

## MEASURING A MAN

Stereoptican Lecture at Sanitarium Parlor, Battle Creek, Mich.,

February 6th, 1908, By J. H. Kellogg, M. D.

at 8:00 P. M.

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The measuring of a man is not simply the co-efficient of his height, not simply to find out how long he is or how much he weighs, but to find out what sort of a man he is, to take an inventory of the man, to learn what is his muscular capacity, and so far as possible, the condition of his nervous system, what is his digestive capacity, his liver capacity, his whole vital capacity.

Now this is a problem which has interested physicians I think almost more than any other, how to take a real inventory of a man. When you are going to buy a horse you take him to a horse expert and you get him to put him through his paces to see how fast he can go, how many different steps he has, try all of his paces, find out what his capacities are, if you want to know all about him, and you look at his teeth, and you want to keep him a little while to see how he can eat, to see what sort of food he can thrive on, if you are going to buy, like you investigate the soil. If you are going to buy a mine you have a careful assay made of the ore to find out how much gold there is in it, how much silver and other metals there are.

Now when a man comes to the Sanitarium and his doctor examines him the thing of first consequence to that doctor in making up his diagnosis and his prognosis is to know what sort of subject he has to deal with, whether he is like a farm that has been cropped and cropped and cropped until it is

completely worn out and there is nothing left in the soil, or whether this man is likely a poor old stage horse that has served ten years on some horse car line in the city until it ~~is~~ has nothing left in it, or whether he has got still a fund of vitality and vigor and ability to get well. It means all the difference in the world in the prognosis of that man, as to what is going to result from his treatment, how much get well he has left in him. Now that is the thing that used to trouble me a great deal. A man would sit down in the office and tell me all about his case and say, "Doctor, what can you do for me?" I tell you that was a hard question. The patient would say, "What can you do for me? can you cure me?" That is the question of all questions for a sick man. It is more important for him to that than anything else. Can you cure me? He has come hundreds of miles perhaps here and he wants to know what is going to happen, what the result is going to be. I often used to say to a patient who asked me that question, "I am only a poor finite man. I cannot predict. How can I tell whether you are going to get well or not? I can't even predict what is going to be the weather tomorrow and how do I know what Providence has in store for you?" I used to adopt all sorts of subterfuges to get around answering that question, because I didn't know, and I didn't like to tell lies. I felt a little like George Washington is supposed to have felt when he cut down the tree with his hatchet, so I adopted every expedient to get out of answering that question, but I don't feel that way nowadays so much so by any means.

I set to work 25 years ago ransacking all the medical literature I could get hold of, all the medical knowledge, and I traveled abroad many times and studied in the great centers of Europe. I searched high and low in medical science to find means by which we could estimate the various capacities of a

man, his vital capacities, so that we might know what to expect of a man. Here is a man who looks very well, thinks he is all right, looks healthy and robust, but tomorrow you may read that that man drops dead on the street. Now there must be some way of finding out that that man was likely to drop dead, some way to know that, but they didn't know it, but now we can tell. Now we can examine that man and we know whether he is liable to such a sudden collapse as that. Here is a man going on for years and years, looking all right, but that man has Bright's disease preying upon him all the while and he doesn't know anything about it. He has not reached that stage in which it becomes apparent that he has the disease, but he is going right on making large investments, spreading out his business and he has only six months to live and doesn't know it. If he knew he had only six months to live he would make altogether different plans. If he knew he had only six months to live, and if the doctor knew, he might be able to do something for him that would add many months more and perhaps years to his life.

Disease is like a fire in your house, where the house itself is burning. We may have two kinds of fire in the house. We may have fire in the house, simply a kerosene lamp tipped over on the kitchen floor so there is a little blaze, or a little alcohol lamp that ~~smokily~~ sets the table cloth afire and it burns up, but it is easily put out. The house is not afire. The fire is soon exhausted and gone and the alcohol burns up and no great harm is done. The walls are smoked a little perhaps. Possibly there is a black spot on the floor but that is all there is of it. The fire has gone out and left very little damage. That is one kind of fire in the house. Now there is another kind of fire, the kind that comes from an overheated furnace perhaps and goes through the wooden partition which is not properly protected. It is not very rapid; it is slow, but by and by it breaks out through the roof, then someone sees it and says that the man's house has caught fire. It has not

just caught fire. It has been burning for 48 hours ; perhaps it might have been burning for a longer time than that. I knew of a case sometime ago in which a house was afire for three days and the people didn't know anything about it, and finally they accidentally made the discovery. A little smoke came curling out around the chimney over the mantel piece. They were just going to bed, and if they had gone off to bed ~~and~~ the house would have been burned up, but the mantel became warm and some smoke appeared so they got the fire department out and the house was saved and lives were saved also.

Chronic disease is like this fire in the house which has been creeping along the floors, with no sign of it, until it bursts out through the upper chamber windows or through the roof, then notice is given , attention is called to the fact, something is done, the fire is put out, but the house is gutted, the walls are weakened, the foundations are weakened, the supports of the house are weakened, and possibly the roof may fall in. That is the trouble. People suffering from chronic disease allow the thing to go on and on and on. It has gone on for years and years without warning and they didn't know anything was going on. They have had a bad taste in the mouth, but that didn't amount to much. They were not quite so strong as they wished, perhaps, but they thought they would feel better tomorrow. There is a loathsome, horrible condition, perhaps, of the intestinal residues. Well that is not a matter of any great moment. The doctor never said anything about it. There can't be anything very serious about that. The roses are disappearing from the cheeks, the skin is getting tawny, the pimples are blossoming out. A man said to me this morning, "Doctor, what makes my nose so red?" "Germs," I told him, "Autointoxication." Did you ever hear of that before? I proved it to him. There wasn't any doubt about it. The body was flooded with poisons. You may be a <sup>lady</sup> ~~lady~~ and you may say, "These pimples

are not very nice on my nose, but cosmetics will cover them up. I will paint them over so nobody will notice it. I have an awfully bad breath, but perfumes will obscure it and cover it up," and so people go on year after year not thinking that these signs appearing on the surface are indications of a work of havoc and destruction that is going on inside, like a fire burning in the walls of a house.

But now we have means by which we can find out about these things. These outward signs are things of importance. Science has put into our hands delicate means of measurement, of precision, so that we may determine exactly what is the condition of a man, and we can explain it mathematically, so I have been working for years to get that thing down to that fine point. A part of the Battle Creek Sanitarium System is a system of coefficients by which we can make mathematical expression of the condition within the man, whether it is normal and ~~pathological~~ physiological, or whether it is diseased and pathological.

Now we are going to introduce you to this system to some degree and let you know how it is that we make up our estimate of what a man's condition is. The important thing is to catch this fire when it is smothering, to make the examination early enough so we can find out in time to save the man, to keep him comfortable and to prolong his life. I will tell you a little bit about what we learn from these coefficients and what we are able to do in meeting these indications.

I am just showing you some pictures of the muscular system. Here are various muscles of the body, muscles of the back. There are five layers of muscles in the back. These long muscles run from one end to the other. They are the stringers of the body, intended to keep the back rigid, but the body stringers get so weak sometimes that the body springs over the other way.

Here are the abdominal muscles, three sets of them. One set runs

obliquely across, one set runs straight across and another set runs obliquely in the opposite direction. Here are the pectoral muscles, the wing muscles. Here are these steadying muscles, the muscles that support the figure, and here is the normal outline of the body. This picture is copied from one of the great German anatomies, and this is the outline, convex in front you see and concave behind, and that is the normal outline for both man and woman.

When you see a great here and an  
 here that is a pathological condition and that is just about what we see in a vast number of people. The habit of sitting relaxed, sitting down and allowing the chest to become flattened, letting the chest drop in--you see the chest drops in here and the stomach bulges out down here you see because the contents of the body remain the same all the time. Now the proper degree of strength of these individual muscles is a thing of primary importance in many cases, because when these muscles become weak and allow things to drop out of place then there is mischief. For instance I have in my office some pictures of a lady's stomach showing the stomach up here where it belongs and another picture of the same stomach showing it clear down to the pubic bone when that lady was standing on her feet. When she was lying down the stomach rolled back into place, so when that woman moves about, bends over, leans to the right or left that stomach will go swaying about like a ~~max~~ bough swaying in the wind. Just think of it! the stomach living in such a desultory way as that, wandering about from place to place like a poor tramp because of insufficient physical development.

Now we want to know not only how strong a man is, but how strong he is compared with the strength he ought to have. That is the important thing. A man of a certain height ought to have a certain strength. By the study of many thousands of people and examinations, the total strength measurements--

the most of you have been measured with the dynamometer and the strength of the three large groups of muscles in the body has been determined. Adding these together we have the total strength of the body, and we have determined this for normal people of different heights. We have made this examination in the cases of more than 10,000 people, and getting the averages from healthy people--medical students, nurses and employes come here, of whom we have almost as many as we have patients; in the summertime we have a thousand helpers in this institution, a thousand employes taking care of a thousand patients. At the present time we have 700 employes taking care of four or five hundred patients. We always have more helpers than patients in winter time and in summertime we get about even. We find the strength of these healthy people so when we get the strength of a man or woman that comes here we compare it with the strength of healthy men and women. We find what the man's strength ought to be compared with his height, and that is his strength height coefficient. There should be a certain weight for the height. A lady said to me the other day, "Doctor, I am so fat. I came here to have my weight reduced." I said, "How much do you weigh?" and she told me. But I said, "That is the proper weight for your height." She was so anxious to be slim, with a nice little waist that you could reach around with your fingers. She wanted to wear a sixteen inch corset you see. Here is another patient thinks he is not fat enough. Bring up to the standard and you see he has just the right weight. His weight divided by the weight of the normal man or the weight of a ~~normal~~ woman divided by a normal woman gives the weight coefficient. That means the weight is normal. If the coefficient is above 1 he is a little too fat. We had sometime ago a lady whose coefficient was 2. That is, she weighed just twice as much as she ought to weigh. She needed to reduce considerably. We had a man sometime ago whose

height weight coefficient was 2.5. He weight two and a half times as much as he ought to weigh. He weighed 475 pounds. The strength height coefficient is the strength of the body compared with the height. A person ought to have a certain strength for each inch of his height. When he hasn't that, when his strength is below that his coefficient will be less than one. Here is the strength weight coefficient and the respiratory weight coefficient. The strength weight coefficient is the strength a person has in proportion to his weight. For a person that weighs 200 pounds when he ought to weigh 100 pounds, and his strength ~~his~~ height coefficient is normal, his strength weight coefficient will be only half of what it ought to be. He will not have the strength he ought to have for his weight. Here is the respiratory height coefficient, relation of the man's breathing capacity to his height. A person ought to have a certain breathing ability for each pound of his weight. We breathe to keep the tissues alive, not for the benefit of the lungs, but for the benefit of the hands, arms, toes, stomach and brain; so one's respiratory or breathing capacity should be equal to his weight.

Here is a man whose respiratory ~~magi~~ weight coefficient is normal for a 150 pound man. That is what his weight ought to be, but he weighs 350 pounds. Then his respiratory coefficient is only 50, so you see he will be very short of breath. The fat accumulating outside the chest is accumulating inside also, so that man's ability to breathe will be only  $1/4$  of what it ought to be for a man of his weight. His respiratory coefficient will only be half what it ought to be for a normal man of his weight.

A person who has a good arms strength coefficient can lift himself with his arms. This is determined by the actual strength of his arms divided by the weight of his body. We learn by that whether he can do very hard



work in the gymnasium or not. We learn what exercises he can take. Here is the legs strength height coefficient. We learn by this how far a man should walk. Here is the trunk strength height coefficient. It tells us whether the muscles about the trunk are strong enough or not. This tells us what a man's habits are, whether he is sedentary, whether he spends a great deal of time in a chair. We know as soon as we look at that coefficient about what these muscles will do.

Here is the diaphragm height coefficient, which shows the breathing power. That gives us the proper relation of this man's breathing capacity to his height, and it may be only 20% or 25%. It must be increased: so we have the arms weight, the legs weight endurance, the actual height, the sitting height, chest measurement and waist measurement. A lady told me the other day that her waist measurement had increased 7 inches and a man told me his chest measurement had increased four inches by exercising in the gymnasium. That means a marvelous increase of vitality because these coefficients relate to the actual physical capacity of the man, and give us a better picture of the man than figures would give us because we know what the man's dynamic capacity is. We may have a photo of a man but you cannot tell from that whether that man is paralysed, or whether he is a vigorous, healthy man. He might be completely paralysed, and yet look outside as healthy as anybody, but a man cannot go through this test and produce coefficients of one all the way through unless he has the vitality and the vigor and the energy of a healthy and a normal man.

Here is the ~~expansive~~ expansion of the upper arm and the measurement of the lower arm, the measurement of the calf. When we have all these coefficients we know we have a better picture of the man, as I said before,

than we can get from a photograph, because we have an inside view of him. We know just what his muscular capacity is. One of the most important things we ought to know is about this man's vitality. We know something about his machine, and now we want to know whether he can get up steam or not, whether he can work. If we have a locomotive we know the locomotive has capacity for pulling a long train, but if there is no steam in it and no capacity for getting up steam, the locomotive is worthless and can do nothing. The blood is the life of the body, so it is a matter of tremendous importance to know just what the blood is. We used to look at the blood and see it was a little pale and say, "You are anemic ." We would look at the blood of another man and we would say, "You are full-blooded." When we came to apply these crucial tests to a man and counting the blood cells then we found we had been mistaken half the time. We found that this pale man had more blood than he needed but his vessels were contracted and it didn't show in the skin. The skin was thick so the blood did not appear. And this rosy-checked girl that we thought was full-blooded and needed to be reduced, has not more than  $\frac{2}{3}$  as much blood as she needs, but it happens that the blood vessels of the skin are relaxed and that makes her look florid, so as a matter of fact she is really anemic. So by the hemoglobinometer and other delicate instruments for measuring counting the blood we are able to obtain knowledge which we could not get in any other possible way. The ingenuity of medical men and physiologists for many years has been taxed to find some instrument by which the power of the heart could be tested. We listened to the heart at times and noticed it made a great racket, but it might be just about ready to stop. We cannot tell by the way it <sup>sounds</sup> ~~sounds~~, but the thing is to measure the power of the heart, and this can be accomplished by measuring the pulse under different conditions by means of taking the blood pressure. If we find high blood pressure

we know the heart must be able to do the work indicated by that pressure, which has been increased in the arteries. We have an instrument for this purpose, instrument, under various names--sphygmometer and various other names are used to designate the various instruments that have been invented-- gives us a knowledge of the difference between normal pressure and the abnormal condition which may be present. For instance, the normal pressure is put down at about 105, and we may find it 200 or more.

Here is a little instrument which counts the pulse for us, which ~~says~~ we call the sphygmograph. There is a little finger which sketches a line on an ordinary piece of smoked paper, and that indicates the pulse. Every one of these curves means a pulse beat, and tells us the character of the pulse. Here is the counting of the blood in the laboratory. This requires great skill and a sharp eye and special training. Here is Dr. Nelson who has charge of this department, and who is an expert in these things, and gives his whole life to it, and visits various laboratories and the most skilled experts in this line to get the very latest information. And this study of germs as well as of the blood enables us to know what is going on in the body.

A person may have a cough and we may not know whether it is bronchitis or influenza or croup or consumption or something else. Examination shows which particular germ is there and that gives the diagnosis complete.

Frequently we have some casts and pathological specimens which indicate the changes that take place in the blood vessels. In these persons we find a process which narrows the blood vessels, and in which the arteries get into a condition where they are soft and brittle, ~~xxxxxx~~ because of a sediment which has been deposited in them. Instead of having elastic walls there is a thickened wall, so thick that the calibre of the artery is reduced to a quarter of what it ought to be, and by and by it gets plugged up entirely in an advanced stage, then the patient dies.

An old man came to see me sometime ago--a few years ago--and said one of his toes was getting black, and wanted to know what was the matter. I looked at it and said, "Why you have got gangrene; that toe is dead." He said, "What are you going to do with it, cut it off?" I said "No, I would not dare to cut it off. It may be some more would die. We must simply see if we cannot bring it to life again." So we put that man's leg in hot water, but in spite of all we could do to prevent it, to hinder it, the foot got black and we had to cut his leg off, and when I cut off that leg and reached the artery the knife gritted just as if it was running across a piece of stone. That artery had actually become a stone. It was like a stone pipe or a sewer pipe. It was solid and reduced down to very small calibre, so there was not blood enough come ~~had~~ down to his foot to keep it alive. Fortunately we were able to save his life, and he lived a good many years. By and by he died of apoplexy. The very same thing happened to his brain. The arteries of his brain shriveled up and turned to stone. A doctor telephoned me today to come down in the city to see a case, a man 46 years old, and we expect to find his arteries in just that condition, for his blood pressure is 240. You see what that means. It is 240 when it ought to be 100, so it is 140 too high. 105 would be about the normal. My own blood pressure is about 105. I hope it won't get above that for 20 years at least. If I can keep my blood pressure down to 105 so it never gets above that I shall know I am keeping young. If your blood pressure has never gone above 110 or 115 or 120 you are still young. When your blood pressure goes up to 145 you are an old man or woman. It doesn't make any difference what the old family Bible says about it, you are old. Your age in years may be 35, but you are 75 or 80 years old, and when your blood pressure gets up to 200 you are nearly 100 years old. A normal man can live 100 years without having the blood pressure so high as 150. Dr. Harvey examined the old man Thomas Parr

who died at the age of 152 years and 9 months and was buried in Westminster Abbey. You will see his name in Westminster Abbey, and this inscription, "Under this stone lies Thomas Parr, who died at the age of 152 years, 9 months." He was buried there in Westminster Abbey. Dr. Harvey examined him after death and there was not one hard artery in his body. The arteries were perfectly healthy and normal, and he ought to have lived on 15 or 20 years longer. He didn't die of old age at all. He had lived in the country all his life on a plain diet, vegetable diet, worked out of doors and was a normal man, but the King heard about it, and he was such a prodigy because he was so old that the King invited him to come down to the Court, and he fed him so high for a couple of weeks that he killed him. He died of surfeit. When he had wintered all the storms of 150 years then he died of surfeit. I tell you my friends, more people die of over-feeding than of hardships and starvation. Probably one person dies from being deprived of food where 100 people die from over-eating.

Here are the coefficients of the blood hemoglobin, that is, the degree of oxygen in the blood, the color index, and the number of red cells and the white cells and the alkalinity of the blood. When a person's vitality is high his alkalinity is high. When the alkalinity gets down so low that is an index of lowered vitality. When you have typhoid fever it is the blood that fights off the germs. It is the blood that fights them off, and eats them up and brings your body back to health again.

Here is the coagulability of the blood. Here is the lymphocytosis, the myelocytosis, ~~polymorpho-leucocytosis~~ polymorpha-leucocytosis, and the eosinophile. These are all different kinds of cells. I expect tomorrow we will hear you talking very learned talk around the house here. Some of these cells ought not to be in the blood at all. These dark cells are

normally found in the blood in certain proportions, and when they become increased that is evidence of disease. The opsonin is a wonderfully interesting thing. We are able to determine something of a man's ability to fight disease. Wouldn't you give a good deal to know whether you are liable to have consumption or not? Wouldn't you like to know whether there are some ~~ix~~ tubercle germs lurking around inside your body somewhere in some lymphatic gland ready to break out and ~~stare~~ seize upon some internal membrane when you get low down, and start in with tuberculosis. Now we can find out something about it. If you haven't tuberculosis we can tell you whether you are going to have it or not, and if you have got it we can tell whether you are going up or down. If you have got some other disease we can tell the same thing. If a man has pneumonia we can tell whether he is coming up or going down. If a person has typhoid fever we can tell him the same thing. When a man has blood poisoning we can tell something about how his case is progressing. How do we know? Suppose you wanted to know whether a man had capacity for dealing with a certain problem or requiring the exercising of great strength. If you would put that man to the test to determine what his strength was you would know whether he was fitted for that task or not. This thing goes a little further than that even. The blood is the fighting department of the body. If a man is liable to get tuberculosis it is only because his blood is reduced so it cannot fight off tuberculosis. Now if you take one drop of a man's blood and subject it to the action of tubercle germs, place it in contact with tubercle germs under conditions that give each one a fair chance, and watch them through a microscope you can see the fight that goes on there, and see which comes out ahead. Then you will know what that man is capable of doing, because if one drop of a man's blood can fight off tubercle germs, eat them up, kill them, then another drop of blood will do

the same thing, and every other drop of blood in his body will do it, and if every drop of blood in a man's body is able to kill off the tubercle germs, to hold its own against them, that man is safe from tuberculosis you see. Now it is possible to determine whether a man's blood will do that by making this test, and that is called the opsonic index. By this means it is possible to determine whether a man who is suffering from tuberculosis has got some further maladies, or whether he is liable to have, so this is a very interesting part of the inventory that is taken. But we will pass on to another class of coefficients. I don't expect to be able to tell you tonight all there is to be known upon this subject for it covers pretty much the whole ground of medical science, those coefficients of various sorts.

Here is a study of the eye. Here is a study of the muscles. By delicate apparatus, the most delicate apparatus that has ever been devised for measuring nerve currents and for measuring muscular activities, testing ~~the~~ by means of these delicate instruments we can find out the condition of the nerves and determine whether degeneration is taking place, and whether the parts are becoming damaged or not.

Here are other effectual tests to which the patient is submitted. This little instrument determines how long it takes a man to think. I brought this instrument from Paris some years ago. I bought it from quite an ingenious man who made it. He tested me and found my test was  $4/100$  of a second. He said he tested one other man who made the same record, and that was Don Pedro of Brazil, but he didn't think quite quick enough to get the start of those fellows that were putting him out. If you give a man that test and find it takes four or five seconds to do something which he ought to do in  $4/15$  of a second there is something the matter with that man's feeling machine sure. I made an experiment of that kind once that made a great

impression upon some boys. I was giving a public lecture in a city in Illinois on cigarettes, and the school children were all gathered in. It had been announced for sometime and the school teacher and the members of the board had taken great interest in the matter and had gotten just as many school children as possible in, and there was a great lot of boys, young men ten or 12 or fifteen years old. I said, "Boys, come up here, I have got a machine that will tell whether you smoke cigarettes or not." They looked at one another, and they were on the qui vive I tell you. They were very sure I could not do it,. So these boys, about 20 of them, marched up and I applied this instrument to them, and I found every boy in the lot that came up there had a good, keen, active brain. Some of them were very quick, but there was one boy that required 30-100 of a second. Most of the boys were able to make the record in ten or fifteen hundredths of a second, but this boy required thirty to forty-five hundredths of a second to think. I said, "This boy smokes cigarettes," and the boys fairly shouted, for they all knew he did, that he was a cigarette fiend. He had not smoked long enough to produce great degeneration of his brain, but he had smoked thirty or forty cigarettes that day, and his brain was clouded with toxins so it could not work properly, and it made a great impression on the ~~many~~ boys. He said he believed he would quit, and the rest of the boys took a solemn vow that they would never smoke as long as they lived. These are the internal organs of the body, the brain and nerve centers. We find out whether the telephone girl is up to her business or not, don't you see? If the telephone girl has gone to sleep you cannot get the answer you want. Your telephone is out of use you see and is not of much good to you. We have something in the body that corresponds exactly to that. We haven't time to go into all these questions tonight and I think I will let you go now and finish up next time.



You want to sleep so you will have a good appetite for breakfast, and I see it is pretty nearly 9 o'clock. Unfortunately we had a board meeting tonight with our annual report on hand, and it hindered me a little bit on coming in, but I am glad to tell you the Battle Creek Sanitarium has paid ~~paid~~ expenses last year and just a little more. We were able to pay \$40,000 on our debt, so we are glad, and this year we are going to do better. The Battle Creek Sanitarium last year did a little larger business than it has done at any time in its history before. The total receipts were \$677,000 and it took just \$616,000 to run the machine, to pay the expenses of this machine, and we had \$61,000 left with which to pay debts and make necessary improvements. It costs something to run the Sanitarium. We received \$677,000 and it cost us \$616,000, but we are glad to come out so well as we did, and next year we hope to do a little better. We have better helpers and more experienced helpers and managers and our work is a little better organized and I am glad to see we have an improving class of patients who are more appreciative of what is done in an establishment of this kind, and of what it costs to take care of people in a thorough-going way.

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## **THE UNDESIRABLE LIFE**

A Lecture at the Sanitarium Parlor, Battle Creek, Mich., Thursday, March 12, 1908  
at 8:00 P. M.

by

J. H. Kellogg, M. D.

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The bad air in churches is enough to put the preachers, the people in the churches, choir boys, and everybody else to sleep. It is the poison that comes from the lungs that does this. Other poisons escape from the skin. Something like a thousand years ago they had a great church celebration in Rome, and somebody conceived the brilliant idea to have a real, live angel. Generally the angels are only simply gilded dummies up among the decorations, but this time they proposed to have a real, live angel, to have the angel sing; and wasn't that a beautiful idea? So they took a little boy, covered him all over with gold leaf, had him fixed up there among the leaves and flowers, and when the right time came the little <sup>angel</sup> ~~child~~ sang, but pretty soon this <sup>angel</sup> ~~child~~ began to cry, and they got the ~~child~~ angel down—the weeping spoiled the effect of the occasion. They brought the angel down, and in three hours the poor, little angel was a corpse, dead,—died in three hours. Why did the little fellow die? He was simply cased in with gold leaf and the perspiration could not find its way out, and the poisons which escaped from the skin accumulated in the blood because they could not get out through the skin, so he was intoxicated, dead drunk, and died from the intoxication ~~gas~~ from poisons generated in his own body. Here is a baby has the whooping cough, and is coughing, coughing, coughing as it loses its breath, and pretty soon it gets black in its face. If it does not get some relief pretty soon it will die. It is poisoned, suffocated, destroyed by poisons generated in its own body. It is because

it can not get rid of the poisons from its blood. If it could get the poisons out of the blood it could live for some time, but it can not get the poisons out; if it could breathe into the atmosphere the hydrogen or nitrogen or something else so it could get rid of these poisons, the child might live some little time. It is the accumulation of poison, not lack of air the child dies from. Suppose there is an accident in which the kidney ceases to act, in a few hours the patient is dead. If the liver ceases to act, in a few hours the patient is dead, because the poisons that normally find their way out through the body, through these channels are left, accumulate so the patient dies. The poisons which normally find their way out through the bowels are retained throughout the body, and the consequence is chronic auto-intoxication. You see we have different kinds of auto-intoxication. We have auto-intoxication because one does not breathe enough, and carbonic acid gas and other poisons accumulate in the body producing auto-intoxication; and because one does not sweat enough. That is why the Lord told Adam he must earn his bread by the sweat of his face to get the old Adam out of him, don't you see, the poisons that accumulated in the blood must be sweated out, and if a man won't sweat, why total depravity accumulates, gets worse. I do not believe in any other kind of total depravity except that of that sort, and that is a terrible thing and I do believe in that sort of total depravity. I met a lady the other day the other day who said to me, "Doctor what do you call my disease?" I said, "Madam, I think it is total depravity." She said, "Well, I believe it is myself"; so the body may go on accumulating these poisons till there is not a sound cell or fiber of organ in the entire body. Now, that is what is the matter with these people that are dull and stupid, some of them--I do not mean people that are born tired, that are constitutionally lazy, but people that have been well, strong, vigorous and active, and you see these people getting stupid, they feel sort of dazed; they have coming upon them a stupor accumulating, generated within the body, developing

developing. When these patients come here and we look into their cases, we find this thing every time. Now, there is a lot of evidence that has been accumulating in late years in relation to this. Prof. Horsley made some experiments which clearly proved it. He went to France, (because they would not allow him to do it in England), and he made some experiments which consisted of making a window in a monkey's skull so you could look in and see the brain. These were cruel experiments, yet the monkey was not asked to undergo anything more than some doctors have been willing to sacrifice for the good of humanity. The monkey of course, could not appreciate the good he was doing, but the doctor might. The monkey went to sleep and woke up with a window in his skull, and the doctor looked in, saw his brain, could see the brain throbb at each beat of the heart; then the doctor touched a little electrical instrument to that part of the brain exposed, and the monkey made a wry face, turned up his nose. He touched another spot and the monkey pulled up the arm; touched another spot and the monkey's leg drew up. So the brain is a keyboard just like a piano forte--you touch a key and you get a note. Touch a certain spot on the brain and some muscle works. So in this monkey's case any part of its body could be made to contract. We surgeons are able to get great lessons from that. We had a man here some time ago who had spasms which came on once in every so often. The first thing that happened was his big toe would bend down, then a foot would draw up, a leg would begin to shake, and he would have a spasm all over. This was on his left foot. So I knew all we had to do was to cut a little window in his skull, and right in the very center of that hole I could see a tumor sticking out. I cut that tumor off, and the man was well and is well to this day. These experiments are of great interest to surgery. We never would have known that if experiments had not been made upon the monkey. When Horsley was making this wonderfully interesting experiment upon the monkey, he studied the effects of different things applied to the brain. He tried to see if he could put something upon the brain that would make it act quicker, or what effect different

things had, and one day he made the experiment of putting a little of Liebig's extract of beef on it—Grouse's extract of beef is the same thing, or the homemade extract of beef, beef tea, beef broth, bouillon are all the same thing. Beef-juice is just the same thing. The beef-juice you get out of beefsteak when you chew it in your mouth is just the same thing. He took some of this beef tea and dropped just a little bit of a weak solution of it upon the brain. He applied electricity before, and the muscles were drawn into vigorous action; but when he put a little of that beef extract on it, instantly the muscles were paralyzed, the brain was paralyzed, and the muscles were absolutely paralyzed, whereas electricity applied ever so strongly to the brain had no effect whatever upon the muscles. The muscles and brain were paralyzed by the beef-juice. This man that has a paralyzed brain can not think, can not work; he is sleepy, drowsy, hesitates, in a state of constant indecision, can not make up his mind about things, can not exercise his judgment, or his will as he ought to. That man is laboring under the influence of poison. If he is a big beef eater, it is pretty easy to tell what is the matter with him. He is eating so much beef the extract of beef is paralyzing his brain. Turn that man out to pasture for a while, send him to the Battle Creek Sanitarium, and he brightens up, and gets to be a new man in a little while. I remember a man who came up here from St. Louis a few years ago. He was a life insurance agent who had charge of the state of Missouri, had a very large business on his hands, for a very large company, but he got so he could not work, could not do business. He said, "I used to have power to get hold of men and they could not get away from me. If I got hold of a man he could not escape, but I can not do that any more. When I once get hold of a man I could lead him right into my net and he could not get away." He had been making about twenty thousand dollars a year writing life insurance policies, and was doing a large business. He had gotten to the point where he was completely used up, completely unable to do business. He came to the

Sanitarium one of the most melancholy men I ever saw in my life. He never went to school only long enough to learn to read and write, and the rest of his education he worked out himself, and in this way he worked himself into a fine position from a very poor boy. He was a very active and a very successful business man in his profession. He was completely wrecked, could do nothing. He came to the Sanitarium here, spent three months; he adopted the Sanitarium diet and the Sanitarium mode of life, went home, and carried out from that time to this, most conscientiously, I think, about ten years now, the principles he learned here. Two or three years ago I was in St. Louis. He found I was there, hunted me up, took me up to his home, and a beautiful home he has. He said, "Doctor, I have earned this home since I came back from the Sanitarium, and I have added 50% to the best work I ever did in my life. The next year after I got home, I added 25% to my income over the best I had ever done, and he said, "I am worth three times as much today as I was when I went to the Sanitarium, and I owe it all to you." He did not sign me personally, but to the Sanitarium, the principles that he obtained here, sticking right to it for business reasons. He said, "If I eat beefsteak I can not do anything; it simply seems to stupefy me." Did you ever notice what a dog wants to do when he eats a good, big beefsteak? He wants to get around behind the stove somewhere, lie down and go to sleep. That is the way he feels. I was out West some years ago, in the City of Des Moines, I happened up there, and I found a little Battle Creek Sanitarium restaurant there--I do not know whether it is there now or not; it was there at that time. I dropped in; I saw the sign hanging out, and I went in to see what they were doing there. I found a nice place. An old nurse had got enthusiastic about these principles, and they thought they wanted to do something for the people of Des Moines, and they started this restaurant as a missionary enterprise, and I asked them how they were getting on. "First rate, first rate. We had a pretty hard time until a few months ago Judge Se-and-se came in one day, and we found he was the member of the supreme court

of the state of Iowa, one of the elder judges on the bench." They said this judge came in, and he said, "Now, I can work all right in the forenoon, but I can not do a thing after dinner. I want to try your dinners to see what they will do to me." He ate a dinner of wholesome food, went back to his office, went to work, worked hard the whole afternoon; came the next day and said, "Why, I can work after your dinner, and I can not work after the ordinary dinner. What is the reason?" The nurse told him the reason; the nurse knew. Now, I found this judge had been patronizing them for six months, and the business men that had trouble in working after dinner too discovered the judge was coming in there because he could work better after dinner, he could work first rate after dinner and could not work at all to amount to anything for two or three hours after the ordinary dinner; so the business men were coming in until the restaurant was thronged with business men who came in there to eat food that would enable them to work after dinner, and to do good work. I find that business men everywhere about the country are beginning to do that thing—out for efficiency. You always feed a horse for efficiency, don't you? If you are going to feed a horse, you think, "Now, then, what will be the effect of this on this horse's performance; what will be the influence of it?" You do not say, "Now, my horse is very fond of mutton chop; my horse likes mayonnaise dressing, my horse likes something else; so think up all the different sort of dainties you can to tickle your horse's palate with. You do not think anything of the sort, but you think, "What will enable my horse to pull the biggest load, to travel the furthest, to give him the most endurance, the most working ability?" Isn't it strange that men should not treat themselves as well as their horses. The horse uses horse sense about his eating. Do all of you use horse sense in your eating? The horse does not have to be told what to eat and he does not have to be told very often what not to eat; he uses judgment, he uses discretion; he uses intelligence. How many men and women do that? But



they sit down to the table and eat what they like; we are educated to do it. A mother at the table says, "Johnnie, what would you like?" She does not say, "Johnnie, here is some Graham bread and butter that is good for you. Eat this and it will make you strong and well." Once in a while Johnnie finds it out himself. We had an old lady here a number of years ago, from Saginaw, Mich. She went home and took some granola with her. She found it was very good for her, and she came back after while and told me a story about a grandson of hers, Tunny, a little fellow about seven years old, who had just begun going to school. She tried to get him to eat granola along with her. She said, "Tunny, if you eat granola you will grow up strong and well, have stout muscles, be healthy, vigorous boy if you eat granola." But he would not touch it. She talked to him many times about it. But he wanted breakfast, mince pie and rich things. One day she noticed Tunny began to eat granola, and he would not eat anything else but granola, scarcely a thing but granola, granola, granola, breakfast dinner and supper, day after day several days in succession, eating granola all the time, and she could not make out what the matter, began to be almost alarmed about him because he had become almost a maniac for granola. She asked him several times why it was and he would not tell, but finally one day when she asked him he said, when she put down her cut, "Granma, I'll tell you; Bill Jones slapped me the other day at school, and I am eating granola so I can get stout and lick him." That little fellow was willing to practice the greatest self-denial, you see, shut down all the things he liked, and devoted himself to that dry, rather insipid food, and day after day he ate granola, granola, granola so that he could accomplish something, so that he could fight, could carry out his purpose. That boy had character. How many of you have got as much as that, now? How many of you have got enough character, enough stability of mind and of spirit, and enough grit to say to yourselves, "Now, I am going to eat the thing that is good for me; I am going to eat the proper amount; I am going to eat the proper combinations, and the proper proportions; I am going

to count my calories and put them down?" A man asked me the other day why it was we had these bills of fare filed up with figures on them. I told him it was to find out who was eating up our victuals. He said, "That is a mighty good scheme." Of course it is a tremendous advantage to a doctor to know whether his patient is carrying out his prescription or not, and to know just how he is carrying out the prescription. I met a man, a lawyer from Tennessee the other day who said to me, "Doctor, I have a very important case on my hands, a very important case, and through my own stupidity in not doing the right thing at the right time, it has cost my client several thousand dollars. I made up my mind I better begin to do something to myself." This man was a very pleasant man, but it was evident there was something the matter with him; he was stupid, and he was very thin and scrawny. He came into the office one day and said, "Doctor, my headache is not a bit better than it was when I came here six weeks ago, and I have not gained a pound; I am just as thin as I was when I came. I think there must be something wrong with my treatment, and I wish you would look into it." I said, "Don't you tell me about your eating, how many calories?" He said, "Well, I don't know; I have not paid much attention to that." I said, "Don't you put it down on the bill of fare and figure it up to see how much you eat?" "Oh, no," he said, "I did not think that was very important. I came up here to get treatment; I can diet at home." I said, "Now, suppose you tell me what you eat, what you have eaten today." So he told me what he ate, and I put it down and computed the calories, and it was 4000 calories, and he was entitled to only two thousand. We ought to charge him double price for his beard. He was eating 4000 calories instead of 2000. I want to tell you that was very costly business for him. If he had got his beard for nothing he could not afford to do such a thing as that. 2000 calories was all that could be appropriated in his body, and all the rest was converted into poisons. His blood was flooded with poisons. He said he wondered why he could not get fat.

I called his attention to the amount of fat he was eating. He was eating 2800 calories of fat every day,—three or four big lumps of butter at every meal, drinking cream by the tumblerful, one or two tumblerfuls of rich cream at every meal, and salted nuts in quantity; so he was eating more fat alone than his total ration should be. I put this man on a ration of 2000 calories, brought his fats down to 600 and his total bill of fare down to 2000, and in three weeks he gained ten pounds, and he got rid of his headaches, and in two or three weeks more he went home feeling fine, looking well, and I hope able to advance his client's business in much better shape than before, and in a more satisfactory manner. You see it makes a difference and a wonderful difference whether one is eating for efficiency or for the fun of it. I hope our friend, Mr. Sunshine Hawks, while he is here, is going to catch onto a few points, and when he gets out into the Chautauque, that he is going to get after people's follies in eating. I wish he would turn his wit on that thing and laugh people out of it until they straighten up and see a little horse sense in the way they treat their own bodies. The body is the best capital we have, the best thing we have. The great Teacher said, "All that a man hath will he give for his life", but a man that does not feel that way at all has not got much of anything worth saving. The sick man waits until there is almost nothing left of him; then he is willing to give almost anything for the saving of that little bit of rag end of what was once a splendid man. He has squandered almost all he had, and now is beginning to try to save what is left. Suppose he had begun before he was spoiled. I don't suppose there is more than one person in ten who comes to this institution that is not suffering from auto-intoxication of some sort, in some form or other. Metabolic auto-intoxication, intoxication that is developed in the alimentary canal. The efficient life requires that we should first of all have a clean diet; that it should be sufficient in quantity but in no wise excessive; that every organ of the body should be kept doing its

work efficiently. We are just going to make a hasty survey of some of the principal functions of the organs of the body, and we will talk about that a few moments and see what a person ought to do and why he ought to live this simple life, why he ought to take care of these bodily functions. Here are the various organs, the muscles, the bones, the liver, the stomach, the heart, the blood-making organs, the brain and nervous system which control all of the machinery of the body. These ugly looking bones are the factories of the blood, where the red blood is made. Physiologists hunted a long, long time to find where the blood was made. They thought a number of times they had found the place, and then found it was not. Then they would find another place. They thought it was the spleen; then they thought it was the liver, then thought it was the lymphatic glands; but they had to give it all up; finally it was discovered the blood was made in the bones, in the so-called red marrow of the bones, not in the hollow part of the bones, but in the red marrow of the ends of the bones. We have the bones, of course useful as mechanical structures, as levers, but they have other functions to perform; but their most important function after all is as the makers of the blood. So it is important the muscles should be exercised in order that the bone should be supplied with blood, in order that the blood-making process should be carried on properly. The bones are covered with the muscles, and every muscle is a pump which pumps the blood not only into the muscles but into the bones lying under the muscles. So when we tell a patient to exercise, it is not simply to make his muscles strong. That is the least part of it; but it is to encourage the blood-making and the blood-purifying process.

Here is another illustration of the muscles, splendid great masses of living tissues. That is lean meat; so whenever you eat beefsteak, just think, "I am chewing the muscle of another creature, a fellow, a relative, perhaps, of mine. Here is the great muscle that pumps the air out and in the lungs. These

muscles push the air out. This shows the muscles inside. These are the muscles that are used in breathing, the pectoral muscles, which correspond to the wing muscles of birds. When these muscles are weak, they allow the abdomen to fall out this way.

This is a normal figure, convex in front, concave behind. This is the outline for both men and women. In women, the hips being larger, there is a little increased fullness here, but there is no such thing as a drooping in here and bulging out here. When you get an opportunity to investigate yourselves, notice that and see if you have a falling in here and a bulging out here. If you have, you ought to be ashamed and correct that as fast as ever you can by carrying the chin high and by carrying the chest high. Pull the chin in and that draws in these muscles because it stretches them in. Here is a well developed man and an undeveloped man. That man once was a poor wretched specimen, not nearly as well developed as that man. He developed himself by systematic exercise. With better muscles he got better health. Here are the nerves. They are a part of the brain, for the brain extends into the entire body. The brain is not confined to the skull, but is everywhere in the body. The soft part of the brain is in the skull, but its branches run out through openings in the skull and ramify throughout the entire body. If everything else was removed but just the nerves, all these branching fibers are so wonderfully numerous that ~~even~~ if every other part of the body was removed but the nerves, it would still be a perfect representation of the body. It would look to be complete just as if everything else was there, because the nerves are so extremely numerous they fill up the whole space.

This gives you an idea of how these nerve cells look. Nerve energy is generated in these little cells. This shows a ruined nerve cell, the result of the action of alcohol and tobacco. Other poison substances do the same thing. The poisons absorbed from the colon are just as bad as the poison absorbed from the

tobacco and alcohol, just as bad and may even be worse. Wrong diet, food intoxication, if you please, is probably a source of far greater mischief than alcoholic intoxication. There are probably ten persons whose lives are ruined and spoiled by food intoxication where there is one spoiled by alcoholic intoxication. Yet we hear very little about food intoxication.

Here is a Purkinje cell, which looks like a tree. You see it has beautiful branching tuigs. Here is a cell that has been almost entirely spoiled by chronic alcoholism. These cells are destroyed by poisons generated in the body in the same way. In fact, recent researches have shown that alcohol does not act directly on the cells in this way, but alcohol spoils the stomach, spoils the digestion, sets up auto-intoxication, generates poisons in the alimentary canal which absorbed into the blood are the real cause of degeneration of the brain.

Here is another section of the brain showing how diseases are produced in different parts of the body. This shows these wonderful nerve-cells, how they are connected with the muscles and cause the muscles to act,—how a man is tired even though he ~~has~~ has not worked. A man who eats a large amount of beefsteak often becomes exhausted, tired, feels as though he has been at work when he has not been at work, because he has absorbed into his own blood the products of work which were in the muscles of the ox.

This is a representation of the sympathetic nervous system. There is the spinal cord through which the large cord from the brain runs down; then in front of this there is another cord, the sympathetic nerve cord that sends off a great number of nerve branches into the stomach, bowels, heart, liver, kidneys, all these internal organs of the trunk. These sympathetic nerves control every blood-vessel in the body. It is these sympathetic nerves which cause the blood-vessels to contract. Now, it is by the perfect harmonious action of all these various parts of the body, maintaining these parts of the body in perfectly healthy condition by keeping the

blood pure, by proper exercise, proper sleep and proper habits of life that a vigorous healthy life is to be maintained. Now, as I stated the other night, I have prepared a little book giving some rules, and they are not very numerous, so I am going to run over just a little of that.

(Reading Simple Life in a Nut Shell).

(After reading Rule 1.) Forty years' experience in this institution has demonstrated these principles, and the experience of many thousands of people, five or six or seven thousand people coming in here a year and trying these methods, this experience has demonstrated again and again their value. A thing that will restore a sick man to health, or to keep him from getting sick after he gets well, ought to keep a well man from getting sick.

(After reading rule 4.) Scientific researches, not only those made here but those made by Metchnikoff, Pasteur, Goube, and many other investigators, European as well as American, have shown the facts that are stated here are true; that auto-intoxication, the infection of the alimentary canal with poison-forming germs, is the principal cause of most chronic maladies.

(After general rule 2.) That is the only way--increase your capital. The mind is not a thing that is independent of the body. The mind is a part of the body; it is a part of it. I think we ought to get rid of that idea. The soul and body are so interwoven that it is impossible to separate one from the other. Each one is influenced one by the other. You can not possibly improve the condition of the mind or of the soul by abusing the body. That idea originated in the dark ages, but it is certainly disappearing in the light of our modern civilization.

(After rule 7.) They are poison for some people. I have met a great many people who said they could not eat eggs without getting bilious. The healthy intestine is able to strain the poisons out; it does not permit them to enter, but in persons who become diseased in certain ways, the poisons contained in eggs

are readily admitted into the blood, then these persons suffer from auto-intoxication. Then, eggs contain substances which readily decompose; so many people are better off not to eat eggs.

(After Rule 8.) Good food for calves—not for human beings. If you are going to eat cow's milk take it in the form of fresh buttermilk. Yogurt is better still. Many persons are suffering from casein dyspepsia. Chronic milk poisoning kills thousands of persons every year. Millions of babies have been killed by cow's milk. Certain people can not digest cow's milk, but suffer from headaches, nausea, loss of appetite, a bad taste in the mouth which is caused by the use of milk. I myself was a victim of that thing for about twenty years of my life. I was not aware of it. I thought I must eat milk in order to get the proper preparation of proteid because I did not eat meat. So I ate milk rather freely, a glass of milk at every meal, and I always had a coated tongue and never dared to show anybody my tongue, and I was so ashamed of it, and I knew my breath had a little taint, and I was so ashamed of it I took great care when I was examining a patient to see that the patient did not catch my breath. I was ashamed of it, conscious of it, felt cheap, and greatly chagrined, because I could not get a clean tongue and I did not know what was the matter. I finally learned that milk was often productive of that thing in patients. I took milk away from them, and their tongues got clean, and I said I would try it on myself. And I was amazed to see how quickly my tongue got clean and my breath sweet. It was simply the result of auto-intoxication due to decomposition of the casein. I look back now with a great deal of horror at the use of milk for twenty years. I shall have to stop short of ninety or somewhere when I ought to have lived on to 150 or more. 150 is the normal limit of life, I believe, but very few reach it. Old Parr lived to the age of 152 years and nine months. You will find that stated in the capital put down in Westminster Abbey,—"Here lies Thomas Parr, who died at the age of 152



years and nine months. This man lived only two or three hundred years ago, and within that time, man have lived to be 150 years of age, and why should not there not be multitudes who live to that age? ~~It is because~~ It is because, as the great French doctor says, Man does not die, he kills himself. Ignorance destroys life more than anything else, perhaps.

(After reading Rule 15.) One part proteid, three parts fat, six parts carbohydrates; one tenth proteid, three tenths fats, six tenths carbohydrates.

The quantity of food should be adapted to the size of the person. The person of average height, requires 300 calories of proteid, or 3000 calories in all. Look over the Battle Creek Diet List, and it will tell you all about the philosophy of this thing. Food must be well relished. When food makes the mouth water it makes the stomach and liver water also, makes all the glands in the body active.

(After reading Rule 16.) The sugar of malted nuts and malt honey can be eaten as freely as bread, but cane sugar must be eaten very sparingly because it is an irritant to the stomach when eaten in larger than very small quantity.

(After reading Rule 27.) Some fresh, raw food should be eaten every day. At this time of year, lettuce, celery and feeds of that kind are the only things besides fruits you can get. You can get dried fruit. Prunes are very good soaked in water over night. They are almost as tender as the fresh, ripe plums, and are very wholesome; so you can get some kind of fresh, raw, uncooked food, and something raw should be eaten at every meal. Babies get scurvy and die because their mothers feed them on sterilized milk or cooked gruels. Everybody must have some kind of uncooked food at every meal. That does not mean to live on turnips, potatoes, wheat, oats, corn, things of that kind uncooked. That is simply a notion that some faddist has gotten hold of, and there is no foundation for it at all; but the appetite for green things, especially in the spring, is based upon a physiologic fact of great importance. There are found in these raw feeds certain

anyone or substance which encourage nutrition. We have determined here in our laboratory experiments that uncooked food does not undergo putrefaction in the intestine, does not undergo the putrefactive changes, whereas cooked food does undergo these changes very readily. Germs can not attack the uncooked food because it is living and resists them; but cooked food is dead, and germs attack it, decomposition takes place, the formation of poisons which produce auto-intoxication.

(After reading Rule 22.) Many people can not sleep at night because of the heavy six o'clock dinner. The six o'clock dinner is doing an immense amount of damage among business men. Many people eat a hearty six o'clock dinner, go to bed soon afterwards, and get a stroke of apoplexy before morning.

(After reading Rule 23.) Suppose you have got hyperacidity, and the stomach does too much work, then the food is just the thing; <sup>it</sup> is best to eat all your food for a time cold, as cold as you can take it, and it will help to relieve the condition of the stomach.

(After reading Rule 24.) That is necessary for persons whose motility is low. If your stomach is slow and the food remains too long in the stomach, that is a good rule to follow.

(After reading Rule 26.) I remember some years ago a lady who was stopping here received at the table a letter. She had just sat down to the table and was beginning to eat, to enjoy her meal very well, and somebody came and laid beside her plate a letter from home, and the letter said, "Your baby is sick with diphtheria; come home as quick as you can." She dropped her eating at once, got up from the table and with a look of great distress in her face passed out of the dining-room, and when she got to her room vomited everything she had eaten. Her appetite was gone, nausea came to take its place; there was a complete revulsion of sensation as a result of the bad news from home. Worry, fear, anger are depressing. Hope, good cheer, sunshine are elevating, are the best tonic in the world, are stimulating and encourage all the vital functions.

(After reading rule 26.) Hearty food is hard-to-digest food. That is why it is called hearty.

(After reading Rule 27). It is better not to drink a glassful at a time. Take a few sips, half a glassful at a time, at any time you want it, and in fifteen minutes take another glassful. If you drink a large quantity at a time you are likely to be more thirsty.

Next time we will talk about exercising for health. Get out of doors every minute you possibly can. Health, vigor, vitality are out of doors, not shut up in the house. Keep your windows open night and day. Especially at night keep your windows wide open and have your bed warmed up if you want to. Keep your head protected if you will, but keep your windows open all the time at night; get out of doors every minute you can. Don't sit down and loaf around the lobby, chew tobacco and spit on the floor. We are not going to tolerate that any longer. I just discovered that a little while ago. People who want to do that thing must find some other place; we can not tolerate it here. Don't loaf about; go out-doors to loaf. If you want to sit around, go out on the porch and sit; don't sit down in the house, in the parlors upstairs; don't come in here and sit down, breathing the same air over and over; go outdoors, get the fresh air and sunshine. I want you to get well quick. We want to get rid of you as quick as ever we can; we do not want you to stay here; we want you to go home and send us twenty more of your neighbors; so the best way for us to get patients is to get you home to advertise for us, and you won't be a good advertisement unless we get you cured up in good shape; so your interests and our interests are one--to get you well as quick as possible and as well as possible, and to get you home as quick as possible. That is the best thing for you and the best thing for us, because our mission is to cure just as many people as possible.

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**HOW THE BODY DEFENDS ITSELF AGAINST DISEASE.**

**A Stereopticon Lecture at the Sanitarium Park, Little Creek, Md., Thursday,**

**March 21, 1902, at 8:00 P. M.,**

**by**

**J. H. Kellogg, M. D.**

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The story of how the body defends itself against disease is I think the most interesting, most fascinating, most wonderful of anything that is encountered in human experience. Tonight I am going to explain to you in a few words some of the most marvelous happenings that come within the range of human knowledge. There is nothing so wonderful, in fact, as the details of the battle which is going on all the time between the human body and the foes which continually surround it. We live right in the very midst of death. Death is on all sides of us all the time. With every breath we draw we take into our lungs multitudes of death-dealing germs. In the mouth there are all the time mingled with the saliva millions of microbes which are capable of producing death. This fact was discovered by Dr. Sternberg, surgeon-general of the United States army. He was down at New Orleans some twenty-five or thirty years ago investigating the yellow fever outbreak down there, and when he returned home to Washington, he was making some experiments with a rabbit; and in one of these experiments he injected a drop of his own saliva into the veins of a rabbit, and that rabbit was dead in forty-eight hours. "Oh," he said, "I have been down in New Orleans, and the air down in New Orleans must be terribly bad. I must have gotten some yellow fever germs into my mouth, and they must be very deadly for my saliva to kill a rabbit." So he tried it again, and killed another rabbit. Then he got drops of saliva from the mouths of some of his friends, injected it into rabbits, and they all died. So he made the wonderful discovery

that the saliva contains always poisons, deadly germs which are capable of destroying the life of an animal or the life of a man. Why, then, don't we all die if the saliva is so deadly? If these germs are so abundant, why do we live? Simply because there is continually maintained a battle between the living cells of the mouth and these germs. The saliva which is being poured out is itself battling against these germs. The saliva contains substances which are capable of destroying the lives of germs, which are germicidal, when we are in health. Did you ever notice that the dog has a very clean tongue? You know, when you are out of health, one of the first things the doctor says to you is, "Let us see your tongue." You present your tongue, the doctor examines it and says, "Oh, your tongue is coated; there is something wrong with your liver; there is something wrong with your stomach; there is something wrong somewhere, because you have such a terrible coat on your tongue. You have a bad breath and a foul tongue." If the doctor finds your tongue clean, then he says, "This speaks well for your health." He gives you a good opinion, perhaps, based upon the fact that your tongue is clean. If you have had typhoid fever, perhaps, and the tongue is leathery, brown, dry, foul, and the foul accumulations are all about the teeth and on the lips so the nurse is kept busy constantly removing these horrid accumulations, what does it mean? It means germs are growing, like the mold that grows upon the wall. Scavenger germs are growing in the mouth, and are penetrating the body, growing in the intestines, in the stomach, and perhaps growing in the blood. Now, by and by the doctor finds the tongue is getting clean, and he says, "Oh, you are better today, your tongue is getting cleaner"; and by and by the tongue is cleared off entirely. Then the doctor says, "You are convalescent." So you see the condition of the tongue is an indicator, not of the condition of the stomach simply, but of the condition of the entire body, because the blood is the power which really defends the body. The blood pours out this saliva which is a germicide, which destroys germs when it is of the right quality; and when the blood is of the right

quality than the saliva will be of the right quality and be capable of destroying germs and preventing their growth in the mouth. If you have a coated tongue, bad breath, and foul accumulations about the tongue and teeth, it is because your blood is wrong; there is something constitutionally faulty, and it is a matter that ought to be looked into. This process of defense is going on continually. The skin is constantly defending itself against germs. If you scrape off the surface of the skin a little of the scuff and put it into a test-tube it will grow, because there are millions of germs there. If some of these germs are inoculated beneath the skin, they set up suppuration, and pus is formed. When a doctor does an operation, there are two things he is very particular about. One is that his hands should be clean as well as his instruments; and another is that the patient's skin should be clean—the surface upon which he is going to operate. Yesterday I had to remove a large goiter from a man's neck, and it went away down into the chest so I had to dissect it out, and it lay right down upon the trachea, and upon the large arteries of the neck; they were all laid bare, and there was a terrible wound. If I had not taken care to make the skin perfectly clean and to wear rubber gloves on my hands, to have every condition about that patient absolutely sterile, to have everything absolutely clean, I should know for a certainty the patient would be killed by what I did; but by taking all these precautions, I feel almost as certain that that patient will in a few days be convalescent, and be out around the halls here in a wheelchair, feeling happy and well, because he has gotten rid of this great, ugly goiter which was choking him to death, because it was growing down here in a place where it was surrounding the trachea, pressing upon it, and he could not swallow a morsel of food without its pressing upon the trachea and the esophagus there. But he is free from it now. It is by this antisepsis that we are able to do it. We take the greatest care that the neck should be perfectly clean, that all the germs should be killed, because if we had not done that, the contact of the hands and the instruments with the skin and the tissues

tissues underneath would be infected, and suppuration would occur and pass on down to the subcutaneous space and mischief would result. The whole skin is fighting against these germs. Why don't they destroy our lives? Simply because as they attempt to work in through the layers of the skin they find there a hurricane, if you please, built up there by the living cells of the body, and sprays upon sprays upon sprays of living cells that fight them off, that destroy them, eat them up.

The lungs, for instance, have an inner lining surface of 2000 square feet, and that entire surface is covered over with living cells which are fighting off the germs, destroying and eating them up. That is the reason why we can inhale dust that contains germs without any injury; but if the resistance of the body is reduced, if the vitality is lowered, then these germ-killing cells lose their vigor and power so that they are not able to destroy germs, and the germs then find lodgment, grow and develop. Then we may have tuberculosis starting in up here somewhere— at the apex of one lung or of the other lung. Or perhaps pneumonia germs or some other kind of germ develop, perhaps grip germs. Whenever one has an attack of pneumonia, grip, tuberculosis, or anything of that sort, it is because his vitality has been lowered, and in the great majority of cases the real cause is lowering of the vitality which makes it possible for these germs to make headway, to grow in from the skin, to grow in the lungs, and to establish themselves within the body. The thing that renders this possible is the accumulation of bowel poisons, poisons which are absorbed from the colon, colon poisons, the result of the putrefaction of fecal matter in the colon and the absorption of these poisons into the blood paralyzes the living cells, so many great mischiefs result. For instance, here is a patient suffering from asthma. A patient arrived here not very long ago suffering from very grave attacks of asthma. That patient has been here four weeks, and has not had one attack of asthma since because when he came here he found that the trouble was poisons formed in the colon being thrown off through the lungs irritated the lungs, set up spasms in the lungs, and that causes asthma.

Just as soon as the cause was removed, just as soon as his diet was corrected and those toxins removed, the asthma was relieved. Multitudes of cases of asthma are due to this same cause. I examined a day or two ago a man with an enormous liver. That was the trouble of Feinsch. ~~Was~~

The mucous membrane of the stomach is full of little pockets or glands in which the gastric juice is formed. These glands are made up of multitudes of little cells, and each one of these cells is a living creature. If you should look at one of these living cells under the microscope, you could see it move; it is active, working just like the base of a hair. Every little cell is a living worker, and they are all at work making gastric juice. That fact—~~that~~ simply ~~can~~ digest the food. The gastric juice does something more than that. The gastric juice not only digests food, but it also destroys germs, disinfects the food. Some time ago a physiologist made the experiment of giving a dog some putrid meat to eat,—~~some~~ prime beef, I suppose it was, or game, or something of that kind—all of these things are putrid, but this perhaps was just a little more so; the ~~dog~~ ~~meat~~ was a little bit too high; and the dog swallowed the meat. Dogs are not always particular about the flavor of their diet. Some people have a dog's taste in that regard—like things that have a strong flavor. The dog swallowed the meat, and an hour afterwards was killed while the meat which the dog had swallowed was still in its stomach, and you know, that meat was just as sweet as the freshest meat you ever saw. It had been disinfectated by the gastric juice. The gastric juice had destroyed all the germs and had eaten, had completely disinfectated that meat so it was good enough for anybody to eat—that is for any meat eater to eat; it was entirely sweet. The gastric juice, then, is a disinfectant, and it is necessary that it should be a disinfectant, because ~~as~~ ~~the~~ ~~food~~ ~~is~~ ~~being~~ ~~taken~~ ~~into~~ ~~the~~ ~~mouth~~, and through the nose, into the throat, multitudes of these poisonous germs, and they are all swept down into the stomach. The stomach is a receptacle. Here in the nose is a filter which collects these germs from the air; then the tears which



flow down to moisten the eye—they are flowing all the time, but sometimes they over-flow, but they are continually flowing. When they overflow, we say a person is weeping, but we are weeping a little all the time; the tears are always flowing, but they pass down into the nose through those germs which accumulate in the nose, and wash those germs down into the throat, flow down the back of the throat, and are swallowed into the stomach where they are met by the gastric juice, and the gastric juice destroys them, so it is a nose and mouth disinfectant, you see,—a very wonderful arrangement. But suppose a person has hypopepsia, hypochlorhydria. About half of you have have got it, and the other half have not hypopepsia, pretty much. Now, suppose a person has hypopepsia; then this person is not able to disinfect himself, you see, and he better not eat any. Not only that, but he is not able to digest the solids which he swallows; he is not able to disinfect the germs which drop down from the nose into his stomach, consequently they accumulate there, and they fasten themselves upon the walls of the stomach, grow there, so ulcers form in the stomach, and a variety of mischief are the result, and not only in the stomach, but they pass down into the intestines, develop there, grow in the intestines; pass to the liver, develop there; get into the gall-bladder, grow there, and produce other mischief that we will mention later.

Sometimes the liver also becomes diseased because of the very cause of which I am speaking, because germs travel down into the stomach, travel up into the little ducts here, get up into the liver; then the patient suffers from hepatic jaundice or sometimes from infectious jaundice,—a kind of jaundice that behaves very much like malarial fever. The patient has chills and fever, and a little jaundice of the skin, and looks as though he had malarial fever, whereas the whole trouble is infection of the liver. It travels sometimes up into the gall-bladder, though stones are formed, and the liver becomes enlarged by and by, and becomes diseased in such a way that it begins after while to show its structure, becomes cicatricial, contracts, shrivels, shrivels up until it is not more than half as large, or one third as large as it ought to be; and sometimes it swells, becomes

enormously enlarged. As much as twenty-five or thirty years ago we had a patient arrive here with a great tumor. He died the next day, and the postmortem examination showed it was his liver. The liver weighed twenty-eight pounds—a quarter as much as the man did. Usually the liver weighs three pounds and a half. So here was a liver that weighed eight times as much as it ought to weigh—twenty-eight pounds. The liver tissue is lined with cells situated right along the blood-vessels and the bile ducts, and when germs climb up here, grow along up these gall-ducts, or when the germs are brought to the liver in the vessels or arteries, then these cells capture the germs and destroy them, and that is the business of the liver. So when a person's stomach is disturbed, or he has hypopepsia, has an little or no gastric juice, then the germs multiply all along the alimentary canal, get into the blood, are carried to the liver, and it is the duty of the liver to destroy these germs; it fights them off. But the liver does more than that. It has also a wonderful work to do in destroying germ poisons. It destroys both germs and germ poisons, poisons formed by the germs, and prevents their passing into the system at large. That is the reason why there is a beneficent arrangement of the circulation by which the blood instead of passing straight from the stomach directly into the general circulation, passes through the liver first; so everything that enters the stomach in the shape of food must be filtered through the liver before it can find its way into the general circulation. For instance, if one drinks water that comes through lead pipes, the liver removes the lead from the water, stores it up in itself. If a person is taking doses of calomel for the benefit of his bowels, the liver gathers in that mercury. If a person is taking medicine in the form of arsenic, for example, for skin disease, or the complexion, or something of that kind, the liver soaks up the arsenic, retains it, sometimes for a long time. When I was a medical student in New York City, one of our professors told us of a man who had been guilty of murder some thirty years before, but the fact was not known until some ten years before. Some peculiar

circumstances arose some time afterwards which pointed to this man as having been the possible cause of the death of the person, and the body of the person which had been killed was examined, and that region of the body, that portion where the liver had been, or which constituted the liver,—the dust of that portion was gathered and examined, and arsenic was found in it in large quantity; and that was the proof that was necessary to complete the chain of evidence that the man was guilty of the death of that person, and he was convicted and was punished for the crime. So you see the liver has the power of concentrating poisons in itself so as to preserve the rest of the body. It is a sacrificing organ,—sacrifices itself, gives its life, so to speak, for the rest of the body. When poisons are being absorbed into the blood from the colon in consequence of decomposition taking place there, the same thing happens. The liver gathers the poison in, deals with it in that way. But by and by it becomes over-worked, congested, diseased, and that is what is called biliousness. By and by it becomes chronic, and the liver is swollen, congested all the while; then it becomes broken, diseased, then disease comes as the result. So you see what a wonderful scheme of defense this is. The liver stands right at the gateway, so to speak, shuts the door against poisons, against germs; it is a shut door and so long as the liver can keep the door shut so the poisons and the germs can not get in, just so long the body will remain intact from poisons which get in through that way. But now here is the man who chews tobacco. Some of the tobacco is swallowed. Here is a man who smokes. Some of the nicotine is swallowed with the saliva. The liver has to deal with that poison, and the liver has so much poison to deal with it by and by gets worn out. In the case of the man who drinks coffee, for example, the same thing happens. The thein and caffeine of tea and coffee taken down into the stomach all goes to the liver. The liver has to deal with them. Here is a person who is very fond of pickles, vinegar, mustard, pepper, peppercorns, ginger, and other things of that sort that sting and blister and burn when they go down the throat,—the liver has to deal

with these poisons tea, and when the liver is overwhelmed with these poisons, it by and by loses the ~~opportunity~~ power to keep the door shut; so the devil of disease gets its foot into the door so it can not be shut; then there is a stream of poisons pouring in all the while, because there is no barrier to prevent their coming in; then the poisons formed in the intestine flow right down into the blood; the germs absorbed go right on into the blood, and then all sorts of mischief begin,—the skin begins to lose its beautiful complexion, and deposits of pigment occur in the skin, and big patches of brown spots occur in the skin, and there are great brown bands formed around the eyes. The functions of the body are interfered with, and emaciation comes on. There is a loss of flesh, loss of appetite, an accumulation of germs in the mouth, a coat on the tongue, and specks before the eyes. Old age makes its appearance; the arteries having impure blood circulating through them get hardened. I met a man a few minutes ago, felt his arteries, and found his blood-pressure was 188. Think of it! That blood-pressure ought not to be over 125 for that man who is only a little over forty years of age; but his blood-pressure is 188. That means his arteries are 125 years old. He ought to be older than that with arteries less hard than that, with a blood-pressure less than that; for old Thomas Parr died at the age of 152 years and 9 months and his arteries were all soft; he had not a hard artery in his body; yet, this man at forty-six has arteries so hard he can not live more than two or three years more unless he reforms, stops his tobacco, tea, and coffee, turns over a new leaf and cultivates soft arteries. His days are numbered. It is the liver that is removing these poisons, but if the liver is overwhelmed with poisons it can not keep the door shut, and the poisons get in.

There is another organ that has a complementary function. The liver is a shut door; the kidneys are the open door. It is the duty of the liver to keep poisons out and when poisons come in to destroy them, keep them from passing on into the general circulation. It is the duty of the kidneys to eliminate poisons, to keep the blood free from poisons; so the blood from the body circulates through

the cortical portion of the kidney, a large portion of blood passing through it  
 continually, a stream of blood forced continually through the kidneys, and the  
 kidneys are actively engaged in taking these poisons out. I had to remove a kid-  
 ney a day or two ago that had become diseased. There was a growth in the kidney  
 and it had become such a sort of pain and distress it became necessary to remove  
 it. I did not take it out because the other kidney was healthy. One healthy kid-  
 ney is able to do all the work required. In fact, if we should remove one kidney,  
 the one kidney left, or two thirds of it, is capable of doing all the work the  
 body requires in a state of health under ordinary conditions; but now suppose a  
 person by the use of tea, coffee, mustard, pepper, and these other things that are  
 poisonous, or the use of tobacco, cigarettes, cigars, chewing tobacco, drinking  
 alcohol, and other things of that kind; and suppose a person by the large use of  
 meat, introducing uric acid into his system, and the formation of toxins in his  
 system until the blood is overwhelmed with poisons and the kidneys overwhelmed,—  
 suppose that person has been going on in that way for years and years and years, and  
 his kidneys are become diseased, worn out, and by and by he has not got more than one  
 third of a healthy kidney, and each kidney is not more than one third healthy,—  
 two thirds of it is diseased. Then the person goes just a little step further  
 and what happens to him?—Bright's disease. That is just what it is. Bright's  
 disease comes before that time. It comes when the kidneys begin to degenerate,  
 and that is the indication of this degenerative process, the indication that it is  
 going on, and it is because the kidney is worn out with its work of poison elimina-  
 tion. Don't you see, then, the time to cure Bright's disease is before you get it.  
 The time to cure Bright's disease is before it has gone on so far the case is hope-  
 less. When you wait until you go to a doctor and the doctor makes an examination  
 and it shows albumin, casts, which indicate Bright's disease, it is too late.  
 That is not the beginning of Bright's disease; that is the end of it. The begin-  
 ning of it is way back when the kidney first begins to be diseased a little;

but when the kidney becomes so badly diseased that albumin and casts appear, that is the flame bursting out through the roof, a flame that has burned its way all the way from the basement up through the house, and now is bursting out through the third story window, or out through the top of the house. You can say, that house has just caught fire; but it has been afire a long time; it has burned clear up through the house until the thing is just ready to collapse, to fall in. That is the condition of the man who has Bright's disease, or any disease of the kidneys that has gone on far enough to be readily discovered. We must find out the condition of the kidneys before.

In the kidneys, as I said before, we have the defensive process of the liver complemented,—the kidneys an open door, and the liver a shut door. Now, so long as the liver door remains shut, and so long as the kidney door remains open, the blood is kept pure and free from poisons, and the functions of the body go on in a natural and normal way. But when the process of hardening begins, it begins right in here, right around these little capsules; begins right here in these arterioles, so the arterioles are stopped up, and this little filtering arrangement is all clogged up so the blood can not get through, so the poisons can not be filtered out; then at the same time the same process which accomplishes this thing has already been at work damaging the liver; so there we are with the liver door open when it should be shut, and with the kidney door shut when it should be open; and you see what the consequence is; poisons are continually flooding in, and the tissues are bathed with poisons. Then degeneration goes on rapidly; the blood-vessels harden and the brain becomes diseased, and every organ is deteriorated, and that is what makes old age. Nobody can ever get old so long as his liver door is shut and the kidney doors are open,—he can never get old, he can live on for centuries if he can only keep that liver door shut and keep the kidney door open; but it is because the kidneys deteriorate, become gradually hardened, and the liver becomes diseased that a little opening occurs, and the poisons pass in and are not

eliminated but accumulate in the body. That is the reason why old age comes. Now, in neurasthenia, so-called nervous exhaustion, what is the here is the fundamental trouble it is interference with these two organs, the liver and kidneys. The liver becomes overworked and poisons accumulate in the blood; then the lungs are paralyzed, the brain is paralyzed, there is confusion of thought, irritability, loss of sleep--all these other things that go along to interfere with the normal functions of lost appetite, weakness, prostration, inattention, inability to concentrate the mind. These are all difficulties which grow out of poisons which accumulate in the body, which the liver should have destroyed and the kidneys have eliminated.

The spleen is another wonderful organ. We did not use to know what the spleen is for. We do not know all about it yet, but it certainly is a very wonderful organ. It was once supposed that the spleen had some remarkable and mysterious function connected with digestion, but now we know it is not particularly associated with digestion, but the spleen probably produces an internal secretion of some kind which, thrown into the blood, helps the blood to destroy germs. The spleen is probably also the graveyard of the dead corpuscles. The blood cells of the body live only about six weeks, then die. Eight millions of them die every second of our lives,--eight millions of them created and eight millions of them die. These eight millions that die are carried to the spleen, and there they are destroyed, eaten up, just as living germs would be eaten up.

There are some wonderful things about the nervous system which we must consider if we would know what is going on in the body. We have large nerve-trunks and nerve fibers, and these are the telegraphic wires of the system. On the telephone poles out here you see some big trunk lines, large ones, half as large as my wrist, and inside of these, perhaps, there are thirty or forty or fifty or more telephone wires scattered about this part of the town carrying messages to the central telephone office, from different houses in this neighborhood. That is what a nerve is. The smallest nerve that can be seen with the microscope

in a trunk line. It has a large number of still finer nerves inside, and these different nerves go to different parts. Now suppose an accident happens and a nerve is broken in two. Now are these minute lines, which are only one 20,000th of an inch in diameter, ever going to be joined together? That has been one of the greatest mysteries the physiologists ever had to solve. Suppose one of these trunk lines should get broken off. Is there anybody wise enough to bring these together, to fit these wires together by looking at them? In the case of the electric wires, they all have to be tested out, and it is a very difficult process to get them all fitted together again; it takes a long time. But in the case of the nerve broken into two parts, how are we ever going to get them fitted together again? That has been recently seen to happen. These little fibers on one side begin to grow out. For instance, a little fiber grows out from one of these parts, and it goes feeling around, feeling around, touching here, touching there, and by and by it touches its mate, and when it touches its mate it knows it, sticks to it, grows fast, and the thing is done. Suppose you saw one of these electrical trunk lines out here broken in two, then should see one of these wires growing out into the air, hunting up the particular wire that belonged to it, the other segment of the broken wire, you would say it was wonderful, wouldn't you? That is exactly what happens when you have a nerve broken in two. Now, my friends, that could not happen unless there was a wonderful power working in the body caring for it and protecting it. But here is another wonderful indication of how this power works in the body. Suppose a baby swallows a pin. A little one came to me the other day and said he had swallowed a pin, a pin about two inches long, I suppose, and he was so afraid it would kill him, I told him not to be frightened, and made a picture to show him what would happen to that pin, and it comforted him, and perhaps the same thing may comfort you. Suppose the pin goes down point foremost, and it sticks point foremost in the intestine. The first thing that happens is that the wall of the intestine where the point of the pin is lodged, begins to thicken up so the pin won't stick there, don't you see? As the pin penetrates the tissue,



It becomes thicker, and the tissue grows out on the other side faster than the pin can get in; so the pin can not get through, because the intestine keeps swelling up on the other side to prevent its penetrating. The next thing that happens is that the intestine dips down in front and dips up behind it so, and keeps dipping down further and further in front and tipping up further and further behind so giving the pin a push, don't you see, lifts it up until it gets it pushed clear over; then it is reversed you see, and banking down the intestine head foremost instead of going foremost and so back can happen. Now that is what the intestine does whenever a pin gets into it, or anything with a sharp point that is likely to do any harm. It is not simply a hypothesis, but Prof. Rager, of the Institute of Hygiene, the successor of the great Henslow, has proven this by experiments upon animals. Now again you have the evidence of intelligence. Now, it is not the intestine that is intelligent, but there is a power that presides in the body, that presides over all our functions, watches every heart beat, directs and orders every heart beat, that is controlling all these functions and is looking after all the wants and needs of the body.

Under the same influences which produce disease of the liver, kidneys and organs, the arteries become hard and chalky. Chalk is deposited in the walls of the artery until by and by it is a great mass of chalk. That is ~~the~~ the condition when you feel the artery in a wrist and find it hard; it feels like a pipe when broken up into fragments. I see some of you feeling your wrists, and I assure you it is a good thing to look after. When you find your arteries palpable, find the radial pulse palpable, so you can feel the artery all the time between the beats,—if you feel it only at the beating it is not significant, but when you can feel the artery all the time between the beats, feel that it is hard like your pipestem under your finger, that means the artery is getting hard. This chalky deposit is not a thing to be regretted. The artery becomes thin, rotten, brittle first because of the poisons that are circulating through it, and when that

change occurs, something must be done to keep the blood from bursting out; so Nature,—not Nature; I do not like to use that word, for it is meaningless; but the Power that resides in the body, and that Power is nothing more nor less than the Power that made us. The same Power that made the first man, the same divine Intelligence that created the first man created you and me just as much exactly, and just as really and just as truly, and repairs our bodies, stands by us and looks after our needs. Through this agency this chalk is deposited in the wall, and the deposit in the wall strengthens the artery, but at the same time it narrows it so the heart must work harder in order to get the same amount of blood through the smaller opening, you see, and that is why the blood pressure rises,—because the heart has to work so hard to get the proper amount of blood through to supply the brain and the kidneys, to carry on the wonderful functions of the body. But the story of the blood I will leave until next time. Good night.



**regard.**

## **THE BLOOD**

### **THE BLOOD IS THE LIFE IN THE BLOOD**

**A Stereoscopic Lecture at the Sanitarium Parlor, Battle Creek, Mich., Thursday,**

**April 9, 1908, at 8 P. M.**

**by**

**J. H. Kellogg, M. D.**

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The Bible says the blood is the life. It also says the life is in the blood. Many years ago John Hunter, the great English anatomist, made an interesting experiment, a very cruel one, but one that had a very important lesson in it. He took an animal and cut all the nerves going into one limb. The limb lived; it was warm, the blood circulated through it as before, but of course the limb had no feeling in it; it had no power in it, but the limb was still alive. Then he made another experiment. He took an animal and he tied all the blood-vessels going into one of its limbs. Notice the result. At once the limb became cold. In a few days it became black and gangrenous, and in a few weeks it had sloughed off. The limb was dead. Now this proved that the life of the body is transmitted to each part, distributed through the body by the blood, in the blood; that the nerves are simply the mechanism by which the dispatches are sent from one part of the body to another, by means of which every part of the body is controlled--by the brain, but the life of the body is through the blood. So we see the reason why in Holy Writ this is made so emphatic--that the life is in the blood. The physiologist understands this today just as well as Moses understood it three thousand years ago, but probably no better, for Moses knew it; he was divinely

taught, and he knew it to be the truth; and the blood on this account was so sacred that when an animal was slain the blood must be preserved, and the eating of blood was prohibited by Jehovah. When first permission was given to eat animals, the eating of blood was prohibited. Animals were allowed to be eaten, but not the blood. He said to Noah, "But the blood thereof which is the life thereof, thou shalt not eat of it." The flesh with the blood must not be eaten, and this was reiterated by Moses to the Jews when they were being taught in the wilderness, you know; and it was reiterated again by James, the pastor, if you please, of the first church, the president of the first general conference, the first bishop. James, the president of the council at Jerusalem, James the apostle, the laughing brother of Christ. This question came up—how far these old laws were binding upon Christians, upon gentile Christians. Paul went up you remember, to Jerusalem to have the question settled. There was a dispute about it, and James said, "It seemeth good to the Holy Ghost and to us to lay upon you no greater burthen than these four necessary things,—to abstain from flesh offered to idols, from things strangled, from blood, and from fermentation." These four things were laid upon the gentiles; these things were prohibited. Now that means—this was twenty-seven or twenty-eight years after the crucifixion,—so that is a command that applies to all Christian people. In the first place, it applies to all human beings because it was the command of Jehovah. When animals were first permitted to be eaten, Noah was given permission to eat animals for the first time, they were forbidden to eat blood, and the Jews, when they were taught, instructed in the wilderness, they were instructed again, as they had been down in Egypt where they had become semi-barbarous so they had to be instructed over again, and at the beginning of the Christian era, the Christian dispensation, the Christians, followers of Christ were again instructed, not by Paul, or by Peter, or by James, for James said, "It seemeth good to the Holy Ghost and to us", and this prohibition

was made. Those of you who have access to Adam Clark's commentary, I would suggest that you read his Commentary on the ninth chapter of Genesis, and the fifteenth chapter of Acts that refers to the same thing, and Galatians where the same matter is referred to again,—if you will read his commentary—he devotes eight or ten pages of his great commentary to the discussion of this question, and showing, I think beyond all possibility of controversy, that the prohibition against eating blood is just as binding upon Christianspeople today as it ever was upon the Jews, or upon the people of ancient times; yet we hear of Christian people eating such awful things as blood pudding. I saw a man some time ago just sopping his bread in blood and eating it. He was eating what is called a rare beefsteak, you know, and as he was cutting the beefsteak, the blood was running out of it all over his plate, and he took a piece of bread, dipped it in that blood and ate it. I suppose if his taste was really gratified he would have a bowl of blood sitting beside his plate at the table to dip the bread into. He might just as well, because the blood in the flesh was the same as that which ran out of it. Probably the blood which ran out was better than that which was left in the flesh, because some of it was pure arterial blood, and that left in the flesh is all bad blood, impure blood; so if you are going to eat blood you better eat the blood that runs out of the arteries when the throat of the animal is cut than to eat that which was left behind in the flesh; but the ancient Jews took great pains to get rid of this blood in the flesh by washing it thoroughly, soaking it in salt water, smothering it in the salt. The salt would extract the blood, you know, and there was a good reason for that; it was a sacred rite with them, and this prohibition of eating blood is still alive; it has not become obsolete. It was reenacted in the Christian dispensation. Three times it has been reiterated, and three times with divine authority. First of all to ~~Jesus~~ Noah, I think, then through Moses to the Children of Israel, then by the president, the pastor of the first Christian

church to all Christian people—James, the brother of Christ, and the president of the council at Jerusalem the first one. Why is this? It is because, as I said, the blood has been held in respect, in veneration, and it is a curious thing that this instinct of respect for blood, or we may say horror of blood almost,—the two things are closely akin in some respects, is shared with human beings by animals. Animals go perfectly frantic at the sight of blood. Cows, oxen, go perfectly wild and become apparently insane at the sight or the odor of blood; so the blood is always to be preserved; the life is in the blood. The divine life is circulating in the blood, and this blood is a creative power in the body; it is a healing power in the body, and I am going to tell you some things about it tonight that I am sure will surprise you. This is a picture of the blood. It does not look a bit like what you would think it would look like, does it? When you look at blood and see the scarlet red color, you haven't any conception of what that blood is made up of. Red is not the real color of the blood; it is the reflected color. The individual corpuscles are not red as you see them here, but they are colored here to make their form apparent so as to distinguish them from others. They are a very light amber color, but it is only when the light is reflected from them that they have this red color. Now, the blood has a variety of different forms of cells in it. These forms you see here represent some of them. They are not all here, but these forms represent some of the various blood-cells. Now, there are two kinds. Here are these red cells you see here, the red blood cells; and then there are the so-called white cells,—all these larger ones up here are the white blood-cells and these are the red blood-cells. The red blood cells are the most numerous. There are a great number of them in the blood, and minute drops so small they will just hang upon the point of a pin, representing we will say, the cubic 1-2500th of an inch; half a line contains five million blood-cells; just think of it. Now these five million, most of them, are red; there are five million red ones; then one out of 700 of these is white. For every 700 red ones there is one

white ones; and there are several kinds of red ones, and a number of different kinds of white ones. These so-called white cells have the color of water; they are absolutely transparent, and it is very difficult to see them only as light is refracted somewhat differently than water, the refraction index is different, so they can be determined with the microscope. Now, these different white blood-cells and the red cells have different functions. The red cells have but one function; their purpose is to carry oxygen. They carry oxygen from the lungs down to the tissues, and carry carbonic acid gas back. Their principal office is to carry oxygen; they are simply vehicles for gathering the oxygen that comes into the lungs and carrying it down to the tissues, and in that way vitalising the tissues. You know a child gets black in its face when it does not get the regular supply of oxygen coming along. Here is a little cell somewhere in the tip of a finger, and here come these red cells, each with its load of oxygen, and find the white cell there breathing its last breath, so to speak, black in the face, holding its breath, and these red cells come down, deposit their oxygen and revive that cell which is just ready to expire; so you see how wonderful this process is, just as a person almost dead in a room, suffocated with smoke, carried out, brought into the fresh air,—how quickly they revive. Or a person has fainted away, and some one fans him in the face, perhaps compressing the chest to get some air into the lungs,—how quickly he will revive again. So a child that has been coughing and is holding its breath, so to speak, so that it is black in the face, until it is just about ready to expire, just about dead, a little cold water dashed over the child will perhaps make it take a deep breath, and how quickly the normal color returns to the face again. It is because the oxygen is carried in. The circulation of oxygen ceases when the child holds its breath, but when the lungs are set to work again, oxygen is poured into the whole body through the agency of these red cells.

The red cells live six weeks, and at the end of six weeks they die.

Then there must be new ones to take their place. These cells are dying at the rate

of eight millions every second. Every second eight million cells are dead. And eight million more are created to take their place. That is the wonderful thing about it, isn't it? Eight million new cells created. It is not wonderful that eight million cells die, but it is in a wonder that eight million new cells are created to take their place, and every one of these is just as much a new creation as though a man sprang up into existence right before our eyes here. Eight million of these creations taking place in every human being that is alive, and in every animal alive this same process of creating blood cells is going on; so you see when God made the world and made man and made all the animals, he did not stop work; he only began, because he had to keep right on creating blood, creating these living cells for use in our bodies, for the work they have to do.

Now, these white cells are still more wonderful than these red cells. The red cells are plain, homely sort of fellows like every day laborers that dig ditches and repair the streets, so to speak. I always think of them as hog carriers, that carry oxygen from the lungs down to the tissues and carry rubbish back, like the hog carriers who carry mortar up and carry down rubbish, brickbats, etc. But it is almost too wonderful to believe the functions of these white cells. There are different kinds of them. Some of these white cells, for example, are builders. They are builders, creators, workmen that are established as instruments in the creative process going on in the body. For instance, suppose you cut yourself, make a deep cut in the flesh, and the next morning perhaps you can easily separate the surfaces that have been cut; for instance, suppose you split the end of your thumb by accident with a knife. It will grow together over night, but the next morning if you spread your thumb out here a little pressure upon it will upon it up and tear it apart, but you will see that the tissues have been joined together there over night and it is easy to break it down; but allow it to remain quite for a week, and then that is impossible. What has happened when you cut the thumb there? The first thing that happened was the formation of a clot by the blood poured in there, and if you could look at that clot through a microscope you could see it



was a network of minute threads, little rods running from one side to the other, running right across the chasm. The chasm was bridged over here by a million little threads running from one side to the other. If you watch that with a microscope, you will see that along each one of these little threads, these white cells were creeping out. They have the power to creep along like a worm on a level surface in the ~~same~~ same kind of way. They are round as you see them here, but as you see them at work and alive, they stretch themselves into all kinds of shapes. They sometimes look like a great octopus spreading out its legs on all sides, and sometimes they are drawn out like a worm; then they will stick out a little projection, and keep sticking it out farther and farther and farther until it gets to be the whole thing, and the rest of the body comes up behind; then a projection is thrown out again; and so they travel about. It is a wonderful thing to see them going through their evolution. Now, if you could see that little chasm where you split your thumb, if you could look at it through the microscope, you would see the bridge, you would see the threads of fibrin like fine spider webs reaching from one side to the other; the clot that is formed by the blood is in this form of fibers, and you see creeping along each one of these little threads a string of these little round cells, stringing out there just like worms crawling along a telegraph wire, and what are they doing? They are going out there to throw up a temporary structure, a bridge, a temporary structure to join the parts together, just as the architect or the bridge builder throws out a temporary structure when he is going to make a wire bridge across a chasm. And they are making a temporary structure across the chasm, and they get it over pretty soon; then they tear it down and build something more substantial in its place; and they keep building, building and building until by and by a solid, firm structure that will hold just as well as the original structure is formed, and fully developed; and then the parts are cured. A cicatrix is formed, and the part is sound and whole again.

It is wonderful how many of these builders there are at work. Whenever

you have got a ~~any~~ surface anywhere, you will see a white discharge coming from it all the time, a mattery discharge. That discharge is not impurity, but it is made up of these wonderful little tissue builders; it is just millions upon millions of these tissue builders. Take a drop of the mattery discharge from a sore or an abscess, put it under a microscope, and that is exactly what you find it to be, billions upon billions of these little tissue builders. These tissue builders, when the need exists for them, are created in vast multitudes. The body contains some thing like thirty thousand million million of these living cells, and one out of every 700 of them is a white cell. Now, under certain conditions,--for instance, a case sometime ago, a man had an abscess in his chest, and he discharged a pint every day of matter from that cavity. That meant a pint of these white cells was produced and discharged every day. How many in that pint? There were more than the entire body normally contains; more than the entire body contains were found in that pint of these cells. In other words, the body was creating new every single day two or three times as many as the ordinary content of the blood. What for? To meet that emergency, in order to carry on the healing process. It is a thing that fascinates me more than anything I know of--the study of these white cells. For more than thirty-five years, I have been studying these white cells, watching every new thing about them. My first acquaintance with them was in a laboratory in New York City thirty-four years ago under the tutelage of Prof. Arnold of the University of New York. I was taking special studies with him on these white cells and other living tissue cells, and it was such a fascinating thing that I thought about it all day and dreamed about it all night, and it has been the most fascinating study of my life,--these white cells. There are men who have given their whole lives to the study of these white cells, who have done almost nothing else their whole life-time in the last twenty-five or thirty years than to study these white cells. Metchnikoff of Paris is one of the men--the great successor of Pasteur, in the Pasteur institute, and he is the greatest man there since

the death of Pasteur. I know Pasteur, had the pleasure of knowing him personally; met him in his laboratory. He was a man of genius and one of the most wonderful men I think that have lived in this modern time, yet he was like myself a small man, not quite as tall as I am, and when I met him he had suffered from an attack of paralysis so he had only one hand to use; the other hand was crippled, and he was in old age and considerably infirm, but he was still working at this problem, studying this question relating to the very question we are studying here tonight; and Metchnikoff succeeded him and took up the study, and has made some wonderful discoveries that have gone far beyond those made by Pasteur; and one of these discoveries is the fact that certain of these cells have a special function in the body--to fight for the body. They are the body defenders. The purpose of these cells is to fight for germs. When a germ gets into the body these cells pursue them and swallow them and eat up them up, actually digest them. They are not carnivorous because germs are vegetables; they are vegetarians in that regard; but their diet is a very poor diet. I can not say so much as that for some of the others I am going to tell you about; but these are vegetarians; and their duty is to consume germs. Now it is very important we should have these cells, because our bodies are covered with germs. We are fairly smothered with germs. Every drop of saliva has thousands of germs in it; every breath of air we draw has many, many germs in it. The surface of the body is completely covered with germs. The chief thing I have to worry about all the time in performing operations, some of them rather critical operations--one yesterday was the removal of the thyroid gland from a woman who had exophthalmic goiter, and working down here among the great vessels and nerves of the neck, the most important region of the body,--the only thing that worried me was lest some germs would get in there, more germs would get in there than these cells of the body would be able to eat up and destroy. When we are going to operate upon a patient, one of the things I always take pains to carefully investigate is these cells, to see if the patient has got a good sup-

ply of these body defenders. If I find the patient has not got a good supply of these body defenders, I would not operate upon that patient, because I would know they would be an easy prey to germs. We take all the pains we can to make ourselves clean and to make the patient clean, to put on rubber gloves, because we are suspicious of ourselves, and the last thing before an operation, we paint the skin of the patient all over with tincture of iodine so as to be sure to kill every germ on the surface and clear down deep in; then we go ahead and do our operations, and keep things just as clean as possible; but always some germs get in from the air in spite of all we can do; and if it were not for these cells which defend the body, if it were not for these little innocent looking things that are so small you could not begin to see one with the microscope-- $\frac{1}{2500}$ th of an inch in diameter,-- $2500$  of them to make a row an inch long,--if it were not for these wonderful little creatures--for they are living, individual creatures just as much as birds, flies, frogs, or anything else,--if it were not for the work which they do for the body, every wound would be a fatal wound, every one, and the things I did for some patients yesterday would certainly bring inevitable death if it were not for the work done by these little cells. Now, germs are always getting in, but these cells swarm into the wound and destroy them, and they are swarming under the skin in great numbers, fighting off the germs that are all the time working down in. If you see some grass seed in the ground, you know how it strikes root away down in. These germs come in contact with the skin all the while through the air and the things the skin comes in contact with, and they grow upon the skin, strike roots down into the skin, grow down into the tissues all the time penetrating the tissues; and if it were not for the offensive action of these cells they would destroy the body in a short time. Within twenty-four hours after the death of an animal, the entire body is swarming with these germs, filled with them. So when you eat a piece of beefsteak, remember you are swallowing myriads, multitudes of germs. The very smallest morsel of beefsteak you eat is filled with these germs,

these very germs that were in the animal's colon and on the animal's skin, and working into the tissues, and after death they simply go through it with great rapidity. Microscopic examination shows these germs. Codfish has as much as a billion germs in every ounce. Codfish and all kinds of salt fish—Flanagan haddock, and preserved fish,—I do not think it is possible to estimate the number of germs in Flanagan haddock and in codfish and halibut or herring. Because fish of that sort are simply swarming with germs in countless numbers. 305 million germs were found in a quarter of a dram, so you can see about how many there, and thirty times as much as that in an ounce; so it would be somewhere about nine billions of these germs in one single ounce.

Now these cells, as I said, are fighting for our lives all the while. When we get inoculated with any sort of disease, these germs come out in great numbers. When a person gets pneumonia, they multiply in the blood; in the first twenty-four hours after a person gets pneumonia they will double, sometimes become three or four times as many. When a person has appendicitis, they are produced in enormous numbers. In twenty-four or forty-eight hours, a person has produced in his body so many white cells to fight off that pneumonia he has contracted, that they are found in the blood in four times the usual number, even far more than that. They may increase from 7000 in a cubic millimeter up to 280,000 to the cubic millimeter. They may increase in other ways 1400%, so that there are fourteen times the ordinary number in forty-eight hours; so there is a new creative process, you see, the purpose of which is to defend the body, and this the body performs.

Here are some curious cells that have this peculiar raspberry appearance. These are very interesting cells, and they disappear when a person has pneumonia. As the disease advances and gets worse, these cells disappear entirely; and then as a person begins to get better, they reappear; and when you find them reappearing, you know the patient is going to get well; but if they do not reappear, then the patient is probably going to die; so by the simple examination of a drop of blood,

from a pneumonia patient, the doctor can learn what the fate of that patient is going to be, because the thing depends upon these living cells in the tissues; it all depends upon that.

Here are some other cells I have not said anything about yet. And this is one of the most interesting, picturesque features of the story that Metchnikoff has worked out in relation to these living cells. These cells are known as macrophages; these are microphages, smaller cells; and these large cells are called macrophages. These macrophages destroy microbes, destroy germs. These smaller ones up here in the corner, are builders, but these are macrophages. They have another function in the body. When one has a boil, you know he has a lump after the boil. How do you get rid of that lump? It gradually disappears. If you sprain your ankle it gets swollen up, there is a great, hard mass around the ankle; how does it disappear; how do you ever get rid of it? When a person has an injury of any sort, a swelling of any sort, there is generally induration, hardness, about it, and how do you get rid of it? Suppose a person had a blood-clot buried up down in the tissues somewhere. Sometimes a blood-vessel ruptures. After while that clot is absorbed, disappears, but how does it disappear? It is through the action of these macrophages. These macrophages swarm out around every bit of rubbish in the body, wherever there is a particle of rubbish of any sort, they swarm out around it and eat it up, digest it and carry it off. When I was studying these cells in New York thirty-four years ago, I injected into a frog's blood, into one of his lymph sacs, some indigo, and the next morning I got a drop of blood for examination and studied these macrophages, and every one of them I found two or three particles of indigo. We did not know these cells as macrophages then. The indigo disappeared from the blood entirely, and every one of these white cells was carrying off two or three lumps of indigo. Now, that is what their purpose is in the blood.

As I told you, these cells are dying every second, eight millions of them.

What becomes of their dead bodies? They are swallowed up by the macrophages. That is what becomes of them; they are cannibals, you see. Macrophages are not vegetable eaters, they are animal eaters, and if a portion of the body dies, they swarm around that dead portion of the body, destroy it, carry it off; they are the scavengers of the body. Now, see what a marvelous provision this is,—that here in every little drop of blood there are to be found seven thousand of these living white cells, in every minute drop of blood so small you can hardly see it, not as big as the head of a pin, there are 7000 of these living cells that are devoted to the business of keeping the body clean, defending and building and repairing the body besides five millions of these red cells which are for the purpose of supplying oxygen to the body. These white cells are the workmen. Different kinds of them work at different trades. These are the tenders that go along to furnish the air for them to breathe and for the other living tissues of the body, to take care of them. Now, I will show you about how these wonderful creatures work. When I was down in Mexico some years ago, I noticed the policemen in the City of Mexico—my first visit there,—and I did not like the looks of them very well. I said to my friend who was living in the city and who was showing me about the City, "I would not like to meet one of these fellows in the night. They look to me about as dangerous as any ruffians." He said, "I will explain that to you. You know when Diaz conquered Mexico and became President of Mexico, he had great difficulty in subduing the bandits out in the mountains. The whole country was in distress because of the attacks of these bandits upon small settlements and small towns. They used to come right down to the City of Mexico. Even at that time—I rode out eight or ten miles on the trolley cars, and two or three soldiers went along on the tram-car with us to defend us. We rode out to a little village only eight or ten miles off, settled all along the road, and yet we had three or four soldiers go along with us. We always had four cars together, and had a

little company of soldiers along with us to protect us. It was only about twelve or thirteen years ago in Mexico. It is not quite so bad now. Now, Diaz had a great deal of difficulty with these bandits, and the question was how to quiet them. He captured a few of them, and he inquired of them how much money they made by their nefarious business. They told him about how much they averaged, so he offered to raise their income and give each one of them a salary if they would go down to town and act as policemen. He gave every one of them a position as policeman so they could make more money than they could as bandits; so he broke up the business and got them all into town."

It has often occurred to me since learning of Metchnikoff's discoveries about these macrophages, that they are like the policemen of Mexico. Suppose these policemen should turn loose upon the populace sometime; suppose they should get tired of their business, did not get enough to do, and they should turn loose upon the populace, what would happen? You can see what might happen? It is only necessary that the government of Mexico, the City of Mexico, and that Mexico should be strong enough to control these bandits, these policemen, to control them, or else they are likely to be destroyed by them.

That very state of things exists in the body. These macrophages that have for their purpose to destroy the rubbish in the body act as scavengers, keep the body clean,—they may actually turn upon the body itself and destroy it; and they do sometimes. In going through the south-western part of the United States some years ago, I glanced out of the car window and saw a most pitiful sight. It was a poor cow left behind on the range. The grass had dried up, drouth had come, and this cow was left behind, and she was staggering along straight to death; she was nothing but just a skeleton, just barely able to stumble along hunting for a few blades of grass; and there was a turkey buzzard perched upon her back picking her bones while she was still alive, for she had lost the power to resist. This bird of prey was perched upon her back picking her bones; she had lost the power



to resist. This kind of prey was perched upon her back picking her bones, but she had lost the power of resistance and did not pay any attention to it; but just went on. Some of you have seen sometimes perhaps a poor sick dog that had lost the power to resist, was covered with flies; or some poor, tired out structure horse that was being eaten up by flies, because he had ceased to resist; he was tired out, exhausted. Now, the human body gets into that condition sometimes. When the bodily resistance has been lowered by wrong habits of life, by the use of alcohol, tea, coffee, by other poisons, when the body has become so saturated with poisons and its vital resistance lowered, the activity and the vitality of its cells is lowered to such a degree that they have lost their power of resistance, then these macrophages actually turn upon the tissues, turn upon the body, devour and destroy the body itself. And that is what degeneration is; that is what makes paresis. Some years ago I was visiting a large insane asylum down in Illinois. The assistant superintendent showed me about, and as he was showing me around I noticed once in a while he made a little slip of the tongue; I noticed that his tongue was a little thick, and I thought he was a little bit slovenly in his clothing and dress; several things attracted my attention; and three or four months after I came away I heard this man had been shut up. He himself had become a lunatic; and I then recalled the little things I noticed, and I saw they had all tended in that direction, and three or four months later he was dead of paresis. That is a peculiar form of mental disease that is getting more and more abundant, more and more common in these days; so common it is getting to be that they told me at Kankakee insane asylum,--this very doctor told me that nearly half of their patients were patients with paresis, and he had it himself that very minute when he told me, and six months later he was dead. He made out the diagnosis himself and ordered himself to be shut up, and went into confinement, and in a few months later he was dead of paresis. Now, what is paresis? It is nothing more nor less than these macrophages I have been telling you about turning themselves loose upon the brain

and destroying the brain. Why? Because the brain cells have lost their resistance, because poisons circulating in the blood have deteriorated the tissues, and reduced the tissues to that point where the tide of life is so low the vitality is reduced to such a state that they have no longer power to resist; but these macrophages come in and devour them as though they were already dead. They cumber the ground; so the scavengers come in. These wild animals that have somehow gotten into the body act as scavengers, serving the body in the most useful capacity as scavengers in the ordinary condition, but when the body government is reduced in activity, vigor, when the vitality of the body is lowered, they seize upon these tissues as turkey buzzards seize upon the carcass of a dead or dying animal; so you see them swarming into the brain-cells and destroying them. Metchnikoff saw that with his own eyes under the microscope, and he made this picture of it which is copied from him, and it is the brain of a man 100 years old. Here is the same thing. These macrophages are swarming into a kidney, destroying the kidney. Here is the cause of Bright's disease—these very cells swarming into the kidney and destroying it. Why? The kidney has been required to eliminate from the body, to filter out of the body the poisons in such enormous quantities that the kidney itself has become damaged by its own work. It is like the hands of the washerwoman that become damaged by the soap with which she is cleansing the clothes. The kidneys in their work of cleansing the blood become damaged by the poisons which they have to eliminate, you see, so here the kidneys are being destroyed because their vitality is somewhat lowered.

This picture is to show you how the hair is produced. You see here the fat cells, and here are the sweat-forming cells that send out the sweat through this canal that looks like a corkscrew, you see; and here is the hair growing. These are the hair follicles that have roots down deep in the skin, and the blood-vessels supply nutrition at the root of the hair, and the nerves; and here are the glands which furnish the oil for the hair, and these are hairs growing. Did you

ever hear of hair getting gray over night, in a short time, in a few days turning gray? Do you know why that happens? Nobody ever knew until Hetchnikoff showed us. Hetchnikoff found out the secret of that thing,—why the hair becomes gray. Now the hair is colored because of coloring matter in it,—little specks of coloring matter. Red hair has red specks in it, and black hair has black specks in it, and different colored hair have different coloring material in the hair. Blonde hair has very little coloring matter of any kind—only a few specks; white hair has none.

What causes whitening of the hair? These macrophages. There is one looking like a great octopus. Here is another one. The hair is a tube, and these macrophages climb up into the hair, swarm there, and gather up these pigment cells and destroy them. And there are millions upon millions of these creatures in our bodies. If you will divide thirty thousand million million by about thirty thousand, you will have just about a million million of these cells living in our bodies, every one of them, and they are doing this sort of work. Now, they are beneficent when we behave ourselves, when we live righteously. If we do not smoke, if we do not drink alcohol, if we do not drink tea, or coffee, if we do not eat breakfast, the carcasses of dead animals, if we take proper care of ourselves so the blood is kept clean, pure, and our tissues are kept in a clean pure state, then these macrophages attend to their proper business; but when we allow ourselves to become reduced by wrong habits, degraded, when our tissues become degraded by wrong habits of life, then these defenders of the body, these scavengers all become our executioners. They veritably become our executioners; they become assassins, every one of them, and attack the body, destroy the body from right within the citadel of life itself; so this is, as I said a while ago, the most interesting of all the wonderful discoveries of Hetchnikoff—is the function of the macrophages; and you see what a very important relation they have to habits of life.

Now, I must say a word with reference to the other classes. The body defenders which destroy the microbes and the tissue builders which construct tissues

tissues that have been torn, reconstruct, rebuild, repair, create; their work has a very important relation to our habits of life. For instance, when a person does not sleep, then the number of these cells is very greatly reduced. They are created chiefly while we sleep, and when one does not sleep, the number is reduced, and his fighting power, power of resistance is greatly decreased. When one's body is exposed to warm air or over-heated continually by excessive clothing, or over-heating the house, or by too much clothing, the body is over-heated, then the number is greatly reduced; but exposure to cold air or to a cold bath has a marvelous power to create these cells in great numbers. The breathing of cold air has this effect. For instance, a person takes a cold bath, gets a good reaction from exercise, afterwards the blood count is found to be increased as much as 25% or even 50%. See what a wonderful gain that is, say in half an hour, with a single bath, in fifteen or twenty minutes <sup>think of</sup> ~~they~~ actually increasing the number of these body defenders by 25%. That is the reason why a cold bath does so much good in typhoid fever. Because in typhoid fever there is generally a reduction of these body defenders, and by the cold bath we increase the number and so help to antagonize that terrible germ disease. That is the reason why the cold towel rub is ordered for nearly every one of you, or the cold mitten friction, or that morning shower bath or a dip in the swimming bath. The purpose of these is to marshal these body-defenders, the forces of the body so that they will work for you to reconstruct livers, brains and nerves. That is the very purpose of this cold treatment; that is the scientific foundation of it, and the reason why it is given to you—is that very thing. Ask your doctors, and they will tell you that very thing; that is the reason; they will tell you it is tonic. It simply helps the body to fight. It is a natural physiologic stimulant. How does it help the body to fight? We did not know until Metchnikoff showed us; but we now know it; and Metchnikoff and <sup>old</sup> Winternitz and other scientific investigators of the world have shown us the reason

why. Another thing: When a person eats a good deal of meat, he has more of these leucocytes, white cells in the blood than when he does not eat meat. Then you say, "It is a good thing for me to eat meat?" Not by any means. The reason he has more leucocytes is because the body is so full of germs, and germ poisons. His body is compelled to send this great number of defenders in order to destroy the waste and effete matter that is being introduced into his body. Whenever a person has intestinal auto-intoxication, in other words, there is always an increased number of these leucocytes, that is if he has a chance to live; but sometimes this auto-intoxication increases to such a degree that his body is overwhelmed, and the blood-cells are not produced in proper number to antagonize these poisons; then that patient rapidly sinks down and dies. Now, here is another provision that is made for facilitating the work of these body defenders. This is an apron. You sometimes see a lady wearing an apron, or a cook, perhaps. We all wear aprons inside. That is the universal fashion among human beings,--is to wear an apron. Here is the inside of the apron, if you please, attaching it along here at the waist, hangs down inside and covers over the bowels, and it is called the great omentum. Now, this omentum is a vehicle that seems to have no other purpose than to serve as a means of facilitating the work of these body defenders in the body, the abdomen. The alimentary canal is swarming with bacteria all the time. Even under the very best and most favorable conditions of diet, the alimentary canal is swarming with germs, and millions upon millions of them are deadly germs capable of producing death; there is only just the smallest little dividing wall between life and death in the abdomen here, because right inside the alimentary canal, all the way through inside the body, with this thin transparent membrane, the intestinal wall, there are these multitudes of deadly germs. Suppose we were performing an operation upon the abdomen here, and made a little incision in the intestine. We should expect that patient to die sure; he might not certainly die, he might escape, but we should expect him to, and probably he would if the inside of the body should

become clogged with these germs from the inside of the intestine. Now these germs are working through that intestinal wall all the time; they are all the time working through, millions of them are working through every day, working into the tissues, into the abdominal cavity, into the blood-cells. This constant is a mass of fat and tissue, with a great number of blood-vessels pouring down here all the while, tearing down these cells which are defending the body, and pouring them out into the abdominal cavity to fight off these germs, and at the same time gathering up the germs and carrying them back, carrying them up into the circulation, gathering up the germs through these blood-vessels, and carrying them up through these large vessels, up into the liver, you see, up here, carrying them into the liver through this large vein, carrying the germs up there, and when they get up there, to the liver, then it is the duty of the liver to destroy them. The cells are brought down through these large arteries, distributed through these fine branches, spread out upon the surface where they do their fighting, fight the germs off, then they with their germs are gathered up through these vessels to the veins, and carried to the liver, and in the liver you will see where they work in the liver itself-- these pyramidal cells. They gather up the germs, send them down through these little ducts here in the bile, and when they are in too great numbers, they collect in the gall-bladder and make gall-stones. This is to show you how this happens.

. The blood goes out from the heart, is distributed through the arterial system, is gathered up through the large vein. The veins come into the abdomen, and then the blood through these vessels here is carried to the liver and strained before it goes around to the right heart; then it goes to the right heart where it is purified. This is a defensive process going on continually, a marvelous mechanism in which the whole body co-operates. You can see what will happen when the liver becomes crippled. Here are some portions of diseased livers. Gin liver, cirrhosis of the liver, cancerous liver, nutmeg liver. You can readily see it

would be impossible for these crippled livers to do their work, so germs accumulate and develop in the blood. Here we have a picture of how the defensive work is carried on by these white cells in defending the body continually. General infection is continually taking place by the absorption of germs from the skin, by inoculation and in other ways. Here the blood cells come along down to the portion of the body where some germs ~~and~~ have gotten in. They pause. Instead of simply slipping along the wall, they pause opposite the point where the germs are, make a little gullet, then you will see a little bit of a hook thrust out, a gullet, and they begin to tuck this through the wall, make a little hole in the wall and then tuck themselves through the hole as you would tuck a pocket handkerchief through a ring; then when they get outside, they close up the hole they have made, and go straight for these germs. They do not go feeling aimlessly around like a blind-man in a room groping for a chair, but they go right straight to them; they seem to have an instinct which leads them to go right straight to the germ and swallow it. Here is one swallowed up. Sometimes one of these cells swallows so many germs they get the better of it, and they kill the cell, and these dead cells are pushed out to the surface, and that is what forms the pus that is discharged from a boil; it is simply these living cells that have been sacrificed, laid down their lives for defense of the body in the battle with these germs. This shows how the battle is going on continually with these various kinds of germs. Here are the tubercle bacilli that cause consumption. Here are some of these white cells. You see these germs in these cells. This man is dying of consumption. If he were recovering, generally these cells would be filled with these germs, but the cells have lost their power to capture the germs; so there is nothing to hinder their growth, and they are going on in numbers. A man's blood was examined a while ago and it was found the cells could not capture one single germ; he had absolutely lost the power. He had tuberculosis, and in a few days that man was dead with

tuberculosis because he had lost his power to fight tubercular germs. When we examine a man's blood, we can take the blood, put it in contact with these living cells, watch and see what happens. If we find the cells are lively in capturing and destroying the germs, the rate is counted. The rate at which these germs are destroyed, the number of germs killed in fifteen minutes is counted up, and that shows what that man's defensive power is. If a certain number of germs are captured in fifteen minutes, that means ability to destroy germs, or his tuberculo-specific index, as it is called, is 100. If it is only three quarters what it ought to be, if it is only 75, he is going to get consumption, if he has not got it already, if he comes in contact with it. If it is 225, it is likely he has got it and is making a good fight against it. If it is down to fifty, he gets it and it kills him. If the man smokes, it very likely is down to fifty. Smoking will bring it down.

Here is the plague bacillus. Here are some that have been captured, you see. Here is one capturing one now, so that the body is making a good fight against the bacilli of plague. Here is the bacillus of influenza, you see this cell here is bristling with them. We generally get well of grip, because our blood-cells have a great capacity for grip germs. These very macrophages I was telling you about swarm into the blood-vessels sometimes destroy the blood-vessels, then chalk is deposited in the place of the normal vessel wall, and that is what makes hardening of the arteries; that is what causes arteriosclerosis; that is the explanation of hardening of the arteries, or so-called arteriosclerosis which accompanies old age, which is the cause of old age, which produces premature old age; and this shows that difference, you see,—the normal vessel wall and a vessel wall that has been thickened by connective tissue and so takes the place of the normal tissue which has been carried off by microbes which I was showing you a little while ago; and later, as the wall becomes weakened, chalk is deposited in it to prevent it from rupturing it at once and producing death.



This is Metchnikoff who made these wonderful discoveries. I have the pleasure of knowing him; had a pleasant visit with him the last time I was in Paris. I sometimes have correspondence with him, and I keep very close track of his work.

This is Prof. Koch who discovered the tubercle bacillus and has worked out these wonderful discoveries. He has recently arrived in this country, and is to speak in Chicago in a short time. The world owes a great deal to these two men.

This shows how to cultivate a good, high tuberculo-epenic index, to encourage your macrophages to make a good fight against the germs. Get outdoors as much as you can; sleep with your windows wide open; take good, long deep breaths when you haven't anything else to do--and that means a good deal of the time; when you are taking your treatment, breath deep. The more fresh air you get the more lively these blood-cells will be, and the better equipped they will be, more vigorous, more active, more ready to do their work. But I must let you go to sleep now, because it is during sleep that you manufacture these wonderful body defenses.

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Mediterranean by a ship out dredging a curious little petrified something that looked like a baby, and the question arose, What is it? Nobody knew; there could not anybody tell. Finally a man came forward and said, "I know, it is Noah's baby that fell out of the ark." "Why now, there is no account that Noah had a baby in the ark; there was no baby there." "Well, if it is not Noah's baby, then what is it?" "Don't know." "Then of course it is Noah's baby." It afterwards turned out to be a petrified salamander, and then it was no longer Noah's baby.

Now, you know thousands and thousands of people argue just that way about the methods that are employed and the remedies that are employed in the treatment of disease, and doctors themselves have been fooled for centuries. It is amazing how the medical profession through hundreds and thousands of years have been so awfully fooled and deceived with reference to various things. The father of his country, George Washington, was bled to death, as every doctor knows nowadays-- was simply bled to death. If he were alive now and had the rational treatment which any intelligent physician would give him, he would unquestionably recover from the same illness. You do not hear of people dying very often of the difficulty he is supposed to have died of, for he really did not die of disease at all, but died of bleeding from the doctor's lances. I think there is no doubt about it, and a good many others, I think are of the same opinion. That is the real cause of his death. If you study the history of medical literature, you will find plenty of evidence that a great many other people died in the same way. I do not say this to the discredit of the medical profession, for there is no profession that has worked so hard to find out the right way as the medical profession has. It is because of the ignorance and darkness and lack of knowledge that has been more surmounted by members of the medical profession than any other profession, I am sure. They have been working against their own interests. They are the men who are working for the preservation of the health of the community. It is always the doctors who are working to get sanitary laws enacted, to get public health laws enacted so as to

protect the public health. So you see the doctors are always working against their own interests. If there is a great public health meeting anywhere, if some public health association holds a meeting, it is a meeting of doctors. What for? To keep people from getting sick, yet they do not get a cent for their services unless somebody is sick. Compensation stops as soon as the patient gets well. So the medical profession as a whole always work against their own interests in that regard, and for the good of the community, but there has been such dense darkness upon the world, and such little knowledge of right principles that we have simply been ~~groping on~~, ~~groping on~~ groping on, groping on. I heard an eye doctor say once, a very excellent specialist, "I think I spoiled a bushel of eyes before I learned how to save eyes." He put out a bushel of eyes before he learned how to save eyes; then he brought ~~many~~ ~~many~~ sight to many bushels of blind eyes; so it said that that doctor should have that training even though it was at that expense. Nowadays better methods have been discovered, better opportunities are afforded doctors for learning so they do not have to learn by destroying eyes, but profit by the experience of their predecessors. I am sure I do not know of any class of men who are so eager for knowledge or truth as doctors are, at least who are more so, but as I said, the world has been in darkness, so we have been groping; and it is really only in comparatively recent times that the same methods were in vogue, because wrong principles were recognized. For instance, here is a splendid old book I hold in my hand entitled "Practice of Medicine" by Cullen, the great Scotch doctor, William Cullen, M. D., and this book was published in New York just 102 years ago, in 1866, an American edition of the English edition of the same book, which was published some years before, so the book is over a century old. I see the preface is dated Edinburgh, 1789, which would be 119 years ago that this book was written. Cullen was one of the great physicians of his time, and he did a great deal to help forward the progress of medical science, but he had an utterly wrong principle that he worked from and this was his principle: "Some have supposed

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that fevers should be left to the operations of nature. This plan, however, I can not adopt, because it appears to me that the operations of nature are very precarious and not so well understood as to enable us to regulate them properly. It appears to me that trusting to these operations has often given occasion to neglect." In another place he says, "I would drive nature out of the sick room as I would a squalling cat." That was his idea of nature. But what should we do? He says here, "Nothing is more evident than that blood-letting is one of the most powerful means of diminishing the activities of the whole body." There is no doubt about that. You can easily bleed a man to death; "it must therefore be the most effectual means of moderating the violence of fevers." Because you can kill a man. The idea was that when a man had fever his vital ~~and~~ functions were too active, that ~~his~~ body was in a furiously active state and something must be done to subdue it, and as blood-letting so quickly weakened a man, that must be the best means of doing it. "Be the quantity of fluids contained in the ~~circulation~~ sanguiferous system"—he means the circulation ~~of~~—"may be diminished most conveniently by the evacuations of blood-letting and purging." So he proceeded to recommend in fevers of all kinds that blood-letting should be considered as the principle remedy "and may be employed as far as the symptoms of the disease may seem to require." That is what they did with the great Washington. The doctor called to see him the first day, and he had a fever. They bled him. He was bled a pint, until he fainted away. The next day the doctor called; he still had a fever. They had a consultation of doctors then, and bled him another two pints, a pint or two at any rate, of blood, and he fainted away. The next day they bled him again, but they did not get a chance to bleed him any more. It is no credit to the medical profession, but it is no discredit to the medical profession either, for the doctors have done their best. The reason why we have blundered along so has been because we had a wrong principle. The principles on which doctors worked were utterly wrong, absolutely opposite the truth; they thought nature was a power

to be combated and not appear to be encouraged and to be cooperated with.

About fifteen years ago there was a wonderful meeting held at Rome, a meeting of medical men from all over the world, the great international medical congress, and at this meeting a German doctor read a paper in which he showed that the high temperature of fever was an advantage, that when a man had fever he ought to have a high temperature, for it helped him to recovery. It is the means by which nature fights against the poisons from the disease and enables the body to manufacture antitoxic substances, substances which would oppose the poisons, antidotes for poisons produced by germs in the body; and that the worst kind of case was when a man had an infection with typhoid fever germs, for example, and had no fever. The fever is necessary to enable the body to combat the disease, and it is only necessary that this system should be moderately controlled,—really not necessary that the symptoms should have any attention at all, because if the man himself is treated, if the man is helped, <sup>if</sup> the vital resources of the body are encouraged and assisted, then the fever takes care of itself; and this thing has been studied and demonstrated until today it is known that if a man who has a fever will go to bed, simply lie there and swallow water, if he does not do another thing but simply swallow water and take enough of it, the chances are 100 to one he will get well. All one has to do is to drink a glassful every hour. Now, sometimes it is difficult to get the patient to do that. It is better to take half a glassful every half hour, or a quarter glassful every fifteen minutes. It works very well that way. Sometimes the patient won't do it, so a doctor in Chicago has gotten hold of ~~the~~ <sup>an</sup> idea and has utilized it to the fullest degree, and found it a very practical way. He introduces two tubes into the bowel as far as he can, and he has a stream of water running in one and ~~the~~ out the other all the time continuously. Has a fountain arranged up here beside the bed, and that fountain is kept full of water, and that stream of water runs all the while, and

a large amount of that water is absorbed, so there is just a flood of water passing out continually from the kidneys, washing out the poisons of the disease, and the temperature comes down, the bad symptoms disappear. See how different that is from the method of treating patients infected in that way in Cullen's time. Cullen says we must reduce the sanguiferous system, remove the fluids from the body, so there must be bleeding to get the fluids out of the body; there must be purging to get the fluids out of the body. Think how absurd it would be when making such violent efforts to get fluids out of the body to put fluids in; so the patient must not drink, must not be allowed any water. So the patient was compelled to lie there with a parched tongue, with a burning and consuming thirst, obliged to lie day after day without water, and the wonder is they ever lived at all.

One of the first cases which brought skepticism upon this method of treatment was a poor fellow who had the small-pox, was nearly dead with it, was covered up with feather beds because the cold air was so terribly dangerous; so there he was, smothered up in feather beds; and of course the temperature arose so high he became delirious. The attendant stepped out for a moment, was compelled to leave the room for something, and this patient in his delirium raised the window and sprang out of the window into a snowbank. He was brought in, and they thought of course he would certainly die, but to the astonishment of everybody in half an hour he was quite himself. He was rational, the delirium had disappeared, and he made a splendid recovery. Well, that was a lesson. And other cases were observed in which people had recovered without any treatment at all, and that was noted, and by and by the impression was forced upon the medical men that it was possible for men to recover without treatment of any sort. Sir John Forbes wrote a splendid book on the subject in which he called attention to the fact that there was a natural cure for disease, and he pointed out the fact that animals getting wounded, sick, out in the woods, in the forest, recovered; that wild men recovered, savage

man recovered, so he said there must be a natural process of cure. This is the way it came up in modern times, and that gradually led to the development of the idea of rational treatment, of doing something to aid the forces of the body naturally, which Galien supposed 100 years ago, but now we find about fifty years ago Dr. Oliver Wendell Holmes, that wonderful man, poet as well as philosopher, ~~present~~ ancestor of the breakfast table, you remember, in one of his interesting papers--about thirty-eight years ago he ~~was~~ ~~was~~ wrote a very interesting poem which I think I will read to you, which gives you an idea of what he was doing at that time; and even so far back as ten or fifteen or twenty years before that time he was preparing and writing some papers, as was also Jacob Bigelow of Boston. Dr. Oliver Wendell Holmes wrote a poem entitled "Rip Van Winkle, M. D." It is rather interesting, and I thought I would read a few stanzas of it.

(Read the entire poem with the exception of a few stanzas.)

Now the significance of this poem is the fact that it is written by so distinguished a medical man and professor as Dr. Oliver Wendell Holmes. It is published in the volume containing a complete list of his works so you who want to can find it there. It shows he recognized the principle of rational medicine, and he was not the first.

Any back as far as Hygieia, one of the greatest medical men who ever lived, the father of medicine, a Grecian physician who lived three or four centuries before Christ, enunciated the very same principles--the power of nature as the real healing force. He recognized the fact that this power of healing is not simply an abstract principle, but that it is an intelligent power residing in the body, that is working always in the interests of the body. So we are to co-operate with this principle, or this power, this intelligence in operation, and not fight against it.

I have occupied more of your time than I intended, but I am going to give you just a little pictorial sketch of the modern way, the rational way that Dr.



Salmon entailed and that he himself practiced so far as he was able. We will throw upon the screen a few pictures which will show you something of how we have endeavored to epitomize the rational or co-operative method of treating the sick. Disease is recognized no longer as an entity, something within him to be cast out, as the ancients did. For instance, the ancients said when a man is sick there is a devil in him, and we must cast this devil out, persuade him to get out, drive him out. Sometimes a man was thrown down, beaten with sticks until he was nearly dead. Sometimes a man was carried into some dark cave where certain spirits were supposed to dwell which were capable of driving the demons out, and there the man would be set upon by men employed for the purpose, he knocked down, beaten until nearly dead, perhaps half suffocated, then he dragged out to the mouth of the cave, and then if he recovered, it was a remarkable case of cure. I have visited in Italy some of the very caves where this was practiced; and it is just as reasonable and as sensible to endeavor to cure a man in that way as by bleeding and purging in the old fashioned way described by Cullen. If a man recovered, it was only in spite of what was done for him and not by the aid of it.

Another method much in vogue by the ancient Jews, Syrians and Babylonians was to burn a mass of fragrant twigs, bring these to the nostrils, carry them away again and by this means entice the demon to leave the body, to go away. Similar methods are employed at the present time in tartary where the tartar physician goes out from his hut and carries along with him a little bag of herbs, which he carries on his shoulder or in his saddle-bag, that he has gathered from the forest. He looks at the patient's tongue, feels his pulse, then looks into his bag to see if he has the proper herb to exercise the particular demon this man is supposed to be possessed with; and if he does not have the proper herb, he writes the name of the herb on a piece of paper, rolls it up into a ball, gives it to the patient to swallow, and that is a ~~notification~~ notification to the demon that he better leave because the remedy is coming; and it is supposed to be almost as effective as the

medicine itself; then, if the patient is a very wealthy patient, the doctor says to his patient, the only way this demon can be really gotten out of him, permanently, is for him to give the doctor one of his best horses. So the doctor is prepared to extract the demon and to get him into his bag, then he mounts the best horse right away, and takes the demon off with him. This is said to be practiced in Tartary at the present time. It is not a bit of improvement on the methods of the old doctors of three thousand years ago, the old Egyptian time, in fact.

When a man goes to a mineral spring and gets better, recovers, he goes home and tells some friends. He goes, he gets well, he comes back and tells another friend; so the water gets a great reputation of having cured these men,—this man of one disease, another man of another disease, whereas the fact is the man has been cured by powers in his body. Why did he get well at the spring when he did not at home? Perhaps because he rested. In Iowa there is a place where there is some water which is very bad, unpleasant tasting water. The farmers fenced this spring in because they found it made their cattle sick, fifty years ago, and they fenced it in. An ingenious Yankee came through the country, found this spring fenced in because it made the cattle sick, and he said, "If that water makes cattle sick, it must be just the thing to cure people who are sick." So he put up a hotel inside the fence, and now for the last twenty years there have been several thousand people going there every year to be cured of their diseases by means of the water that made cattle sick, and that the farmers fenced the cattle away from. How much intelligence is there in that? That I have been informed was the origin of Colfax Springs, Iowa. And in this state we have at Mount Clemens a spring which originated in a somewhat similar way. A well was put down by some one boring for salt, with the idea of having salt works, and the pipe was put down, and water was obtained, artesian water, but it turned out to be so impure that it contained so much sulphate of magnesia and other impurities in addition to the salt that although it contained a large amount of salt it was quite unusable for salt. The impurities

were so many, existed in so large quantity, that the water could not be used for the manufacture of salt. There was such a large quantity of impurities that the labor of purifying the brine was so great so expensive it did not pay to use it for salt-making purposes; so for a long time it remained idle, looked as though the project was going to be a very expensive experiment. But a Yankee came along and he said, "I believe I can make a medical institution out of that spring." So he started, put in a bath-tub, and began to advertise it, and it began to cure. I remember the whole history of the place. It has been very, very widely advertised and at the present time a number of people go to Mount Clemens and some are benefited, some because they stop drinking beer, whiskey, and drink this diluted salt water instead; and others are benefited because they have been leading sedentary lives, and they are put into the water and made to sweat, perspire, and the perspiration helps them. But there is absolutely no conceivable benefit to be derived from any of these mineral springs so far as ~~there~~ any secret or occult principle or quality is concerned. I said to the managers once at one of these mineral springs the water of which was advertised to cure rheumatism, "I would like to have you ship me several hogheads full if you will guarantee it to cure." They said, "Oh, it won't cure at a distance; it will cure only when taken right fresh at the spring. Its properties evaporate." The idea that these mineral springs absorb some wonderful virtues from the wall which gives the water some specific ability to cure is just as much an absurdity, just as much an error, as the ancient notion that disease was due to the possession of demons, and that the patient must be cured by conjurer whipping or exorcising these demons out.

This is a picture of Pricessits, the peasant of Gerafenburg, who, although an illiterate man, not able to read or write until forty years of age, nevertheless originated a system of using water, or rather systematized the popular methods of using water which had been in vogue among the peasantry of Europe for many

centuries. Friessnitz actually discovered very little. Water was in use by the common people, has been in use from the very earliest time. The use of water seems to be recognized even by the lower animals. A sick animal will bathe; a sick dog will fast, abstain from food, drink water, will lie in the sunshine to get a sun-bath. There are many evidences that animals have really an instinctive knowledge of natural methods of cure. Here was a case in which Friessnitz made his first observation when a boy about twelve years of age. He saw a deer which had a wounded leg soaking this leg in a spring. He took notice of this, and when he himself was wounded by a runaway horse, a rib broken, and an arm injured, he cured himself by soaking his arm and his side with compresses wrung out of water. This shows how he practiced the water cure upon himself, soaking his hand in a tub, in one of those wooden pitchers which are still in use in this out-of-the-way country. This became so remarkable that the people were attracted; neighbors came in, and this picture shows how he treated the poor people when they came and sat upon a bench by his father's house.

This is a method invented by Friessnitz for curing a drunkard. Meeting a drunkard in a stall one day, he took a large horse syringe and with it forced cold water upon the pit of the drunkard's stomach which caused a strong emesis, so the liquor was ejected from the stomach. By pouring cold water upon the stomach this way, he produced vomiting and an ejection of the intoxicating liquor.

Here is a patient whose toe is swollen up with gout, and he is applying the remedy. Four, five, or six hours' bathing consecutively in the cold water was his method. Here was the method most in use, of sweating under a feather bed. The patient was wrapped in a wet sheet, covered with a feather bed, and allowed to perspire until the mattress was soaked; and one case is recorded in which a patient below complained that some of the perspiration leaked down through the cracks in the floor; so it was really a very profuse sweating, followed by bathing

in a cold bath. Exercise was also one of the hobbies of this man who systematized this method of treatment, or the natural method, 100 years ago. He did not have to pay anything for cutting his wood, or getting it cut; he even had some of the gentle ladies who were patients, very wealthy ladies, conversing in this way. The wood was carried to the bed chamber. A lady you see has brought in a ~~guest~~ card of some royal visitor, but she is engaged in cutting wood and has not time to attend to it.

Here is a patient after a sweating bath coming down for a plunge in a pool of cold water coming down from the mountain springs, running through a wooden trough with icicles hanging from the troughs, the water at a temperature of about 40°. Here is a man coming in from his sweat, and he is now going to have a cold sitz-bath, for half an hour to three or four hours, for Priessnitz was very thorough-going in his methods.

This shows the wet sheet rub. After the application, each patient was rubbed. Here is a patient in a park. A story is told of a man who came from Brazil, spent six months in getting to this out of the way place on the borders of <sup>Brazilian</sup> Russia, in Austrian Silesia. After the ~~ship~~ arrived there, he had his sweat, was led down to the pool and asked to plunge into the cold water. He looked at it for a moment, then drated away home. He said, "I will die first." Here are patients taking outdoor treatment—the sun-bath. There is scarcely a thing we know in our modern methods of treatment that this pioneer of the mountains, this ignorant man did not employ. This is the grass walk you heard about that is practiced by Eschschke. Eschschke took it up in Wirsbafen, Germany, fifty years after Priessnitz introduced it. It was employed by a physician in the island of Malta years before he took it up. It is a practice several hundred years old. The great disadvantage of this method of securing good, vigorous circulation in the body is that it can not be practiced at all times during the year. So I have constructed a grass walk in the bathroom. A current of water is turned on there, and many streams of water are scattered along; then there are little brass rods covered

with cords for whipping the legs as you walk through. So in this way you can get all the effects of the goose walk without the inconveniences. This picture was taken in 1897, fifty years ago, and shows the methods employed at that time. Each one carries his own drinking horn and drinks from the springs. Here is one of the shower baths. They had not means at that time for conveying the water a mile and a half down to the cure; so the patients went out to the woods, and this particular spring was eight or nine miles out in the woods, and a great stream of water as big as your arm fell a distance of fifteen feet, so it had considerable force to it. Here is another of the more recent douches, that are employed in more recent times.

Fifty years after Prichnitz began his work, Virchow, the greatest physician who has lived in modern times, almost the only man who dared to stand up against Bismark in Berlin. He was for many years of his life a member of the senate city council of Berlin, and he steadily opposed the policy of Bismark, and was of the opposite political party. He said in 1847, "Diseases are not entities that have entered into the body, they are not parasites that take root in the body. They merely show us the course of the vital processes under altered conditions." You can not find any better definition of disease formulated at the present time than this of Virchow, one of the greatest scientists, and one of the greatest medical men the world has ever known.

A few years after this, some twenty years later, there began at this very spot a movement which has been developing ever since until the present time. In the summer of 1866—that was forty-one years ago, forty-two years ago this summer, an institution was started here with a small cottage and a farm about half as large as this building shown here, a small farm building that stood upon these premises. This was the entire family after the institution had been in operation about ten years. There were no trained nurses, no trained attendants. At the time this picture was taken, I was myself just taking charge of it, and you see

how your humble servant looked at that time. I was a boy of twenty-four years, but the physician in charge went away, and I came in the next morning and have been on duty ever since, now thirty-two years. And one of the things we have endeavored to accomplish and that I have sought to do, is the building up of a systematic method, more thoroughly formulated and systematized method of using natural agents; and in the diagnosis of disease,—to study the human body in such a way as to know exactly what its conditions are, to know just what every organ is doing, and to be able to express these conditions in mathematical terms; so we have what we call the Sanitarium System of Vital Coefficients. Now, the next time I will tell you about the vital coefficients and how a man is measured, how we take an inventory of the human body.

I want to just say one word before closing, to call your attention to the fact that spring has come; really summer has come. It has been rather a cool summer day today, but we had plenty of good sunshine, and the outdoor life ought to begin. If you have been shut up indoors because you thought the <sup>weather</sup> ~~summer~~ was too cold, begin to get out, and spend as many hours out of doors as possible. I feel sorry, and when I see people sitting down about the lobby. It does not pay. You are here to get health, and all the health you can possibly get. You can stay in the lobby or loaf about some other place, but it does not pay at all to sit around indoors in the shade. Get ground in the fresh air. There is wonderful power in it. I do not believe anybody knows exactly what it is or why it is that the outdoor air has such wonderful healing power in it. We have not fathomed it all yet, but we know it has power, and wonderful power of healing; so at the present time where patients are sick, it does not make much difference what the matter is, it is found the outdoor life, and the outdoor air has a healing virtue in it. Down in New York they put babies outdoors when they have pneumonia, in the coldest winter day. At the children's hospital in New York, if the baby is really sick, and

and the doctor is afraid the baby is going to die, he will put the baby outdoors, dress the nurse up in greatcoats, bundle the nurse all up, and the baby too, of course, and put it right outdoors, let it breathe cold air, and the baby gets well. I have tried this myself, and it is found to be true that the pure cold air of winter has virtue in it. If you will study the reports of Arctic expeditions, you will find the report that everybody has been perfectly well during the whole time. They have had zero air, temperature many below zero, 100° below zero, and their health was marvelously perfect because of the influence of the pure, cold air. This cold air taken into the lungs is a wonderfully tonic. So get outdoors every minute you possibly can. Go out and walk before breakfast; take your regular exercise. Lie down and rest after dinner, but exercise after treatment. After treatment, go out and exercise, but after dinner rest a little while. Get your doctor to give you just as much cold treatment as you think you can stand. Tell your doctor for cold water. Don't beg for hot water, but ask for cold water. When I was in Vienna the last time, I said to Prof. Winternitz, "What is there new in hydrotherapy?" He said, "Oh, there is nothing new, Doctor, but always colder water. I follow Priessnitz." One of the most distinguished physicians in the world today said that to me in Vienna only a few years ago; and I find in my own experience the more cold water you get the more tonic effects you get. Hot water is depressing, relieves pain, but depresses the vital forces, but cold water is the thing that boosts towards health, that invigorates the vital forces of the body, and stimulates the heart to circulation. So get all the cold water you can. Of course, you can get too much, but your doctor won't let you have too much. I said to one of my boys the other day who has been taking cold baths in the winter-time, "Well, George, do you like cold water?" "Oh, yes, indeed I do." "Do you like cold water right out of the pipe, at 40°?" "Oh, yes," he said, "it is never too cold for me." I said, "How would you like to get out and cut a hole through



the ice and jump into the river sometime?" He said, "Oh, I think that would be great fun." "Doesn't it chill you? Don't you think it is unpleasant?" "Oh, no," he said, "You feel so warm afterwards; you just fairly burn. I didn't use to like it, but now I do not mind it at all; I just love it." He is a little boy of thirteen or fourteen, and he is accustomed to it until he enjoys the coldest water he can get; and I don't think he would mind rolling in the snow. If one has not been accustomed to cold water, it takes a little while to get accustomed to it, to train the skin to react well, but the good reaction that comes, the exhilaration and the vital uplift increase the vital resistance and it is well worth the trouble it takes to get the training. When you once get it, you do not lose it; you will find it is a constant source of satisfaction to be able to resort to this powerful means of toning up. It does not have the bad effect a pill does, to tone you up for a minute, and then drop you away down below where you were before, away down below par. Cold water tones you up and keeps you there, and each day or two or three times a day you get yhid little lift, you will keep rising higher and higher and higher until by and by you are ready to go home.

CONVERSATIONAL CLUB

BANQUET



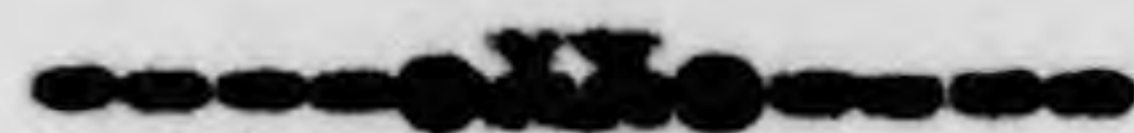
A COMPLIMENTARY EVENING

TO

DR. KELLOGG

AT

The Sanitarium



Wednesday, April Twenty-second

1908

**MENU**

**Grape Fruit**

**Radishes**

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**Salted Pine Nuts**

**Vegetable Bouillon--Bread Sticks**

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**Fillet of Nut Meat**

**Parisian Potatoes**

**Green Peas**

**Sliced Tomatoes**

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**Mues Frensada--Mint Sauce**

**Macaroni with Cheese**

-----

**Apple and Celery Salad--Wafers**

**Fruit Buns**

-----

**Fresh Strawberries--Whipped Cream**

**Assorted Cake**

**Faisin Delight**

**Cashew Nuts**

**Chocolates**

**Raspberry Nectar**

**Noko**

**PROGRAM**

**Our Guest of Honor, Dr. Kellogg**

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**Master of Ceremonies**

**Edward M. Brigham**

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**Invocation**

**CHAPLAIN L. MCCOY**

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**Our Appreciation**

**Rev. George W. Buckley**

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**The Battle Creek Idea**

**HON. JOHN W. BAILEY**

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**The Woman in Our Club**

**Mrs. George W. Buckley**

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**Echoes of Battle Creek in Foreign Lands**

**Dr. James M. Peebles**

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**The Goose That Lays the Golden Egg**

**Arthur D. Welton**

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**BATTLE CREEK AND THE BATTLE CREEK SANITARIUM**

**IRVING L. STONE**

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**A Response**

**DR. JOHN H. KELLOGG**

The Chairman: Dr. Kellogg, our Guest of Honor, Mr. President and members of the Club, and Friends: As they say at graduating exercises, our education is not yet finished--just fairly begun. This part of our menu is different, it is all meat, so to speak. A stranger would naturally suppose that members of the Conversational Club would rather talk than eat, but in view of what has just taken place, this preconception must have received a shock. As a matter of fact, members of the Conversational Club never talk--they converse. With some misgivings I announce the first response by our President. I will let you into a secret,--our President--and yet he is withal so autocratic and we are so democratic that we sometimes call him esar,--often and often when the members are discussing some up-to-date subject in an up-to-date way, all of which he classes with the foibles of the modern world, he will without a word of warning usher in Theocrastus or some other Theo-, some ancient philosopher of some forgotten time who said thus and who said so; then the insurrection gathers head and there are mutterings of "Csar, esari" He would chain us to the dead past, to the classic past,--while the members of the Conversational Club are making their own history. But in spite of it all we love him. In spite of it all he seems proud of us, for he is extremely discerning--knows a good thing when he sees it; to use a board of trade phrase, he is long on appreciation; and so our honored President will respond to Our Appreciation,--the Rev. George W. Buckley.

Rev. Buckley. Members of the Conversational Club and other ladies and gentlemen who are present here: I have learned two things from the speech of our worthy Toastmaster--quite a revelation to me. I never before was called conservative--glad to see I have that side to me,--I never before was called a esar; I am sure I am not in my own family. We are gathered here tonight to close the first decade--that is not known to many of you--to close the first decade in the history of the Conversational Club and also to do honor to Dr. Kellogg. During that period the work of the organization has grown in breadth of interest and in public recognition until it has become an important factor in the intellectual and higher life of the city. I heard at the table a gentleman making a remark showing that he understood this club already; he remarked to his friend, "You would know this is a conversational club; you could hear it up there in front." Well, as our name implies, we are a conversational club. The function of the club is conversation--not conversation merely for the purpose of talking, but conversation for the purpose of getting light on many topics from a diversity of minds, and that in a more spontaneous fashion than is usual with the literary club; and I think in the main we have clung quite well to the object of our being and developed marvelous talents for talking back and talking forward too,--such marvelous talent that we begin to think--we ourselves think so any way--that it is about time to enroll us in the smart set. We have developed to such an extent that even the women have learned to talk and do it with most persuasive reason and flow of speech, and as to the men, some of them can talk quite successfully when there is nothing to talk about. Indeed, I have known several members who when they joined this Club were as bashful and silent, well, as the young lady used to be when she made her debut in society. But

now these very same members can carry on a monologue with as much confidence and with as much fluency as any curtain lecturing wife on the planet, and that too just as well on the wrong side as on the right. I must not talk that way any longer. I am afraid Mr. Brigham will call me to order for being personal here. Well, so much for the general work of the Club. Now, as to the particular work of the past year. We began our meetings under the best of auspices--under the leadership of those two talented and obliging gentlemen, Dr. Kellogg and Horace Fletcher. I think I am 50% more a vegetarian and a Fletcheriser, if I can use that word, than I was before that evening. That was a red letter night. Then in midwinter again, Dr. Kellogg with equal grace and graciousness ministered both to our bodies and our souls in this building. That was another red letter night; and now we have still another red letter night. We meet here to close the course, and this time Dr. Kellogg is our guest, our honored guest. Not many weeks ago in the House of Commons some Irish member in the midst of an impassioned speech broke out, "What are the Irish members here for?" And somebody piped out from the ministerial benches, "God only knows." Now in our case, not only God knows and I think approves, but the members of the Conversational Club very positively know what they are here for. In the first place they are here to testify to their appreciation of the head of this institution (Applause), not only because of his generally recognized capability, but because of his very friendly and hospitable attitude toward the conversational club. And let me say, not to be narrow about it, a variety of organizations, scientific, literary, sanitary and other organizations help immensely to mold the life of society on its upper side; and, my friends, to me that is a phase of the beneficent influence of this institution that is not to be lightly estimated. Friends, my memory goes back the lapse of years to boyhood days when I sat in the same school room in a very common school building, very common compared to the school building we are likely to see down there on West Van Buren Street,--when I sat in the same school room containing a few, three or four, hard benches, with a young lad, studious, unobtrusive, with a thoughtful, observing eye, a young lad who knew what he was there for, somebody who was wise enough to know what he was there for when some of us seemed to be foolish enough not to know what we were there for. That young lad is now the head of the greatest Sanitarium in the world, as I understand it, and tonight I greet him with gladness, not only in my capacity as president of the conversational club, but personally, in the spirit of old acquaintance and many fraternal years. In the first place, then, we are here to testify to our appreciation of Dr. Kellogg. And now, we have a marked virtue in our Club, and that is the virtue of frankness; and so, in the next place, I would say we are here to testify to an appreciation of ourselves, appreciation of a good feast--two good feasts, for that matter, and that to the feast of the body you have certainly paid very substantial compliments--I watched some of you,--and now we will testify to our appreciation of a second feast, for the soul, by paying good attention; and, friends, I do not want to spoil this feast by occupying too much of your attention, and do not want to hazard the criticism that a young lawyer--not Mr. Bailey because he had a wife,--I do not want to hazard the criticism that an aspiring young lawyer got from his wife on making his first speech. On the way home he waited eagerly for her verdict, and he thought of course she would say, just as it is the duty of every good wife, dutiful wife, to say, even though she lie about it,--"My dear, it was perfectly lovely"; but no, she trod along

provokingly silent, as a decapitated Egyptian sphinx, and finally he got impatient and he asked straight out, "What did you think of my speech, any way?" "Well," she said, "What you said was all right, but it seemed to me, Dearie, you missed your opportunities." "Opportunities! Great Scott! What do you mean?" "Well, you had such an excellent chance several times to sit down before you did." This is at least one excellent chance I have to sit down, and I am going to do it now, and let the curtain rise on our genial and brilliant toastmaster and the other genial and brilliant people on this program to light up their wit for this occasion. (Loud applause.)

The Chairman: The Battle Creek Idea. The response is by one of the City's fathers, a very patriarch, who has watched the idea grow through the generations from a mere seedling. No man has regarded the growth of this tree with more patriotism, with more paternal pride than has he. It is with peculiar gratification that I introduce him to such a cheerful assemblage. He needs the inspiration, he needs the buoyancy of this occasion, for he is our most lonesome citizen and our last surviving democrat,—the Hon. John W. Bailey.

John W. Bailey. Mr. Master of Ceremonies, ladies and gentlemen, members of the Conversational Club and honored guests: I at first thought I might not be able to get strength enough to get over here to this stand when I heard our worthy Master of Ceremonies talk of my age, antiquity, etc. When I was asked to speak to this Club a short three minutes, I was assured by our worthy Toastmaster that I would come last on the program, or next to the last any way, and it was not necessary for me to know anything; for I could gather ideas enough from the other speakers. When I come here and find the place I have been assigned, I am a little reminded of a story that was told some time ago about a gentleman who had been out with the boys a little bit, and going home early in the morning a little bit under the weather, in turning a corner he went a little bit past the sidewalk, down to the curb line, and turned up the street one foot in the gutter and one foot on the curb. He hobbled along through that block until a policeman came and stopped him. He says, "What in the world is the matter with you?" He says, "I don't know; I was all right until I turned that last corner; since then I have been walking lame." I think the program has gotten into that condition; they have put me up at the head where I am not able to imbibe any of the ideas I know I should had I been fortunate enough to have been placed at the last. I am asked to say a word or two on the Battle Creek ideas. There are so many of them, some unique, some original, but of all kinds, that it would be quite impossible for me to give them very much attention in the few minutes that I have. I once heard a lady deliver a lecture, and I think her subject was man. And she said there were two sides to him; one was the best and the other was the worst. I think that is possibly the case with the Battle Creek ideas. There are two kinds; some are good; some are bad. I will begin with the bad and get rid of them, as they are disagreeable. One of the bad ideas I frequently have impressed upon me as I go about

the streets is the fact that the owners of all these buss buggies own the streets, and that we haven't any right there. Another bad idea that is occasionally forced upon us is the idea that our present police station which occupies that magnificent location back of the City Hall is good enough for all the occupants, and that we do not need another one. I think that is a very bad idea. Another one of the bad ideas is that our present City Hall is good enough for all purposes and that we do not need another one, and that it would not be a good idea to place it on the bank of the river opposite the Michigan Central Passenger house and clean up that unsightly spot. Another bad idea is one that some of our people, but I am glad to say not very many, had some time ago, and that was that water from the flats near Verona, highly filled with iron, was as good as our beautiful Lake Goguae water. Another of the ideas which strike me as being bad, although our worthy honored guest would not agree to that, is the idea of having two Sundays, because those of us who have elastic consciences are forced to work all the seven days through that process instead of being allowed to have one rest day occasionally. Another of the bad ideas, which now occurs to me is one that seemed to take possession of our city fathers some time since, and that was that it was a good deal better and perhaps quite the right thing to do to give the dispensers of liquid refreshments until ten o'clock to ply their trade for the one good reason that they could not make them stop at nine o'clock as the law provided. It struck me then that it was rank nonsense and I have not changed my mind, and all the arguments which were then advanced in favor of it have all gone glimmering by actual experience. I am not going to tell all the bad things I could recall tonight, but I am going to stop. I am going to talk about some good things. One of the good ideas that originated in our town was the idea which put into execution resulted in this magnificent Sanitarium. Some of us who are older than our worthy Master of Ceremonies remember when the idea was quite young, when we had on this hill a little wooden building about the size of the average dwelling house. That was called the Water Cure. From it by easy and gradual stages has grown the Battle Creek Sanitarium until now we have this magnificent building magnificently operated, and as we believe the largest in the known world. Another idea which has taken root in this end of town is the Orphan's Home, a place where a great deal of good is done to a great many young people who need that care and affection and assistance which only such an institution can give it. Another one of the good ideas which also has originated upon this hill is the idea of a medical college, and we have here, as I am told, a medical college at the present time which is doing work without any expense to the city, without any expense to the state, which equals similar work being done at our University of Michigan, and is turning out a large number of young men and women who are equipped to do the work of the medical profession in all parts of the world, and who are taking leading positions in that profession. There are a great many other ideas which our Battle Creek people have. Another which now occurs to me is the idea that our public school system should be put upon the very highest plane and kept there. I think there should be provided for every boy and girl within school age a good place and good instruction, and I am glad to say that the citizens of Battle Creek all



have that idea, and that they never wince and never complain when called upon to do what is necessary to bring about a full execution of that idea. It seems to me that none of these ideas which I have mentioned is really what has come to be known as the Battle Creek Idea. I think perhaps, if I have a correct understanding of that phrase, it is more popularly known and more generally known throughout the world as an idea which has reference to correct living, an idea which requires and refers most especially to correct eating, correct exercise, correct bathing, correct doing,--in short, it seems to me that what has come to be known as the Battle Creek Idea refers most especially to a simple, proper, orderly Christian life, and that idea has been worked out in this institution and has come to be known the world over; and it seems to me that of all the things, of all the ideas that have originated in our community, that that one idea has done more to give Battle Creek a distinct place and distinct recognition the world over than any other idea which we have advanced or attempted to give to the world at large. And it seems to me that from a commercial sense and in a commercial sense that that idea lies more at the bottom of our prosperity, our commercial prosperity, than any other idea which has been advanced. We all recognize that upon this hill that idea took root which has resulted in giving to Battle Creek all of our large and extensive food factories of the present day. The idea that proper food was necessary to a properly nourished body and to health originated here and has grown until now we have hundreds of thousands of dollars worth of property invested in that work and thousands of people employed in Battle Creek and Battle Creek foods going to every corner of the earth. If I were to name the party that was most responsible and perhaps entirely responsible for that idea in originating it and most largely responsible for working it out to its present advanced position,--if I were to name the man that was responsible for the carrying out, conceiving the idea and executing that idea and developing it into this large and commodious and useful Sanitarium, if I were to name the man who had done more than any other man in Battle Creek in relieving the sick and the needy and the unfortunate, and restoring to health and vigor hundreds and hundreds of people,--if I were to name the man who had added most by his original ideas to the population and commercial prosperity of the City of Battle Creek; if I were to name the man who would be most missed from our community, if I were to name a man who we all hope and pray shall for the next generation continue the activity and the vigorous action which he has carried out in our midst during the last two generations, and who we all hope after having carried forward that work and having carried out another generation of that activity in our midst may still for many, many years continue to be a resident of our city and walk among us, carrying the title, well deserved and well earned, of Michigan's Grand Old Man, I would name Dr. John H. Kellogg, our honored guest of this evening. I thank you. (Loud applause.)

The Chairman. The Woman in Our Club. Here as elsewhere she has her own sweet way. The response is by one of them, one of the majority. Why the majority? It has never been satisfactorily explained why the women so greatly outnumber the men in the Conversational Club. Some men have had the temerity to insinuate--once only--result fatal,--before I get nervous on this subject I will introduce one of our conversational queens, Mrs. George W. Buckley.

Mrs. George W. Buckley: I have just been wondering. I am afraid I shall do more wondering if I get up here in front. I have just been wondering if Eve, after eating the forbidden fruit, could have felt much more trepidation when called upon to face the dreadful consequences of that act, than I, after partaking of such an elaborate repast, to be called upon to give an account of myself and my sisters before this august and awe-inspiring assembly. I feel, in noticing that I am the one woman on the program among these colossal minds, that I have been chosen as a sacrifice. I am to be consumed by the electric flashes, the scintillating sparks, and the scorching fire of these brilliant intellects. It has been said that it is the magnanimity of women to yield. The most distinguished feature, characteristic of the women of the Conversational Club is that they with great unity and equanimity yield the floor to the man, notwithstanding my brother to the contrary, showing that they at least are not targets for the perennial jokes on the love women have for talking. Women retire more graciously to the background because they believe that they are the power behind the throne. Many of the great authors have told us so, and of course we believe it, and the Egyptians and the Greeks chose women to represent wisdom. Were the women to stay away from the club and the men no longer to feel the influence of her presence, to see her appreciation in her eloquent silence, in short, were she not in her place to applaud the deed, how long do you think these eloquent men would be in the Club before they would be yawning and looking at one another blankly, and asking the same question that Irishmen did--what are we here for? So with this attitude of mind, the women of the Conversational Club are pacified to a dignified silence. This word pacified brings to mind a story that occurred in my early life, a little episode. It does not relate particularly to woman, but it gives a very significant estimate of man. I had in my employ an elderly Irish woman. If she had not done a stroke of work she would have been worth all she cost by way of entertainment. One day she was telling me a sad part of her history. She had lost her husband. I was dissolved by sympathy at once; it seemed to me an irreparable loss. I hadn't had mine very long then. When my sympathy was at its height she said, "Yes, yes, it was hard, but then, when he died he left me an insurance of forty dollars, and of course that pacified me." I sometimes think the self-satisfied sense of security and indulgence toward men signifies a kind of sympathy that is akin to the divine. Men can never know the joy of mother-love. The word mother is almost as sacred as one's relation. It was a beautiful thought of the author that said "God could not be everywhere, so he made mothers." A woman feels by this instinct of love that in a sense she dwells in the secret place of the most High, and from this kingdom of love she appropriates riches; but she loves to hand them back to man, and that she thinks will add to his happiness. And man is very generous to woman. He will work for her, he will fight for her, he will even die for her. All that a man has will he give to a woman--except his dinner. I tremble when I think of what a lonely fate man would have had if the apple had fallen in the first place into his hands. Woman would have had no part in the history of evil excepting what she could have absorbed from the core. There is not likely to be any controversy in this club over the relative weight of the brain lobes, and I am sure the women will never serve the men as a professor in Russia was served. This professor very stoutly objected to the enfranchisement of women on the grounds that the brain of woman weighed only 1250 grams, while man's brain weighed 1350 grams; but

the woman had a sweet revenge on that professor by weighing his brain after his death. It lacked just ten grams of being as heavy as the average woman's. If the men in this Club have the heavier brains, perhaps we have more sentiment or larger hearts, and if we have a union of heads and hearts, what better foundation for good conversation? (Loud applause.)

The Chairman: Echoes of Battle Creek in Foreign Lands. I say, down with Oslorism, and hurrah for Longfellow, the poet, who said age is opportunity no less than youth itself but in another dress. Here one of our members at the age of eighty-seven contemplates a journey around the globe as most men would an after breakfast constitutional,--seven times around and going again. And when he goes abroad, what a demonstration to the world of the virtue of Battle Creek Health foods. Our traveller is a strict vegetarian. He is not tempted by the flesh pots of Egypt nor of any other land. Great is Battle Creek. It is said that in an early day often one could not turn a corner without being confronted in this city by a new ism. Great is Battle Creek. There is a reason. It is full of ideas; not inert, but active ideas. To be sure they emanate from certain sources. Some are prolific of ideas, others borrow; but what matters it so long as the ideas are operative, so long as they are used indifferently by every member of the household. We are proud beyond measure that our home is in this City of perpetual motion; and when our traveller goes abroad, when our traveller goes abroad he will carry with him the name of Battle Creek wherever he goes, and he will find that it was there before him--wherever he goes. And now, Dr. James M. Peebles will respond to the Echoes of Battle Creek in other Lands. Dr. Peebles.

Dr. James M. Peebles. Mr. Toastmaster, Members of the Club, and friends all: It gives me a very great degree of pleasure to be among you this evening, especially so because in honor of Dr. Kellogg who in my heart I have honored for more than fifty years. In fact, some fifty-two years ago, myself and wife came to Battle Creek, a little town here then, and among the boys playing in the streets, a bright, sturgy, active, wide awake boy was Dr. Kellogg, of this day and age. He was a handsome boy then, a bright, handsome boy, and all these years I have had him in my mind, grown up to youth and manhood, and now in life's prime, at the head of this grand and splendid building. Yes, I have travelled around five times, and wherever I have been I have heard of Battle Creek, the cereal foods, the Sanitarium and Dr. Kellogg, and I have felt very proud of Battle Creek; and I said to them what a building we have here--a thousand every summer, patients flocked around it in the tents, and the building should be light, I may say, in body and soul. Now, when I got to Honolulu, I remained there ten days, and I inquired if there were any baths there, and I found a sanitarium. In South Africa I found a sanitarium, a very large one. I got to Calcutta, India, and inquired of my host there if there were any good bathrooms there, any place to bathe, and the reply was, "Why, yes, there are adventists here; they have a church here and a sanitarium here." And there I went to bathe, in that sanitarium. So all over the wide world, in Australia, New Zealand, wherever I have been, I have heard of Battle Creek, its honor and its praise, and I feel tonight to appreciate and honor Dr. Kellogg for his grand, and I may say glorious work; and especially do I honor him because I am with him heart and hand in regard to our foods. Our foods make our bodies, make our

blood first, and our bodies, and the bodies make the brain. By the way, this man (referring to Dr. S. S. French who was present) is away beyond me in age, ninety-two they say, and I honor him for his long years; a good looking old man he is too. But our foods, --I must tell you one little amusing thing. When I got to Colombo, Ceylon, I went to call on the Buddhist priests. I talked with one of the priests, Girshma Suva Gani ---- Gosh(?) for two hours, I suppose, and as I arose to go, I said, "I bid you goodbye", and he stepped right back, shook his own hands--he would not shake my hand. Of course I inquired why. He says, "You are a western man; you are a Christian man, an American man; you eat animal flesh; you eat dead cattle and dead sheep. I have heard worse of you in America. I have heard that you do worse things in America; I have heard that you actually take hogs, filthy, dirty, old nasty hogs, kill them, bury them; and when they have been dead and buried six months, you take those dead hog corpses and eat that dead hog flesh,--goodbye, goodbye." Well, I eat no dead hog nor no dead cows; and right here there is one thing I want to say of this Sanitarium; whenever I come here I find a sweet atmosphere, clean, pure and sweet. I enjoy breathing here, expand my lungs--there is no smoke, no dead cows, dead hogs in the whole building. So far as I am concerned, I eat no animal flesh, no pork, pickles, nor mince pies, nor hot cheese, nor old cheese, nor sauerkraut,--none of this stuff; and I am hearty, robust; and we must eat right if we live to be old people. But how I do enjoy being in New Zealand. Do you know why? Women there votes. And it is the best country in the world, the finest country in the world, because there are no hoboes; they have no beggars. The government owns the railroads, buildings and everything, and the telephones, and it is very prosperous, and there I find a sanitarium, a very large one; I take my baths there, and they say, "You live in Battle Creek?" "Why, yes. I have known Dr. Kellogg for some fifty years." "Give him my regards", they say; so from New Zealand tonight I tender the regards of the doctors there to Dr. Kellogg for the grand work he has done and is still doing. Long may he live. And I want to say one thing more, that in all my travels around the wide world I have learned this; that mankind are about the same; they all have warm hearts; they want to progress; if they can only be taught to eat right, drink right, think right, and live right, what a grand world we would soon have; and this Sanitarium is the very foundation, the starting-point, I might say, of these foods and these drinks and of these baths. And I value Dr. Kellogg above all price, and I appreciate him more than words can tell, and I want simply to say before I close my remarks, to Dr. Kellogg, Doctor, you have no warmer friend than I am, and long may you live, and God bless you, here and here, Doctor. (Loud applause).

The Chairman. Battle Creek and the Sanitarium. Response by Irving L. Stone, a solid man with a solid name, a name that has stood for solidity in Battle Creek for thirty years, who has business relations extending to the ends of the earth. A name fixed like a keystone in many of the arches that sustain the moral, the intellectual and the material Battle Creek of today; a man who has travelled much and travelled far; and so he projects Battle Creek against a background, not of Calhoun County, but of the world. He knows Battle Creek. He knows the Sanitarium--its personnel. His name is wrought into the arch of friendship that sustains this great institution; he knows the Sanitarium. And so he responds to Battle Creek and the Sanitarium. Prof. Stone.

Prof. I. L. Stone. Mr. Toastmaster, ladies and gentlemen, members of the Club, and others collected here; I have had no consultation with the architects of this toast, but I assume that they had not intended that it shall be considered separately as two subjects, but rather that we should consider the relation of the two, the relation of Battle Creek to the Sanitarium, and the Sanitarium to Battle Creek. And just in a word I think I may say truthfully that the relation is that of a thing created to the creator of it. I believe I am safe in saying, that I am truthful in saying, or correct in saying, that the Sanitarium has had more to do with the development of this town than any other cause or force in it. I do know the town pretty well and the Sanitarium pretty well. It was more than thirty years ago that my acquaintance with it began. I remember when I first came here. Within two or three weeks after I came I had charge of the public schools here, and it was in the central high school building which was then entirely new, or almost new, and one day a gentleman came in followed by a boy, and this gentleman introduced himself as being from the College, the new Advent College here which was just erected at that time, and he said they were furnishing it, getting ready to furnish it, and he wanted to see what we had upon the stairways in the building, and we had them covered with matting, and he came in to see something about the best way of covering the stairways in the College over here. He was followed by a boy--I hope I was not disrespectful to the boy, but certainly I gave him no particular attention because he had nothing to say, and the man who was with him was the business man. That boy is the present honored guest of the evening, and I have known him intimately ever since. At that time the population of the town was about 4000, if I remember rightly, between 4000 and 5000, and there were two institutions in it, as I said before in some public place--two institutions in it which were somewhat prominent, and the two institutions out of which Battle Creek has mainly grown. One was the Nichols and Shepard Manufacturing concern, and the other was the young Sanitarium and the society here. From Nichols and Shepard there have developed the mechanical and industrial Battle Creek very largely. If you trace back all of these things we have today, you will find that mechanical Battle Creek has developed very largely from that institution. All the rest of it, almost entirely, all of our great food industries here, and the Sanitarium and everything in the health way, and a great many other things that come in on that account, owe their origin to the Battle Creek Sanitarium; and what an institution this has become. Dr. Peebles has told us how he has found it the world over, and I am not certain just what number of sanitariums there are in the world that are affiliated with this and largely controlled by this, and governed by the ideas of this institution here; but there are scores of them,--I think more than three score of them. I remember two or three years ago, as Dr. Peebles remarked in his case, we were in Calcutta, spent two or three days there in the sanitarium which was a Battle Creek sanitarium, in one of the beautiful streets, one of the finest streets in the city. Go to South Africa, and there is an immense sanitarium there; go to Mexico, and there is a large sanitarium there; so throughout the world; it is remarkable how it has spread, what powerful influence it exerts everywhere. Mrs. Stone three or four years ago spent a summer in Mussoorie, away up in the Himalayan mountains, more than 1000 miles north-west of Calcutta, and she had, or could have had if she wanted it, Granose Flakes every morning for breakfast, Battle Creek granose flakes. And that is the idea that has

prevailed, which originated here. And the prosperity of this town--I think you will all bear me out in this, depends more, has been promoted more by this institution and depends more upon it today than upon any other institution in it. And it is very strange, it seems very strange to me, and doubtless it seems very strange to you, that such an institution as this, which has so far built up this city, should have any enemies; that there should be any opposition to it. I can not understand it; and there are a great many things that we can not understand. It seems very strange to us that George Washington, as we look upon him, should have had enemies, but he had them--bitter enemies. It seems strange to us that Abraham Lincoln should have had enemies, but he had them, and bitter enemies who shot him to his death. It seems strange to us that Jesus Christ should have had enemies, He who came to save the world and was willing to give his life, for he had no thought only of benevolence and philanthropy,--it seems strange that men should have hated him, despised him and murdered him; but they did. So it seems strange to us that people here, people today should oppose that which is true and right, but they did. And I think it is true that no man can be right, no man can be true and honest and persistent in that truth and honesty and righteousness without meeting opposition, bitter opposition. But these men and the Lord did not lie down and give up. Washington carried his battles through to the end; otherwise he would not have saved the country, would not have been the father of the country, and would not be honored today. Abraham Lincoln did not lie down in his work; he stood up for it, and went to his death for his convictions. Jesus Christ did not surrender his principles; he stood up for them and was willing to die for them, and did die for them. And Dr. Kellogg is not going to lie down and run away. He wrote a letter the other day--he has not said a word to me on the subject; I have not had a word with him on the subject, but he wrote a letter and talked about leaving Fattle Creek and going to Atlantic City; but he is not going. (Loud applause). Of all places Atlantic City is the last place to which he would go. This institution could never have been born, or if it had been born, it could never have lived at Atlantic City. Atlantic City is a great surf, nothing but surf, perpetual surf 365 days in the year, and an institution like this would be submerged. If Dr. Kellogg has a million dollars given to him for a Sanitarium at Atlantic City he will go there and build it, a magnificent one, and it will be a success. But he can not take this institution there, and that would not succeed if it were not for this, in that atmosphere. No, Dr. Kellogg will stand by this institution and this City will stand by him (loud applause); it can not do otherwise. If Dr. Kellogg were not here I would make a prophecy, and that prophecy would be that in the future when the long years shall have come and gone and the history of this time shall have been written, the name which will reflect the most luster upon that historical page will be Kellogg. (Loud and prolonged applause).

The Chairman. "An institution is the length and shadow of one man," said Ralph Waldo Emerson. The Sanitarium, great as it is, as has been said this evening, is but a part of a system with branches in all parts of the known world, in all civilized lands. These collectively are the institution, the lengthened shadow of one man. How are such achievements possible in the span of one life? What a combination of co-ordinating faculties would be

required to explain such a stupendous achievement: Courage--what courage, what strength of purpose, what endurance, and withal what celerity of thought and of action! Perhaps celerity is the greatest of these. I recall a case in point, a telephonic conversation. "Hello, Dr. Kellogg." "Hello, hello." "Doctor--I see by the press, by the papers that you recently returned from Mexico. Did you have a pleasant journey?" "A very pleasant journey, indeed, Mr. Brigham. I thought of you almost every day I was there, and wished you had been there. I saw these great, green lizards six feet long up in the trees,--great, green fellows five or six feet long." For several days afterward I pondered this conversation. He thought of me, he was reminded of me--great lizards, green lizards, six feet long, up in the trees! I finally, after several days revolving this part of the subject and the compliment it contained, evolved this scheme to get even with the Doctor, and the scheme involved a puzzle. I would puzzle him for a little while, then finally I would tell him that these great green lizards that took his attention so forcibly were notorious vegetarians. "Hello, Dr. Kellogg." "Hello." "It has just occurred to me, Doctor, what particularly took your attention to those great, green lizards, why were you so particularly struck with those great, green lizards? Do you know?" With a flash, with a flash as if from a live wire and a shock equal to it came back,-- "Yes, yes, they are vegetarians." Surprised him, did I? Most men are contented to use this electrical contrivance we call the telephone to do their talking, but here is a man who thinks by electricity. Great is celerity in the lives of men whose lengthened shadows are the institutions of the world. Dr. Kellogg. (Loud applause).

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Dr. J. H. Kellogg: My friends, I think I never found myself so completely at a loss to know what to say as on this occasion. I certainly think it is very kind of you to come here and to say these many pleasant things, and I do not wish you to feel that I do not appreciate what you say. When I say to you that when Mr. Brigham telephoned me that you were proposing to have a dinner, a banquet, and it was to be complimentary to me, I at once began thinking, What have I to be complimented about? And several days have elapsed, and I have been thinking the matter over and I can discover nothing that I am worthy of compliment about. As I have been listening this evening here to what you have been saying, I have been feeling more and more unworthy of your compliments, and feeling more and more assured that I can do nothing more than to discuss them all. This institution is not the shadow of a man. Some institutions are; this is not. And certainly, if it were, I would not be the man. This institution is, I trust, not a shadow at all; at least I am hoping that it shall not prove to be a shadow. I have been bending my energies for more than thirty years to make it something real and solid and tangible. I confess I am at the present time a little bit in doubt as to whether such a thing is possible in the State of Michigan or not. But if it shall not be possible in Michigan, it will be possible somewhere else. The whole purpose of my life for many years has been to make an institution representing the ideas which this institution stands for, to build it, to organize it, and to place it upon a foundation where it might stand, where it might stand alone, might stand by its own force, by its own intrinsic merit and its own intrinsic power, without outside support or assistance, for that is the only way which it could be assured of standing at all. But I don't wish to enter into that discussion here tonight.

I want to assure you that I feel most profoundly grateful for the appreciation that is shown by your presence here tonight, and I accept your congratulations, for I feel that I am to be congratulated as a man who has discovered a pearl of great price. The only thing that I feel that I congratulate myself upon, except the discovery of Mrs. Kellogg, is the discovery of this great truth that this institution stands for. When a boy of fourteen, these principles came to my knowledge, and I recognized them as truth. They took hold of me, took possession of me, and I have never lost my relish for them. As I have been living these forty years since, I have seen these principles become more and more established in the world; I have seen scientific evidence accumulating; I have made it the business of my life to study and sift the evidence for and against, and to do it impartially as I could, and today I think I can say without any hesitation at all that the principles which this institution represents are more solidly established than they ever were before, and are acquiring recognition more and more, and I was thinking as I was sitting here this evening, and as I was watching you at the dinner table, noticing the readiness with which our bill of fare was being assimilated, that such a thing would not have been possible thirty years ago. Thirty-five years ago it would not have been possible to have presented as acceptable a bill of fare perhaps, and certainly it would not have been possible to have gathered so many appreciative diners. I was wondering how many of the persons sitting at the table this evening really relished their meal. How many really looked upon the meal as satisfactory, as a wholesome and satisfactory bill of fare. I thought as I saw the smiling faces about



that most people were quite well pleased, and I am going to be frank and say to you that when Mr. Brigham asked me whether this banquet should be at the Post Tavern or the Sanitarium, I very quickly said, with great celerity, at the Sanitarium, of course; because I did not want to miss such an opportunity for an object-lesson for inculcating the principles of this institution. So I am glad you are here and that again we have had a chance to feed you some of our animal food.

Some time ago a doctor said to one of his patients, "Madam, I think you should eat more animal food." The doctor called upon her a few weeks later and found her looking very pale, and rather melancholy, and he said, "What is the matter?" She said, "Well, I am feeling quite ill, Doctor." "Well, what is the trouble?" "Well," she said, "I got along with the oats pretty well, but the hay was something awful." Now there are different kinds of animal food. For our part, we feel that the sort of animal food that was made for us at the beginning when Eve ate the apple--kindly note it was an apple, not a beefsteak, that Eve ate,--and she could not have been tempted with beefsteak, I am sure. From that time, or at that time, at any rate, the animal food of the human race as well as of other races, was furnished by the vegetable kingdom. And I have not been able to discover any scientific proof that originally any other food than food furnished by the vegetable kingdom was intended for use. One thing I hope none of you at any rate have any reason to make a complaint the little girl did when she was eating deviled eggs. She was making a very wry face, as the eggs happened to have too much mustard in them. The mother noticed and said, "Mary, what is the matter?" She said, "Oh, Mother, there is too much devil in the eggs." There are some things which ordinary foods contain which we feel need to be exercised; so, in the Sanitarium bill of fare, we take great care to leave out all things of that sort.

I believe that I ought to say again that I do not appropriate to myself any credit whatever for this institution, and I feel that the good words that have been said, the complimentary remarks that have been made--I ought to disown every word of it, for this institution is the growth of an idea. It does not represent the growth or development or activities of a man or a set of men. If credit is due to human agencies, the credit is certainly quite as much due to my colleagues as to myself, for this is a sort of work that can not be done by one alone; there must be an association of individuals together, and in this institution there have been associated together, and there are here this evening living evidences of that in my colleagues who are here. There have been associated together here men and women who loved these truths and principles, not simply because they have done them good, but because it seemed as though the world needed these ideas; that the world had been wandering away from the right path and needed to be enticed back into the right road of wholesome living. That is the whole purpose of this institution, that is why it is here. It is a mission; and if I had not felt during the many years that I have been here that this institution had a mission, I certainly should have given up long ago. For there have been many dark hours. And I was thinking as Mr. Stone was standing here a moment ago, of one of the very darkest hours in the history of this institution, when our main buildings were in ashes, and we had not the means with which to rebuild, for the fire entailed a loss of not less than \$350,000, in fact pretty much all the savings of all

the years were wiped away on that night of the fire, and I was thinking of that dark hour when Mr. Stone came to me and spoke to me with a sympathetic tone in his voice, and with sympathy in his face, of his sorrow, his grief, and not only that, but he said to me, "Doctor, what can we do to help you?" I told him I did not know; the situation was one that wasted much for me. I did not know whether we should rebuild here or not. It was a question we could not settle. I did not know what Providence wanted us to do. I did not know whether the people of the town wanted this institution here or not. I felt that there was something of a hostile feeling in the city, and I was not sure but this was the door Providence had opened for us to begin our work somewhere else. And I was thinking of the weeks that followed, when Mr. Stone went as a missionary from house to house, and from man to man in this town, leaving his busy duties, his responsible work which was greatly needing his attention at that time, dropping his work and going right out in the town and doing, as I said, real missionary work in going from one to another until the sentiment of the town was changed. And I think we have no occasion to feel from that time to now that the people of Battle Creek have not a very kind, friendly feeling for the Battle Creek Sanitarium. Certainly we have no reason to feel that there is hostility here or unfriendliness. The thing that has most distressed me in my work here at the institution was the fact that it seemed to me that our work was not understood, that we were perhaps under more or less of ambiguity, that there was not a full understanding of what we were trying to do and how we were trying to do it, yet the situation has been such that we could not make clear what our work was. We simply had to wait for people to find out, and I am very glad to come in closer contact with the people of the city here in this way this evening, and in other ways. I feel that one of the things that we need to do here at the Sanitarium is to cultivate our friends a little more, and to get in closer contact with the people of the town. We have been very busy here at the Sanitarium,—our doctors work night and day, and their attention is taken up continually with the sick people here; we have had too small a number of doctors to do the work and too small a number of business men to perform the duties of that department, so we have all been overworked; it has taken our entire time, every moment of our lives that we did not necessarily have to spend for eating and sleeping—and we spend as little time in that way as possible,—so we have not had time; and we have been isolated, and there have been various other reasons, perhaps, why we have been so isolated. I am afraid we have been a little Pharisaical and I am ashamed of that. I do not know that I can take that to myself as fully as I might have; I am not quite certain whether I have felt better than my neighbors or not; I am not quite sure about that. But I feel that as a class of people in this part of the city we have not been free to mingle with our friends and neighbors as we should have been, and for myself and for my colleagues, I am sure we are all very anxious to cultivate friendly relations with our townsmen and with our friends in this City and to become a little better acquainted. Probably the fault has been more ours than that of others.

I was thinking as Mr. Buckley was speaking of the old days when we were boys together, in school together, and I certainly do not think he had any reason to reflect upon himself for not improving his time, for I was always saying to myself, "If I was as good a scholar as Mr. Buckley how glad I would be; it would be so much easier for me to get along with my work. I

had to occupy my time very busily outside of school as well as in school, for I started out to earn my own living from the time I was ten years old, I had to care for myself after that time; so I know what it was to be very busy, and I am sure I might reciprocate the sentiments that were expressed of fraternity during all these years. I always feel glad to meet Mr. Buckley and to shake his hand, and I am very glad to greet him with other friends here tonight.

Our friend, Mr. Bailey, has shown us very many kind favors during many years past, and I remember one time I was called to see a poor, sick woman in the night, to perform a surgical operation, and I called upon Mr. Bailey to help me get there. It was a desperate case, there was no regular train that would get me there, that would make a proper connection, and it was too far to go there with a carriage, and Mr. Bailey said "I will help you out." And he promptly got out an engine and a car, made up a train for me, carried me in the middle of the night down to Marengo and back again; and when I called for the bill, I found he had managed somehow to settle the bills himself; there were no bills rendered to me. I never shall forget such favors and very many other favors.

Now, Mr. Brigham was speaking of my thinking of him. I remember Mr. Brigham a great many years ago. I was teaching a physiology class, I think about thirty-three years ago. Mr. Brigham sometimes came in to my talks to the class, and I became acquainted with him. One day he said to me, "I am going away to be gone for a year or two." I found he was off for a tramp in South America, and I have never told him, but I do not believe there was a week during that whole time Mr. Brigham was gone until he got back again that I was not thinking of him. I had in my mind pictures of him tramping through the forest there, what a lonesome tramp! and I think he remembers how hard I labored with him not to go, for I thought it was a long, dangerous journey. I am very glad to have these friends here tonight, and to know that Providence has watched over us all of these years and given us each an opportunity to do our part in the world. Whatever I have done or been able to do, I am sure I owe it all to a kind Providence. I have earnestly asked God every day of my life to help me to do the things I had to do, and not only every day, but a great many times a day, for the problems have been too much for me; and I want to assure you, my friends, that this institution is not the work of a man. If I could give you the inner history of this institution, if I could tell you the difficulties and the perplexities, and the obstacles that it has been necessary to work through and to overcome, you could see that no many could ever do it. I can frankly say to you that I have been almost every day of my life in my work in this institution passing obstacles and difficulties that I knew nothing about how to get over, how to get through; I could only ask God to help me, and go straight ahead. I felt that this was a thing that needed to be done and must be done, and I have simply worked away. People give me credit for having a great deal of foresight and being a shrewd calculator, manager and all that. It is not a word of it true, my friends. I never made any plans for such a great institution as this; I never planned for any great work. I came here to a little two-story wooden building with twelve patients, and I never supposed it was going to be any

bigger than that. I never dreamed of anything else. I came to it that year only because there was nobody else; it was simply a Hobson's choice, and it was an accident, in a certain way, I think, that I am here tonight, and you are here complimenting me. I am not to be complimented. This thing was a thing God planted here in this place, an idea that needed to be developed in the world, that the world needed. We are members of a degenerate race, a deteriorating race,--there is no question about it, and we are going down hill with tremendous rapidity, and it is necessary that some standard should be erected and that light should be planted to warn people off the shoals, of the awful dangers that are developing in the human race, everywhere in civilized countries at least. So this is one of the lights God has planted, just as he has planted many others in other places; and it has happened I am here, and others are here; and I am willing to be congratulated, but I do not want to be complimented. I want God to have the glory that belongs to him; I want the credit to be just where it belongs. It is truth that is to be honored and not me, or any other man. It is not hard for me to say this; it is a pleasure for me to say it. I say it not as a duty, but because I would not want anybody to go away from this place with the impression that I builded this place or had very much to do with it except to do each day what I felt impelled to do, what I simply had to do because of the circumstances which surrounded me and pressed me along.

Now, I will just tell you one circumstance so you will see why I feel as I do. Just thirty years ago this very summer, this very time, this very season of the year,--just thirty years ago we were just building our first main building, and we had a building that cost,--as such enterprises always do,--three times as much as we were led to believe it would cost at the beginning, and we started to build with only three thousand dollars in the bank; that is all the money we had; every dollar was borrowed with that exception. We had gotten up to the place where we had the roof on, but the building was not at all finished inside; the whole town was full of people waiting for a chance to get in; and there was need for rooms as fast as they could be gotten ready, but we had not one single dollar, not a dollar in the bank, and worse than that, we had thirty thousand dollars due in ten days, and not a dollar in sight. Every dollar had been arranged for; money had been promised but everybody had gotten scared and failed to produce the money. The first building cost one hundred thousand dollars, and I handled over \$500,000 in putting it up. I borrowed money for ten days, and paid it; borrowed money for two weeks, paid it; borrowed money for thirty days, and paid it. So it required constant changing and manipulating in that way, and we finally got to that point. Now, we had thirty thousand dollars due in ten days, and I thought the matter was arranged after a great deal of anxiety, but I had been disappointed and the last hope was gone, and I was in utter despair. It looked as though the whole enterprise must fail, and I was walking up and down the streets in front of this building on the sidewalk there, or the one that preceded it--not the present one,--and I was walking up and down there from midnight on when everyone else was in bed. I walked up and down there hour after hour, pondering what could be done, and I was in absolute despair; I could think of nothing at all, and I was tearing my hair out by the roots in the agony of my soul, for it seemed the thing must fail.

I turned my face up toward heaven, and I pled with God to help me, to send me help, and I said, "Oh, God, if Thou wilt help me, if Thou wilt make this institution what it ought to be, I will never take an atom of credit to myself, I never will allow any credit to be given me." I tell you, my friends, that night was burned into my soul. In less than ten days, I had the money, every dollar of it. Our good old friend, Mr. Collier, who is now dead, when I stepped down to the bank one day and told him our situation, said, "I will get the money for you." I hadn't a thing in the world but a few books and a horse and carriage, but Mr. Collier took my note for five thousand dollars, and the note of the Sanitarium for ten thousand dollars; he took Prof. Brownsberger's note for five thousand dollars--that is the man Prof. Stone was talking about,--he hadn't anything either but a wife and baby; but Mr. Collier took his note for five thousand dollars and the Sanitarium note for ten thousand dollars and the Sanitarium didn't have anything but a debt, and my note for five thousand dollars. Now, that was not a good business proposition, was it? Mr. Collier told me his colleagues were fairly frantic with fright because of what he was doing, but he said--I asked him twenty years afterwards, "Mr. Collier, why did you do it? That wasn't a good proposition." He said, "Now, when you came into my office and told me about your situation, why I kind of felt I would like to help you." Now God put that into his heart, and that is what helped us out. God answered my prayer, and I know he did, and I want to tell you, my friends, that this institution has not been built with skill, and this enterprise has not been built up with shrewdness nor with cunning nor with smartness, nor by human power or ability; it is because God is in it; he has helped about it, and I am here simply because God has been good to me and merciful, and has given me an opportunity to have a part in a good thing, and I am willing you should congratulate me, but I beg you don't compliment me, and don't think that I am anything but a poor, humble instrument God has used here, and I am glad to be here. I do not know of anything else I would like to do in all the world so much as the thing I have an opportunity to do; but I only wonder that God has permitted me to do it.

Now I want to thank you again for your courtesy and for your appreciation and for your presence here tonight, and to hope that I may have the opportunity, and that my colleagues here may often have the opportunity to meet you and that the present friendly and fraternal relations and feeling may always exist. I thank you. (Loud applause).

The Chairman: Our Club is complimented tonight by the presence of many of Dr. Kellogg's colleagues, as he says, and guests, friends of the institution. I am sure we would be glad to meet all of them; they are all good people, and I think everybody present will agree with us that the occasion has been a great success, and that everybody feels thankful to everybody else for the radiation of so much goodness. (Applause).

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## THE BLOOD—PRESSURE

A Stereopticon Lecture at the Sanitarium Parlor, Battle Creek, Mich., Thursday,

April 30, 1908, at 8:00 P. M.

by

J. N. Kellogg, M. D.

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### Hebrew

When the old prophet said, "The blood is the life," he gave utterance to a scientific fact which has not been upset, in fact, which has been only confirmed by the researches of scientific men during the last twenty-five years, especially during the last fifty years; and the last ten years, and even the last five years facts have been brought forward to the ~~scientific world~~ attention of the scientific world, particularly the medical world, which show how important is the blood in the healing and the curative processes of the body. The blood we know to be essential to the maintenance of life. If the blood is the life, it is the thing which maintains the life of every tissue, the life of every cell, and of every organ of the body, the thing which lies back of all the functions of the body; and the more blood, the more life; the more function the more activity; so it is very important for us to know about the blood and how it is circulated.

I I told you the other day something about the blood. Tonight we are going to talk about the circulation of the blood, and blood-pressure, and what happens when the blood-pressure gets too high,—the consequences, and so on. Here is a view of the circulation. This is the heart, the central organ, the pump, and here are the pipes, called the arteries, through which it is distributed to the various parts of the body; then here are the tubes, the veins, which bring the blood back to the heart. The blood is forced out into the body under pressure. If we should tap one of these arteries and attach a tube to it, it would raise a column of water seven feet high. It requires that amount of pressure to circulate the blood

the blood. The blood is forced out of the heart with considerable velocity, at the rate of ten or fifteen feet a second when it goes out from the heart; it goes with great rapidity; but the speed of the blood becomes slower, and slower and slower as it passes through these large arteries, as the arteries get smaller, and smaller and smaller, sub-divide, break up, until by and by they come to the minute vessels called the capillaries which are so small only a single corpuscle can pass through at one time, and even sometimes has to roll up in order to get through, has to fold a little. These tubes are so small the blood has to be forced through these minute capillaries from the arteries, then picked up in the veins to be carried back to the heart. These cells are very small. These are about 1-3000th of an inch in diameter, the red ones, and the white ones are about one ~~twenty-fifth~~ <sup>2500th</sup> of an inch in diameter, that is, 2500 of them arranged in a row would make a row only an inch long, and the great pump, the heart, the double pump shown here diagrammatically, is double; and this great pump is continually barely keeping up pressure high enough to keep the blood moving through against this resistance. This is the left heart, and this is the right heart, bound up in two bundles. The blood is forced out through this great tube the aorta, and is brought back ~~from there~~ through these veins, and then forced out through this large artery, the pulmonary artery, to the lungs for purification.

The heart does an enormous amount of work. It does work equivalent to lifting 124 tons, one foot high every twenty-four hours. Every hour it does work equivalent to lifting six tons. The blood is forced through the arteries and the small capillaries, and in that way every organ is supplied.

This is the stomach, and this shows the large vessels which supply the stomach. Here is a large artery that runs clear around it, you see. One runs around one side, and another artery around the other side; then here is the pancreas. Here is a large artery which goes to the spleen, and some branches go to the pancreas; so the pancreas are supplied with a large amount of blood, because the pancreas, the spleen and the stomach are organs which require a large amount



the pancreas, the spleen and the stomach are organs which require a large amount of blood.

Here is another view to show the enormous supply of blood-vessels to different parts of the bowels. Here is the intestine. This is just a small section of intestine, representing perhaps six inches of intestine, and this shows how these large arteries run down into the intestine, are distributed; they run so close together you can hardly see the spaces between them,--such an enormous supply of blood from the intestine and the large veins.

This shows the mesenteric arteries and veins. Here is the liver, the stomach, and the bowels. This gives you a better idea of the large arteries which are subdivided, again subdivided until the whole intestine, large intestine, small intestine, liver, stomach and all these other organs are supplied abundantly with blood. These parts of the body receive more blood than any other part, because it is here where the blood is made, where the supplies of food are taken in. The interior of the body is more exposed to the attacks of germs than any other part, and the blood is needed there for protection as well as for the digestion of food. Here is the heart, and the lungs on either side. You see how they are closely packed together here. Here are the large arteries which supply the head, and the large veins which bring the blood back. Here are the arteries and veins for the arm. The entire body is constantly supplied with blood, and any part which does not receive blood dies very quickly. If we tie a string around a finger and cut off the supply of fresh blood, it very quickly dies.

This shows the kidney, an organ for the purification of the blood. Here is the suprarenal capsule. This produces a substance called adrenal. If you go in to see Dr. Byington and have your nose treated, he puts adrenalin into the nose to stop hemorrhage, to contract the tissues. When a little adrenalin is put upon the mucous membrane of the nose, in a moment it becomes white. If it is injected under the skin it influences the area there so it is absolutely

white. The blood-vessels are contracted so completely the blood can not enter at all. This adrenalin is supplied by the suprarenal capsule or the adrenals, as they are called, is formed continually and sent into the blood for the purpose of maintaining the tone of the blood-vessels. It is a wonderful method by which Nature manufactures the medicine the medicine which she needs herself. When there are blood-vessels that should be kept contracted to the proper amount so as to keep the blood distributed equally throughout the body, this adrenalin is being continually produced. The thyroid gland is producing a substance all the while, which dilates the blood-vessels and so the balance is maintained between the activity of these two organs, the suprarenal capsules and the thyroid gland. Sometimes a person's thyroid gland becomes enlarged, grows too fast, makes too much of the dilating substance. The result will be what is known as exophthalmic goiter or Graves's disease, the throat becoming too large so the eyes protrude because of the enlargement of the vessels around the eye. The throat becomes enlarged because of the enlargement of the thyroid gland, and there is a flushed, feverish condition of the body which is the result of an excessive dilatation of these blood-vessels. The heart is over-excited. The suprarenal capsule makes a substance which opposes this dilatation of the vessels, causes the contraction of the vessels; so it is necessary there should be a constant balance maintained between the product of the adrenals of the suprarenal capsules, and the product of the thyroid gland. If either one gets a start, then there is mischief resulting. In Addison's disease, there is destruction, ~~and~~ tubercular, cancerous, or some other destructive degeneration of these suprarenal capsules, and the person loses his power to destroy toxins, the skin becomes sallow, yellow, as a result of the absorption of poisons, or poisonous matters from the colon. This is the condition in Addison's disease, because of the destruction of the adrenal bodies, and this is because the adrenal substance produced by these bodies, not only contracts the

blood-vessels, but is a substance which helps the body to burn up poisons; it is an antitoxic substance which enables the body to destroy the toxins which are taken in from the intestine. A toxin is a poison taken in from the colon. The purpose of the kidney particularly is to eliminate poisons. The liver is a closed door which shuts the door against poisons and which keeps poisons out of the general circulation in a way which we will learn later; but the kidneys are an open door through which poisons are being continually discharged from the body. This work of separating poisons from the blood is carried on continually up here in this portion of the kidney, the cortical portion. The poison is carried off through the ureter to the bladder and discharged. One purpose of blood pressure is to force the blood through the kidneys. The kidneys have large vessels which carry to them an enormous amount of blood, and it is to force the blood through these vessels in which this work takes place. Here is it. Here comes an artery. This is from the kidney. This shows the minute structure of the kidney as you see it through a microscope. Here is one of the capsules, a very minute capsule, or Malpighian body; these are the arteries, and here are the veins which gather up the blood and carry it back to the heart. Here the watery part of the blood passes out. It is squeezed out the thin walls of these minute vessels and passes down these tubes,--a very convoluted tube, very long and crooked tube, and finally finds its way down into the interior of the kidney, thence down to the bladder. See how much force must be required to force all the blood up through these minute little coils. We have our steam boilers down below the hill, and we require about four pounds of pressure to circulate steam through these steam coils by which our house is warmed. It requires four pounds to circulate this steam through the house,--from four to ten or twelve pounds; but sixty pounds' pressure is produced in the boilers, forced up to the house, and from here it is carried through the house at a pressure of about four pounds. It takes just about the same pressure to circulate the blood through the liver, kidneys and all the different organs of the

body as it does to force the steam through this house. If the water-pressure is low, you know you can not get water out of the tap very well. So it is with the blood. If the pressure is deficient, the blood will not be properly distributed to the body; the kidneys will not get their proper amount of the blood if the blood-pressure is low, so there must be a sufficient amount of blood-pressure to distribute the blood.

Here is the liver, a little section of the liver which shows how the blood is circulated through the minute vessels of the liver so that poisonous matters can be taken out, poured out these little tubes here which gradually increase in size until they reach the periphery, then carried off. These vessels bring in the blood out of which is made the bile, which escapes into the bowel and is thence discharged from the body. Now, in order that this work should be carried on properly, all of these regulating functions must be executed. You must have the right amount of secretion from the thyroid; we must have the right amount of secretion from the adrenals; the right amount from the adrenals; we must have the heart doing its work properly; we must have the blood-vessels formed so that the blood can be properly circulated. Now, this shows what happens to the blood-vessels sometimes when they have been overstretched, irritated by poisons circulated in the blood,--the blood-vessels gradually become hardened, chalk is deposited in the walls, the walls become thickened and fill up just as a water pipe becomes filled up with sediment.

These are actual x-ray blood-vessels shown here, photographs of arteries that have been spoiled by the disease known as arteriosclerosis. This shows the inside of these blood-vessels. Here is a blood-vessel partly filled up. Here is another one filled up still more. The wall is thickened until it has become smaller and smaller and smaller, until it is so small it is impossible to circulate a sufficient amount of blood through it. In order that a proper amount of blood

should be circulated to the brain, for example, when the caliber of the arteries carrying blood to the brain had been diminished one fourth, it would require four times as much force at least--more than that, because the friction would be increased, so it would require more than four times as much force of the heart to drive to the brain the proper amount of blood. Suppose a person's blood-pressure was such as to require, we will say, ninety milligrams of mercury--a pressure of 90 milligrams of mercury, or four inches of mercury, about three and three eighths inches of mercury. Mercury is much heavier than water, you know. That is the way pressure is indicated--in millimeters of mercury--the column of mercury which would be required to drive the blood through. That is, if we should tap an artery and attach it to a column of mercury here, a tube which had some mercury at the bottom of it, the pressure of the blood would be sufficient to raise that mercury up to the height of three and a half inches--in such a case as that. Suppose that amount of pressure is required to circulate the blood to the brain and nerves, and the rest of the organs of the body, the result would be if the blood-vessels are narrow so that it required a higher pressure to get the same amount of blood through the mercurial column, it would raise; then it would be 150, 125, 130, 180, or perhaps 200. We had a guest here some time ago, a lady who had a blood-pressure of 310--three times what it ought to be. We will say more about that.

Here is a diagram intended to show how the blood is circulated, and the relation of blood-pressure to the circulation. Here is the heart which is the great pump which circulates the blood through the body--the left side of the heart; and this represents all of the arteries of the body; and these tubes here represent the capillaries of the body, small tubes which dilate and contract in order to control the circulation. For example, here is the salivary gland. Now, the salivary gland has a very small supply of blood, ~~very~~ and makes very ~~an~~ little saliva; but as soon as one takes into the mouth agreeable food, then the veins of the

salivary gland enlarges enormously, and the blood flows into the gland in great quantities, and the gland begins its work in great activity, and the saliva is poured out in great quantity, and sometimes it comes out so rapidly that it comes in little jets or spurts. Some of you have sometimes had that experience. You have sometimes felt a little spurt of fluid on the inside of the cheek. It is because your salivary glands were working so fast the saliva could not flow out fast enough under the ordinary pressure, so it is being spurted out. The blood-vessels are regulated differently—to supply each organ just the amount of blood it needs. When this food is taken into the stomach, the same thing happens to the stomach. The blood-vessels of the stomach become dilated, and a large amount of blood flows through the stomach so as to enable it to make the gastric juice which is required; and the pancreas, the liver, and all these other organs are operated in exactly the same way. The same thing is true of the brain. A doctor made an experiment once upon a man who had had an injury to his skull so a portion had to be removed so he could look in and see the brain. He watched this man. When he was asleep the brain was pale. The moment he waked up the brain became rosy in color. The same observation has been made upon monkeys from whose skull a portion of bone had been removed so the brain could be watched. The moment the brain became active, when the monkey woke up, it would become rosy, and it would become pale as soon as it went to sleep, because the brain is supplied with just the amount of blood required. Now, this supply of blood, suited to the needs of each organ, is a thing that is regulated with such nicety and with such absolute certainty that some of the most marvelous things are observed in consequence. For example, here is a man who has had a fall upon his head; and he is insensible. It may be because a blood-vessel is ruptured; it may be because the skull has been depressed upon his brain; it may be because his brain has been jarred because of concussion of the brain, or compression of the brain. If it is

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concussion of the brain, he will get well in a little while if the brain has not too badly bruised, he will become conscious again and after while be all right; but if it is pressure upon the brain from a ruptured blood-vessel forming a clot in the brain or from compression of a portion of bone upon the brain, then he will not get well without a surgical operation, that is, if it is a severe depression; so it is necessary for the surgeon to know. Now, how do you suppose you can find out? By simply obtaining the blood-pressure. We have instruments by which we can find ascertain that. It is only necessary for the doctor to apply an instrument, to the wrist, a sphygmograph; and these are pulse tracings taken by this means. These pulse beats are the hand writing on the wall, sometimes. For instance, this is a smokers' pulse. This shows how the smoker's heart is being abused by tobacco.

Here is an indication which shows different kinds of blood-cells. This is a normal, and this a high tension pulse. This is one of the earlier instruments devised for determining the blood-pressure. A little rubber ring is put around the finger, the blood is all compressed out of the finger by means of a piece of rubber here, and the finger is wet. Then this little rubber ring, having been slipped over before, is inflated by a rubber bulb which is held in the hand here; the ring is inflated until it remains wet(?), then the pressure is gradually let up and is watched. This column falls as the pressure is diminished, and finally comes down to the point that is normal, and that would be about here. When it gets down to about there, then the pink color returns to the finger. That is the pressure required to hold the blood out of the finger. When you get down to the point where you see the finger has become red under the pressure here, that means that person's blood-pressure is that. This is a very simple means and a very good one, but one of the best we had until we got our present instrument which you see here. This is a more exact and scientific instrument, in which the same rubber ring which has to be inflated is a bigger one and put around the arm,

and the principle is exactly the same; and by the use of this instrument we are enabled to measure the blood-pressure just exactly as accurately as you can measure steam or water pressure. This shows the instrument more in detail. When you can feel the pulse just stop and then begin again, that is the critical point.

Now let me just say a few words in further explaining the blood-pressure. I ought to make clear to you why it is so very important to determine the blood-pressure in such a case as I am telling you about, where the skull is compressing the brain so the brain is not able to do its work, so the man is lying unconscious. If the skull is compressed, it must be raised; so it is important to know that; so the surgeon will apply one of these instruments, find the blood-pressure perhaps 150 when it ought to be 100. Then he knows the skull is compressed, and he must operate; or there may be a clot that can be taken out. And the same thing is true of apoplexy. Formerly when a person had a large clot formed in the brain, he was certain to die, but now it is possible to remove a portion of the skull and remove that clot; it is possible even to know just where the clot is by means of the scientific facts which have been worked out in relation to the functions of the brain in order to locate the clot and determine the presence of a clot by taking the blood-pressure. Why is that? Why should the whole blood-pressure be raised when there is compression of just one point in the brain? It is simply because the forces which control the body, which care for the body are so desirous of maintaining the perfect integrity of every part of the body, the absolute health, vigor and activity of every part, that if one part is starved, if one part is deprived of the blood which it needs, the blood-pressure of the entire body will be raised in order that that one part should be supplied; so when there is pressure upon a part of the brain, the blood-pressure is raised in the effort to get the blood ~~thru~~ through that bruised part so as to save his life. Now, the same thing is true of the kidneys. When the kidneys become diseased because of



the arteries becoming small, because of hardening of the arteries of the kidneys  
~~happens~~ in consequence of the passing of so much poison through the kidney, then  
 the blood-pressure in the entire body is raised. The kidneys are more subject  
 to this disease commonly known as Bright's disease than any other part of the body,  
 because they are more exposed to poison. The kidneys, as I stated to you a little  
 while ago, are the open door of the body, or the back door of the factory through  
 which all the rubbish is thrown out. They are a sort of sewer that leads the  
 poisons out of the body. The urine is an extract of the blood. Whatever urine  
 contains was obtained from the blood. It was all in the blood before it was  
 passed off in the urine. Anything that is found in the urine can ~~not~~ be found in  
 the blood; it is there, and the kidneys take these poisons out of the blood.  
 The blood takes the poisons up from the tissues, from different parts, from the  
 stomach and bowels when poisons are taken into the body; then if poisons are taken  
 in in extraordinary ways such as smoking and chewing tobacco, by the use of meat,  
 of tea, and coffee, by the inhalation of poisons,--in whatever way the poisons are  
 taken in it is the duty of the kidneys to carry these poisons out; but in the  
 urine the poisons become concentrated, very much concentrated, you see, because  
 little by little the poisons are taken out; so in the urine we find the poison  
 present in concentrations representing hundreds of volumes of concentration, hund-  
 reds of times more concentrated than in the blood. So the kidneys themselves are  
 exposed to these poisons more than any other part; and the constant presence of  
 these poisons in contact with the tissues of the kidney, by and by sets up this  
 disease of the kidney; and ~~it is because~~ <sup>this causes</sup> the kidneys to undergo degeneration more  
 readily than any other part of the body, if poisons are present in abnormal  
 quantity. So the man who smokes is certain to get Bright's disease sooner or  
 later. If a man uses alcohol, he is certain to get Bright's disease of the  
 kidneys if he does not die of some other cause, from accident or some other thing

of that sort; it is certainly going to be because he is introducing into the body an abnormal amount of poison. A person who eats meat in considerable quantity so there is decomposition taking place in the colon all the time and these meat poisons are being absorbed into his body, he is certain to die before he ought to; for Prof. Metchnikoff has shown beyond any possibility of doubt, that meat eaters are short lived; that is, meat eating animals which have long colons, are shorter lived than they ought to be; that their lives are shortened by the use of meat. There can be no doubt of it, and it is because of the poisons which are formed from the meats. Here you have been examined, and you find you have high blood-pressure. I was talking with a gentleman a few moments ago whose arteries are hard like those arteries you saw a few moments ago; his blood-pressure was 185. That means the process of hardening is going on, and probably with considerable rapidity; and next year if we see him it will be 195 or 200; the next year, 210 or 215, and so it will go right on up rapidly. This process goes right on. You have sometimes seen people who grew old very quickly. You say it is astonishing what a change there has been in that man or woman in the last two years. You wonder why it was. It is this degenerative process that has started and is progressing rapidly. When the kidneys have once reached the point where they are not able to keep poisons out of the blood, then they accumulate rapidly. It is just like a hole in a ship; when it gets big enough so the water can rush in rapidly, it is going to sink the ship. It starts as a little bit of a hole, but gets bigger and bigger, and by and by the ship goes down. That is the way with the kidneys,--when they have gotten to the point where they are no longer able to do their work well. Just as long as the men can bail the water out of the ship, or pump it out as fast as it flows in, the ship can be kept afloat all right. If we can have more capacity for baling than necessary to keep the ship afloat, the opening of the ship may increase considerably before the point is reached where the balers can

no longer keep the ship afloat, and sooner or later the time will come when the men can not keep up with the incoming tide, so the water will rise higher and higher in the ship, and the ship will sink, lower and lower in the water, and by and by it will go down. That is the situation of the man whose arteries are getting bad, and whose kidneys have reached the point where they can no longer keep the blood clean, but poisons are accumulating in the blood, this process of hardening of the arteries begins, and progresses more rapidly. How important it is for such a person to know how to keep his blood clean, to know how he can check this process of hardening the arteries and of advancing old age! It is the most important thing you can learn about, my friends, those of you who have passed middle life. For anybody who has passed middle life and cares to live, the most important thing for him from the <sup>physical</sup> ~~general~~ standpoint is to learn how to be saved from arteriosclerosis, for this arteriosclerosis is the instrument which Old Father Time uses to slay us with; that is the sword with which he cuts us down. Every man and woman who dies of old age dies of arteriosclerosis. That is the old age process. Now, you see an old oak tree, it looks different from a young tree, doesn't it? I passed an old oak tree the other day that looked so old and venerable I involuntarily took off my hat. It had that old, venerable aspect. It makes you think of the old man. You can almost see the wrinkles in the tree. You see the old little twigs have all disappeared; the branches are short and stubby. What is the matter with the old tree? The very same thing is happening to it. The channels that carried up the sap from the roots of the tree to keep it flourishing as in its youth have been gradually furrowed and choked until they are no longer new and able to supply the amount of nourishment needed; so from the roots up to the tip, the tree is old. That is the condition of the old man. Now, to learn how to stop this old age process is a thing of tremendous importance for everybody. It is just as important for the young man as for the old man,--not so eminently important, but really just as important, because in youth we can culti-

vate old age, or rather, we can cultivate longevity. In old age, all we can do is to possibly add just a little; but in youth there is the time we are using up our old age; that is the time we are cutting off our years, by useless expenditure of energy, vigor, and vitality, by ~~excessive~~ customs of various sorts. In youth we are unwise, careless, heedless,--don't think but what we are always going to be just as strong and hardy as we are now. If you talk to a young man or woman who is doing something he ought not to do, eating candy, smoking, he says, "Oh, smoking doesn't hurt me; candy doesn't hurt me; my stomach will digest anything." How many of you have said that when somebody expostulated with you years ago when you ~~you~~ ~~had~~ thought you could eat anything? You could at that time, but you were using up your capital, and by and by it was all used up, and your capital was gone; then you made a check on the bank and it was not cashed; then you had a sinking spell, and your stomach gave out. Of the various things we can do, that can be done to check this downward process, this poison-forming process in the body, the most important of all is diet. That is the most important of all, because these things are made out of what we eat; that is where they originate--in the things that we eat; and poisons which make arteriosclerosis are made from one element of food. They are not made from fats; they are not made from starches; they are not made from sugars; but they are made from just one thing, and that is protein; and they are chiefly made from animal proteins and from the forms of animal protein that are found in meat and eggs. They are not made from starch or fat or sugar; they are made only to a very small extent by the proteins found in vegetables; so it is important for us, in the highest degree important for us to know this thing, to recognize the fact that if one takes a large excess of these proteins, then he must count upon having developed in his body a large amount of these poisons. If one says, "Oh, I am fond of beefsteak; I like it; I am going to eat beefsteak", he has got to consider the fact that all that beefsteak, except

the small amount which he can utilise, which is very little, not more than three ounces a day,--all the rest he eats is made into poisons, and those poisons are making him an old man prematurely. He has got to calculate on that and consider whether it will pay or not. A man in Chicago some time ago published a calculation in the papers that he had eaten five wagonloads more than he ought to have eaten in the course of his life. That five wagonloads, a large part of it was converted into poisons. A wagon load of poison is a tremendous burden for one pair of kidneys to carry and to deal with, and the poisons resulting from the putrefaction of these unused foodstuffs in his body are hardening his arteries. One of these days he will go to the doctor and say, "Doctor, I am giddy when I get up in the morning; I sometimes have strange, sudden giddy spells come over me; my memory is getting short; I am getting forgetful; I can not concentrate my mind as I once did; I can not take things in so rapidly and so readily as I once did. I can not make up my mind about a proposition as quickly as I once did; I get confused; sometimes I do not sleep very well at night; I have insomnia, I can not sleep. I am irritable, feel as though I am depressed, often feel as though I was not myself. I sometimes have to say to my wife, 'Don't mind me, because I have got an off day today; never mind what I do today, or what I say; you must excuse me, this is an off day'" so he says, "I am feeling myself deteriorating." What is the matter? The doctor takes his blood-pressure, and finds it has gone up fifty points. The doctor knows right away what is the matter. He knows that man is getting arteriosclerosis, and that the blood-vessels of his brain are becoming degenerated and his brain is damaged because it is not properly supplied with blood; deterioration is taking place; that man is becoming senile. That is the thing that happens. Some of you remember that some time ago a woman down in Ohio got a whole lot of money out of the banks,--an adventuress. The woman went to prison and the banker went to the graveyard. When I saw an account in the papers of what that banker had done, the president of the bank, of what he had done,

how he had trusted that woman, I said to myself that banker was an old man at any rate; it does not make any difference what the number of his years is, he is an old man; he has got arteriosclerosis, paresis, or he would not do such a silly thing as that, because he is thoroughly unbusinesslike. I was not a bit surprised when I saw a few months later that he had been buried, that he had died of paresis. It was not that loss of money that gave him paresis; but it was the paresis that caused the loss of money; it was the paresis that led him to do the foolish thing which led to the wreckage of his bank. You will often see that some business man has done something that you say is a very foolish thing, a man that has been a successful business man for forty years, perhaps, will sometimes do a strange, foolish thing and people wonder why he did it. This is the explanation of the thing. The man is going right on at his business, and this insidious thing is working, cutting off the blood supply of his brain, the efficiency of his brain, deteriorating; his judgment is being modified, and he does not know it; his friends hardly know it. It goes on so insidiously that by and by he does some outrageous thing, then it is discovered. A man was brought here from Iowa some days ago, and the thing that discovered his condition to his friends there was the fact that he was doing foolish things in business. He was a shoe dealer. He ordered carloads of shoes and boots of shoe dealers' stock; he ordered carloads from every great manufacturer in the country, and they came pouring in there, carload after carload of goods he did not need, and had no place in town to put them. His friends began to look into the thing, and found this man had actually been sending out these orders to every manufacturer in the country, to send him two or three carloads of goods. His friends saw something was the matter with him, and brought him here. And he actually was so silly he had to have a man with him all the time to keep him straight. We had to keep him out in a cottage because he was so utterly incapable of behaving himself in an orderly way. His blood-pressure was away up

high, and the auto-intoxication that made it was simply terrible,--his tongue was so filthy, his breath had such a horrid, foul smell, his skin had such a leathery tint. It is a wonder he could live at all. In three months he was back to his home and his business and was all right, appeared to be all right. We could not discover a thing wrong with him.

Some years ago the mayor of a large western city was brought here in the same condition. He was about forty-five years old, and he broke out in the management of the city affairs so that it became apparent to everybody that he was non cogens mentis. He was brought here, and we put him on an antitoxic diet. His blood was cleansed, purified, and in six months he was well again, recuperated. If he had gone on three or four years, he could not have gotten well. I am dwelling upon this thing not because I want to frighten you, but I feel it my duty as a physician who knows this thing to tell you about it; it is a most important thing for men and women to know about, that the dietary is a thing that more than anything else controls our physical destiny. The food we eat is manufactured into poison or into tissue. It must be one or the other. Any excess you eat becomes poison, and it is not simply an inconvenience; it is more than that--it becomes an actual food poison. More people are dying this minute in the United States and in every other civilized land, far more people are dying from food intoxication than from alcoholic intoxication. The wrong diet, food intoxication,--meat eating in my opinion, does more harm, more physical injury, perhaps more moral injury to the people of the United States today than alcohol does; yet I am not at all in favor of alcohol, because alcohol is one of the products of meat eating. Banish the meat, and the alcohol will almost disappear--if you banish the process of meat eating. Certainly, in countries where men and women are strict vegetarians in practice, you can not show me a case in which those people are drinkers. They have no appetite for drink, they have no appetite for liquor. Meat is a thing

that creates a craving for tobacco alcohol and other narcotics and stimulants. They are required by the body to neutralise the evil effects of the tobacco and the alcohol. It is a common thing in the institution here when people come here with these appetites to find in a week or ten days they are entirely disappeared, and they become insensible to their presence, even. I remember a tobacco merchant from the South who for twenty-five years had been using tobacco, a pretty long time it took him to get rid of it. He told me he would resolve at night that he would never smoke again, and the next morning he would smoke a cigar. But when he went home, he said, "Doctor, I can not smoke; certainly I am not going to smoke any more. I had not been here three weeks before I went down town past a man who was smoking a cigar, and the odor of it made me sick. I do not see how I am going to get on with my business." He says, "Doctor, with this diet I could not smoke; I had to give it up; it would make me sick. I had no desire for it whatever." Now, that is not because there is anything specific in the diet of our table here against tobacco, because this is a natural dietary, and a natural dietary is opposed to tobacco. Tobacco is one of the products of an evil dietary, of the use of it. Now, there are some other things. Just remember to chew the food thoroughly well so it will be all digested, utilized; so you won't be likely to use too much, to eat too much. If you chew thoroughly, you won't eat too much. Second, don't eat any more than you ought to eat. Third, adopt and adhere for ever to a low proteid diet. That means eat no meats of any kind whatever; that excludes all kinds of shellfish, so-called sea food, as well as fish, flesh and fowl; and also it is best to exclude cheese. Cream cheese might not be particularly harmful. Milk must be sometimes excluded; it can be used in moderation by certain persons with whom it does not disagree; then take the greatest care to avoid eating when you are not hungry. Never eat too much; never eat too fast; never eat when you are not hungry; then drink a good deal of water; drink more than you want.



You wet your face and your hands when you do not need water to cool you off. You wash your hands and face to be clean. Your body needs to be washed for the very same reason, especially in men and women who are not engaged in active, vigorous exercise. The Lord told Adam he must earn his bread by the sweat of his brow. The most of you do not do that; you get some one else to sweat for you and pay him a dollar a day or two dollars a day for doing your sweating; and they sweat and they get the benefit of the sweating; but you do not get the benefit of it; you get the worst of it, because the poisons that ought to be carried out in sweating are loaded up in the body to accumulate in the blood, and that is one of the causes of arteriosclerosis. The laboring man who works hard and sweats every day does not get arteriosclerosis when he is forty-five years old. It is the man who goes into an office when he is seventeen or eighteen years old; he has a great gift for business, so he gets in as clerk, works his way along up until he is called a successful business man; but this business man when he is forty-five or fifty years of age is an old man. He has lived indoors, lived an unnatural life all his life; he has not had an opportunity to get out into the fresh air and the sunshine, to sweat and work out the impurities which are being generated in the body; so the poor man is old when he ought still to be young. Sweating is a good thing. Now, if one does not sweat much, he does not feel the need of drinking; and the amount of thirst depends upon the amount of physical exercise more than anything else. Under ordinary circumstances, the skin only evaporates about an ounce and a half of water in an hour; that is only thirty-six ounces in twenty-four hours,--only a little more than a quart; and that is easily taken in with the food; but when one exercises vigorously and sensible perspiration occurs, one is pouring out of the skin four times as much as under ordinary circumstances, when only the insensible perspiration is taking place. So one needs to drink, because that will compel the kidneys to do work even if the skin does not. By the drinking of water you may not be made to sweat very much more, but your kidneys will be

be compelled to carry that water out; and in carrying it out, it will rinse the blood, purify it, so one should drink every day, especially sedentary people, from one to two or three quarts. If you have auto-intoxication, drink every time you think of it, so as to rinse out the poisons of the blood. You will be surprised to see how rapidly this may be accomplished by simply giving attention to the matter of drinking for internal cleanliness. It is far more important to keep the blood clean than to keep the skin clean. In fact, if you keep the blood clean, the skin will take care of itself pretty well, because the skin peels off. We are scaly creatures, like fish,--some more scaly than others are; and this scalliness keeps the skin peeling off, carrying off all the poisons which accumulate upon it.

How may the blood-pressure be diminished? One way is by getting the blood into the skin. Then there will be less on the interior of the body. If we dilate the vessels of the skin, that allows the blood to come there more easily, dilates the vessels so the blood-pressure may fall a little bit. That is one thing the mitten friction is for. The wet sheet rub is another thing for the very same purpose,--because by that means the blood-vessels of the whole skin may be dilated, and in this way the blood-pressure will be still more diminished. Then, we may dilate these large vessels of the interior of the body which are capable of holding all the blood in the body. We can dilate those blood-vessels by drinking, we can dilate them by means of the vibrating chair and the trunk shaker. That is why you feel more comfortable after taking this vibration. Here is another means by which the same thing may be accomplished. The blood-vessels of the legs are made to contract thoroughly every time this movement is executed. All these machines are for that purpose,--the stirring mechanical effect of the vibration stimulates the dilatation of the vessels. Then there are the manual movements in which the same thing is accomplished by the breathing exercises particularly.

Here is another matter of very great importance--sitting and standing in

a correct attitude. By this means the blood-pressure of the interior of the abdomen is increased and the blood is forced along into the weak vessels, and not allowed to stagnate.

Here is the outdoor gymnasium which will be open soon now, and this is an excellent means of enlarging the blood-vessels of the skin by exposure of the skin to the sun and to water--the veins are dilated. It is a good thing to get sunburned. I advise every one of you to get thoroughly sunburned yourself, in summer if you get a chance. We have a sand heap out there, sand made from flints that we got from a glass factory,--pure, white, made from grinding up of white flints, so it is very clean, sweet, pure sand, and this sand is washed and kept clean. Here is the wood pile. Chopping is another means of getting blood into the muscles. Exercise of all sorts dilates the blood-vessels of the muscles, and that lowers pressure. This is a method that must be employed, however, with some care, because the man whose blood-pressure is high when he begins to exercise hard, the heart is excited and the blood-pressure rises a little, so it is dangerous for such a person to run, to engage in any kind of violent exercise. These young men are nurses, and they are running about the gymnasium. They can exert themselves as violently as they wish. They may run and exercise until they fall down with exhaustion; it does them no permanent harm, because the blood-vessels of the young man are so elastic, so powerful, so tough that they resist a pressure fifty times as great as that which is ordinarily exerted upon them by the heart,--50 times as great; so they are able to bear a very great pressure; but this is not true of the man who has arteriosclerosis. His blood-vessels may deteriorate to such a degree that a raise of a few milligram millimeters in his blood-pressure may be sufficient to rupture a blood-vessel--an increase of twenty or thirty points. That is what happens when a man smokes a cigar. Usually when a man has apoplexy, you will find the blood-pressure is zero. He ate a hearty dinner, was sitting in the hotel lobby

with some gentlemen smoking, and he fell out of his chair onto the floor. It was that little rise of blood-pressure from smoking that made the last straw that broke the camel's back.

Another thing which I recommend to you to ~~say~~ do is to live the simple life--the Sanitarium life; live according to the Battle Creek Idea, as we call it, because we do not know how else to designate it,--this group of ideas that are in operation here, that are the basis of the life of this institution with reference to dress, diet, exercise, the outdoor life, bathing, and all these things,--getting near to nature; live this out when you go home. Don't leave it behind. Don't say, "I have been up there to the Sanitarium doing works of supererogation, now I will go home and do as I please, go back to the flesh pots of Egypt and have a good time again." Don't do it; it does not pay. It pays to be good. You have been here a few weeks, and most of you are getting better. We don't keep the people that won't get better; we send them home. Because we do not want them to stay unless it is profitable for them, because it is not profitable for us. When you go home, take a copy of Good Health along with you; let it visit you once a month. It costs about a dollar and a half a year to publish every number that is published. The circulation is not large,--only about twelve to fifteen thousand, and it is not a popular journal and never can be popular because we have to keep ahead, in advance a little of the popular way; and we are so far away the average man and woman does not relish it; it is a little too advanced continually; but every single number has something in it which tells you things that are important for you to know. There is a question-box. If you have some question you want answered, you can send and get an answer to it, and it does not cost you anything at all, but one dollar a year. You can get the advice of the Sanitarium, and keep in touch with the Sanitarium right along after you go home. We want you to do it; would like you to have the paper on your table when you go home, so your friends

will see it and you will have to tell them about it and inculcate them with the same idea. The purpose of this institution is to propagate ideas of healthful living, to show people, men and women, how they are going down, and how to turn around and climb up the hill again. As I meet the men and women with their sallow faces, sunken eyes, and see evidences of auto-intoxication, feed intoxication from wrong habits of life, smoking, etc.,--meet splendid men and women and see how they are suffering because they do not know things that I know, I can hardly hold my peace. I sometimes feel as though I wish I could go out and scream, go down the streets and shout aloud, ~~loud~~ loud enough to make everybody in the town know and hear. But you can not do it that way. You have got to patiently work along in the world, with the people you have to come in contact with, and get them to pass it along; for I want to tell you it pays to recognize these great principles. That there is something in it you can see by what you see here at the Sanitarium,--this multitude of people coming in here from all about the country, 6000 or 7000 people a year that are offered no inducements to come here, come here as you do, and pay out twenty dollars a week, or \$30 a week, or \$60 a week, week after week pay to this institution \$500,000 or \$600,000 every year--they do not do it without getting something in return, and the reason why you came was because some friend told you they were here and were helped. The thing that helped them was not my great skill; it was not the great skill of my colleagues; it is these great principles on which this institution stands upon. They are the great thing that helps. Years ago I was very much perplexed to know how to help the people who came here; I did not know. I would mark out a course of treatment I thought was just exactly fitted to the case, and the man would get well. Then along would come another case, and I would find one of my colleagues was giving him a very different course of treatment, and he got well just the same. Then I tried something else on another patient, and he got well just the same. And I by and by discovered there was a drift toward health here, a sort of tide setting

healthward, and everybody who got into it got well; it did not make much difference what we did for them if we did not do anything very bad, they got well anyhow. I was very much perplexed about the thing, and I studied upon that thing until I made up my mind the thing that did it was the diet. I am willing to make the confession right here; I want to tell you honestly, I want to make this statement, that if any of you would adopt the diet which you get here in this institution, and would stick to it, it would accomplish for you the greater part of the benefit you get at this institution, if you did not do another thing. I haven't a particle of doubt about that. If you are reasonable in the expenditure of your energy, if you take proper care to sleep enough, to get outdoors and make reasonable use of water, keep the skin clean, take cool baths in the morning,--the diet will do almost all the rest for you. But of course, other things must be done for some special ailments, and the pain in the back you would like to get rid of, treatment which will help that, and you will get rid of it in time if you do not have any treatment, because the curative power is in your body. You get a little jaundice perhaps because your liver is sluggish. Right diet and right living will cure you, because healing power is within; it is not in the doctor's hands; it is not in the nurses' hands; it is not in physicians, or treatment of any sort; the real healing power is in yourself. Give it a fair chance, co-operate with it, and it will accomplish for you the miracles that are possible and that are constantly being wrought.

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Karl Marx and Dr. J. H. Kellogg.

At the Sanitarium Parlor, Battle Creek, Mich., Thursday, June 25, 1908, at 8 P. M.

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Dr. Kellogg: The Bible says, "Whatsoever a man soweth that shall he also reap." That is a principle that is as absolute as the everlasting hills. If we sow poisons in our bodies we reap poisons, we reap diseases. I met a distinguished surgeon when I was away this week, one of the most distinguished surgeons in the United States. I was in Philadelphia, and he very kindly telephoned me and urged me to come to visit him. We were sitting down in his library. His mother was present, and his sister; his family were out at his country place. Almost the first question he asked me was this: he said, "Doctor, I have been thinking quite a little lately on this diet question. You tell me you do not eat any meat." "No, I never eat meat. I stopped eating meat forty years ago." He said, "Now, Doctor, I am a Bible student; I study my Bible a great deal"--it is not a very common thing with doctors, I am sorry to say, but this doctor is a great Bible student, is known throughout the United States as a Bible student, as well as a great surgeon, and he said, "I have been thinking of this matter from a Bible standpoint, and it seems to me the Bible rather favors the use of meat. Did you know there were laws about what animals should be eaten and what should not be, and there were regulations about priests offering sacrifices, eating meat, etc.? Now, I do not quite see how you justify your course in not eating meat when the Bible, which I believe to be an inspired book; I believe every word of it,--when the Bible does not say anything against it, and really, on the whole rather favors it? I would like to hear what you have to say about that." Said I, "have you your Bible here?" Yes, it was close at hand; so he got a Bible. I began at the first chapter of Genesis and read to him that sixteenth verse which says, "And God said, Let the

earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth: and it was so. And the earth brought forth grass, and herb yielding seed after his kind, and the tree yielding fruit, whose seed was in itself, after his kind: and God saw that it was good." So the earth brought forth fruit trees in obedience to the command of the Almighty. That is a very interesting text to me. I confess I never recognized the significance of it until a few years ago when when in reading this verse I recognized for the first time that every tree made in the beginning was a fruit tree. The only kind of trees God ever made were fruit trees. There were no other kinds of trees created but fruit trees. Then in the 29th verse of that chapter there is a description of three kinds of vegetation produced. There were fruit trees, there were herbs bearing seed, then there was the grass. There were three kinds of vegetation,—fruit trees, herbs, and grass; the fruit trees bearing fruit, and the herbs bearing seed; then there was the green herb besides. The vegetation was of those three kinds, and they were all for food; everything that grew was for food—fruit trees, herbs and grass. From the 29th and 30th verses, we learn how this food was to be eaten. The fruit of the trees and the seeds of the herbs were for man. "To you it shall be for meat", God said to Adam. Every herb bearing seed, and every fruit tree bearing fruit in which is the seed thereof, shall be to you for meat; so man was given fruits and seeds for his diet, and the beast was to eat the grass. The grass was to be for the beasts of the field. But over in the third chapter we read something more. I turned over to this third chapter and read about when the earth was cursed; God said to Adam the ground was cursed for his sake; "Cursed is the ground for thy sake; in sorrow shalt thou eat of it all the days of thy life; thorns also and thistles shall it bring forth to thee; and thou shalt eat the herb of the field"; so there was a third article of diet came in for Adam. He had fruits and seeds, and now when the field brings forth nothing but thorns and thistles, then he must have herbs to eat, because there



was nothing else to eat, you see. He must eat herbs. The trees ceased to bear fruit, the herbs ceased to produce seed; so, "thou shalt eat the herb of the field."; so there was a third article of diet came in for Adam. It was an emergency diet, you see, for famine. I suppose God taught him how to cook about that time, so it must be the use of fire, of cookery came in about that same time. Nobody can live on grass, nobody can live on potatoes, parsnips, turnips and things of that kind without cookery; so cookery came in along about that time I suspect. Then, in the 6th chapter, when Noah was going into the ark, he was to take in clean animals by sevens and the other animals by twos, and they all gathered themselves together and Noah took them into the ark, and God said to Noah he was to take into the ark along with the animals as he went in himself, food to eat, of all food that is eaten. the text says, of all food that is eaten; that is, of all food which is customary for you to eat, and for these animals to eat. Now, what was all the food that was to be eaten? There was fruit of the fruit trees, seeds of the herbs; then there was the green grass, the green herb. So all these different kinds of food were taken into the ark to be eaten. But you say, "How do you know he did not take some animals along for the lions to eat?" Stop to make a little calculation. They were in the ark a whole year at least, and these animals were in there with Noah. How many sheep would it take to support a pair of lions for a year? It takes a pretty good piece of mutton to support a lion, and the lions were big in those days. And I suppose it would have taken at least 100 sheep for the lion; it would have taken 100 or 200 sheep to support those lions; then how many would there have to be for the tigers, and leopards, and all the other carnivorous animals,—just think of it. It would have taken an enormous lot of animals to supply these carnivorous animals; but there were no such animals taken into the ark. They went in by twos and sevens, the clean animals by sevens and the others by twos; so there was no provision made for carnivorous animals in the ark; so God said to Noah, take in of all food that is eaten; and he did not take in any animals for himself nor for the other

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animals; consequently we may conclude that up to that time, the food that was eaten by the human family consisted of the things which God gave to man in the first place for him to eat. It seems a very plain proposition; but after the flood God said to Noah that he might eat of all sorts of four-footed beasts, and of fowls of the air and of creeping things. He was permitted to eat them all, all of these things that come upon the earth,--he was permitted to eat. God said to Noah, "Even as the green herb have I given you all", not all things, as you read it in your version. The word "things" is put in by the translators; it does not belong there; it is not in the original, and it is not in the Revised version of the Bible. "Even as the green herb have I given you all",--that is, all the different kinds of animals that have been enumerated. But these animals were given to Noah. How? For a regular diet? Oh, no. As the original diet? Not at all, not the original diet. As his best diet? By no means, but given to him as the green herb. The green herb was an emergency diet; the green herb was a diet to fall back upon when the ground produced nothing but thorns and thistles; so here was the flesh of animals given as the green herb,--was given as an emergency diet, because here was a great emergency. The flood had covered the earth; there were not even green herbs to be eaten; everything was gone, so I suppose Noah was given permission then to eat of flesh, and fish; there must have been plenty of fish, for they did not suffer from the deluge as the other beasts did; they were at home in the water; so I suppose the ground may have been covered when Noah came out, with various sorts of aquatic beasts, and he was given permission to eat fish and these various other sorts of animals; but only as he was given permission to eat the green herb; it was an emergency diet. So I chatted with the Doctor on this subject in this way, and when I got through, he said, "Now, I declare, I have studied my Bible a great deal, but I did not know there were such specific things in the Bible about man's diet; I did not know the words were so precise and exact as you have read. I declare, I do not see how to meet the argument. I think you are right about it;

I think you are right about it." Certainly we are right about it; and here is a wonderful thing--that not only the bible testifies that the diet of the early man was a non-flesh diet, that away back in the beginning of the history of the race, neither man nor animals subsisted upon living things, upon other animals, that in those days the products of the earth were recognized as the only eatables while animals were the eaters, all alike dining at the table spread by the Creator for their sustenance, and that when men began to eat flesh, when animals began to feast upon other animals, it was like the guests at the table turning from the feast spread before them to devour one another,--not only the Bible says that the early days of the race were days in which there was no blood-shed, and no eating of flesh, but the history of every great nation points back to the same time. The tradition of every great nation, the old Babylonians, and the old Egyptians, and the old Romans and the old Greeks all look back to a golden age, as Pythagoras said, which fed on fruit, "nor durst with bloody meals their mouths pollute." Pythagoras makes the argument that man has no right to take life. He says,

"Take not away the life you can not give,

For all things have an equal right to live."

So in these modern days when we are beginning to talk about the non-flesh diet, it is not a new idea. It is not a fad; it is not somebody's fancy; but it is simply the returning to the old ways. I was over to Vienna some years ago, dining at the table with a friend of mine, Prof. Winternize, and he offered me flesh of various kinds, and I declined. They said, "Why, what are you going to eat?" I said, "Oh, there is plenty for me to eat here. I have an abundance, all I need." A lady sitting near to me said, "But, do you think a person can live to be very old if they eat as you do? Is that the reason why you are eating as you do?" I said, "Now, I eat as I do because it is right; and I am satisfied, however, that it will conduce to longevity, to strength and to endurance." "Do you think people

can live to greater age if they live as you do?" "Oh, yes, I am sure of it; I know it." She thought a little, and in the meantime another lady said, "Doctor, you are the most original person I ever met." She did not like to say to me I was odd, that I was a crank, and I was the most eccentric person she ever encountered; so she very politely said I was the most original person she ever met. She evidently had the idea that I was the only person that ever lived on a diet that did not include flesh; that it was an original idea of mine; that I originated the notion. And the other lady said to me again, "Do you really think a person will live longer if they live on this diet?" "Yes," I said, "I am sure of it." "How do you know? How do you know?" "Well," I said, "I had a relative that lived to a very great age; I had a relative who lived to a very, very great age." "Is that so? How old?" "Well, I hardly dare tell you how old he was when he died." I said, "I fear you would not believe me if I should tell you." "Oh, yes, we will believe you. We don't believe you would tell anything but the truth." "Well," I said, "I will tell you. My relative lived to be nearly a thousand years of age." "O-o-o-o-h!"

Every countenance fell. They really thought I was telling a whopper. A doctor just across the table looked up and said, "Just tell me his name; I would like to look it up." ~~HE~~ I said, "His name was Adam." Now, you consult the Good Book, and you find away back in those days when Adam lived upon the original diet, upon the Battle Creek Sanitarium diet, if you please, or rather, when he lived upon the Edenic diet, which we ourselves follow here, men lived to nearly a thousand years; but after the flood, when they adopted the emergency ration, of flesh, began to eat flesh, and I suppose they ate it more and more, the length of life was shortened very rapidly, and within two or three generations it had shortened down to 300 years, and in three or four more generations, it had shortened down to 150 years, and in two or three more generations it was down to seventy years. When we got down to David, it was only three score years and ten. And now, in our day, in

this country where we have such great enlightenment and so much knowledge about how to keep ourselves alive and in health, how to fight off great epidemics, plagues, etc., we just manage to live our forty years, just a little more than forty years. Now think of it, my friends; ten times as long, these old patriarchs lived, twenty times as long,—more than that—fifty times as long. Now, just think, if we had the privilege of living fifty times as long as we do. When we get to be about forty or fifty or sixty years old, we just begin to learn a little bit about how to live. Then we have to get ready to die. The oldest man alive is only a little over 100. Very few people are over 100 years of age. In those days, a man 100 years of age was considered as only a boy. So, as I said, it is not a novel idea; it is not an innovation. I suppose some of you people come here and think Dr. Kellogg, Dr. Stewart, Dr. Riley and the rest of the folks here are great quacks, very eccentric folks because we are advocating this non-flesh dietary; and so it is comforting to us once in a while to bring out the fact that we are only reviving an ancient notion that had been forgotten, covered up with the dust of the ages; in the dark ages of the middle centuries had been forgotten. If you go back even a thousand years, or two thousand years, you will find a great number of people who were vegetarians. There was John the Baptist, one of the noblest men that ever lived,—he was a vegetarian. He ate locusts and wild honey; but they were not grasshoppers; it was a kind of locusts that grow on trees; and all along down through the ages there have been great men; and some of the early fathers of the church were vegetarians,—in fact, many of them. Justinian was a vegetarian; then there was Plutarch, that great writer, one of the greatest writers of his time, the biographer of all the ages, was a vegetarian; and there was Pythagoras, the greatest of all Grecian philosophers, the man who preceded Socrates, from whom Socrates got the greater part of his wisdom, really laid the foundation for the Greek philosophy that survived until the present day,—Pythagoras was a vegetarian. He established a little vegetarian colony some little ways out, called Crotona, and had several hundred of his ~~fellow~~<sup>followers</sup> gathered about him there, and the people of some

of the neighboring cities became so incensed at them because they set up here a different philosophy that some time after the death of Pythagoras they gathered together and killed them all off, destroyed them, because they were heretics. Heretics have always been very unpopular, and I imagine it will be some little time before the non-flesh dietary rank and the dietary of the Battle Creek Sanitarium, the teaching here, becomes really popular; but there is this satisfaction in it at any rate, that every man and woman who gives this thing a thorough trial is well paid for doing it; he is splendidly compensated. I received a letter from Prof. Fisher just a few minutes ago. He is the head of the political science department in Yale University. The professor writes me that he has just been testing out one of their graduates there, a graduate student, a very able and brainy young man who is taking post-graduate studies in the university,--he has been subjecting him to a series of tests through a number of months, to tests of the low proteid diet and the thorough mastication of food, Fletcherizing his food and living on a low proteid diet; that is, cutting meat out of his dietary, and he found that this young man's efficiency had been increased 65%. Now, that is worth while, isn't it? Suppose you could double the efficiency of every business man, of every professional man, of every scholar, of every teacher, of every doctor, of every clergyman,--suppose we could increase the efficiency of every man that is working, every working man and woman, every mental worker and every muscle workers,--suppose we could increase their efficiency 50%; see what that would add to the wealth of the world. It would cost no more to maintain the man on high efficiency than it does to maintain him on low efficiency. It pays a great deal better to keep a high efficiency horse than a low efficiency horse. If a farmer finds his horse does not produce very much and is eating just as much as any other horse, and doing very little work, he disposes of him. If he finds a cow producing very little milk but eats as much as any other cow, he sells her, does not keep her because she has such small efficiency. Just think how many men and women there are who are living at a low rate,

a slow pace, that have a low efficiency; and this whole matter of efficiency is found to be more due to diet than any other one thing. There is nothing in the world that has so great a bearing upon this question of efficiency as diet. Prof. Fisher has been making special experiments upon this for the last three years. He came here three years ago, got himself established on the Battle Creek Sanitarium diet and regimen, and he went home and found the first year it doubled his efficiency in work; he was able to do twice as much work as he had ever done before in his very best year in Yale, and Prof. Fisher has been recognized as a very efficient man. One of his colleagues, who is now his colleague, formerly his teacher, said to me one day in my office here confidentially that Prof. Fisher was regarded as the brightest man that had been turned out from Yale in twenty years. Now, Prof. Fisher is a very capable man, but he told me that he doubled his efficiency, and the next year he more than doubled his efficiency; so he went to work on experiments for testing the efficiency of men on different diets; and he came up here and tested our doctors and nurses and our bath men for their efficiency. Then he went down to Yale and got Prof. Anderson to gather the gymnasts there, their most efficient athletes, and tested their efficiency, their endurance, and brought in various severe tests such as holding out the arms, bending down to the heels and up again, lying upon the back and raising the legs to the perpendicular and other things of that sort, and he found our men while they were not athletes, were not trained, that they on the average nearly doubled the efficiency of the best Yale athletes which were produced. He found that our doctors in our offices here, and our bath men living sedentary lives, had doubled the endurance of the best men of Yale, the men that win in their boat races, that win in their athletic sports, men that had prizes, that were in training for athletic events, for intercollegiate matches,--these men were the men put up to see if they could outdo the results that were obtained here in our institution. And to the astonishment of everybody--I was astonished as much as anybody else,--it was found that these very finely trained men in Yale had not

half the endurance of the untrained men of the Battle Creek Sanitarium who lived on a different dietary. Now, my friends, there is some meaning in that; there is some significance in it. Then along came Mr. Horace Fletcher. Mr. Fletcher is a man nearly sixty years of age. He has been living on this low proteid diet now for a number of years. His thorough mastication of food led him to give up the use of meat almost entirely, and practically he does not eat meat. If he eats a bite of it now and then, it is not because he cares for it, but because he is with people who eat flesh, and he is endeavoring to lead people into right ways, and he does not want people to think he is a faddist; so he eats a little bit of everything that comes along; but he eats very little meat, and he does not care for it; he does better when he does not eat any at all. His dietary is reduced down to what may be termed a very low proteid diet, and it has come about as a result of his thorough mastication, his thorough chewing of food. His natural appetite has turned against meat. Giving the sense of taste an opportunity to select the food has excluded meat. Prof. Fisher came along, and he found in the Yale Gymnasium there they had a strength testing machine, and their athletes had been testing their endurance and their strength. One of these tests was to raise, while sitting in a chair, a weight weighing 350 lbs.—quite a good weight, as large as two men of ordinary size,—the weight resting on his knee, then to raise the heel about an inch and a half as many times as possible. The Yale record was 175. Mr. Fletcher a man of sixty years, made a record of 350, more than double the Yale record. Here the other day there came along a man who has been chewing his food for a great many years, and he had been living upon an absolutely non-flesh diet for a much longer time than Mr. Fletcher, and he was submitted to the same test the other day, and he made a record of 687. Now, think of that,—five or six times the best Yale record of endurance for these trained athletes. Now, I have the pleasure of introducing to you tonight Mr. Karl Marn, the world's champion pedestrian. He has walked further in twenty-four hours than any other man that lives, and on an absolutely non-flesh diet, and I am going to ask him to talk to you a little while



tonight. I have been occupying a little time, because he insisted he should not be asked to talk more than fifteen or twenty minutes, so I have been talking a little while to fill in the time. Now, you will have the pleasure of hearing from Mr. Mann. (Applause.)

Mr. Karl Mann: Ladies and Gentlemen: The reason for my visit here to Battle Creek is an invitation of Dr. Kellogg which was sent to me six years ago when I had a chance of meeting Dr. Kellogg in London and Berlin, and now, so long a time since then, when I now have the possibility to make a trip from Europe and come here, the first thing this morning was Dr. Kellogg thrust upon me to come and address you. I was startled at that, because in six years I was not in England, and only then two weeks, and had not the unity of speaking and writing. I hope you may understand some of the sentences I have to speak to you.

Dr. Kellogg gave a suggestion to me. He felt sure that in the length of time that I was a non-flesh eater among athletic people, a good many persons would wish to speak to me and would perhaps like to give the same questions to me, and I could give answers to some of the questions with which I am familiar. So I beg to proceed in this way. I may state, then, that it is now about fifteen years that I turned to the non-flesh diet, and this is the point which in this Battle Creek Sanitarium is of special value. But it was some four or five years after that I was driven into athletic work for the reason that my comrades in the Berlin gymnastic club, cyclist club, always made fun of me about the eating, which was known to them; so it was once a bet which was proposed in a test in cycling or in walking, and as I felt quite sure that in the few days during which I had been a non-flesh eater, I had greatly increased in strength and endurance, I agreed to this bet, and it was a private one in the club; so the whole Berlin union of gymnasts took the thing up and arranged to some months later arrange a great walking contest under a distance which was an unusual long one. It was in 1898, ten years ago, walking a distance of seventy miles, and this was the first one when I took part; and in this contest thirty-eight young men took part. Half of them were flesh eaters; meat

eaters, and the other half of them so-called vegetarians. And this was such a good success, it was a good time, and of the winners I had the chance to be the winner, but not much in advance against the second man—only some twenty minutes, and in this walking ~~saxtant~~ race, in which the Berlin newspapers were greatly interested, and the Americans, there were six vegetarians to be at the head first; and this success induced me to give the thing more interest, and so I sometimes fell in with others who were my comrades who were not flesh eaters, and they might take part and give proof, even if they were not interested in athletics, if it were not true that people who lived on a non-flesh diet,—if it does not give the ability of developing strength and endurance, and a combination of both, by them. Four years later, in 1902, was arranged among others an international walking contest on a distance which was the longest ever arranged for, the longest distance as yet was only 120 miles, and this distance was a very good record, and it was made on the path on some decayed road. And this long distance walk was arranged by the leading athletic club in Berlin at that time, leading club, and between Dresden and Berlin. It was a distance of 125 miles. Perhaps in the time I was not here Dr. Kellogg has told you something. In this walking contest, thirty-four competitors took part, eighteen of them non-flesh eaters, as they are called in Germany, for the name vegetarian is a wrong, misleading name, I think,—and six <sup>then</sup> meat eaters; and an international committee was represented by competitors, not only from Germany, but also from Austria, from France and from England. And the success of this race was a good one on the whole in athletics, by the record made then in this long distance in record time was <sup>nearly</sup> ~~six~~ twenty-seven hours. It means a distance of five miles an hour on the average. In this time of about twenty-seven hours, less some minutes, includes some pauses which were prescribed, necessary for controlling, although I was very busy at that time—I was going to found a club of my own in that year, 1902,—I thought it rested upon me also to take part in it, not for athletic ambition, but for the cause I was fighting for in public; and I had good success in that I was the winner and was two hours in advance this time against

six

the second one. Also in this race there were ~~six~~ non-flesh eaters at the head, and the seventh and the eighth ones were meat eaters; and the ninth of the winners was a non-flesh eater again, a man in his sixtieth year, and he had not eaten flesh foods for thirty-four years; and tenth also was a non-flesh eater, and the eleventh and twelfth were meat eaters,--nine non-flesh eaters, and three meat eaters.

This winning the race had special interest, much more than in the athletic world, among physicians and physiologists, because during the time of four months before the walking race, a series of investigations were begun by leading physiologists of Germany, Prof. Zuntz, on one favorite meat eater, a Mr. Barker, a good many years the best long distance walker in Germany, an athletic man, and me, as I was regarded a favorite of the non-flesh eaters. Now these investigations were made, supported by the German government, because Prof. Zuntz since some years had given much attention to the results in walking, from comparing a necessity of strength and food in walking among soldiers, and in long and short distances. In the time of the four months I was obliged to have a diet of strictly excluding every animal substance,--no milk, no cow's butter, no cheese and no eggs; and too, for myself, I added the restriction of eating no pulse--what is called in England beans, lentils and peas, legumes, these foods which can be served so well to replace flesh foods, because they are rich in protein substance. And this interested the doctors and physiologists especially because they felt quite sure that it was impossible on such a poor diet, as they called it, especially the two meals a day in training time, to reach the maximum of strength and endurance. But they were very well satisfied. I did not take this animal food or pulse, and I won, the more so, as I have personally myself the greatest interest. They were much satisfied with the result, although it did not interest the athletics very much, though they also were compelled to recognize the result and the conditions. We two men were investigated, and in many directions, two days before the race, and once in the middle of the race, and in the moment after the race. The favorite meat eater had unfortunately given up the

race after about twenty-three miles; he was leading then and I behind him. He could not stand the speed; he could not stand it up hill; and I was in advance by my very good lungs and heart, so he gave up the race. So the last investigation could only be made with me.

At the end of the race there were Prof. Zuntz, Prof. Albu, and Prof. Dr. Caspari who had written upon the subject of low proteid diet some years ago, and Prof. ~~Mussakow~~ von Schrötter of Vienna, and some other medical men of not leading quality. So they were satisfied, because they found that my condition of nerves and sensibility of skin and memory, and I do not know the other tests, had not in the least been modified. Prof. Zuntz told me afterward that he had not thought it possible after prolonged exertion and hard exertion, the first half of the race, especially after so prolonged exertion of twenty-seven hours of uninterrupted fast walking to find no modification of status of the nerves. I was also sent then to have made a Roentgen X-ray photograph of the heart. The heart had been photographed the day before the race, also the other man, and the ninth, the old man walker, who had to give up, I do not know for ~~what~~ what reason. And in my case it was found that the heart, instead of being dilated, had become smaller than it was. It is the usual thing, and it is known that prolonged exertion, and so hard exertion, the muscles of the heart are dilated, and are of course a little injured by this. I may also mention that I was told by the doctors afterwards that it was a very good sign of excellent condition after the twenty-seven hours' walk that in the moment I sat in a carriage to drive to Berlin, from outside of Berlin, I began to sleep and slept until I came to Berlin, about half an hour, and the tiredness had overcome me; but they told me that in over-exertion of that sort exhaustion is expected, and that in this state of nerves and muscles, it is very seldom the young athlete is able to sleep, even if he likes to sleep to make good the loss of energy and sleep without feeling languid.

Here I felt the hardihood to give this address wished for because in this house here in Battle Creek I might say I feel like at home, and I think very high of the Battle Creek idea, and I first got hold of the Battle Creek idea and the Sanitarium eight years ago at the Paris exhibition--some weeks there, and since that time I went on in this way on the non-flesh diet, and I may say I feel sure that I would not have got to the cars if I had not been made acquainted with the to my opinion right, and physiologically right and best diet,--the diet of cereals, breadstuffs, and prepared nuts--non-flesh foods, and a few vegetables. I myself prefer a simple diet, but as I am married the last years and have children, I have to again adapt me to the three-meal plan, and often to a cooked vegetable diet, for which I may say I am sorry; but here at Battle Creek I feel better at home; I should like if I could always have the opportunity, the possibility of living in this way, as I find here in Battle Creek. I am very much thankful and indebted, owe much to this, to Dr. Kellogg for his writings which I noticed since about eight years; and I endeavor by this time to conform my comrades, athletes and others, to this advanced form of non-flesh diet. (Loud applause.)

Dr. Kellogg: The performance of Mr. Mann in winning this race from Dresden to Berlin, 125 miles in twenty-seven hours, so far eclipses anything that has been done by any kind of flesh-eating athletes, that it is certainly worthy of notice and ought to command the attention of the whole world. It was published in the American newspapers, the English papers, and all over the world, because no such thing had ever been done before, and it has not been repeated since. Mr. Mann has taken part in other athletic tests, sailing tests, and has been victorious, especially in cycling, and in long distance tests of this sort is always ahead. No flesh-eater ever will get ahead of him, because while the flesh eater can make a very rapid pace for a very short time, he can not keep it up. It is in the long run, the long race that the non-flesh eater wins, because it is his endurance that counts. Now, why is that? Fatigue is the thing that puts the man out of the

race,--fatigue and exhaustion. What is exhaustion? Fatigue and exhaustion are simply conditions of poisoning, simply states of poisoning. The body is contaminated by the poisons generated in the muscles. As the muscles work, they are producing poisons just as when the fire burns it is producing smoke; so when the muscle works it produces poisons, and these poisons accumulate in the blood, and by and by the poison paralyzes the nerves, and effort is no longer possible; the nerves are paralyzed for the time being. I might illustrate this by telling you of an experiment I made a good many years ago, an experiment with a frog's muscle which was attached to two wires, and a current of electricity was passed through these wires and was interrupted so the muscle was made to contract and lift a ~~xxx~~ weight, and it contracted so many times,--about as rapidly as that. By and by the muscle was completely tired out, would not contract another once, no matter how strong a stimulus was applied to it. Then I simply washed this muscle with water with a little salt in it, so it at once began to work again. The muscle, you see, had been damaged; it was simply paralyzed by poisons accumulating in it. It got tired out, stopped again. I washed it again, and it started on to work again just as strong as ever. That is what the blood is doing to the muscle all the while. It is washing out the poisons which are being formed. If these poisons accumulate in the muscles to a certain extent, then the muscle is paralyzed, and it can not work until after the poison has been washed out. Now, the meat eater is pretty nearly to the point of saturation all the time. Suppose this represents the room for the accumulation of poisons, the amount of poison which the body will stand before paralysis comes on, before fatigue. This amount may be accumulated. Here is a man who eats meat. He swallows some of this poison with meat, you see. He swallows muscle. Meat is muscle, and when the animal dies, its muscle tissue has more or less of this poison in it; so the meat eater is taking into his body the poisons from another animal's body, in addition to those generated in his own body,

you see, but not only that, but some portion of the meat is decomposed in the body, undergoes putrefaction, and these poisons of putrefaction have exactly the same effect as do poisons from work. They are decomposed mostly, and they produce the same paralysis. So the body of the meat eater is already full of poisons up to this point, and it takes only a little more poison to bring him to the point of saturation where his muscles will be paralysed, while the non-flesh eater has all this part for the accumulation of poison, and it takes a longer time to fill him up with poison to the state of saturation or paralysis. So the non-flesh eater must have more endurance, and this is true of animals as well as of human beings. The most enduring animals are not the flesh-eating animals, but the non-flesh eating animals. For instance, a lion could not begin to compete with an ox in work. He could make a number of rapid springs, but he is very soon exhausted. The ox will keep on pulling at his maximum strength all day. The lion could not begin to pull a plow as far as the ox can do it. "But," you say, "the dog is a carnivorous animal; the dog has great endurance; the dog can compete with the horse or with other non-flesh eating animals"; but note this: The dog that has great endurance is not a flesh eating dog; he is a vegetarian dog for the time being. Ask the hunter what he feeds his dogs, and he will tell you he feeds them on bread and oatmeal mush. I asked a hunter once in Indiana what he fed his dogs. He said, "I feed them oatmeal mush." "Don't you feed them meat?" "Oh, no, I never feed meat to a hunting dog." "Why not?" "Because he can not run, and he can not smell." I was out at Portland, Oregon, some years ago, and I met a hunter out there. He was an old-time hunter who for many years had been accustomed to hunting in the Rocky Mountains, and he had several packs of hounds. I said to him, "What do you feed your dogs?" He replied, "I feed them cornmeal mush and bread." "Do you feed them meat?" "No, never." "Why not?" He said, "Because they haven't any wind." I was riding across the highlands of Scotland some years ago on the top of a coach, and as I was riding along, I was chatting with the driver. I enjoy talking with these native people, and I said to him as we were riding through the royal region,

"What is your occupation in winter, sir?" "Oh," he said, "I am a farmer when I am not driving coach, and in the winter I am a shepherd, take care of sheep." I said, "What do you eat? What is your diet?" "Oh," he said, "my diet is potatoes, and barnocks and brose." I said, "You do nothing else; you are simply a farmer?" "Oh," he said, "I do some hunting." "You have dogs, then?" "Yes," he said, "I have a fine pack of hunting dogs." "What do you feed the dogs?" "The same as I eat myself, sir," he said. "Don't you give them meat?" "Oh, no," he said, "I never give them meat." "Why?" "Because," he said, "they have nae sae gude winde."

Now there were three testimonials, one from a hunter in Indiana, another from a hunter in the Rocky mountains, in Portland, and here a Scotchman up in the Highlands of Scotland, all ~~the~~ hunters, ~~the~~ ~~said~~ and all told me the same story; so I believe it must be true that a dog can not run if he eats meat. So you see a dog is a better dog when he becomes a non-flesh eating dog; and if a dog is used to flesh eating, seems to have more or less of it, he is a better dog if he does not eat meat which seems to be to some degree his natural diet, though I doubt it, as a matter of fact,--how much better ought a man to be whose natural diet is not meat at all, when he abstains from meat, and who, when he eats meat, is doing an unnatural thing, a thing he was never intended to do. Mr. Mann has demonstrated to the world, and it is worth everything to the cause of diet reform that he did this thing,--he has demonstrated to the world that a man is a better man physically when he does not eat meat at all, when he lives on the low proteid diet, discards milk and eggs, that he has more endurance than men who were trained, though Mr. Mann was not a trained athlete, was never a trained athlete at all. He was never an athlete and does not consider himself an athlete, but he is simply walking, going about his business, and he came in in that long distance walk of 125 miles two hours ahead of the champion pedestrian of Germany. Germany is a country that gives a great deal of attention to athletics, you know. The turnverein we have in this country came from Germany. There is no other country in the world where so



such attention is given to gymnastics as in Germany, so men are trained to the highest point of perfection to which they can be trained; the greatest attention has been given to diet, and it has been thought that a man must eat meat in order to be strong. That is, in order to be strong, a man must eat a strong animal. That is the characteristic of the nation. When the cannibal kills his chief, he must eat him so he can get his vitality, his courage. So we have gotten that conception somehow, that in order to be strong we must eat an ox, an animal that is strong,--why not an elephant or a whale? But this notion is a false one. If one wants to be strong, the natural suggestion should be that he should eat the thing which the strong animal eats, rather than eating the strong animal himself,--he should eat the thing which makes that animal strong. That thing must be good for me. The ox gets strong on corn, and corn is a thing that gives a man strength. It is a vegetable product. And Mr. Mann has showed the world that a man can be strong, can have more endurance, if not greater brute strength, at least more endurance, more defense, more ability to resist fatigue on an absolutely non-flesh diet than on the best beefsteak which could be provided; so there is a lesson in this which I hope there won't any of you forget; and I am very glad Mr. Mann favored us with a visit, and I feel really highly honored in having this visit from him. He has adopted this dietary not because he was sick, as some of you are doing. A man stated to me the other day, "Doctor, I will eat anything you tell me to eat, even if it is sawdust; anything you say, so I can get well again and take up my business again and work as I once worked." Here is a man that had been forced to adopt this dietary because he was sick; but Mr. Mann adopted the non-flesh dietary when he was well already, because it was right,--he never was sick,--but he adopted it because it was the natural thing to do, the right thing to do.

Mr. Mann: I could report perhaps a better example. In this walking contest of 1902 from Dresden to Berlin, one of the competitors was a man in the 60th year of his age, as I mentioned before, Mr. Gahde,--he did the distance of 125 miles

in forty-one hours, or forty-one and a half hours, and he slept a while on the way; he had a little sleep, but this was counted into the time; and this was, rather, the time of the famous Marathon runner. This was a little better. This man, who had lived on the vegetarian diet since he was young, and had adopted it because he was helplessly sick, and doctors had given him up.--he is writing his story.--the same man took part last year in a long distance walking race around Berlin in which also twenty-nine men are vegetarians, were at the head again. There are other places in Germany also I could report to you where vegetarians were at the head. He took part, and was then in his sixty-fifth year, over sixty-four years old, and he did 137 miles, more than from Dresden to Berlin, and won this race. In another race of 100 kilometers, in September of last year, 62 or 63 miles, he did in fourteen hours and 51 minutes,--not quite fifteen hours; and in this race took part more than fifty young men. In this race, a man nearly sixty-five years of age, adhering to the non-flesh diet since nearly forty years, won. He took up the diet forty years ago because he was helplessly sick, and he told me in my office last year in Berlin, that he prefers a diet about the same as I do, and as most of the German vegetarian athletes really do nowadays, of cereals, nut foods, and fresh food; but he does not take nuts foods; he prepares the nuts himself by a mill, and mixes it with dried food; then it is fresh food. I think he is a far better example of endurance than I am.

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## **QUESTIONS AND ANSWERS**

At the Sanitarium Parlor, Battle Creek, Mich., Monday, June 29, 1908, at 8 P. M.

by

J. H. Kellogg, M.D.

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**Questions:** Are the coarse vegetables bad for a stomach of low motility if the woody parts are rejected before swallowing?

**Answer:** No. The most important thing of all with reference to carbonaceous foods is to reduce them all to a liquid state. If one will take the pains to chew everything until it is reduced to a liquid state in the mouth, everything will combine. There is no trouble then with combinations. People have a great deal of unnecessary distress about that. You can solve the whole thing literally by bringing the foodstuffs into solution in the mouth, and rejecting the woody stuff. The reason why coarse vegetables are difficult of digestion when taken with fruits is this: The coarse vegetables not being properly masticated, not being reduced to a liquid state, having a great amount of indigestible woody stuff connected with them, remain a long time in the stomach. Fruits undergo fermentation very quickly. Fruits contain a great deal of sugar. Sugar ferments, it sours very quickly. Now, fruits require very little digestion in the stomach. They are already digested in the sun. There is nothing about fruits which requires digestion, they only need to be reduced to a soluble form in the mouth. Fruit-juice, for example, grape-juice requires no digestion. Grape-juice is food, ready for immediate assimilation, to be absorbed at once and utilized immediately. That is why fruits are so refreshing, and that is why a tired person feels refreshed when he takes a glass of lemonade, or takes an orange or a little fresh fruit, because it is already digested; it is absorbed and utilized immediately; so it is highly important not taking fruit to avoid taking with the fruit anything that

requires a longer stay in the stomach, because if the fruit stays in the stomach a long time it will undergo fermentation. If the vegetables are taken with fruits, the vegetables stay a long time and keep some of the fruit along with the vegetables there, you see; some portion of the fruit adheres to the vegetable, and the vegetable not being digested, and the fruit not being absorbed, it must ferment. Perhaps some of you do not know about the modern discovery in relation to the stomach. The stomach is not an absorbing organ. When food is taken into the stomach, it is never absorbed from the stomach. If the lower portion of the stomach were closed up, the person would starve to death as certainly as though he had no stomach at all, as certainly as though he took no food at all. Food is not absorbed from the stomach. It must pass from the stomach before absorption takes place. This is the modern idea about the stomach. That is the correct idea of the stomach. The stomach stands nearly perpendicular. When we take X-ray pictures of the stomach, we find the stomach in this nearly perpendicular position. Now, here is the pylorus. This is really the gate-keeper who resides here and opens and shuts the gate, and so keeps the foodstuff in the stomach. This is the pre-pyloric valve, which is called the pre-pyloric muscle or sphincter. This portion of the stomach is the piston, we might say, of the stomach. Food is swallowed into this part of the stomach here; it undergoes digestion on the outside. The gastric juice acting upon the outside is continually dissolving the foodstuff, while the saliva acts upon the inside, and the soluble portion passes out; here it comes in contact with the gastric juice, and that completes the breaking down of the food. For instance, here is a piece of bread. This bread is made up of two things—starch and gluten. The starch is digested by the saliva, the gluten is digested by the gastric juice, so these two fluids, these two liquids ~~mix~~ together, you see, reduce the food to a liquid state. The saliva digests the starch, and the gastric juice digests the gluten, and when that is done it falls apart. Let this represent, if you

please, a starch granule. Now, this starch granule has running through it, that portion of bread, we will say, has running through it fine strings, and a lacework of gluten; and between these strings, these shreds, the fibers, are the particles of starch. Now, together these make up a solid mass of bread; it may be a crumb of bread. Now, the saliva dissolves the starch so the starch disappears, and that leaves a framework of gluten, you see, and the gastric juice dissolves the gluten; and when both starch and gluten have been dissolved, then we have a liquid, you see. That is what is going on here in the mass that is in the stomach; and the liquid portion trickles down here, comes down into this part of the stomach, this pyloric portion; then this valve closes, shuts right up so that it is shut off from the rest of the stomach, and after this happens, this contracts just like the bulb of a syringe, just like a bulb ~~on~~ of an atomizer, contracts and forces the food out. It has to go. At the same time that this portion contracts, this part opens so it passes out. Now, that is the process by which the food is gotten down into the intestine where it is absorbed, and no absorption takes place in the stomach, or very, very little absorption. This is the reason why. But you drink water sometimes, and you can feel the water splashing all about in the stomach. If your stomach is tired so that the walls do not contract upon the water, there is water there, and the water splashes about, perhaps, for several hours; the water will sometimes remain in a slow stomach for hours and hours. Sometimes people get dilated stomachs, get pouches in their stomachs. This part of the stomach gets pouches like that; then when a person drinks water, it comes down in here, and such a person does not get any relief from thirst until the pouch fills up. By and by the pouch gets full up, and some water runs over in here and then it begins to pass on and the thirst will be relieved. That is why sometimes one has to drink three or four or five glasses of water before they get any relief at all from thirst. They have to fill up the ~~pouch~~ pouch, you see, before they get any water out. That is a sort of an unused portion of the stomach. That has to be filled, then

the water runs over. So the stomach does not absorb. Consequently, you see, when you take into the stomach two foodstuffs which require different lengths of time for digestion, vegetables which require a long time for digestion, and fruits which are already digested, these two things are taken into the stomach at the same time, the fruit not being absorbed, ferments quickly, not only digests quickly, but it ferments quickly, so there is likely to be mischief. Now, if we reduce the vegetables and fruit both to a liquid state in the mouth, you see, it will only stay an hour or two in the stomach; it will pass on quickly into this pyloric portion and pass out, and it will be absorbed before fermentation can take place. A solution for nearly all the troubles with the stomach is to be found in thorough mastication of food, so-called fletcherizing the food. Mr. Horace Fletcher has made some interesting observations upon this matter of chewing. He devoted several years to the study of chewing, to the study of mastication. He chewed food, chewed each morsel 200 or 300 times. Think of it! Practicing for two or three weeks at a time the mastication of every single morsel of food from 100 to 200 or 300 times. He had to give his attention mostly to eating, you see; he could not do very much else during that period; and for lesser times, until he found out some very interesting things; and among these interesting things he discovered was that his Bright's disease (he had something like it, akin to it) disappeared, and all his indigestion disappeared. He was excessively fat, and the excessive fatness disappeared. He was weak, wondrously weak physically, muscularly, and he became strong and vigorous, so that he is now in perfect health. He liked to smoke, and the appetite for cigars disappeared. And he liked champagne, and the appetite for champagne disappeared. There was such a revolution in Mr. Horace Fletcher as the result of his mastication that he is thoroughly persuaded that the only thing necessary to revolutionize society, to eliminate the slum, in fact, to bring the whole world into a state of peace and harmony and righteousness, is to chew. That is the remedy for the whole thing. I said to Mr. Horace Fletcher once in talking

this matter over with him, "You seem to have evolved the theory that man can lift himself up with his jaw, that the only thing necessary is to work his jaws hard enough, and his masticatory muscles with sufficient vigor, and he can lift himself up from any low state into a higher one." Well, it is certainly true that this thorough mastication of food makes a wonderful revolution in his physical condition. If you have a dirty tongue, it will clean it off, in two ways. First, the thorough mastication of food will mechanically remove the coat, from the tongue, and second the mastication of the food cuts the food up in the mouth and mixes with it a large amount of oxygen. Now, that oxygen is the thing that is necessary to aid in the digestive process; but it is still more necessary to feed and to encourage the growth of the friendly germs which have been beneficently created, or apparently at any rate, to drive out the unfriendly organisms, the anaerobes, the poison-forming germs which grow in the intestine. Now, I must just tell you a little more about that story because it is so very important, important for almost everybody here. A man came into my office to see me today, and he said, "Doctor, I am suffering from auto-intoxication as almost everybody is." This gentleman was not a patient, but he had just arrived, and he was an intelligent man who had been reading, and he said, "You see I am suffering from intestinal auto-intoxication, as almost everybody is, and I have been suffering from it for years," and he really told the truth about himself. Now this intestinal auto-intoxication is the thing that makes the bad breath, that makes the coated tongue, that makes the dingy complexion, that makes the dingy sclerotic of the eye, that makes most of the headaches, that makes nearly all the neurasthenias, that makes nearly all the Bright's disease; that makes nearly all the dropsies that come from a cirrhotic liver; that makes the arteries get old and hard too early, producing apoplexy, and one of the causes of paralysis; this is the thing that produces such marvelous mischief that is the cause of nearly all chronic disease--it is auto-intoxication which means



simply poisoning; intestinal auto-intoxication is simply poisoning from decaying substances, and poisonous substances that are formed in the intestine and absorbed into the blood. Now, here is a man that has a putrid breath. What is the reason he has a putrid breath? It is not because he has decayed teeth; it is not for that reason. That will aggravate it somewhat, but that is not the real cause of it. He may cleanse his teeth, scrape them as much as he likes, he will still have that bad breath. That man's perspiration smells just as bad as his breath does. Investigate the cause, and you will find where it comes from. It is the colon, putrefactive poisons are produced in that colon and absorbed into the blood, simply coming out through the breath. ~~Many~~ Thorough mastication helps to correct this by reducing the food, grinding the food up; so if one eats and his food is digested quickly and is absorbed quickly, it has not time to putrefy. Now, suppose you should take a piece of meat and put it in your pocket. In forty-eight hours it would be in a horrible state, wouldn't it? Whenever he came about, people would be looking around around to see what was the matter, and people would be moving away from your vicinity, and they would have good reason for it. Now, suppose you had this piece of dead meat in your mouth, it would be the same thing. Suppose when a patient has had an operation performed in the mouth, ~~we~~ perform an operation upon the mouth, we always have a bad odor from that mouth, because there is a raw surface, and there are little edges along that raw surface, of decaying flesh, and it makes that odor of putrescence; and we always have an unpleasant time when we have to do an operation on the mouth, and dislike to do it on that account. We can not prevent it, because the mouth contains germs and when we breathe we are always taking in germs of putrefaction. Now, suppose we take meat down into a healthy stomach; it is putrid meat, the sort of meat you always get at the butcher's; it is all putrid. You can not find meat at the butcher's that is not more or less putrid. Nobody ever thinks of putting meat up for sale the same day it is killed. He waits a little while. In twenty-four hours, that meat is swarming full of germs, even if it is put into the ice-box, it is full of germs within two or three days. When

meat is kept on ice, it does not fall in pieces so soon, but it undergoes slow decomposition. Germs grow at a temperature much below, considerably below the temperature of freezing. The meat must be frozen solid in order to prevent this active decomposition taking place; but to put it into an ordinary ice-box, decomposition goes on, and within three days of the time the animal dies, its body is swarming full of germs, the same kind of germs that are found in the intestine. Now, then, if a person eats a piece of meat and digests half of it, and the other half remains in the gut for hours and hours, perhaps for twenty-four hours, you can easily understand what happens to it. It must undergo putrefaction. That is what makes the skin become so dirty; that is why so many people have such sallow complexions. It is the putrefaction of the meat. Some years ago we had a visit from that splendid New York woman Mr. Roosevelt pronounced America's most useful citizen. You know him, you have heard his name; it is Jacob Riis. Mr. Riis came here to Battle Creek, gave a lecture here. He came up to the Sanitarium, a little bit reluctant, I think, a little prejudiced. He stayed with us a day or two. As he was going away, he said "Doctor, you know when I first came up to the sanitarium, I thought you people looked as though you were anemic; your folks that I met, your doctors and nurses, I thought they must be a little anemic, but I discovered after I had been here a little while that it was not anemic, I thought you were pale, but I discovered you were not pale, but it was a clean look." Now, that is the thing that we notice here right along. Young men and women who come here generally, our family,--if you go over to East Hall where we are feeding several hundred people every day,--in the very busiest season of the year we have 1000 people working in this institution to take care of another 1000 sick people; so we have a good many folks trying this diet, trying this Battle Creek idea, this Battle Creek diet system all the while. These helpers often come to us with pimples on their faces, blotches, have dingy skins, bad headaches, and bad complexions generally. After they have been here a few months, they are entirely different looking folks. Notice the young ladies you meet in the bathroom, and the

gentleman patients here notice the young man you meet in the bathroom, notice their complexion. Dr. Karl Mann who stood here the other evening and talked to you—didn't you admire his complexion, his clear skin? He had been out in the sun, he was brown, but his skin was clear and transparent. A man in that condition of perfect health, with a clean tongue and sweet breath can not be otherwise, because he lives upon a clean, pure diet, and his blood is clean and pure, and there is nothing foul in his body. His whole body is clean. Now, when a person is living in such a state and eating such a diet that he has got a veritable galgatha in his body, he is a cemetery, or potter's field in his intestine, a hoo-yard, or any almost any, there, it is not any wonder he has got a bad breath; it isn't any wonder he has a foul perspiration, and a maledorous body. I must not dwell too long upon this subject, but we will have occasion to revert to it again before we get through.

Q. What produces rheumatism?

A. Rheumatism is a dietetic disorder. One does not have rheumatism unless he eats it. The only way one can get rheumatism is to swallow it. No one would have rheumatism if it were not for this very thing I am talking about. Acute rheumatism I must exclude; that is an infectious disease just like small-pox, scarlet fever, and diphtheria; acute rheumatism is a disease you catch, not necessarily from a person who has rheumatism. But rheumatism is a disorder which accompanies quite a number of different infections. Rheumatism accompanies scarlet fever sometimes, sometimes accompanies a peculiar infection called chorea. It also accompanies another infection, an erythema nodosum,—a peculiar form of skin disease. It is also connected with a number of other infections. Blood infections often produce rheumatism as a complication. That is acute rheumatism. But now, chronic rheumatism is another disease entirely, a disease in which the joints are permanently enlarged

more or less, become deformed, misshapen, drawn all out of shape. This disease, sometimes called deforming rheumatism, is due to poisons generated in the colon, and to the germs which grow there and are absorbed. We always find this man who has chronic rheumatism with bad breath and a bad tongue; we always find horribly putrid-foul discharges; we find in such cases always an intestinal auto-intoxication, and the best thing to be done for that man is to clear out his alimentary canal, to get his colon clean, and his blood clean, and then the disease will disappear of itself. You never can cure chronic rheumatism by sweating baths, never can cure chronic rheumatism by swallowing mineral waters. Sometimes persons go to mineral springs, and they feel better of their rheumatism, because the laxative waters of the mineral spring hasten the peristaltic movement, carry away the poisons and give temporary relief; but the patient is all the time cultivating the disease at the dinner table. He goes to the dinner table, sits down and swallows a whole lot of rheumatism; then goes to drinking water at the drinking fountain, and he drinks the mineral water, and that helps to wash out the poisons, to wash them away temporarily; then he goes back to the table and swallows some more; so he is cultivating rheumatism at the same time he is fighting it. He does not get any permanent relief. Permanent relief in rheumatism comes from correcting the habits of diet, ceasing to eat things that create rheumatism, and the thing that creates rheumatism is a thing that putrefies. Rheumatism is a disease of putrefaction, a disorder which grows out of putrefaction of foodstuffs in the intestine. My friends, this is the most important thing that has ever been discovered in relation to diet--the necessity of taking food which will not rot. You would not feel it such a terrible hardship if you had to live in a room with a barrel of paint; that would not be such an awful thing; or with a dozen loaves of bread; or with a bushel of wheat. That would not be such an awfully bad thing; but now suppose you had to live in a room with a quarter of beefsteak, or a couple of gallons of oysters, or with a Christmas turkey, say for six months or so. Just think of it! Why, the difference is just

simply about the difference between heaven and the other place. You could tolerate the potatoes very well; you could decorate the barrel, perhaps, making a what-not out of it or something else,—make a pedestal, perhaps, of it, possibly a statutory stand, and nobody would ever discover that you had anything unpleasant there; but how would you ever decorate a dead pig, or a piece of dead calf in the corner of the room so that the presence could not be discovered. Somebody would be saying by and by, as a man said to me down at Naples when I was going through a particularly bad part of the city, where there was a terrible malodor,—my guide said to me, "Sir, this bad smell which you feel comes from that tannery over there." So there would be a bad smell that could be felt; you would not have to see the thing to know that there was something there that was horrible. Now, then, suppose that that dead thing was not over there in a corner of the room, but was in a corner of your alimentary canal instead. Isn't it just as bad? Isn't it just as bad? It is not only just as bad, but it is infinitely worse, because when it is over in the corner of the room you only get a little whiff of it, a little flavor of it, well diluted with the air; but when you have it inside, it is doing you exactly the same harm as that piece of rotten meat you ate day before yesterday, or last week; it is still lying in the colon, rotting, decomposing; it does you just as much harm lying there as though you took that piece of rotten meat and swallowed it in that putrescent state. It is exactly the same thing, precisely the same thing. We do not stop to appreciate what it means when a person is living in such a state, eating such a diet, and is in such a condition that the food remains which are discharged from his body are in a putrescent and offensive condition. That person is just as certainly suffering from disease in consequence, and suffering from constant daily poisoning every moment he is being poisoned, just as certainly as though he should take that awfully offensive, putrescent mass and put it back into his body again,—just as certainly. The thing has been there, nobody knows how long.

It has been there perhaps two days, or three days, or a week, two weeks, or three weeks. I have often known people to be relieved by a laxative, or a cathartic, or an emetic of putrescent material which had been lying about for weeks, and those poisonous matters were being absorbed every single moment. Now, we have finally got hold of tests that have been developed by which this poisoning can be measured; the rate, the condition of the poisoning can be accurately determined by the examination of the urinary secretion. We can know by this just how much poison is being absorbed, can watch it hour by hour and day by day. In one examination the other day, we found considerable indican in the urine. This indican is the name of a poison which is found in the urine. The indican should be zero, but in this case it was 1.50. We had a case the other day in which it was 60. It might be 100. 100 is the largest amount which has been discovered. That is, it has rarely ever been found more than 100, while 60 is an enormous amount. That means that person is taking a large quantity of this poison, in such a way that it is being absorbed all the while and carried in his blood. So, when it is in his blood, where else is it? Everywhere in the body. If it is in the blood, it is in the brain also. It is not only in the blood, but everywhere; it is in the salivary glands; it is in the saliva; it is in the eyes, it is in all the nerves and nerve centers of the body; it is everywhere. The whole body is tainted with it. I often think when I meet such a person, of that text of scripture, If your body is dark, how great is that darkness. If your body is filled with darkness instead of with light, how great is that darkness? If our bodies are filled with light, what a great light it is. Our bodies should be filled with light, not filled with darkness. Now, these poisons are the products of decaying, and they are darkness, and they darken the brain, damage the body, throw a shadow over the whole life. I was talking today with a couple of gentlemen who have been intown advocating the beginning of a temperance campaign here. We propose to have a dry town next year, and we are going to have the saloon eliminated, and we had a couple of anti-saloon men in town a few days back, and they are very much encouraged, they tell us we are going to have a dry

town next year sure; and we will take pains to make the fact known when we have that honor. I was talking with these gentlemen on this question,--are we ever going to eliminate intemperance by law? I told them it was a hopeless case, that it never could be done in the world. The saloon is only the vehicle; it is only the means that supplies the demand. We have got to cure the demand, and the demand for alcohol is chiefly produced by this universal intestinal auto-intoxication. It is the thing that lies back of intemperance more than any other thing. It is the very foundation of it. What does a man drink whiskey for? What does the old drinker take it for? Not to make himself happy, but to relieve his miseries. The average business man takes a glass of grog to get rid of that miserable feeling in his head. He has got bad feelings in his head, lightness in his head, pressure at the back of the neck; an all gone feeling, a nervous feeling, or something else, and he takes whiskey to brace him up, he says. Now the thing that breaks a man down, that makes him feel the need of a bracer is this intestinal auto-intoxication, these awful poisons saturating the body, doing such a vast deal of mischief. And that is such a large subject I must get away from it.

Q. Does Plute water thin the blood?

A. Any water thins the blood for just a moment, but not very much, and not for a very long time. The specific gravity of the blood is one of the things in the body that is held at a uniform level, just as the temperature of the body is. The temperature of the body is  $98.6^{\circ}$ , and the specific gravity of the blood has a definite figure just as well. You can not thicken the blood, or thin it, to any great extent. Nature will not permit these changes to any great extent. If the blood gets too thin, the corpuscles would be destroyed right away. It has to have a certain density maintained all the time; so when we drink water it is absorbed into the blood, and carried out through the kidneys very rapidly. That is the reason why you can wash the blood and the body so easily by water drinking,--because the water will be taken out just about as fast as it is taken in.

Q. Should food be cold warm or hot?

A. It is best that the food should be somewhere about the body temperature. It is better to take food a little below the temperature than to take it very much above. Hot food has a rather relaxing tendency.

Q. With poor starch digestion and acidity would you advise a proteid diet when one has rheumatism?

A. Proteids should always be taken in just sufficient quantity to satisfy the body needs--no more. A locomotive, by the way, requires fuel just as the body does, and two kinds of ~~fuel~~ fuel just as the body does. The body requires heat-making foods, and tissue building foods. Now, the heat-making foods are starch and fat, and the tissue-building food is protein. Protein is the modern word instead of proteid. The chemists have recently passed a law that ~~we~~ we should use protein instead of proteid. Protein is the proper word, the scientific word. Protein builds muscles and nerves. We need a little of it, but not a great deal, but we need a great deal for heat. The locomotive has to have two kinds of fuel; it needs coal to make heat for the locomotive, to support the fire. It needs now and then an iron belt, now and then a brass nut or knob or something, or a rod; it needs metal repairs as well as coal repairs. We must replenish the metal of the locomotive as well as the coal, as well as the fire. Protein is to the body what metal is to the locomotive. The carbohydrates and starch and fat, are the coal, and carbon food. Now, suppose, we will say, coal is scarce. Suppose a locomotive comes along to a station and the station master says "I have not got much coal here, but I have got a whole lot of scrap iron. Won't that answer just as well?" What would you say? If the engineer should take on the scrap iron and undertake to keep up his fire with scrap iron, how would it work? Now, that is exactly the same proposition, as to suppose you can not eat much starch, and must eat more protein. Protein does not help you out. Suppose you should put into the firebox of a locomotive, a lot of belts and washers and bits of brass, would that help you any? You can not utilize any more metal than the locomotive needs.



If it has lost a bolt or something, or a rod has broken out, it must have something to take its place, but you can not utilize any more than that. Any more than that becomes a burden. So you can not make up for a deficiency of bread by eating beefsteak, because you can utilize only a small amount of that beefsteak. If you take more than that, it becomes poison, a damage, an embarrassment. . I think it is very important we should understand this. Here is a diabetic, and perhaps the doctor says, "Oh, you have got diabetes, you must live on meat." For that man to live on meat will poison and kill him just as certainly as for a man that has not diabetes to live on meat. It will do him exactly the same harm. Here is a man with a sour stomach who says, "Oh, I can not digest starch, I must eat meat." If that man lives on a meat diet, it will do him exactly the same harm, the same kind of harm and the same amount of harm that it will do another man that did not have sour stomach. He can digest and utilize a certain amount of that meat, but the rest he can not utilize. It is very important to know this because so many thousands of people have been actually killed by being put upon a meat diet. Even a dog can not live on a meat diet. For a long time the lions and other carnivorous animals in the zoological garden in London were fed on meat, and it was found that their progeny were miserable, rickety, deformed, etc., and died easily. A doctor was sent there some little time ago to inquire into the cause of it, the surgeon, Mr. Treves, I think it was, and he said, "Why you are feeding these animals on meat; of course, meat will kill them. They can not live on meat. A lion can not live on meat; he must have something else." So if you try the experiment with a cat or a dog, it is certain to die if you feed it on meat alone. It can not live on meat. The cat will die of fits pretty soon, and the dog will have all sorts of trouble. The man who has a pet cat knows perfectly well that if the cat catches a mouse, she must take the mouse away, must not let the cat eat the mouse, for if the cat eats the mouse, it will be sick, and it will die if it eats any number of mice. A cat must be fed on bread and milk if it is going to be

a good, healthy cat and live long. So with the dog; it must be fed bread. A dog becomes sick and unhealthy when it lives on meat. Now, the doctor changed the diet of these lions, and he gave these lions meat and bones. He gave them bones along with the meat, then the lions got along very well. Now, you know the dog eats the bone with the meat. If you say meat eaters and are going to insist on eating meat, the only way in the world you can escape to any degree the certain and positive damage that comes, even to carnivorous animals, will be to eat the bones along with the meat. If you eat the meat alone, you will suffer. Why? Because the meat does not represent the whole food. Meat is a partial food; it is not a complete food. I will show you that in a moment. Here is a hog that eats an ear of corn. Every kernel of that corn has in it everything that an animal needs, everything is there. It has starch, it has fat there, it has protein there, and has them in good proportion. That is why the hog flourishes so on corn. Now, in that little kernel of corn there is something for the hog's brain, the cells of his brain, and there is something there for his muscles, protein for the muscles, and there is something there for the fat--the oil in the corn. There is something there for the bones--the salts in the corn. Now, the corn is digested and circulated through the blood around in the body. Each part takes that portion of corn that falls to it. The brain takes that part that goes to the brain, the muscles take that part that makes muscles; and the liver and other glands take the parts that belong to them. The bones take that part--the lime--that belongs to them. The soft parts of an animal, the flesh of the animal, contains only about one tenth part of the lime that the food contains. The lime contained in the food is only one tenth of it found in the soft parts of the animal. That is, the lime that is in the corn when taken into the body of the animal goes mostly to the bones, so that there is only one tenth of it found in the soft parts of the animal, and nine tenths of it has gone into the bones. Now, then, if you are going to get that corn back, don't you see, you have got to eat the whole hog. Don't you see? You never can

recover that corn without eating the whole hog, because the corn has been distributed. Part of it is gone into his liver; part of it has gone into his brain; part of it has gone into the muscles, and another part into the bones, and it is unequally distributed. The salts are in the bones and the brain, the protein is in the muscle, and the oil is in the fat in the lard; so you have got to eat that whole hog. There is no other way. It is the whole hog or none if you are going to get your corn back. There isn't any escape from that. Prof. Sherman of the Columbia College, of New York City, has written a paper upon that subject. I heard him give an address on it last year; he has been making experiments upon animals and men, and observations, and he asserts that one fifty of the entire population of the United States are suffering from lime starvation because they are living on meat. You must eat the bones with the meat. Remember that the next time you eat a mutton chop—just tell the cook she must serve up the bone along with the meat so you can get the whole sheep, or the whole hog as the case may be.

Q. You have said that in fasting the tongue gets more and more coated as time goes on from the poisons formed in consequence of the body feeding upon itself. I once fasted 17 days and after 4 days of the tongue, breath, perspiration, etc. becoming terribly bad, all this cleared off, and up to the 9th day, I became stronger and better in every way, but after that I lost strength quickly. How do you account for the clearing of the tongue and increase of strength?

A. Well, now in that particular case the patient was fortunate. He had vital resistance enough so that he was able to eliminate the poisons that are formed in the body, and the tongue cleared off, and the elimination of these poisons gave to him his natural strength,—no increase of strength, but it relieved the weight under which he had been suffering; it took off the pressure, took off the burdens. So that recovery of his strength was not due to an increase of strength, but simply to the removal of burdens his body had carried in the shape of poisons.

Q. Please recommend diet to avoid gas in the bowels when motility of stomach is low.

A. This is due to certain germs there. The thing is to eliminate the germs. Thorough mastication of the food will do more to correct it than any other one thing.

Q. What will cure catarrh of the stomach?

A. Thorough chewing of the food and proper regulation of the diet. Avoid mustard, pepper, peppercorns--condiments of all kinds, and especially meat. You must avoid meat because meat is the cause of catarrh of the stomach. Meat is the cause of ulcer of the stomach. One of the most eminent gastric specialists in the country stood up in the great medical convention held in Chicago a few weeks ago in the discussion of ulcer of the stomach,--it was the question of what surgery should be performed in the stomach for the cure of ulcer, and it was a very vigorous discussion, and this eminent surgeon arose and said, "Gentlemen, the right word has not been said yet. Ulcer of the stomach is a beefsteak disease. We must get at the cause of this thing, and we must recognize, I think, that ulcer of the stomach is a beefsteak disease." In other words, he meant it was a meat eaters' disease. You could not have ulcer of the stomach without it. And he has experimented upon dogs, and has proven that the germs found in meat are the real cause of ulcer of the stomach; and the same thing is true of the meat eater's stomach. These germs are found elsewhere, but meat is the great source of them.

Q. What will cure a stomach that empties slowly?

A. In the first place, don't put too much into it at a time. Never put too much water into it. Eat a small amount, chew it very, very thoroughly, eliminate the necessary wastes from the food, return to the plate, for instance,--I think I was eating green peas for dinner. I was at the table in the dining room, and had green peas for dinner. I ate some greenpeas. If you had seen my plate after I finished my meal, you would have seen every single green pea hull on my plate. There did not any of it get down into my stomach. I watched a lady, a delicate looking woman, right across the table from me, and I looked at her plate, to see if there was any of that rubbish on her plate after she got through, and there was not a single hull there; it had all gone into her stomach. I said to

myself, what a miserable stomach that is. That really is the wrapper Nature puts on to preserve the pea from the water, from bugs, from disintegration and decay, and from germs, to protect it. Now, when you go to a store and buy a nice little article of some kind and go home, you take the wrapper off. If you have a nice pear, you take the wrapper off before you eat it. If you eat some bonbons, you do not eat the wrapper or the box around the bonbons. The shell on the pea is the brown paper, the wrapper put on to protect it. It is of no value in the body; and especially when one eats green peas and things of that kind in which there is so very little nourishment, one could easily put into the stomach an enormous amount of rubbish that the stomach will have a great deal of trouble in dealing with. Put everything into your stomach in a liquid form. The stomach can empty itself of liquids with comparative ease, but these indigestible things keep the food back in the stomach for such a long time.

Q. In the writings of Wesley, Fletcher, Finney, Mrs. E. G. White and others, we read of instantaneous healing in direct answer to prayer. Were they deluded or not?

A. Why, no, they were healed; but you never know anybody to have a leg grown on in answer to prayer. You never heard of such a case. You have heard of people who had their tongues removed and were able to talk afterwards, but they hadn't any new tongues in their mouths. They were able to talk without the tongue; and I have seen that myself in Vienna. The tongue is not absolutely essential for talking. The talking organs are back of the tongue. So the tongue can be removed and the person still talk. There are cases of that sort on record in recent times. It is mentioned in our surgical textbooks that the patient can talk even when his tongue has been removed; but with reference to healing, it is the psychological case that is cured by prayer. The man is suffering from a psychological disease who is healed by prayer. It is not the man who is suffering from a lost leg or a lost eye who is healed; you never saw such a case. You never saw a person who had

lost an eye & he was healed by prayer, by Christian Science, or any other thing. My theory about it is simply this: God can make eyes; he does make eyes; but here is a man who has lost his eye; we ask God to put that eye back again; he is not going to do it, because he has known all about what is going on all the time. If he had wanted that man to have that eye, he would have taken care that he did not lose it. God does not do things for people just because we tempt him. Prayers are not answered because of importunity. Nobody ever gets a prayer answered by praying long and loud and making a great fuss about it. The thing that appeals to God is the need of the man that prays; it is the man's need, the man's extremity and the man's emergency; and if a man prays and gets an answer to his prayer it is because he prayed for the thing that God had ready for him and was waiting for him to ask for, and intended him to have; and he put it into his heart to ask him for it; so that he might be ready to receive it. The desire to pray, and the thought of prayer, the disposition to pray on the part of the man, for the thing was waiting for him, and ready for him; and that is the way he gets an answer to that. We do not get answers to prayer because we persuade God to be good to us. God is doing for us everything he can do for us all the time. He is doing everything he can to help us, doing everything he can to heal us, to make us happy; everything that can be done for us is being done; for God is beneficent. He has made us, we belong to Him, and he is making the most he can out of us all the while; and if we are not getting all we ought to have and all we want to have, and all we need, it is our own fault; it is not God's fault; it is our own fault, or may be the fault of our ancestors; may be the fault goes away back, because we are simply buds from the ancestral tree; we are simply twigs that have been slipped off and planted in other soil; so whatever sins our parents committed, we have to bear the consequences of, because we are a part of them; we are simply extensions of them; so the thing is in us and we can not get rid of it; but God is doing for us all he can.

All that is necessary for us to get more than we are getting is to get in line, to live in harmony, to put ourselves in harmony with the great, divine Power that is working in the universe,--to get in harmony with the universe, in tune with the universe as somebody puts it very beautifully,--just get in tune, then we will get everything that ~~is~~ we are capable of receiving and utilizing.

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4-19-8.

## **THE EVILS OF CONVENTIONAL DRESS**

A Stereopticon Lecture at the Sanitarium Gymnasium, Tuesday, July 7, 1908,

at 8:00 P. M., to Women Only, by

J. H. Kellogg, M. D.

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Ever since Eve began making fig leaf aprons, the subject of dress has been the cause of more anxiety and of more grief and tears, I think, than almost any other personal concern of human beings. There is perhaps at the present time no subject which gives ladies more concern, unless it be the subject of their husbands, than the question of dress.

If we go down to the eastern countries, to Egypt, Syria, or any part of the orient, we find people, ladies and gentlemen, men and women, wearing exactly the same costumes as were worn two thousand or 3000 years ago. If you visit Palestine, for instance, you see people, the peasants, ~~men~~ working in the field, wearing just the same costumes Abraham and Isaac and Jacob and the old patriarchs wore. You see an Arab riding on a camel, and he wears exactly the same garb which Ishmael, his great fore-father, wore 3000 years ago; so at the present time it is only in civilized countries, especially the highly civilized countries, that you find this matter of dress making so much trouble and so much concern, the cause of so much disease; but there can be no question, there is not a particle of question in my mind that in civilized lands, this unnatural, unhealthful dress which has become conventional, which the inhabitants of civilized lands universally wear, is responsible for more disease than almost any other one cause.

Now, there are other causes which are perhaps as great and as active, but this one cause is equal to almost any other. When we consider the other causes which are set in operation by unhealthful dress, I think we may consider it as the most important and the most active of all causes.



Here is the correct outline of a woman's body, and the proper position of the various organs and here is represented the normal position of these organs, according to Prof. Stannan, the eminent German anatomist. Now, see what happens when the waist is compressed a little. The waist is always compressed when an ordinary corset is worn. A woman in putting on a corset never leaves room enough even for breakfast, inside of it. So the breakfast has to squeeze in anywhere it can find a corner. There is no calculation made that there must be room for breakfast, or dinner, or a glass of water, or a cup of carnal cereal, or milk, or something else, but the corset is put on with reference to any such thing. The woman says, "Now, then, my figure is going to be just so large today." You say it may be curled up an inch, but no, the corset is worn every day just that size, and the woman in putting it on, says, "Now, that is my size today", and she laces up her corset string, (laces it to a certain point, and says to her waist, "Thus far shalt thou come, but no farther." She says to her waist, "You may be just so large today, and no larger." She says to her lungs, "You may breathe just so far today, and no farther." Now, the waist is made compressive. God made the waist so it could expand and dilate. The trunk is like a rubber bag. We can take air in, and take in more and more by making a proper effort, but the woman with a corset on, who has the fashionable, conventional dress which is made to fit the body tight, when the breath is all out, made to fit the body as tightly as possible,—the skin-fit, the under-skin-fit, says, "Now, I am going to be just that big all day." Then she eats her breakfast, and she takes in two pints. Then she takes a glass of water, and that is another pint, or quart, or more. Then she takes in a breath, takes a deep breath when she runs upstairs, and there is no room at all for that deep breath, there is no room there for it, and it has to crowd down somewhere, and what is the consequence? One consequence is the liver is pushed out. As she sits down at the breakfast table the waist is just big enough as it is, and when she eats her breakfast, that pushes down here wherever it can. But there is no

runs for it up here under the ribs, so it has to slip down to get out from under the ribs. When a deep breath is taken, or when breakfast is taken, or water is swallowed things are squeezed down here. There is hardly a single organ in place. Look at it. Here is the colon on a line right straight across the body on a level with the lower border of the ribs. Look at it. Where is the colon of the conventional woman? There it is. This is not the fashionable woman; this woman never confessed that she ~~was~~ ever wore anything tight in her life; her clothes were just barely comfortable. This woman said she had never worn anything but a health corset in her life,—an invention of the devil. That is the biggest trick Old Nick can ~~ever~~ play on anybody,—make them think they are good when they are not good at all. So this woman thought she was superlatively good, because never in her life had she worn a wicked corset; she had worn a health corset, but this corset, notwithstanding the word "health" attached to it, had been working mischief every single day until the stomach was down out of place, the liver and everything including the colon, was down there below the umbilicus when it should have been up here above the lower border of the ribs. Now notice here, all these important organs lie above the lower border of the ribs. The colon, the stomach, the liver, the spleen, the pancreas, the kidneys, all lie above the lower border of the ribs; yet you see here they are all below. Half of the liver is below, the whole colon is below, the stomach below, the pancreas fallen down too. Is it any wonder that woman with her stomach down, her liver down, her pancreas down, and the spleen down, both kidneys down,—is it any wonder that woman falls down in the mouth sometimes, and that her spirits are away down in the basement somewhere? That is where she lives, don't you see? Some time ago a Chinese woman was expressing great astonishment that the American woman and civilized woman can wear corsets. "Why", she said, "You say it is bad for me to bandage my feet"—she was a woman who had little feet,— "but my feet are not much account, but here, why, here—here is where you live",

she says, "There is where you live, and you apply a corset string where you live, and crush it in, fetter it, make it impossible for these vital organs to do their duty. Is it any wonder the American woman is pale in color?" She thought it was really such a sin for the American woman to wear corsets.

Here is another fashionable woman. Isn't it lovely--this drapery here--that dress? Isn't it the very dream of a dream? The dress is all right, but the trouble is with the woman. If it were not for the woman, the dress would be superbly lovely. But there is no place in that dress for the woman. Look up here. Where is her stomach? Where is her liver? There isn't any provision made in that dress for her stomach, you see. That sort of dress is all right for a dummy, but when you come to put it onto a human form, onto living flesh, and squeeze human flesh into such an instrument of torture, it is a crime, my friends. Before I get through tonight I hope to convince every woman here that the ordinary, conventional dress, that compresses the body as the organs are not allowed to expand, to perform their functions normally, that crowds the stomach, the liver, the spleen and pancreas out of place, that it is a sin against God, against humanity, against the sun to subject the body to such abuse.

God knew how to make the body; God knew how the body should be constructed; and the artist who chiseled out this beautiful model, one of the masterpieces of ancient art, knew how a healthy and normal, beautiful woman looked, knew what was her figure. This was chiseled from a living human being, and it was the outline.

Now, is there a woman here ~~any~~ who would not like to have such a figure as that, that would not be proud to have a figure like that? Is there such a woman here? No woman that wears the conventional dress, that wears tight waist bands, that wears the ordinary corset can possibly have a figure like that for any great length of time; so it is almost impossible to find a woman twenty-five years of age in civilized lands who has still the original, beautiful figure that God gave her.

Her figure has been fanned, and mangled, and deformed and abused and tortured by the fashion craze, by the medicine, by the dressmaker, until there is none of the original beauty left, until the original beauty is gone, and here is what you see-- a woman in pain.

Now, I am not going to say anything complimentary to you when I tell you I suppose a quarter of the women in this house have not figures so good as that is. Half the women to whom I am talking have had figures far more ugly than that is. Ask your doctor about it. Take an inventory; the next time you take a bath, take an inventory. If you had a looking-glass so you could see, you would find you look a great deal worse than that. There isn't any doubt about it. I know something about it. I presume I have made investigations of this matter more thoroughly than any other man alive. I do not believe there is a man living who has looked into this question so thoroughly and extensively as I have done. For thirty-five years I have been studying it, and I have studied it in a thoroughgoing way. In the course of my profession as physician and gynecologist, it has been required of me to investigate the conditions of probably not less than 50,000 women, and I have had opportunity to know the things of which I am telling you. I have taken pains to examine women of various nationalities, to study their figures. I went to Chinatown, for instance, twenty years ago, and I got a permit from the Chinese consul, a ~~pass~~ passport and a guide, got a guard from the Chinese minister, the Chinese consul. Then I went to Chinatown with my guard and guide, and I visited the houses of the Chinese. I visited the slave dens of the Chinese where Chinese women slaves are kept in bondage, and I had opportunity to take all the measurements I wanted to take, and I measured their chests, their waists, their height, etc., and I found the proportions of these women exactly the same as the proportions of the *Young de Mile*. I found the Chinese woman who wears no corset has the same kind of figure as the *Young de Mile* has.

Here is the figure of a woman who used to have that very poise; had that

very pale. The first time I saw her, she was a poor, broken-down school teacher, melancholy, and miserable as the outline appears here. Now, in a year, that same woman had this outline. Isn't it worth while to have such a change as that? What was done? Simply to strengthen the muscles of her back. These back muscles had been all broken down by pressure of the corset; the abdominal muscles had been broken in, and the stomach, liver, and bowels all crowded off down here when they belonged up there. But this woman's muscles were developed so that she was able to raise her chest, to arch her spine properly, to draw in these abdominal muscles; and this is the figure she possessed at the end of a year, you see. She had treatment, massage, electricity, manual Swedish movements, gymnastics, etc., and became finally a teacher of physical culture. Of course, this woman was a poor woman or she would not have stayed a year. If she had been a rich woman, she would not have gone here long before, but being a poor woman, and not able to pay her way, she had opportunity to get thoroughly well. She was received as a patient, came from the South, and after she was able to do something, we gave her some light work to do, so she continued in the institution for a year, continued her physical culture and treatment until she became a thoroughly well woman, and finally took a course in the training school for nurses here, went out of the institution a trained nurse, went west, took care of a poor sister for several years while she was dying of consumption, finally died, and she still retained her own good health, vigor and vitality. I believe she was married to a very worthy man, and for the last fifteen years has been living a healthy and happy life, a strong, vigorous healthy woman, from a poor, broken down, wreck of a woman when she came here, and largely because of improper dress and improper diet.

When an artist undertakes to make an undraped figure, he follows the Venus de Milo figure, and that is what we see here. Try to recall, if you can, a single undraped figure with a small waist, with a waist such as that woman must have under her corset whenever she puts it on, with the waist which every conventional

of women has. I suppose almost every woman in this room has this very moment the same waist; she possesses that same kind of a waist unquestionably; the compression of her clothing makes it. Every time the waist expands, the clothing around her which restricts is not removed, and so something must go down. Every time a deep breath is taken, the waist can not expand very well, and something must fall.

Here is another figure. Look at this waist. The anterior line is not quite convex, but it comes close to it. We do not see the falling in at the so-called waist line which is caused by corsets until the figures are broken down. See this beautiful, large well developed waist. Here is also a well developed waist. Although the pose of that figure here contracts the waist somewhat, still it is a natural waist, there is no furrow here, no sudden dip here; so we know here is really no deformity, simply a slender woman. Anatomists have made a careful study of this matter, and they have shown us that woman needs a larger waist than man. Here is a picture of an artists' model, and you see what the corset has done here. This woman posed for artists. I collected when I was abroad last a large number of photographs that are prepared for the use of artists, prepared from professional models of different nations, who make their living by posing for artists, and I obtained 100 or more of typical photographs showing the human figure. This is one of them. This was probably taken for the shoulders, and head of this figure, so the artist cared nothing about the waist, but the back; the whole of the figure was taken so the artist could make use of such portion as he wanted. But what artist would ever copy that waist? Do you believe that any artist in the world making an undraped figure would think of copying this waist with its furrow? You can see right where the skirt band was. The principal compression of the corset came right there, and that furrow means that the kidneys and liver and other organs were cramped down out of place.

Here is another beautiful work of art, and here you see the large, well developed waist. No artist would ever dream of making an undraped figure with a

fashionable waist. Here is another work of art, one of the ancient models. You see the curves of the waist, but there is no waist furrow there, no constriction. Here is another similar production, and you see the same thing,—a woman with a large waist, and the woman with the large waist, and the little cupid with a large waist,—all have well developed waists.

Here is a different form. Here you see the marks of the corset; here is the deforming influence of the dress manifested in this figure. This is true to life, but you see what a deformity it is, and how hideous it is, how hideous this figure looks. No one would envy that sort of figure because of the deforming influence of dress. Here we see again the large waists. These are from some of the ancient masters. This is one of Rubin's wonderful productions, and we find it true of every artist, and of all ages, that same thing is true,—that all undraped figures are made with large waists. This, however, is the waist of the fashion-plate. The waist of the fashion plate is always a constricted waist, and this style has somehow been developed until women have come to think that it is necessary that a woman should have a small waist in order to be beautiful; yet, when you have a picture of a woman, and you see nothing but a woman, an undraped figure of woman as God made her, no artist would ever dare to make a woman in any other way than with a large waist; but the woman with a dress on must have a small waist. Now, explain that to me, won't you? Just explain that to me. The fashion plates always show women with little waists, and the artists always make women without clothing, with large waists. Now isn't there something phenomenal about that; isn't that paradoxical? Now what can be done? Must all women be brought down to the fashion manager's style, to the fashion manager's notion. It is the fashion manager. Is the fashion manager a person who has authority to stand up and say God did not know how to make women; to say he and his kind will reform the woman, "we will re-shape the woman; we will re-model the woman, to fit this particular style of corset." Is there a physiologic reason for it? Is there a health reason for it? Is there an

artistic reason for it! There is no sensible reason of any sort to be given why women should be made to change her shape in order to conform to the latest style of fashion. Tell me, my friends. There is only one answer to that question; there can be but one answer to it; there is no reason, there is no sense in it; there is no artistic demand for it, because when the artist makes a picture of woman, only woman, he always makes woman with a large waist. It is only the fashion monger that makes a woman with a small waist; so here we see <sup>it is</sup> ~~him~~ one who speaks without authority. This fashion monger is not telling us the truth; he is not copying Nature; he is making something artificial, he is establishing an artificial standard which does not exist in Nature,—compressing the waist, displacing the organs, crowding things out of place, putting things where they do not belong, making it impossible for organs to perform their function, compressing the liver and gall-bladder so that woman has gall-bladder disease, gallstones, four times as often as man does, because of the interference with the function ~~of the~~ <sup>her</sup> gall-bladder by her mode of dress.

Here is an Esquimaux going out for a morning ride, and here is his partner going along with him, prepared for the day's business. He wears his dress-trousers, and she wears her trousers. Her trousers are only different from his trousers in being made a little more artistically; there is a little more decoration about them. One would know these trousers were a woman's trousers by the style of decoration. There is a feminine taste exhibited in them that ~~is~~ gives them the mark of femininity.

Here are two Syrian women,—what a splendid dress. Who would want any more artistic, graceful clothing than these women wear? These trousers have the lines of beauty in them. They look tight, but if you have never visited the orient, you do not know how graceful these women look going about with these garments. The trousers are made so full that in walking there is nothing to suggest any immodesty in the slightest degree. The fabric is always in contact so that as they move along they are not trampled; there is nothing to trammel the legs



and prevent the free movements of things they move gracefully about and seem to have a freedom and an agility, and elasticity of movement that we do not see in the ordinary American woman, the ordinary civilized woman who is trammled with skirts. I saw a lady going along the walk somewhere this morning, and it was a little damp, and she had picked up her skirts until they were almost to her knees in order to give herself a little easier walking. She was hurrying, and in order to hurry, to run, she had to pull up her skirts, to lift them up. Now, how much more modest, my friends, was that? How much more becoming was that? How much more artistic and beautiful was that lady with her skirts in both hands running along the streets, her legs exposed to the knees—how much more graceful than that Turkish woman whose limbs are always, thoroughly, completely protected because her trousers are gathered about the ankles? The women of the orient are the most modest women, the most retiring women in the world, that can be found anywhere on earth. A bifurcated skirt might be modest in this country, but they do not find this dress to interfere with their ideals of modesty.

Here is an East Indian woman, you can see her dress—beautiful, flowing robes, absolutely untrammled about the trunk. She can breathe as deeply as her brother can breathe, can run, hunt, do anything she likes to do as well as anybody who lives.

Here is a Javaneese woman with light skirts, a large waist, dress constructed so there is perfect freedom of movement. Here are two Sinese women with rather scanty garments. You see they are loose, so there is plenty of room for movement, plenty of opportunity for development. What about this woman? This is the woman you see every time you open a fashion magazine, or a fashion plate. Has she a stomach? If she has a stomach anywhere on earth, where is it? Echo answers, "There!" The fashion maker has forgotten all about the stomach, you see. The fashion maker did not think anything about the stomach at all. The fashion maker is only thinking of the exterior lines, and it is most unfortunate for the fashion maker that there is such a thing as a stomach. What terrible obstacles the liver,

stomach and such things are. If women had only been made without them, then they might have had waists exactly like waists; the waist could have been reduced down to the minimum size.

Here is a Japanese woman. Certainly she has a large waist, and a modest and comfortable dress.

Here is another poor victim of fashion. See this large chest and those broad shoulders. The waist is narrowed down to the very smallest proportions possible, and the whole abdominal viscera compressed in such a way as to make free movement in breathing an utter impossibility. I am not exaggerating. I copied these from fashion plates, and they are exactly as represented.

Here is the work of another artist, and you see what beauty there is in all these outlines. Here is a picture you have seen before, I am sure, of Queen Louise on the staircase. You see what her ideals were. You see the outlines show she has a beautiful figure, the normal figure of the Venus de Milo, and there is certainly nothing about that figure to suggest the slightest lack of artistic taste. The taste is perfect as could be; the art is complete.

Now here are some other figures. These are modern gowns, and aren't they pretty? There is no fault to be found with such gowns.

These are oriental ladies, and here are some more. These again are modern gowns. Why can not ladies have the privilege of wearing gowns of that sort all the time? Why is it that a woman cannot wear such a dress as this indoors, but the moment she goes outdoors she must have something about her waist to compress her figure, to three or four or five or six or eight or ten inches less than its proper proportion.

This woman had a deformity here that had to be padded up. Why? Because her stomach and liver and other things were pushed down out of place. The dress-maker is trying to get back to the normal outline here,—the natural outline of the healthy woman.

Here is a woman that is properly developed, has a proper figure, knows how to stand properly with the chest properly raised, and she does not have to have any such artificial helps to drape her dress upon. The proper figure, with such a loose dress, a natural dress made according to natural ideas, hangs in a perfectly proper way.

Here are three girls from Egypt, from Cairo. These three girls visited the World's Fair in Chicago in 1893, fifteen years ago. They were dancing over in the Midway Plaisance. They were Egyptian dancing girls. Look at those waists. These girls never had corsets on in their lives. I measured some of these girls. I took the measurements of this very girl here, and found them to be those of the Venus de Milo, exactly the same proportion. Some nine years ago I visited Egypt, and I had an opportunity there in certain portions of the City of Cairo to see people gathered there from southern Egypt, people from all up the Nile, of all classes, haffire, ruins, and people of all sorts, and I measured a large number of women there, and I found the very same thing--the proportions of the Venus de Milo,--a waist measurement of nearly half the height,--47.6% of the height, sometimes 48 or 49 people in every 50. These girls were girls who exercised very vigorously every day. These waists are not large because they are very fat, but because they are well developed, naturally developed women.

Anatomists have shown us that women naturally have larger waists than men. They have waists that are larger because the stomach is a little larger, and the liver is a little larger in women than in men, of the same size, and the kidneys are larger, the spleen and colon are larger,--all these organs are larger in women than in men, and why? Because they must do work sometimes for two, because of the responsibility of motherhood. The stomach must digest for two, must digest for the mother and for the nursing baby. The liver must do work for two--for the mother to purify her blood, and work for the unborn babe to purify its blood. The liver

must work for two, so all these very important vital organs,—the liver, the stomach, the spleen the pancreas,—these great organs which lie right here in the waist line, in this very vital part of the body,—all these organs are larger in women than in men, very considerably larger, more than ten per cent larger; so that women must necessarily have a larger waist instead of a smaller waist. What a criminal thing it is, then, for women to compress their waists, for women to wear anything tight about the waist, anything that does not permit the fullest, freest movement of the body, and the fullest expansion of the waist for breathing. Why, my friends, think what an awful thing it is to limit the breathing! You might just as well limit the breath at the throat as at the waist. If the waist is constricted in such a way that the woman can not take in a proper amount of air, you might just as well choke her neck, tie a string around her neck, or grasp her throat and choke her so she could not take in enough air, as to choke the lungs at the other end. It is slow suffocation,—all the same thing, and all the consequences will naturally result that come from lessening the supply of air. But that is not the worst of it. The continual pushing of these internal organs down results in that great plague of womankind,—inactivity of the bowels. This is a thing which affects women perhaps five times as often as it does men. The Lady Webster Pills were made for women. They are made according to a prescription for Lady Webster; so millions of women for almost a century have been taking Lady Webster Pills. Intestinal pills, complexion pills, liver pills, stomach pills, these various sorts of pills which women are swallowing constantly, continually,—trainsloads of them are swallowed every year to combat this disease which is due to improper dress more than to anything else. The colon is crowded down so it becomes a pouch, a receptacle, and there are accumulations there which last weeks and weeks sometimes.

I have only touched just the beginning of this question, and I feel every one of you has a conscience; and I appeal to you to apply that conscience most earnestly to this question of dress, and consider—can you afford to sacrifice a portion of your energy, a portion of your life, your health, your efficiency,—

can you possibly afford to sacrifice this to meet the unreasonable demand of fashion? Now, it is not necessary that you should follow fashion as regards tight lacing in order to make a presentable appearance. . The improvements in dress reform have been so wonderful that at the present time it is possible for a woman to be beautifully dressed, to be perfectly well dressed, and to be dressed at the same time in a perfectly healthymanner, so that she will not be the least bit conspicuous because of any oddity; it is only necessary to comply with the ~~latest~~ ~~up-to-date~~ improvements and up-to-date principles in dress reform for a woman to be physiologically dressed and at the same time to be artistically dressed.

I am glad to tell you that we have a dress department, and one reason for my talking to you this evening is to advertise that department so that every one of you will patronize it. I want you to patronize that department to this extent—that you will get the dressmaker there—she won't charge you a cent for it—to show you how to reform your dress, to make it over, to correct it, and how to fix over the dresses of your daughters when you go home, to show you the principles, and to make it easy for you, to make it plain to you how dresses ought to be made. You go into the bathroom and inquire for her, and she will show you the way, and then let the dressmaker show you her models, how nicely they are made, how they meet all the requirements of healthful, artistic dress, without in any way infringing upon the rights of the body. I want you to see that, and I hope before you leave you will at least get this dressmaker—a very expert one who has been educated by the Sanitarium at large expense,—the Sanitarium has expended thousands of dollars in developing this department, sending dressmakers here and there, all about, to get the latest ideas that will be helpful. Get her to make for you a pattern that you can take home, and give to your dressmaker so she will have a chance to make you a healthful dress. You must go to the dressmaker and say you want her to make you a healthful dress. You have tried it sometime; you have had conscience in this matter; you have tried to reform, wanted to, you went to the dressmaker, and the

dressmaker tried to make ~~some~~ a dress for you and it did not fit at all; had to be done all over. Why was it? Because the dressmaker has scales, makes dresses according to certain forms, to certain measurements, principles and proportions; that is the way she cuts dresses. But, now those scales were all made to fit the corset, you see; they were never made for a woman at all, but for a corset. A corset is not the shape of a woman, consequently these scales are all out of joint; so we undertook to develop a system of dressmaking here, and we found first of all that we had to have a new scale, and we labored for years upon that thing to get a new scale, a new model formed, and we started with the Venus de Milo. I worked at it hours and hours and hours myself, and days, weeks and ~~with~~ months, helping to get that thing right, because there was no model, no standard; but for a number of years now we have been able to offer something that is right, that is perfect; that has been tested and tried, and I am sure you will find it worth while to look into it, and I hope when you go home you will take home with you something that will be of lasting benefit.

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