pounds of corn easily a day." He said he wanted it in the form of corn meal mush and they made up two pounds of corn into corn meal mush a day and it took him three days to finish it. They had a couple of gallons of corn meal mush. At any rate, two pounds of corn will support a man in ordinary hard labor or two pounds of wheat for a whole day so you see fifty million hogs eating eight pounds of corn apiece a day are eating up as much corn as ^{hundred} two/million people would require to keep them alive. Of the three billion bushels of corn we raise a year they are eating one-third of it at the present time and we do not get our corn back. If we eat the hogs we get only a little of the corn back. The hogs waste the most of it in running around the pasture, having a good time

and enjoying life and it has simply vanished into the air. The hogs burn it up. The hog is a furnace and the corn is fuel and it is burned up and wasted just as much as though you threw it into the furnace. The hog is only another means of burning up corn and you might as well set the corn fields afire or the granaries or the grain elevators or burn it up that way as to burn it up by feeding it to pigs. It is simply consumed by a process of oxidation and passes off into carbon dioxide into the air and it is arrested and thrown away. There is another enormous waste - the cattle that are being raised, slaughtered and eaten. There are forty-seven million beef cattle in the United States. How much corn does a steer eat? These cattle are eating up corn too. When you eat this beefsteak, roast beef, and everything of that sort, you are adding to your dietary something that you do not need, that is of no use to you. Now just compare. Here is a pound of corn. Its food value is 100 calories to the ounce and here is a pound of lean meat and its food value is only one-fourth of that much. Why? Because it is three-fourths water. That is the reason. The beef is three-fourths water so we have only got four ounces of actual beef in a pound of beef, saying nothing about the trimmings, bone and all that waste so there is an enormous waste. It takes several pounds of corn to make one pound of beef. How many do you suppose? It takes eight or ten pounds of corn to make a pound of beef. I asked a Wisconsin farmer how many acres it took to raise a steer and he said it takes ~~to~~ acres, two years to make a steer that weighs 600 pounds when it is dressed. How much corn would be produced on that one acre? Suppose we say 50 bushels of corn. That would be 200 bushels on the four acres. Let us see how much food that will produce. Four acres at fifty bushels to the acre is 200 bushels of corn; 60 pounds to the bushel, 12,000 pounds of corn produced on the four acres.

To balance that we have 600 pounds of steer and that 600 pounds of steer is three-fourths water so you only get 160 pounds of steer when you come to dry it compared with the 12,000 pounds of corn. See what an enormous economic waste and no greater value. Every pound of this is worth every pound of that and worth more because it is clean food and it is whole food. This corn has got the lime in it which we need for the bones and the beef has no lime in it at all. That is left behind in the bones. To get your lime in corn back you must eat the whole ox. You have got to eat the whole hog or none in order to get the corn back again because the lime is all left in the bones. In an animal only 1/200 part of the lime is in the soft parts. 199 parts in 200 are found in the bones. There are eight grains of lime in a pound of beans, four grains in a pound of wheat, sixteen grains in a pound of bran and only half a grain in a pound of beefsteak. That is the reason why we are losing our teeth because we are starving to death on beefsteak so you see the economic disadvantage of raising and eating beef is 80 to 1 on the agricultural economic standpoint, so if we want to economize food the best thing would be to stop raising pigs. This is not mere theory. What was the very first thing the German Government did when they found their food supplies were going to be limited? It was to order the people everywhere to kill all their pigs. They knew perfectly well the pigs were eating up their corn and potatoes and they were all killed at once and pork was very cheap for a little while in Germany and the next thing was to kill off nearly all their cattle with the exception of milk cows. They were obliged to reduce the number down to a very small point.

Most of them were slaughtered immediately so that they would not continue eating up their corn, potatoes and other food supplies. They could not afford to keep them though everyone knows when you get right down to the matter of extremity that meat is a luxury; that it is not a necessity. The laboring man did not complain of being weak, feeble and not able to do his work. He only complained that he was not as well fed, could not dine as luxuriously as his rich brother, so it was not fair. He wanted a chance to indulge in a few unnecessaries as well as his wealthier brother. Now this waste of food is something that is very far reaching. We raise every year 640,000,000 bushels of grain, corn, barley and rye, simply to support the brewers of the country and the distillers of the country. And that is worse than wasted. That is enough to support half the population of the United States and all that grain is being actually thrown away and converted into poison, enough food to support half the people of the United States. Then see what the millers are doing. Six hundred and seventy million bushels of wheat produced in 1910. First of all, the miller takes out of that wheat one fifth of it in the shape of bran. That amounts to 134,000,000 bushels or eight billion pounds of bran. That bran contains nearly all the lime that is in the wheat. It contains sixteen grains of lime to the pound. See how much good lime is thrown away. In that we have 20,000,000 pounds of organic lime that we are throwing away. We ought to eat it but instead are allowing the miller to throw it away or give it to the pigs. Then we go to the Doctor and tell the Doctor we do not feel very well, our nutrition is bad, our teeth are decaying and can't he do something for us, and the doctor hunts up some medicine and he sells you his phosphate of v-ik

lime or something of that kind, maybe chalk, or some other kind of lime and he gives you that and charges you a dollar for his advice and two dollars or five dollars and you go to the druggist and buy that lime and pay to the druggist ~~fix~~ fifty cents or a dollar for a bout half an ounce of lime. Or possibly you have heard the gospel of bran, got converted to it and you go to the grocer and tell him to send you up a package of bran and you pay him fifteen or twentyfive cents for a pound of the bran that you paid the miller a cent a pound for taking out ~~it~~ of the wheat. Twenty million pounds of lime that is thrown away. At the ~~same~~ same time we go to the doctor and complain that we are anemic. In the bran there is found six times as much iron as is found in the flour. One third pound of bran contains all the iron ~~that~~ a man needs. We use every day about one sixth of one grain of iron. That very small part of iron we have simply got to have, but if we eat meat we do not get it. If we get some iron in meat we have only half as much and it is not nearly so good. If we take one third of a pound of bran or one third of a pound of spinach or one third of a pound of lentils, either one of them will furnish the iron and we will get in that one third pound all the iron we can make any use of. So in that eight billion pounds of bran we are throwing away, twentyfive billion doses of bran. Just see what a farmer could do with one hundred and sixty acres. He raises suppose on each one of those acres fifty bushels of ~~the~~ grain or eight thousand bushels of corn on his one hundred and sixty acres, sixty pounds to the bushel. That would be 500,000 pounds of corn. Suppose this farmer has himself, his wife, two boys, two girls and a hundred chickens because he must have a few eggs to go along for a little variety and something to trade to the grocerman for nick-nacks, so we will allow him one hundred hens for producing eggs. Allow each one of those six persons two

3. 13

pounds of corn a day which would furnish 32 hundred calories which is more than any of you are eating at the present time. Not ~~any~~ one of you eat 25 hundred calories to three thousand calories and we allow each one of them 32 hundred calories. But three thousand calories a day is enough for convenience. So they will need twelve pounds a day or fortyfour hundred pounds of corn in the course of a year. So you see the farmer can raise in one year food enough on one hundred and sixty acres to support his entire family of six people for one hundred and ten years on his farm of one hundred and sixty acres. Suppose he has one hundred pigs there. They will eat it all up in four years so you can see that the ^{enormous} ~~economic~~ waste that is going on all the time because of lack of practical sense to this question of diet is enormous. The most important thing of all if we want to save ourselves from starvation is to stop throwing away good food to the pigs and eat it ourselves, to take our corn at first hand instead of second hand. Now, is it safe to do this? I told you about Professor Chittenden's experiment and he is still living on 31 grams or a trifle more than an ounce a day of protein. He finds himself improving all the while. This list of comparative values of food in the inverted pyramid was prepared by Professor Irving Fisher. I will admit I made some ~~xxxx~~ suggestions about it. The best foods are the simple foods which should constitute our natural dietary. How much better are the nice fruits and fresh vegetables than ~~xxx~~ beefsteak. Mr. Jacob Reese was here a week and his doctors had been feeding him up on beefsteack and he needed something different very very much. He had high blood pressure and his condition was very bad. He ~~s~~ didn't think it was safe. After a considerable ~~talk~~ talk with him I told him the things we have been talking about. He though he would try it a week. At the end of the v-ikk

16

week he stepped in front of the butcher shop to see what impression it made upon him. It always used to make his mouth water. When he came back, he said, "It left me cold. I positively could not get up any appetite for those beefsteacks. I believe I am cured". And he surely was. It gave him another year of useful life.

Cucumbers are not indigestible. They are very digestible and are entirely wholesome if taken without vinegar and are thoroughly chewed. Our hands are made for plucking things, not for tearing things. We were made to reach up for our food not down. ~~American~~ America's most neglected fruits is the paw paw, a tropical fruit that grows even in Michigan. It is a kind of custard apple. When they are well matured, they are really a very ~~lux~~ ^{fruit} luscious. Here is a picture of the paw paw cut open. It has a very aromatic and delicious flavor when it is ripe. Some years ago I went to St. Petersburg to see Professor Pasloff who had made some wonderful experiments which shows that a stomach which is fed on meat makes a different kind of gastric juice from the stomach fed on other foods. In other words that when one adopts a carnivorous diet, the stomach becomes a carnivorous stomach and make carnivorous gastric juice. His experiments were so wonderful I went to see him in his laboratory. Professor Pasloff invented a peculiar operation by means of which he could study the stomach of a dog. He had a number of fine dogs and gave them the most excellent care. The dogs were exceedingly fine and gave him a joyful welcome whenever he came to see them. In the operation, the dog was operated upon with all the technical painstaking that the most celebrated surgeons employed in their operations. I never saw until I saw Professor Pasloff operate upon the stomach of a dog, I never saw work done so carefully and so deftly as it was done in his laboratory. Greater antiseptic ^{pre}cautions were used than the average surgeon takes. The operations was such as to make two

17

stomachs out of a dog's stomach. One of them was connected with the outside of the body so that he could experiment upon it and the experiments made were really very wonderful. He has arrangements made so that the dog would eat out of his hand here and the food eaten would drop right out through his throat. This picture was taken just as I was coming in in the morning. The dog began at six o'clock in the morning and ate the same food over and over again. When they ate meat, it made one kind of gastric juice. When they ate milk, it made another kind of gastric juice and when they ate bread it made still another kind of gastric juice. Every dog had to make a quart of gastric juice every morning. This was filtered and carefully deodorized and shipped all over Europe for people whose stomach had gone on a strike so they could not make gastric juice for themselves and these dogs Pafloff called his dairy and the laboratory was in part supported by the sale of the gastric juice of these dogs working for their board. They got more hungry every minute while producing this gastric juice and then at ten o'clock the stomach tube is put into the stomach and some oatmeal gruel is poured down. When they eat meat, they produce a kind of gastric juice which is necessary to help out the European goremans who are the patrons of this part of his institutions. These dogs are a marvelous contribution to the knowledge of digestion. They co-operated with the investigators in a most intelligent manner and through the experiences of these dogs the world has received most absolutely invaluable information. The practice we carry on here in our dietetic system is based upon the experiments and investigations of Professor Pasloff ~~and~~ and others who have carried out his work. I mention this to you so that you will see the important point I want to make plain is that the stomach when meat is eaten has to adjust itself to that because it is not a natural diet and the

v-ik

consequence is that the stomach not being naturally adapted to this powerfully acid carosive gastric juice which is required for the digestion of meat is damaged and that is why people get gastric ulcers and get duodenal ulcers and cancer of the stomach perhaps. People who do not eat meat do not get cancer of the stomach. I have been connected with the institution fortyfive years, fortythree years rather, and I have never seen one single case of cancer of the stomach in persons who were not meat eaters. Cancer of the stomach is found to be based upon ulcer of the stomach probably in the great majority of cases and begins first with ulcer and the ulcer becomes cancer. We know perfectly well that ulcer is a meat eaters disease. I do not remember a single case of ulcer of the stomach that occurred in persons who are not meat eaters. A person who has ulcer of the stomach the very first thing you have to do is to say to that man, "You must never eat any more meat because the stomach cannot stand the gastric juice which meat requires for its digestion. Another thing we need is vitamines. When we throw away the bran of the various cereals we throw away the precious vitamines which are necessary to activate the chemical agent sof the body we might ~~x~~ say. The vitamines are to food and digestion what the cap is to the old-fashioned gun which used caps. The processes of the body are in a certain sense a series of explosions. Every muscular movement is an explosion. Every heart beat is a sort of explosion and these movements of the body, the digestion of food, the making of gastric juice and every heart beat and every muscular movement, - all these activities

April 19-1917.

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The vitamins are to food and digestion what the cap is to the old fashioned gun which used caps. The processes of the body are in a certain sense a series of explosions. Every muscular movement is an explosion. Every heart beat is a sort of explosion and these movements of the body, the digestion of food, the making of gastric juice and every heart beat and every muscular movement, all these activities have to be initiated. There must be something to ignite, to touch off the ~~maxima~~ movement in every single instance. There must be something to start them up or activate it and it is found that these activators are placed in our food stuffs. In wheat, rye, barley and all the cereals these activators which are called vitamins and which are absolutely essential to all these vital processes, are placed in the bran and if the bran is lost, then we lose them. They are ~~x~~ destroyed by high cooking. They are all destroyed by the temperature that is used, for instance, in the canning of vegetables and meats. That is the reason why sailors get scurvy is because the vitamins are destroyed and their bodies cannot be nourished and they fall into decay, ulceration, and the body begins to perish. The teeth fall out and the body goes into a state of decay because of lack of vitamins. Many foods are lacking in vitamins including fine flour bread, cornmeal, corn flour, polished rice, sugar and syrup; pasturized milk, oleomargarine, lard, crisco cotton seed oil and candies. Many people eat breakfasts that contain no vitamins at all or at least very little, not enough to support life. There are doubtless thousands of people all over the country who are sick and ailing all the while suffering from a mild kind of scurvy or a mild form of beri-beri because of the lack of vitamins. One pound of eggs has four grains of lime. One pound of ~~xxxxx~~ cows milk, 14 grains; meat one half grain to the pound, the potato one seventh of

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a grain and wheat four grains; fine flour one grain, peas, eight grains, turnip leaves have thirtyfive grains of lime. They contain more lime than any other. When taking a high protein diet including large quantities of beefsteak, there is a waste of vital energy. The table shows the composition of urine and the average amount of different poisons found in the urine of persons who live on a low protein diet and a high protein diet. This was prepared from one hundred employees, healthy young men and women of the institution. The whole mass of poisons is largely represented by the total nitrogen which is 16 in the meat eaters and only 6 ~~xxxx~~ or a fraction over 6 in the case of the low protein feeder. Here is urea another poison almost 30 and in the low protein feeder 11.6. The ammonia is 85 compared to 24, three and a half times as much. Creatinin is another poison and it is double in the meat eater. Indican you see is fourteen times as much in the meat eater. So you see the kidneys of the meat eater have ~~xxxxxx~~ enormous amount of extra work to do on an average, about three times as much work to do as the kidneys of a man who does not eat meat. What is true of the kidneys is true of the liver as well. The meat you eat is always in a state of putrefaction. A ~~xxxxx~~ recent writer, a Government expert, Professor Stiles, Professor of Zoology employed in the Public Health Service at Washington, in a recent article states there was never an animal killed for food that was not more or less diseased, that was not more or less infected by parasites. Parasites in its muscles, in its intestines, in its liver are somewhere and these animals were unquestionably deteriorated and damaged by these parasites and that every body who has ever eaten beef, mutton, pork or lamb, every such person who has ever eaten meat at any time has swallowed

countless numbers of parasites. This Professor Stiles was called upon a while ago in a case in which a butcher was being prosecuted for selling pork that had Trichina to a man and the man sued him for damages. The Court ~~awared~~ awarded damages. The butcher should have examined that pork and should have known that there was no Trichina in it. When it was taken to a high court, Professor Stiles was called upon to testify and he testified before the court as a part of his sworn testimony that raw pork is ~~not~~ not a proper article of food and that there is no kind of an investigation that will make it possible to guarantee that any particular specimen of pork ~~dox~~ does not contain harmful parasites; that it does not contain Trichina. The United States Government has practically given up the examination of pork for Trichina because nearly all hogs are getting it and they cannot catch the Trichina anyhow, they cannot find it all unless they examine every particular animal and every cubic inch of the animal's body would have to be examined to make ~~me~~ sure there was no Trichina present. Some time ago I removed a cancer from a man's lip and when this specimen was put under the microscope to be examined you can imagine how startled the examiner was when he saw something that looked like a great snake in view. It was a Trichina magnified to enormous proportions by the microscope right ~~inxxx~~ that cancer. A little mass of tissue removed with the cancer it was swarming full with Trichina and that may have been the cause of the cancer on the man's lip and what is true of his lip is doubtless true of all the muscles of his body. Thousands of people are going about with their muscles just alive with Trichina. In the desecting rooms of Berlin, the Trichina was first discovered. It was a dissecting room curocity for a long time. When I was in a dissecting room myself as a medical student I called the late Professor Genaway's attention to some peculiar white specks and under the miscrope each v-ik

one of these little white specks ~~is~~ proved to be a coiled up worm and the entire body was filled with the Trichina. Professor Genaway told me that one out of every seventeen of all the bodies that were investigated in that laboratory or ~~is~~ six out of one hundred were found to be infested with Trichina in this way. The United States Government published some years ago that two percent of all hogs were infested with Trichina. Just think how many people those infected hogs will infect. Three times as many people have Trichina as hogs. What do you suppose is the reason? There are more people who eat hogs than there are hogs who eat people, so men it more than hogs do. Trichina was first discovered in the human body afterwards found in rats that visited the dissecting room and afterwards found in pigs. The rats sometimes get into the pig pens and the pigs ate the rats and got Trichina so the pigs got Trichina from the rats. So you see man has Trichina and dies. The rat eats the man and gets Trichina. The pig eats the rat and dies and man eats pigs so one scavenger eats another and passes the parasite around. Dr. Stiles testified in court that raw pork was not a proper ~~is~~ food and that if anyone ate it they should buy it at their own peril because the public ought to know by this time that pork is not fit to eat unless it is cooked enough ~~is~~ so that Trichina are killed. Boiled Trichina are not going to do you any great harm but they are not the most delectable kind of food, of course. But some people will still continue to eat fricasseed Trichina. Nuts contain three thousand calories to the pound, twice as much food as is ~~is~~ contained in a pound of corn and three to five times as much as found in a pound of meat. The most highly concentrated nutrient the world affords and they are produced so easily. You say, "Oh, but they are so expensive". Think of it, ~~is~~ three thousand calories in a pound of almonds. You

can buy almonds in quantity at 40¢ a pound wholesale. Forty cents for three thousand calories. Suppose you paid your money out for beefsteak instead you would pay at least 25¢ a pounds for beefsteak. It takes four pounds of beefsteak to equal one pound of almonds in value and it would cost you a dollar where the almonds would cost you only 40¢ a pound, or, suppose you paid 75¢ a pounds for blanched almonds or even a dollar a pound. It costs no more than the beefsteak did and would be pure, wholesome nourishment instead. A pound of protein in ~~meat~~^{peas} costs 67¢, in oatmeal 15¢. We are making an experiment here in this institution on a very large scale. More than one hundred thousand people have been put upon the low protein diet here. I took from our records the average blood count in one thousand consecutive cases as they came and found the average before treatment was 3,885,000 and after three weeks 4,389,000 or a gain of 12% on this diet. The blood ~~gain~~^{count} in cases of marked anemia was a little less than 2,000,000 and it increased to 3,140,000 or 58% . The hemoglobin increased from 47% to 67% in a very short time. I also made a study of forty men and sixty ~~women~~ women from among our nurses and found the men average of 97% and the women 96.3%; the blood count, the men 4,790,000, women 4,290, 000; white corpuscles normal; color index 101 and 102%, in other words absolutely normal and living for years on this low protein diet without any meat at all so we know it is perfectly safe. I have been trying it myself for fifty years now. I have not eaten a pound of meat in 51 years. The Tara Humara Indians are descended from the great runners of the ~~world~~ the old ~~As~~ Aztec ~~Indians~~, Kings, who did not have the wireless or telegraph, but had these rapid runners stationed all over the country so they could communicate very rapidly to the different parts through these runners. The word "Tara Humara" means "rapid ~~runner~~^{runner}" One of those runners has been known to start off with a little bag of v-ik

corn that has been dried, cooked and ground up. He would mix it with a little water and swallow it twice a day. One of these men has been known to start off with a Government sack and travel three hundred miles over the rough mountains without even a wagon road anywhere and back again in five days. Professor Hewitt who was the Secretary of the Entomological Institute of the United States located in Washington, had charge of the Science Hall in the San Diego Exposition, told me this story. He had been some months exploring among the Tara Humara Indians some years ago and he employed a guide who said he went himself on horse back and his guide went on foot. He said, "that guide would start off ahead of me on foot and kept ahead of my horse all day long. On one occasion, he said, "We traveled four weeks continuously and the guide always kept ahead of my horse and he ~~xx~~ carried every morsel of food he ate in a little cloth or linen bag that hung around his neck and about nine o'clock in the morning he would stop at a stream, take out a handful of dried corn, mix it with the water of the stream and on we would go, and he would not eat another morsel until we stopped at night and he would eat a ~~xxx~~ a similar quantity and he never ate another morsel than that corn and water, and he was sturdy, hardy, vigorous and able always to outdo the horse in work. So you see we have the absolute proof that these simple foods that nature prepared for us that come out of the laboratory of nature all ready for our use are reliable and safe and we can depend upon them to give us complete and sustaining nourishment. But I thank you for your attention.

End.

Question Box Lecture at the Sanitarium Parlor, Battle Creek, Michigan,

Monday, April 30, 1917 at 8:00 P. M.

By

J. H. Kellogg, M. D.

Q. What is the treatment for gallstones?

A. There is only one treatment I know of that is really successful and that is to put them into a bottle. Gallstones when once developed cannot be removed by any other means than surgical procedure. Gallstones are very small and sometimes can find their way through the little duct. The gallbladder is attached to the passage through which the bile passes by a very small tube about as big as a goose quill. If the stone happens to be conical and is about the size or shape of a pea or bean, it can slip into the upper part of the duct, squeeze in more and more and by and by be forced through by the contractions of the gallbladder. Often these stones act like ball valve. The bile squeezes in until the gallbladder gets enormously distended. When there is one stone there is likely to be more. This is a disease due to infection of the gallbladder. The trouble really begins in the colon which gets into a state of infection and the germs swarm into the blood and are carried out into the bile, get into the gallbladder, take up their abode there and the diseased condition which results produces the gall-stones. Nature makes these gall-stones to defend the body against germs. Inside of the gall-stones are found germs which are captured by the gall-stones. The only thing to do is to remove them and generally the gall-bladder should be removed with the stones because if it is

not, another crop of stones will form or, if not another crop of stones, the gallbladder itself will continue disease. I had this very day to remove a gallbladder which had grown fast to everything. The patient had suffered dreadfully for years; had had the stones removed and the gallbladder drained but she was not at all relieved, in fact, was worse then ever because the source of the trouble remained.

Q. What causes diabetes and can it be cured?

A. The body burns sugar. The fuel of the body is sugar. The body is a locomotive, a furnace. It burns fuel just as the furnace of the locomotive does. Every time a muscle contracts the power we use in the contraction of the muscles is the result of an explosion that occurs in the muscle. The sugar is brought into an explosive state so that the nerve impulse from the brain ignites the gun powder and touches it off, so to speak. Some of you know that you can make an explosive mixture with sugar. If you mix a little sulphur and a little sugar and chlorate of potash, add a little charcoal if you want to in the proper proportions, do them up in a little paper parcel, put it on a stone and hit it with a hammer and you will get a tremendous explosion. When a boy I made that experiment and exploded one of my ears and it was set to ringing and did not get over it for twenty-five or thirty years. Sugar is the combustible part. Without the sugar you could not get that explosion. Chlorate of potash furnishes the chlorine and the oxygen which burns the sugar. Putting it into a fine powder, the little heat produced by the blow with a hammer is sufficient to produce the explosion. The sugar is exploding in our own bodies at every heart beat. It takes one one thousandth of one calorie to furnish energy enough to make the heart beat once. Every heart beat requires

the expenditure of one one thousandth of one calorie. It takes as much energy to produce one heart beat, the same amount of energy required for the beat, to lift one pound one foot high. That amount of work requires the burning up of one one thousandth of a calorie of sugar and there are one hundred calories in an ounce of sugar so you see there will be one thousand heart beats. That is, one ounce of sugar furnishes energy for one hundred thousand heart beats and all the work done by the heart can be estimated in just the same way. It is all determined by the amount of sugar that is consumed. A diabetic is a person who has lost his power to burn sugar. The condition of his body is like that of a furnace in which the chimney is obstructed or the grates choked up so that you cannot get a good fire and you want have much heat or much steam or much force and the locomotive will come to a standstill on the track because they cannot keep up steam. That is the trouble with diabetics. The old diabetic far advanced feels weak and languid and by and by he feels emaciated because he begins to burn up his own body. This patient perhaps will eliminate more sugar through the urine than he eats. Sugar is found in the blood always to a certain amount, a little less than 1/10 of one percent. About one tenth of one percent, about one part of the blood in one thousand parts is sugar. The diabetic will have three or four or five parts of sugar because he cannot burn up the sugar and the sugar is carried to the kidneys and the kidneys carry it off. I have frequently met cases in which persons were discharging from their bodies in this way a half pound of sugar every day. Of course, that half pound of sugar should have been burned and not having been burned, the person becomes emaciated, weak, feeble and loses his power. The cause of diabetes is disease of the pancreas. That is probably almost the universal cause. There may possibly be some other

causes occasionally but very rarely. The real cause of diabetes in the majority of cases is a diseased condition of the pancreas. The story of how the pancreas becomes diseased is a very interesting one. The ducts from the pancreas and from the gallbladder come very close together at the entrance to the small intestine. Food is taken into the stomach and remains there about four hours. At the end of four hours it is all down in the small intestine and at the end of four hours more it is in the colon. In another four hours it ought to be discharged from the body but the habits of civilized life are such that this normal rhythm is disturbed and the alimentary cycle ^{which} ought not to be more than twelve hours becomes on the average about two days, about forty-eight hours and even seventy-two hours; sometimes ninety-six hours and occasionally longer than that. The result of it is that this meal which is taken, say at breakfast, the useable part of it is taken out in eight hours and the residue is deposited in the colon and instead of being dismissed from the body in four hours more, it remains in the colon and the next meal continually gets down behind it and supper makes another deposit farther back and the next day breakfast comes in still farther back. Perhaps day after tomorrow morning after breakfast there will be a bowel movement and this breakfast taken on Monday morning, on Wednesday morning after breakfast there will be a bowel movement and that part will be dismissed but the entire colon is filled. The remnants of seven meals are there in the colon all undergoing putrefaction. There are seven meals all deposited there in the colon at one time. From that time on each day there will be a dismissal of some of these remnants but the colon is full all the time. It is like neglecting the garbage box so that it is ~~be~~ running over, full, packed down full and there is a whole lot of material there that is very ancient and putrid and filthy and

being absorbed. In such a condition the colon gets over-stretched and the ileocecal valve that keeps the contents of the colon out of the small intestine is broken down, pulled out, and the consequence is that this material backs up into the small intestine and the infection occurring here is communicated to the small intestine and travels up until by and by it gets into the gallbladder. It comes in directly from the intestine and also comes in through the blood circulating in the bile and gets into the gallbladder in that way. This infection causes a swelling of the mucous membrane so the little outlet becomes partly obstructed and that results in an accumulated pressure so that the bile is forced up into the pancreas. The pancreas is activated by the bile. As it is produced in its normal condition the pancreatic juice does not digest anything until the bile is mixed with it but when the bile is mixed with it, it becomes an active digestive agent and when the bile gets up into the pancreas and mixes with the pancreatic juice in the pancreas, it begins to digest the pancreas itself and this digestion sets up inflammation. The cells are destroyed by the digestive process. Then infection occurs and produces pancreatitis and the pancreatitis damages or destroys the pancreas in such a way that it cannot do its part which is very essential in the burning of sugar. In order to burn sugar the sugar must come in contact with the substance produced by the pancreas which makes it combustible just as you have sugar and sulphur - that does not make an explosive substance. It won't burn by striking with the hammer but you have to have the chlorate of potash with it and then you strike it and get an explosion. The sugar will be burned. I remember one time I found myself in the laboratory without any matches and how I was going to light my fire and get my lamps burning and my gas flames burning I did not know. I happened to know, however, how to do it in another way.

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All I had to do was to make some charcoal and some sugar, cane sugar, and add to it a drop of sulphuric acid and a drop of it onto that mixture and it would immediately set free the oxygen in the chlorate of potash and immediately start off the fire so I had a very nice fire going in a very short time with a little chlorate of potash, sulphur, charcoal, sugar and a drop of sulphuric acid. I dipped a glass rod into the sulphuric acid and touched it and it flamed up right away. The pancreas produces a substance that corresponds to this chlorate of potash and when it is associated with sugar the oxygen we take into our lungs readily combines with the sugar and burns it and produces the energy with which our various functions are carried on so when the pancreas becomes crippled, it can no longer produce this hormone as it is called and the result is the sugar is not burned and, being left in the blood, the kidneys have to remove it to get rid of it as a foreign body. This is a very brief explanation of what diabetes is.

Q. What is a medicine ball?

A. It is a heavy wooden ball, sometimes an iron ball, which has been suggested as a means of stimulating the peristalsis by rolling it around on the colon, a kind of auto massage. It is a crude way of applying massage to ones self.

Q. Is it better to use olive oil with vegetables or to use butter?

A. Olive oil is perfectly good and butter is perfectly good. If one had no other source of fat except olive oil or butter, butter would be the better because butter contains vitamins while the olive oil does not. The vitamins are all left behind in the olives when the oil is squeezed out so it does not contain the vitamins necessary to promote growth. Prof. Mendel of the Sheffield Scientific School demonstrated that in feeding rats. He found the young rats could not be made to grow if their only source of fat was lard, olive oil or

cottonseed oil and the same thing I think would be true of Crisco, and these other substances that are artificially prepared but butter, even a small quantity, would promote growth very rapidly. Why? Because when the cow is traveling about the pasture gathering up her bill-of-fare, she nibbles first one thing, then another, then another and then another and she collects a great fine assortment of vitamins. These vitamins are subtle substances which the body needs for activating its various processes. I have just explained to you how the bile activates the pancreatic juice. It is a sort of igniting substance that sets the starch and sugar going. Every process in the body must be activated. It must have something to start it off as the little percussion cap starts the explosive in the gun. Everything in the body has to be activated. If it was not for this, everything would be going at full speed all the time but Nature has provided that our functions are set in operation only when certain activating substances are brought into action and in this way the activities of the body are perfectly controlled. It is a very wonderful thing that Nature has provided for the activators necessary for the digestion of food and for the assimilation of food, for the use of food in supporting energy of the body, in supporting growth and development in the food itself but only in natural foods. In order to get the benefit of these substances, we must get the foods in their natural state so when we eat vegetables, potatoes, for example, and various other vegetables in their natural state, we get an abundance of vitamins. If we take rice and wheat in their natural state, we get vitamins in abundance but if we take the rice and take off the bran, polish it, then the vitamins are gone because they are with the bran and that is why people get beriberi when they live on polished rice and if we take the bran off

the wheat and eat only fine flour in the form of fine flour bread, in the same way we miss the vitamins because the vitamins are always associated with ^{the} bran and ^{of} cereals. In animal substances they are largely associated with fat. In milk they are associated largely with fat. There are two kinds of vitamins, water soluble vitamins and fat soluble vitamins. Water soluble vitamins are found in bran and fat soluble vitamins are found in butter and we need both of these to promote growth and development in a perfect way. That is why butter is preferable to olive oil if we use only one kind of fat but if one is using milk, nuts, peas and beans, fresh vegetables in abundance, lettuce, potatoes and things of that sort and fruits of various kinds, then we will get all the vitamins we need and one could use the olive oil without any disadvantage. If one is taking olive oil for the purpose of controlling a stomach which makes too much hydrochloric acid, then olive oil is best of all because Pawlow showed in his experiments, many years ago in his wonderful laboratory at St. Petersburg, that olive oil will restrain the action of the stomach in producing hydrochloric acid more than any other known substance. A tablespoonful of olive oil or two or three ordinary teaspoonfuls of olive oil may be taken by persons whose stomachs make too much acid and that means people who suffer from gastric ulcer or duodenal ulcer, who have pain after meals. Such persons are generally relieved by the free use of olive oil. It should be taken best at the beginning of the meal.

Q . What percent of your patients in the Sanitarium are suffering from toxemia?

A. I think about 99%, perhaps 99 1/2%. When I was last in England I spent some little time in the Royal Institute of Public Health and there I found Professor Distase who had formerly been assistant to the great Professor Metchnikoff of the Pasteur

Institute. Dr. Distaso was introduced to me by Dr. Arbuthnot Lane, a great surgeon there as a man who was recommended by Prof. Metchnikoff as knowing more about the bacteria of the intestines than any other man who lived, so I spent several weeks with him to get up-to-date information about intestinal bacteria and I pumped him as hard as I knew how for three weeks steadily to get all the information I could. I paid him five dollars an hour for the privilege of pumping him and I was very much surprised one day when he suddenly exclaimed to me "The English people are all suffering from auto-intoxication." I said, "You don't mean that?" "Yes," he said, "Everyone." I have not seen anybody yet here who did not have auto-intoxication. They have awful breath, coated tongues and their complexion is bad. They have red noses and pimples on their faces " and he went on with a lot of things. I said, "What do you think is the cause of it?" "Why", he said, "It is plain enough. It is because they live on a dog's diet." I said, "Do dogs have auto-intoxication?" "Why" he said, "Of course, they do." The dogs have all got it. That is why they die early and all the carnivorous animals have auto-intoxication and that is why they do not live long. If one lives on a dog's diet he gets it too. But don't you eat meat? "No", he said. Of course, I don't. Do you think I would when I know all the truth about it? When a man has studied ^{the intestines} and knows about the intestinal bacteria and the putrefaction going on there, do you think he would eat meat? I said, "I suppose your folks eat it." "No, indeed they don't," he said. We do not have any meat at our house." It was a very interesting thing to me on my last previous trip to Europe when I became acquainted with Professor Tissier who had also been assistant of Professor Metchnikoff and I asked him the question about the use of buttermilk and the bacillus Bulgaricus to prevent the growth of these putrefactive bacteria and he said "It is very good but I want you to

understand that I am not such a fool as Metchnikoff. Prof. Metchnikoff eats a pound of meat and lets it rot in his colon. They he drinks a pint of sour milk to disinfect it. I am not such a fool as that. I do not eat the beefsteak." That is the first I knew that he was really a vegetarian. He is healthy and hearty and expects to live one hundred years because he follows the discovery he made himself and makes a practical application of it. When he found that meat fed the germs that produced old age and disease, he said, "I will stop eating the meat". Meat not only feeds those germs but it supplies them and the smallest morsel you would think of eating, a bit not bigger than the tip of your thumb, contains anywhere from ten million to one hundred million of these putrefaction germs all ready in advanced state of putrefaction. You probably never have seen any report of meat inspection, a report of the number of germs that meat contains. I went into the office of the state food inspector of Michigan and I said to Mr. Helm in charge, "What sort of results do you find when you make a bacteriological examination of meats?" "O, he said, "We never do it." "Well, why not? "Well", he said, "We never do it." I made some further investigation and I found out a very good reason why they never did it was because it would destroy the whole meat business if they did. He told me a little story about bologna sausage. He said, "It is something awful." He said, "You know the butcher has more or less scraps, odd ends and trimmings and things that he cannot use so he keeps ~~them~~ under his counter a big tin can and when he finds something he cannot sell, he ~~xxxx~~ trims it off and dumps it into that tin can and after perhaps a week the can will get filled up and then he puts it into a sausage hopper and grinds it through, puts in some sage, spices and various things to flavor and makes bologna

out of it." He said our inspectors find when they look into that tin can - they find it is something awful. The butcher never washes out the old tin can but dumps in the things that come along and they stay there till he gets enough of it just as it is with the woman who has one cow on the farm and wants to make butter. They have a big crock there into which they turn the cream day after day and day after day and at the end of a couple of weeks they churn it with all the accumulated germs and mold. The bologna sausage generally contains anywhere from twenty million to one hundred millions of bacteria and ordinary meat ~~contains~~ as it is sold on the market contains bacteria in such numbers that if the public knew about these germs they would not eat it. If the public water supply of any city contained one one-hundredth part as many germs as the meat supply contains, nobody would think of using it. Meat is about the filthiest thing that comes on the table. We are very, very solicitous about the milk supply. If the milk has more than two hundred thousand germs in most states now, if it has one hundred thousand in a cubic centimeter - about one quarter of a teaspoonful - fifteen drops - it is not fit to be sold or allowed to be sold but any meat you can buy on the market has from fifty to one-hundred times as many germs. The milk germs are innocent germs. Suppose you let the milk stand until morning. It is simply sour milk and then it is better than it was before for sour milk is healthy and wholesome. Those germs growing there are not such very bad germs. A few of them are putrefactive germs but let the meat stand around awhile and it smells like a dead rat. It is simply a corpse, far advanced in decay, which ought to have been buried sometime before. Some people like to offer their bodies to be a sepulchre for an ancient - well, I won't say any more about it. That is the situation in which meat always reaches the stomach. These germs that are found in the meat ^{ten to} ~~contains~~ one hundred millions

of them are putrefactive germs, dead rat germs, carrion germs, the germs that are found in filth wherever you find it but the germs found in milk are innocent, milk germs. There are a few of the other kind of germs there but they cannot grow because the friendly germs are so numerous they won't allow them to grow. We object to milk if it has a few of these putrefactive germs in it but we do not object at all to meat when it is simply alive with them. The meat is purposely allowed to become putrescent. You get a piece of fresh meat that was killed this morning, for example, and brought around to you in the afternoon and you would not eat it - it is so tough but you want it taken down to the butcher's store room and hung there until it ripens. Ripening is nothing in the world but raising a crop of putrefying germs. I remember a few years ago how horrified I was on reading the description of how turkey should be prepared for Thanksgiving, that along sometime in October the turkey should be purchased and killed and hung outside the house on the sunny side and should be allowed to hang there by the head until it dropped off. When it dropped off then it was ready to serve and would be found very tender and toothsome. My good friend, Dr. Wiley, published that some years ago but I am sure he would not publish it now because he has been studying dietetics since that time. He has two fine little boys and he had to study dietetics to find out how to raise those boys and the result has been he has adopted a new set of ideas altogether, about what people ought to eat. Everybody is suffering from auto-intoxication. A man said to me the other day, "My bowels move every day." "How many times a day?" "Once". Then, of course, you have got it because anybody whose bowels only move once a day must have auto-intoxication because he has an accumulation of these remnants that have been lying there putrefying and sometimes are several days behind time with bowel movements.

Q. Are baked bananas ever served in the Sanitarium?

A. Yes, they are sometimes served. They are not generally liked. The banana flavor is developed by baking. If you are going to bake them they have to be taken a little green. You never would use a very ripe banana for baking but baking is not necessary and does not do them any good. It really deteriorates the banana. We ought to take just as many things as we can in the natural state in order to get these vitamins I was telling you about. The cow gathers them up in the pasture, then the butter contains them all you see and that is the reason why milk is such a fine food and promotes growth and why all young animals grow so fast while they are fed on milk. Sometimes we put a poor emaciated person on a milk regimen and feed them just as the mother cow feeds her calf and let them take the milk just as often as possible and we have them take it through a straw so as to adopt the calf method as nearly as we can and the result is I have often seen people gain a pound a day and sometimes ten pounds a week because there is nothing that will promote the growth of the body so rapidly as milk because of this fine collection of vitamins. If we eat the original products, fruits, fresh vegetables, like lettuce, celery and things of that kind in abundance, we get a fine assortment of these vitamins and if we neglect to eat them or take them only cooked or get them in a deteriorated form, so we should take bananas and all other fruits as much as possible in their raw state rather than a cooked state. Cooking does not always destroy the vitamins but deteriorates them.

Q. Why is fat good for people with hyperacidity?

A. Fat prevents the stomach from making too much acid. The stomach is an intelligent organ. It does not produce hydro-

chloric acid when it is not needed. Hydrochloric acid is needed for the digestion of meat and for the disinfection of meat and if one takes into the stomach meat and meat juice or beef tea, the stomach recognizes the toxins and immediately pours out a large amount of hydrochloric acid to disinfect that meat and to help to digest it but hydrochloric acid is not needed for starch or fat so if one takes a diet of starch or fat alone, the amount of hydrochloric acid will be cut down very much and if one takes nothing but fat, there wouldn't be any hydrochloric acid because the hydrochloric acid can do nothing whatever in the digestion of fat. It has to be digested by the bile below the stomach.

Q. I suffer with severe pain around the heart.

A. These pains around the heart are often very disturbing and disconcerting and give rise to great alarm.

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Q. What should be the percentage of starchy foods?

A. About one part of protein, three parts of fat and six parts of starch or carbohydrates.

Q. I suffer severe pain in the top of my head.

What causes it and what will relieve it?

A. That pain is what is commonly called a neurasthenic pain. It really is a toxic pain. If you look at your tongue you will find it coated and very likely you have a bad breath. The same thing makes pain the back of your eyes and makes you weary when you haven't done anything.

Q. Are any bad results likely to follow the use of a large amount of butter and cream when taken by a person troubled with hyperacidity?

A. The only trouble is you are likely to get too

fat, so you must be careful not to eat any more than you really ought to eat and should use every other method known for reducing the hyperacidity as well as taking the fat.

Q. What causes high bloodpressure? Can it be cured?

A. Many things cause it. When one gets mad his pressure rises. If he gets too happy, his pressure rises. If one does anything ~~if~~ he exercises in a violent way - violent exercise such as running or any kind of violent work will raise the blood pressure. If one thinks very hard his pressure will go up. The body is always ready to respond to stimulus of any sort and when the heart is made to beat faster and harder it will send the pressure up, of course. Can it be cured? That depends upon the cause. If one has high blood pressure because he smokes twenty cigars a day that will keep the pressure up all the while. A single cigar will raise the blood pressure twenty points in thirty minutes so if a man smokes all day long he gets his pressure up pretty high in the course of a day. If we ~~could~~ ^{want to} get the pressure down the first thing is to cut off the cigars. Another may have high blood pressure from drinking too much coffee and we must persuade the good lady to give up her coffee. Another man may have high blood pressure because he eats so much beefsteak and if we get hold of that person early, before his arteries have been spoiled and he stops his beefsteak, the pressure will come down. I made an investigation of persons who came here with high blood pressure and found that on an average the blood pressure dropped twenty or thirty points within the first two weeks they were here. It was the change of diet that did it - the dropping off of these bad habits, dispensing with cigars and cigarettes, coffee, tea, cutting out beefsteaks. That will bring the pressure down very much. I remember a doctor

v-m

who came to my office sometime ago who said he had come here to get his blood pressure down and to find out how to live. His blood pressure was 210. I told him what beefsteak would do and about cigars and what coffee would do and finally he made up his mind that he would drop those things out and try it for a few days. It looked like a hardship to do it but he tried it. At the end of four days he came to the office, dropped into a chair, his face beaming with delight. "Why, Doctor", he said, "This is breathlessly interesting. Why, my blood pressure has come down thirty points in four days. Just think of it." I took his blood pressure and sure enough it was 180 instead of 210. He said to write down all of the instructions and he would follow them to the letter. I got a letter from him six weeks afterwards telling me he had been following them to the letter, only he smoked about half a cigar and after a year and a half later I saw a little note in the newspaper that that man was dead. He was a prominent man. I remember how shocked I felt when I read that heading "Surgeon-General O'Riley is dead" and he did not need to have died. I gave him a recipe for living and he didn't follow it.

Q. Would lemon juice or fresh strawberries be a good combination for anyone who cannot take cream?

A. At this season of the year I should hardly think lemon juice was necessary. Perhaps along in July or August or a little later in the season it might be. I can hardly imagine why anybody should want to put lemon juice on strawberries. I do not think it would do any harm, however, because the acid of the strawberry is citric acid. The acid of the strawberry and of the lemon are just the same things so that is sort of "carrying coals to Newcastle", isn't it?

Q. If chronic sick headache is due to poison, why does a change of weather bring on a severe attack of headache and inactivity of the bowels?

A. A change of weather often makes a difference about the exercise we take. If we are accustomed to go out and take a five mile walk when a rainy day comes along we don't do it. If we have to stay indoors we ought to run up and down stairs or hop up and down in a corner. One doesn't have to go out on the street to take a walk. You can take a run in place if you want to and you can run miles just as quick as you can outdoors and with just exactly the same results. I have limited time for exercise so I use a couple of 35 pound iron dumb bells. I put one on a box and I lift them up a foot and a half at each lift and I go on until I have lifted about ten thousand foot pounds and then perhaps I rest a moment, finish my dressing, then I have another turn at the dumbbells so I manage to do somewhere about ten or fifteen or twenty thousand foot pounds of work every morning. That is the equivalent to lifting somewhere about ten tons one foot high every morning. When I get up I find one can do a whole lot of work in this way in a very short time. I noticed Mrs. Kellogg the other day went up and down stairs repeatedly. She said, "I am taking my four mile walk." If you lift your body when you are walking you can travel thirteen times as fast because when you lift your body one foot high, you have done just the same amount of work that you would do in walking thirteen feet on the level so by going up and down stairs you can travel just about thirteen times as fast as when ~~as-when~~ walking on the level ^{and} - you can do the same amount of work. It is the amount of work you do that counts. It doesn't

v-m

make much difference whether you go on arms or legs or how you do it. The legs have half the strength of the entire body and are best adapted for exercise and walking is one of the best of all forms of exercise. The best possible exercise one can possibly take is swimming and the next best is running around on all fours. Some years ago Governor Van Sant of Minnesota was here and I told him about that. He was getting a little bit too fat. I said, "I don't know anything quite so good as running on all fours." He said, "I can do that" and down he went and went to capering about my office very much like a school boy. He said, "I can do it just as well as I ever could" and sure enough he could. At that time the practice was quite popular at Berlin. I am afraid there is not so much of that being done just at the present time over there as at that time. Some quite popular doctor there had recommended it to a certain baron and he had recommended it to somebody else and all the big folks were trying the quadruped exercise with great success for reducing weight.

Q. What about the fruit diet?

A. It is a combination of fruit, bran and paraffin. I have experimented for many years and found the fruit diet sometimes works and sometimes didn't work. I found the great difficulty was ~~that~~ it did not produce sufficient stimulation. Some fruits contained a good deal of cellulose and some did not contain enough. It is a very difficult thing to do to carry through successfully the so-called fruit diet so I gradually improved upon this method by adding bran enough and paraffin enough to stimulate intestinal activity. The purpose of the fruit regimen is to change the flora. Everybody who has a

coated tongue, a bad breath, a sallow complexion and putrid stools, toxemia, auto-intoxication, that means almost every single chronic invalid, almost everybody who comes to this institution and a great many who do not come here as patients, a great many of our helpers, students apparently in good health have these same toxic conditions when they come, have bad breath and coated tongue, and we exhort them to reform their conditions and they do. As I say, every one of these persons almost is toxic and the only way in the world to get rid of this toxic condition is by changing the flora, that is changing the kind of germs that grow in the interior. The flora means the vegetable organisms that grow in a particular locality. The trees, grass, weeds, flowers and all the different kinds of grass that grow in a particular locality is called its flora. That term is applied by bacteriologists to the various germs that grow in the alimentary canal. The germs in the alimentary canal of a person would represent that person's flora. Metchnikoff called attention to the fact that people grow old faster when the flora contains great numbers of these putrefaction germs because they make poisons which harden the arteries, cause degenerations of various kinds and by changing this flora and establishing the natural flora which was studied by Professor Tissier of the Pasteur Institute, it is possible to stop this old age process and to hold old age at bay for a long time perhaps. I do not know how long. Some of us are going to try it out and see. I have been trying this method for some little time but I confess I have not been able to perfect the method as thoroughly as I would like to until the last few years.

My own tongue was for years a little coated and I labored hard for years to get it off but I just didn't succeed until in experiments upon myself I found out how I could get my own tongue clean. You know what the Bible says about "physician heal thyself." That was the reproach that was thrown up by somebody and that applied to me. I had to get rid of that coated tongue before I could exhort other people to get their tongues cleaner and Pawlow showed the way. I found out how to get my tongue clean and I am very proud of it and glad to exhibit it on every possible occasion. My tongue sometimes gets the least little bit coated when I am so crowded I cannot give myself proper attention, especially in traveling and immediately I find the shadow coming over my mind, begin to feel a little bit clouded, cannot think so fast. I can generally do about three things at once but when my brain gets a little clouded, I cannot do but two and, when it gets a little more clouded, then I can only do one. If it gets a little more shadow on it I cannot do one thing and do it really well and as rapidly as I want. I do not have any difficulty ordinarily in reading letters or answering letters or sometimes doing a few other things on the side but, when I get a coated tongue, I cannot do it. I know right away there is something wrong. I experimented upon myself until I found how to get my tongue clean and keep it clean and I am certain it is a very successful method because I have tried it in hundreds and hundreds of people. The method is simply to take a fruit diet, eat nothing at all but fruit, and at the same time eat such a large amount of bran and such a large quantity of paraffin

in some form that the intestines will be stimulated to unusual activity and in that way by increasing the activity of the intestines and by cutting off the supplies of these germs, by not letting them have anything at all to live upon, we can starve them out in a month and so it is possible sometimes, even in four or five days, to clean off the tongue and such a person will enter upon a new era of life. Last Friday night one of the happiest persons I ever saw came into my office. Two weeks before she came in with a badly coated tongue and said, "If you can relieve me of these dreadful headaches I shall be the happiest woman in the world and this terrible depression. I am tired all the time and I hope you can do something for me." I said, "Let me see your tongue." It was just as I expected, an awfully bad tongue but it wasn't her tongue that smelled bad, really. It was the lady herself that had that unpleasant aroma about her. It came from her blood. That is the important thing about it. This bad breath you have is not in your mouth or your tongue simply, but it is you that smells bad. The whole body is full of that poison and it is simply coming out from the blood in the breath, volumes of it. If you should wash your tongue as clean as you can you would not get rid of that bad breath because it comes out of the blood and gets into the colon and is transmitted to the lungs which are throwing out the poisons that the colon ought to discharge and the whole body is saturated. The kidneys, the skin and the lungs are all pouring out the filth that ought to be carried out through the bowels but has been retained until they are absorbed into the body and it has

17,502

become so saturated that it smells bad. I said, "You must have a fruit regimen." She started off the next morning. The next week she said, "Doctor, I am feeling better. I have not had so much headache but my tongue is almost as bad as ever" I know it was better because her breath was not so bad. I said, "We will have to have another week of it." She said, "All right." She went on another week and last Friday night she came to my office with her tongue as clean as mine and her breath absolutely sweet and she said, "O, Doctor, I am so happy. I have not had the least bit of headache and I have not felt so well in years and years. I just feel like another woman! I have seen that transformation hundreds of times within the last few years since we have perfected the method we call the fruit regimen. I think it so important I have just completed a book and I expect to put the last touches on the book tonight. If you have a coated tongue and a bad breath and are toxic, have headaches, feel tired and are neurasthenic and all that sort of thing, I want to say to you the fruit regimen is probably indicated for your case and it won't do you any harm anyhow and after you get home and find you are not feeling as well as you want to, and you are getting kind of dull and feel a little cross, scold your husband or your wife or your children and are irritable and pessimistic, just put yourself on a fruit regimen and see how it will sweeten things up in the course of two or three days. It will perhaps do your neighbors and your family as much good as it does you.

Q. Will persistent stasis of the colon and of the ileum do any particular harm when one avoids flesh foods?

A. Yes, you cannot live on a diet so clean ^{that} ~~or in~~ such a condition won't do harm because the bile itself will undergo

putrefaction of the mucus of the intestine and all these other secretions are capable of undergoing putrefaction if you do not eat a particle of meat. If there is constipation you will have autointoxication and a coated tongue just the same.

Q. Is Bright's disease curable?

A. Bright's disease is a disease in which the kidney is progressively destroyed. When one has Bright's disease he may be like a man who has lost the thumb of one hand. The kidneys may be practically intact. At any rate they can do all the work the body requires. By and by the disease advances like losing another finger and then another and another, and by and by the kidney is so crippled that it cannot do its work efficiently; then the body begins to suffer from the accumulation of poisons and begins to show the effects. The feet begin to swell. Other symptoms begin to appear and after while there is a general collapse so you see Bright's disease is not strictly speaking a curable disease because if one has lost a thumb he cannot grow on another thumb but suppose you have an ulcerative process that is eating off the finger. We had a young lady who had had two toes cut off and thought she was going to lose all her toes. She didn't like the idea and came here to see what could be done. The thing we did for her was simply to let the sunlight or the electric light shine on those toes for half an hour every day and the toes revived. The black color disappeared and we saved every toe and she was very happy. They simply needed more vitality. The toes don't have half a chance shut up as they are. They are confined in a polluted atmosphere. Leather shoes are such filthy things they get so smelling bad after while and if you keep your foot inside of a shoe for twelve hours your foot smells bad when you take your shoe off. It is an unclean practice, the wearing of

leather shoes. I shall be very glad when the price of leather gets so high that we cannot have leather shoes. There is no reason why your feet should smell any worse than your hands do if they have a fair chance but we shut them up so that the secretions of the skin are retained within the shoe and the shoe gets saturated and people wonder why their feet sweat. We have a great many uncanny practices.

Q. Should adenoids be removed before a child is three or four years old?

A. They should be removed as soon as the difficulty is discovered if troubling the child seriously.

Q. Why does the Almighty create hogs?

A. I have never thought it best to undertake to explain why the Almighty did things. I do not claim to be wise enough but if you wish to ask me for the raison bet of the hog we can find plenty of reasons for that. Just turn a hog loose and see what he will do. He will hunt up every old nasty thing he can find and eat it up. If there is a dead horse around you will find him going after it. A man told me he once suspected that a man who was buying up dead horses had a hog farm somewhere so he watched him and went with him and he found he took these dead horses out to a place in the country, had the car run out on a side track and there was a slide made on it down to a low place where there were a lot of hogs and these horses were rolled down that slide and as soon as they struck bottom they were pounced upon by a dozen hogs that ripped up their abdomens and buried their heads in the interiors of these dead horses and reveled in delight. The hogs were happy. That is what hogs are for.

Q. Does a blood pressure of 146 indicate that

arteriosclerosis is taking place?

A. Not necessarily yet, if it is continuous, it indicates some condition that is serious and ought to have attention. If the arteriosclerosis has not come yet, it is coming because when the blood pressure starts going up, it keeps right on going up and doesn't come down. It is just like a fire in a house that keeps on burning and needs to be stopped. That is what can be done with the process of producing high blood pressure. It should be arrested and Bright's disease can be arrested. I saw a note in the paper a day or two ago, - rather a serious international problem arose in Denmark which depends upon America for foodstuffs for their cattle. The present situation seems to be such as is likely to result in cutting off the food supplies for cattle in Denmark and the consequence is the cattle have got to be killed because they have not got food to feed them, and if they are going to be killed there are more than the people of Denmark want to eat. They must be killed off at once so they have got to be disposed of in some way and there is a railway that runs over into Germany so it is likely that they will go over to Germany. The question is which is the thing to do, to keep them alive so that the Germans won't get them or to starve them out so they have to be buried in German stomachs. The idea of burying a hog in a human stomach seems to be really uncanny, beyond belief that human beings could ever have brought themselves to consume such a filthy creature as the hog. The Lord forbade the Hebrews, as you know, to eat the hog and that Adam Clark one of the most famous of modern commentators of the Scriptures maintained that that law was just as binding today as it ever was. One day He was asked to ask a blessing at a table where there was a roast pig in the center of the table and He looked at it a moment and then He

v-m

raised his eyes to Heaven and he said, "O, Lord, if thou canst bless unto the gospel what thou didst curse unto the law, bless this. Adam Clark said also if he was going to make an offering to the devil it would be a roast pig suffed with tobacco.

Q. What is the meaning of 9,000 whiteblood cells?

A. It means that you have a fine army of disease fighters working for your defence. When the bowels become a little constipated you have got more white cells because germs are flowing in and these white cells are produced at once to fight them off.

Q. Tell us something about the liver. What is a torpid liver? How can it be made active?

A. Suppose you have a poor horse and have loaded him down and worked him, shipped him, until the poor horse was tired out and could not go another step. You would say he is a torpid horse, wouldn't you? He is torpid because you have abused him and worn him out, exhausted his energy. That is what a torpid liver is. It has been over-worked. The thing to do for it is to change the flora. The principal work your liver has to do is to deal with poisons that are absorbed from the colon. It aids digestion and destroys poisons, distoxicates poisons. When the liver is over-worked it ceases to be able to do this and the poisons go right on. Then you say you are bilious.

Q. Are starches hard to digest?

A. No, indeed. They are easier to digest than any other food. When saliva comes in contact with starch it digests almost at once. There is nothing that requires so little work of the body as the digestion of starch. The

popular idea that starch is hard to digest and people are suffering from indigestion of starch is all wrong. It is not true.

Q. What is migraine?

A. It is a toxic condition of the body, a sort of nerve storm that results from the accumulation of poisons.

Q. If the once ileocecal valve has disappeared how can we overcome the condition resulting?

A. By the fruit regimen and by living on such a wholesome and cleanly diet that it won't make any difference if the garbage box does run over into the dining room. There is nothing dirty in it anyhow. The stomach is the kitchen of the body. The small intestine is the dining room and the colon is the garbage box. If you keep the garbage can as clean as you do the dishes, the knives, forks and spoons and it is thoroughly cleansed out three times a day, it would not be the least bit obnoxious or make the least bit of disturbance but let the old garbage box stay there and get all full of rotting, decomposing material, old bones and all kinds of rubbish, by and by it gets full and running over into the dining room, spilled over onto the table, gets mixed in with the victuals and things would be very unpleasant. That is what happens in the body when the ileocecal valve is bad so long as the colon is in that filthy state but keep the colon empty and there will be no trouble at all even if the little valve is impaired. Nine-tenths of all the people who suffer from incompetency of the ileocecal valve can be cured in other words by regulation of the diet after the flora has been changed but it must be kept changed.

Q. If I have had intestinal toxemia for many years and finally got rid of the condition, am I permanently handicapped in any way?

A. Not so long as you keep right yourself. If you have righted your stomach and keep right, that is all you have to do but if you go back to the old ways and the things that made you sick, mustard, pepper, peppersauce, tea, coffee, beefsteak and all the other bad things by which you abused your stomach --of course, you will suffer the same penalty. "Whatsoever a man soweth, that shall he also reap". The old prophet said, "Cease to do evil and learn to do well." When you have learned to do well don't go back to the old evil any more.

Q. Should one eat more than four varieties of food at one meal?

A. I do not think that is a very good rule about varieties. For instance, suppose one ate a peach, an apple, a plum, a cherry. That would be only one variety because they are all fruits. Suppose one ate corn bread, wheat bread, and oatmeal all at one meal. That is only kind of food. It is true that one kind of starch is a little more easily assimilated than several but there is no reason why they should disagree so far as digestion is concerned. The great difficulty with eating too many dishes is that one is inclined to eat too much. It is better to eat a few things and have a variety by changing at different meals.

Q. What are the advantages of the electric light bath over the vapor bath?

A. The electric light bath stimulates the glands. All the vapor bath does is to cause an accumulation of heat in the body. It over-heats the body but the electric light shines down into the skin, perhaps half an inch or more, and so stimulates the glands and the cells of the body and produces perspiration with a lower temperature. The light itself is stimulating. Luminous heat will penetrate. The dark ray of

non-luminous heat, however, has no penetrating power because it has not a sufficiently high rate of motion. I made a very uncanny remark a little while ago about offering ourselves to be sepulchers for dead animals. I did not originate that notion. I do not claim to be the originator of this particular idea. It was Charles Lamb, the great literary wit, whose name is familiar to all of you. He wrote an essay on roast pig and he extoled ^{it} and finally admitted that it was rather hard on the pig but then he said the pig has a compensation in the fact that he has such a fine sepulcher.

I thank you for your attention.

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v-m