

## THE BATTLE CREEK SYSTEM OF PHYSICAL EDUCATION.

1. Strength testing apparatus perfected after some ten years of experiment by means of which the strength of each one of the 30 principal groups of muscles of the body may be accurately determined. This dynamometer, introduced at Annapolis by the late Rear Admiral Niblack, has been in use by the United States government in its military training schools during the last 30 years. Every student who has entered Annapolis in the last 25 years has been tested by the Battle Creek dynamometer. It is also in use at West Point and at the United States military school in the Philippines and is made the basis of the muscle training program carried out in the Annapolis Naval Training School.

This strength testing appliance was described in papers read before both the British and American Associations for the Advancement of Science nearly 40 years ago and was exhibited at the Quadricentennial Exhibition in 1893 and also at the great Hygienic Exposition at Dresden, Germany in 1911, where it was presented by the eminent German physiologist Professor Zuntz, of Berlin.

2. Standards of average-mean strength for the individual muscular groups of persons of different heights ranging from 5 feet 3 inches to 5 feet 7 inches in women and 5 feet 4 inches to 6 feet in men. By tabulating these averages a chart has been prepared on which may be plotted the results obtained with the dynamometer, thus producing a strength graphic on which is shown the percental relation of the strength of each group of muscles to that of a normal average person of the same height.

3. Normal posture standards, both standing and sitting. These were first established about 1885 and shown in a series of outline charts at the Quadricentennial Exhibition in Chicago in 1893. These standards were the result of an extended research involving the making of profiles

of several hundred persons\* and the determination of the relation of external contours to the positions of the internal viscera and measurements and posture studies of some scores of individuals of different primitive and semi-civilized races -- the American Indians, Mexican Indians, Egyptians, various African tribes, desert Arabs (Sahara) and statues, ancient and modern, shown in leading museums.

4. The photo-silhouette, or shadowgraph. This is a photograph of a shadow made upon a screen placed close to the body by a strong light placed at a sufficient distance to avoid appreciable change in the size of the subject or in the profile. This device was first used in 1924, since which time it has been in constant use in the Battle Creek Sanitarium and in Battle Creek College, where several thousand photo-silhouettes have been made.

5. Posture analysis and definition. In addition to the establishment of normal or standard postures, the Battle Creek System provides a means of analyzing and defining postures through the use of the photo-silhouette, or shadowgraph, with markers. The photo-silhouette provides an accurate picture of the body contours at any desired angle. The standing, front, and side profiles are usually employed. By the aid of markers placed at fixed points, reference lines are laid down upon the photo-silhouette which make it possible to analyze the profile, to establish ratios of contour and to determine accurately the degree of angular deviation from the established normal standard.

The fixed points marked are the pubes, the tip of the spine of the third lumbar vertebra, the lower end of the sternum, a point on the spine opposite, the upper end of the sternum and the point of the chin. A marker indicating the opening of the ear is also sometimes employed.

---

\*A partial report of this research was made in a paper presented before the International Periodical Congress of Gynecologists and Obstetricians at its meeting at Brussels in 1892.

A line drawn on the photo-silhouette connecting the pubic marker with the lumbar shows the obliquity of the pelvis. This is taken as the base line of the body. The pelvis and legs form a pedestal on which is balanced the trunk or torso. Through the center of the oblique line of the pelvis, a vertical line is drawn reaching from the vertex to the level platform on which the subject stands. This is taken as the axis of the body and the chief line of reference whereby the amount of deviation from the normal of any portion of the body contour may be measured and indicated in angular degrees.

An important contribution to posture reform is the perfect posture chair, which provides interscapular as well as lumbar support. The use of this chair is found the most efficient means of correcting the most common posture faults, such as round shoulders and flat chest.

An essential feature of the Battle Creek System of physical education is biologic living, which connotes simply strict conformity of one's living habits to the requirements of physiology. In other words, to take as good care of our bodies as of our automobiles. Modern research has made clear the importance of an abundant daily supply of vitamins, food minerals and bulkage, as well as a well balanced intake of protein, fats and carbohydrates. The discovery by Bouchard, Metchnikoff, Brieger and other eminent scientists of intestinal toxins and their pernicious effects has clearly shown the paramount importance of the complete suppression of intestinal putrefactions by changing the intestinal flora.

6-16-34

1. Dynamometer.
2. The strength graphic.
3. The photo-silhouette or shadowgraph.
4. Posture analysis.
5. The biologic regimen.
6. Visceral education.
7. Methods of rejuvenation, prolonging youth and  
postponing senility.

HEALTH DEMANDSWholesome Food, Proper Amount, and Proper Times

Eat enough but never too much.

Eat biologically clean food, free from germs, containing plenty of bulk and food minerals as well as proteins, fats, carbohydrates, so including an abundance of fresh, uncooked foods, greens, fruits, and fresh vegetables.

Mastication

Chew each morsel thoroughly before swallowing, pressing with the tongue against the roof of the mouth to hold back particles which need further mastication.

Eat some dry and some hard food at each meal to assimilate the salivary glands and develop the jaw muscles.

Water-Drinking

In addition to liquid at stated meals, take a glass of water half an hour before each meal and before retiring. In hot weather, drink ad libitum whenever thirsty. Avoid copious drinking at meals. Take small sips only. Ice water is harmless if sipped slowly; otherwise injurious.

Colon Hygiene-Evacuation

The bowels move normally after each meal. If the bowels feel full, evacuate on retiring, employing the enemas if necessary (1-3 pints; temperature 110° F). Repeat if necessary. Large results is evidence that the enema was needed.

One should never retire with a full colon. Try daily evacuations to be accomplished by regulation of diet and the use of food accessories, such as bran (Krusty Bran is the most palatable), Kaba, psyllium seed, agar, Paramels.

HEALTH DEMANDSWholesome Food, Proper Amount, and Proper Times

Eat enough but never too much.

Eat biologically clean food, free from germs, containing plenty of bulk and food minerals as well as proteins, fats, carbohydrates, so including an abundance of fresh, uncooked foods, greens, fruits, and fresh vegetables.

Mastication

Chew each morsel thoroughly before swallowing, pressing with the tongue against the roof of the mouth to hold back particles which need further mastication.

Eat some dry and some hard food at each meal to assimilate the salivary glands and develop the jaw muscles.

Water-Drinking

In addition to liquid at stated meals, take a glass of water half an hour before each meal and before retiring. In hot weather, drink ad libitum whenever thirsty. Avoid copious drinking at meals. Take small sips only. Ice water is harmless if sipped slowly; otherwise injurious.

Colon Hygiene-Evacuation

The bowels move normally after each meal. If the bowels feel full, evacuate on retiring, employing the enemas if necessary (1-3 pints; temperature 110° F). Repeat if necessary. Large results is evidence that the enema was needed.

One should never retire with a full colon. Try daily evacuations to be accomplished by regulation of diet and the use of food accessories, such as bran (Krusty Bran is the most palatable), Kaba, psyllium seed, agar, Parameals.

If the stools have a foul or rancid odor, the colon is infected and a change of flora highly necessary. This requires the use of lactose or lacto-dextrin, acidophilus cultures (soy acidophilus milk), and thorough emptying of the colon daily.

Avoid drugs.

### Mouth Hygiene

Thoroughly cleanse the teeth after each meal. Use a good tooth paste once a day. If the tongue is coated, scrub with lacto-dextrin twice daily and take measures to change the intestinal flora.

### Exercise

Walk three to six miles a day. Do other work sufficiently vigorous to produce perspiration and deep breathing. Avoid getting out of breath. Golf, boating, swimming, horseback riding, gardening, chores, and even housework are good exercises.

### The Health Ladder

A series of phonograph records; is very attractive and efficient.

### Posture

Standing, walking, or sitting, keep the chest raised and the chin drawn in. Hold the hips back; push the chest forward. If the chair is not so constructed as to support the body in normal position, place a small cushion at the hollow of the back.

### Cleanliness

Keep the hands clean. Avoid touching germs or filth. Avoid contacts with persons suffering from colds, influenza, or any infectious disease.

In visiting a toilet, take great care to protect the hands from contact with anything which might communicate infection. Cleanse the anal region with moist paper.

If the stools have a foul or rancid odor, the colon is infected and a change of flora highly necessary. This requires the use of lactose or lacto-dextrin, acidophilus cultures (soy acidophilus milk), and thorough emptying of the colon daily.

Avoid drugs.

### Mouth Hygiene

Thoroughly cleanse the teeth after each meal. Use a good tooth paste once a day. If the tongue is coated, scrub with lacto-dextrin twice daily and take measures to change the intestinal flora.

### Exercise

Walk three to six miles a day. Do other work sufficiently vigorous to produce perspiration and deep breathing. Avoid getting out of breath. Golf, boating, swimming, horseback riding, gardening, chores, and even housework are good exercises.

### The Health Ladder

A series of phonograph records; is very attractive and efficient.

### Posture

Standing, walking, or sitting, keep the chest raised and the chin drawn in. Hold the hips back; push the chest forward. If the chair is not so constructed as to support the body in normal position, place a small cushion at the hollow of the back.

### Cleanliness

Keep the hands clean. Avoid touching germs or filth. Avoid contacts with persons suffering from colds, influenza, or any infectious disease.

In visiting a toilet, take great care to protect the hands from contact with anything which might communicate infection. Cleanse the anal region with moist paper.



Avoid contact with animals. If accidental contact occurs, at once cleanse the hands with soap and water.

### Skin Hygiene

Take a warm water bath two or three times a week. Take a cool water bath or cool air bath every morning. Take a sun bath at least two or three times a week if possible.

Change stockings and underclothes at least every other day. Wear porous clothing. Wear waterproofs only when necessary. On removal, change the outer clothing to avoid chilling by evaporation of the accumulated perspiration.

Take one full rest-day every week and rest an hour in the middle of each day if possible.

Sleep eight hours every night in a quiet place.

Do not eat heartily shortly before going to bed.

Take care that the colon is emptied before retiring.

If nervous or wakeful, take a warm bath b 92-95° twenty minutes before retiring. Omit the usual cooling at the end of the bath and avoid getting chilled. Get into bed quickly while warm; close your eyes and go to sleep.

### Recreation

Take a half-day outing at least once a week, or better, take an hour's outing for vigorous exercise in the fresh air every day. Let the mind rest by diverting it from the accustomed course of duties.

Avoid drugs of every sort. This includes not only tobacco, but tea, coffee, chocolate, and mate, -all the habit-forming drugs, -and in addition pain-relieving and sleep-producing drugs, such as aspirin, bromo-selzer and also other drugs, every one of which is harmful. Equally harmful are laxative pills and other drugs which

Avoid contact with animals. If accidental contact occurs, at once cleanse the hands with soap and water.

### Skin Hygiene

Take a warm water bath two or three times a week. Take a cool water bath or cool air bath every morning. Take a sun bath at least two or three times a week if possible.

Change stockings and underclothes at least every other day. Wear porous clothing. Wear waterproofs only when necessary. On removal, change the outer clothing to avoid chilling by evaporation of the accumulated perspiration.

Take one full rest-day every week and rest an hour in the middle of each day if possible.

Sleep eight hours every night in a quiet place.

Do not eat heartily shortly before going to bed.

Take care that the colon is emptied before retiring.

If nervous or wakeful, take a warm bath b 92-95° twenty minutes before retiring. Omit the usual cooling at the end of the bath and avoid getting chilled. Get into bed quickly while warm; close your eyes and go to sleep.

### Recreation

Take a half-day outing at least once a week, or better, take an hour's outing for vigorous exercise in the fresh air every day. Let the mind rest by diverting it from the accustomed course of duties.

Avoid drugs of every sort. This includes not only tobacco, but tea, coffee, chocolate, and mate,--all the habit-forming drugs,--and in addition pain-relieving and sleep-producing drugs, such as aspirin, bromo-selzer and also other drugs, every one of which is harmful. Equally harmful are laxative pills and other drugs which

move the bowels by forcing them to act. Avoid them all and secure relief by natural or physiologic means.

### Mental Hygiene

Avoid worry. It wastes energy and does no good.

Avoid anger, hate, and all the depressing emotions. They engender poisons which do great injury.

Maintain optimism and amiability. They promote health as well as good cheer and friendship.

### Concentration

Devote several minutes to concentration of the mind upon some noble, lofty ideal, aim, or purpose. Reach out for it; long for it; determine resolutely to attain it. If you have troublesome problems to solve, concentrate upon one of these in an appealing attitude of mind. This will put the problem into your subconscious and in due time if there is an answer or a solution, it will come back, and thus your appeal will be answered.

Concentration is a highly efficient remedy for worry. The ancient sage who wrote, "Cast thy burdens on the Lord" knew from experience the value of concentration.

The subconscious is the "holy of holiest" of the mind where the finite and the infinite make contact.

move the bowels by forcing them to act. Avoid them all and secure relief by natural or physiologic means.

### Mental Hygiene

Avoid worry. It wastes energy and does no good.

Avoid anger, hate, and all the depressing emotions. They engender poisons which do great injury.

Maintain optimism and amiability. They promote health as well as good cheer and friendship.

### Concentration

Devote several minutes to concentration of the mind upon some noble, lofty ideal, aim, or purpose. Reach out for it; long for it; determine resolutely to attain it. If you have troublesome problems to solve, concentrate upon one of these in an appealing attitude of mind. This will put the problem into your subconscious and in due time if there is an answer or a solution, it will come back, and thus your appeal will be answered.

Concentration is a highly efficient remedy for worry. The ancient sage who wrote, "Cast thy burdens on the Lord" knew from experience the value of concentration.

The subconscious is the "holy of holiest" of the mind where the finite and the infinite make contact.

m

(Notes from a lecture by Dr. K., at M.S., Fla., Mar. 10, 1935)

The great problem before the world today, my friends, is how to save the human race. The human race is going down - going down very fast. Up to two hundred years ago, the decadence was not so marked, but within the last two hundred years, particularly in the last hundred years, there has been such a <sup>rapid</sup> decline in the vitality of the race, such an enormous increase of degeneracy of various sorts, physically, mentally, and morally, that the most eminent scientists in the world have become thoroughly convinced that the human race will not survive.

A few years ago, at a convention of the Eugenics Association, Major Darwin, son of Professor Charles Darwin, who made the leading address, said in a very sad tone of voice, "If civilization is ever saved, and I fear it will not be, it will be because the United States saves it, for there is no hope in any other part of the world."

Degeneracy has struck this country at last and it is going down at a very great rate. One sign of degeneracy is the destruction of the teeth. It is observed in all races of animals that when the process of degeneracy is beginning to be well established, the first signs of destruction, of decay of the race, develops in the hard parts of the body, that is, the bones. So the beginning of destruction of the human race is shown in the decay of the teeth. Three hundred years ago, at the time of the plague in London, people died so fast that they just dug holes in the ground and dumped them in. Pepys mentions this in his diary. Doctors have to have skeletons to study the bones. For the last two hundred years in London they have dug down in the ground and got skeletons.

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

Monday, May 7, 1917, at 8:00 P. M.

By

J. H. Kellogg, M. D.

There is a land crab in the South Sea Islands that has a very peculiar habit. It doesn't understand the use of wash basins, towels, napkins, etc., so when it gets its feet dirty it simply nips it off. A missionary once saw a land crab going down to sea-shore for breakfast that accidentally fell into a mud puddle. He climbed out and looked himself over with dismay, then deliberately went to work and nipped off every one of his legs and slowly dragged himself home to a hole in the rocks by his nippers. Why do you suppose these crabs are so absolutely reckless about their legs? I suppose it is for the same reason that some people are equally restless and careless about their stomachs and livers and throw them away just as recklessly or remorselessly but the crab has the advantage over the man - he throws away his vitality, squanders his energy. In six weeks the crab is going to molt and get a brand new skin and with the new skin he will get a new set of legs so he knows perfectly well he will soon be restored to a condition just as good as ever. You have heard of people who have had a third set of teeth. We are born with two sets of teeth but the first set called the milk teeth, twenty of them, then there is another set of thirty-two, sixteen in each jaw, and once in a while a person is born with a third set of teeth buds down in the jaw that come creeping out at seventy or

eighty years of age when the second set have been all worn out. The crab and lobster are particularly blessed with leg buds. They have not only two sets of leg buds but they have many sets of leg buds, so many that they can get a new set every time they molt and they molt once in six weeks so if the lobster should live ten years he would have at least eighty or ninety crops of legs and each set that comes out is a little bigger and a little better than the set he had before. Fortunately, there is a little of this wonderful restorative power in the human body. This was proven by an experiment made by the German investigator some years ago who cut off half a rabbit's liver. Three months later he opened up the rabbit's body and found that <sup>the</sup> half of the liver that had been cut off had grown on and the liver was just as large and good as it ever was. Then the physiologist cut off the other half of that liver and at the end of three months made another investigation and found that the rabbit had a brand new liver. He had grown on the second half so he had just as good a liver as he ever had so it is possible for the body to reproduce certain parts. If a man loses some of the glands of his stomach, his stomach goes to work and reproduces these gastric glands, actually makes new ones. If a man has a new pylorus, for example, in the course of three weeks after a certain operation Nature makes a new pylorus just <sup>exactly</sup> as good as the old one was. That is the most wonderful thing I know of in human experience, a marvelous way in which Nature adapts herself to absolutely new conditions so when the intestine is attached at a new point, Nature proceeds to make a pylorus to protect the intestine so as to dole the food out. The duty of the pylorus is to spoon the food out into the intestine because the intestine is not a cavity like the stomach but it is long, slender tube. The stomach is a

cavity, a reservoir for food which is spooned out of the stomach a spoonful at a time. A teaspoonful will pass out through the pylorus into the small intestine two or three times a minute until the stomach is entirely empty. It is very necessary that this regulative process should occur so, as I told you, within three weeks after the stomach has been repaired, patched up in this way, a new pylorus is produced to do this work of regulating the amount of food from the stomach into the intestine and the body shows this in many ways. Suppose, for example, a man gets an injury to his leg, a part of his leg is shot away, that is, the bone is shot away so he loses six inches of his leg bone. It is possible to reproduce that completely. It is only necessary to take off a splinter of bone off the shin perhaps the size of my little finger and patch it in, attaching the two ends and keeping the leg quiet for a few weeks. Then this man has a new leg bone just as good as the old one was and this little bone that is put into that place proceeds to grow until it gets to be as big as the old bone that was there before.



as the old bone that was put in there. That is another one of the marvels of modern surgery which is based entirely on the ability of the body to repair itself. That, my friends, is the great hope for you. That is why it is possible for you to get well, because there is a healing power, a creative power that works within you. It is not the doctors that heal you; it is not the nurses that heal you; it is not the attendants that heal you or make you well, it is not the baths; it isn't any medicine that anybody ever gave you that could possibly heal you. You cannot ~~pack~~ <sup>bottle</sup> healing power up in a bottle. You could not keep it in if you could get it in there. The cork would not keep it down. It would blow the thing up for healing power partakes of the nature of earthquakes, cyclones, tidal waves and volcanic eruptions. Healing power is creative power. It is almighty force. If it were not, we would have been dead long ago, for we all have to be healed. From the time we were born into this world we began to suffer injury and damages and these damages have had to be repaired, and the parts that were injured have had to be renewed. So these healing processes have been going on all the while. The Power that made us has the power to heal us and that is the great hope. It is not because you are going to find a great doctor somewhere that you are going to be healed but because there is a great healing power ~~spread~~ spread abroad about the whole universe that is hunting up everything that is lame, sick, wounded, hurt and endeavoring to repair it and restore it. When you get home break a twig off a limb and watch what happens and you will see little by little a new bark will grow out and cover that little raw surface. By and by the bark will be grown all over it. Suppose you cut the limbs all off a tree like a crab that <sup>had its</sup> <sup>legs</sup> ~~take its~~ <sup>legs</sup> ~~off~~, pretty soon you will see the tree supplied with new limbs and so far as

possible these limbs will be grown out in such a way as to give the tree its normal shape and appearance just as far as possible. Now if this healing power that exists in the universe cares for trees, bushes, crabs and insects, and these poor humble things, isn't it certain that it cares for you and me, for human beings, the Masterpiece of God, the creatures that stand at the very top of all creation? Is it possible that these beings so important could be neglected and forgotten when all the rest of the world of created things is being looked after? Certainly not! Now, my friends, as I said, that is the great hope for every sick man, is that there is a great healing power that exists in the universe and is looking after everything that is hurt, injured, harmed, feeble and sickly, and laboring to restore it, this great beneficent force. The illustration I have just given ~~it~~ you is a proof of it. I would never dare to do a physical operation if I did not know that there was a power that could heal up those wounds I have made. I have stood at the operating table many hours today and I have been cutting, maiming, tearing, doing harm and injuring parts that I have torn out, cut off, wounded, and I sent these poor suffering patients to their beds with nurses to care for them while this great healing power binds up their wounds. Tomorrow morning when I call on those patients, I shall beg their humble pardon for having hurt their feelings. I never dare see a patient I have operated upon without presenting my apology for having injured their feelings and I feel very grateful when I see the patient smiling back at me, notwithstanding what I have done to them. My friends, we do not appreciate how much we are dependent upon these great unseen forces that are caring for us all the time, looking after us and working for us. I never dare undertake a surgical operation without evoking the help of that power and

I shall not do any more harm than is necessary that the wounds I make shall be bound up again so that the patient shall be really helped and really restored again. The thing for us to do is to get in line with this power. We cannot expect we are going to be helped when we are all the time doing ourselves damage. The new legs are coming out on the crab but supposed as fast as the new legs come out, they are nipped off. Then the crab would never have any legs. Here is a man with heart troubles because he smokes too much and nature begins to cure him up and every day or two he slips down the street to a little place called "The Park" and finds an easy seat, sits down there and smokes a cigar once or twice a day. How long is it going to be before that man's heart is going to be healed? He is not co-operating. He is working against the power that is trying to heal him. God said, "Thou shalt not smoke". I do not mean any irreverence about that but God said it. How did He say it? He said it when He put into tobacco something that made a man sick the first time he smokes. That is a notification to that man that that thing is poison and never was intended to be used and that smoking is a damaging and ~~sick~~ wicked thing to do. It is a notice on the signboard put up on it to keep away from this thing; let it alone. It will make you vomit, make you sick, ruin your heart and your blood vessels. It will spoil you. It will make you a bad smelling nose guy, if you please, wherever you go. Now the same thing is true of almost every other harmful thing. Every~~thing~~ elicited thing. I must tell you how I cured my good friend, Mr. Horace Fletcher, of smoking. The first ~~time~~ <sup>time I met</sup> ~~time~~ ~~met~~ Mr. Fletcher he chewed splendidly. But among other things he chewed tobacco,

chewed the end of a cigar as well as chewing bread, meat and other things he ate. He had gotten so far along he didn't chew meat any more and the more he chewed the less meat he wanted but he still chewed the end of that cigar and I couldn't make him see that there was any harm in it. He said "my instinct didn't tell me there was anything wrong in it." One day I was talking with Mr. Fletcher and I said to Mr. Fletcher, "You haven't any right to smoke." He said, "Why haven't I a perfect right to smoke?" I said, "Because it is an unearned felicity." That was a new term. Mr. Fletcher is very fond of fine phrases and the next day I came to see him and he said, "What was that expression you made yesterday in talking to me about smoking?" I said I told you you hadn't any business to smoke because it was an unearned felicity, an illegitimate pleasure that you got out of it, a felicity you have not earned. He said, "Now that strikes me as a good argument. I don't believe I will smoke any more" and he didn't. He stopped. It takes different kinds of arguments to reach different people. I am trying that on you now. It is an illegitimate thing to drink tea and coffee. You get a certain exhilaration out of it but it is a felicity you have not earned. The Bible says, you know, "The sleep of the laboring man is sweet". "Why"? "Why he has earned the right to sleep because he works. A man that does not work, rolls around and tosses all night and cannot sleep. He has no business to sleep. He has not earned the right to sleep. That is the reason. You know the Bible says, "The man that will not work shall not eat." Nature says the same thing - takes his appetite away so he cannot eat, upsets his digestion so he cannot digest so he loses his appetite and his digestion if he doesn't work. Nature also says that a man who does not work shall not sleep. Every real felicity, every real pleasure, every legitimate pleasure has to be earned and

the use of tobacco, of tea, coffee, alcohol and those things that cause abnormal and unnatural and artificial felicity are illegitimate, illegal and unlawful and that is why we suffer. We do not suffer from lawful pleasures but it is the unlawful pleasures that do us harm.

Q. What are the symptoms of an acid stomach? Are there different forms of it?

A. Yes, there are different symptoms. One symptom is an unpleasant burning, not always in the stomach but more often a burning pain between the shoulders. The spine is closely related to all the viscera. When you have a diseased gall-bladder you very likely have a sore place in the spine where the vertebrae connected with the ribs join those that are called the lumbar vertebra. A tender spot right there is likely to be present when there is gall-bladder disease. I

we are not going to say tenderness of the spine always means gall-bladder disease. That is not true but when we have symptoms of gall-bladder disease and along with it have these tender spots along that part of the back, that is pretty good confirmatory evidence of gall-bladder trouble. If there is trouble in the stomach it will be higher up between the shoulders and the burning aches between the shoulders is a very common symptom of hyperacidity, excessive acid formation in the stomach. Another symptom is the raising up of a little acid fluid into the throat which burns, is very acrid, and likely to be a little bitter or extremely sour. Another symptom is a gnawing pain coming on about three hours after eating. When the food leaves the stomach it leaves behind a quantity of acid. The acid secretion continues until the food has gone ~~at~~ at the end of three and a half to four hours and the acid gastric juice then has no food to dilute it or to neutralize it so it lies in direct contact with the stomach and makes irritation there. Still another symptom is a feeling of gaseousness. People who

have hyperacidity are likely to feel after the digestion of a meal before going to bed a feeling of heaviness. There may be some pain connected with it. It is sometimes called a hunger pain. That means that there is an excessive acidity of the gastric contents which is irritating to the mucous membrane. This is generally relieved by eating something and that is because the food taken dilutes the acid and so protects the mucous membrane. Instead of taking food under such circumstances, the proper thing to do is to take a glassful of hot water. In fact, I think it is a good plan for nearly everybody with hyperacidity at the end of four hours after a meal or one hour before the next meal to take a pint of hot water. The temperature of the water should not be so hot as to burn the mouth but it ought to be about 102 or 103°, as hot as one can drink comfortably. The effects of this hot water taken in this way is to relax the pylorus, to cause it to relax, and after it has relaxed and the food is rinsed out of the stomach, the diluted gastric juice coming in contact with the duodenum will have the effect to produce a closure of the pylorus which is less forcible and less intense. In other words, to relieve the spasm of the pylorus. Persons who suffer from hyperacidity generally have the food

17,512 staying too long in the stomach and the reason is that when the food passes out into the duodenum it causes a spasm of the pylorus. There is a very interesting bit of physiology in connection with this. The pylorus is open ordinarily but when food is taken into the stomach while it is being chewed, hydrochloric acid is produced in the stomach in anticipation of the swallowing of food and some of this hydrochloric acid gets into the duodenum and as soon as it does, it causes the pylorus to shut up reflexly just exactly as though someone is threatening to strike you in the eye, it would make you wink, shut your eyes up. If you should take a persimmon into your mouth or

something of that kind that is not right, it will push your mouth up in spite of you. This is a reflex. In just the same way when this hydrochloric acid gets into the duodenum it causes the pylorus to shut up. This acid is neutralized by the bile coming down. The bile trickles down here and the pancreatic juice comes down in this direction and it neutralizes that acid because the bile is alkaline and when the acid is entirely neutralized the pylorus will open again and will allow some more of the acid to pass out. The effect of acid on the inside of the stomach is to open the pylorus and on the other side of the pylorus it closes it. The acid in the duodenum is neutralized after while by the bile and the pancreatic juice and that will allow the acid in the stomach to open the pylorus again. When one has too much acid in the stomach, the acid coming out into the duodenum is so large an amount and so great in acidity that it causes the pylorus to shut up so tightly that it does not open for it takes a long time for the bile to neutralize this highly acid juice that has come out so it takes a long time for the pylorus to open again. So the stomach is too slow in emptying itself and food remains too long and the acid accumulates in the stomach so the stomach becomes irritated and after while ulceration starts and that is the beginning of trouble. By drinking a quantity of hot water about an hour before meal time the effect is to dilute the gastric juice so that when it comes through into the duodenum it ~~deeee~~ is not so strongly acid, consequently it is more quickly neutralized and the pylorus is not shut up so tightly and opens more frequently so that the stomach will be more readily emptied. This emptying of the

stomach is quite important. People who do not have too much hydrochloric acid need to drink the water an hour before meal time also for the purpose of disinfecting the stomach. This is important and of very great interest. Water disinfects the stomach in two ways. First, by its effect upon the mucous membrane, not simply cleansing it but rinsing away the contents of the stomach and washing the mucous membrane. A deluge of water coming into the stomach suddenly will have the effect to do that, to rinse it down into the small intestine and so empty the stomach. This is something that ought to be done an hour before every meal. Nobody ever ought to insult his stomach by putting into it food when there is already food from the previous meal. The stomach needs an hour's rest for recuperation and for disinfection. It is absolutely necessary for good digestion. The stomach carries on its work of digestion by means of cells. These cells in the stomach make the gastric juice. Each cell is full of minute energy granules by means of which the cell does its work and makes hydrochloric acid. If you look at one of these cells after it has been working for a long time, it is bound to be entirely changed. It is not fat but is a lean cell and, instead of having a lot of these energy granules, has only here and there a little speck. It is a tired cell. This is not a fairy story I am telling you but is a fact that is actually observed in experiments upon various animals. It is found that work has the effect to exhaust the cell, to cause it to become shrunken and to use up its energy granules. This happens in all kinds of cells that do work in the body, gland cells and nerve cells in particular have been studied with reference to this particular condition. When the stomach then has been working four hours digesting a meal, it needs an hour's rest before the next meal to give these cells a chance to accumulate energy granules and to get loaded for another attack upon



the food, if you please. The digestion of food requires an expenditure of energy and the cells that do the work have to gather their energy from the blood before they can expend the energy. You cannot expend what you have not got. You cannot expend money when you have nothing in your pocketbook, haven't any credit and haven't anything in the bank. You must go according to your means so the stomach cannot make gastric juice unless its cells are well loaded with energy and they can only accumulate energy while they are at rest. When they are working they are pouring out energy. They must have an opportunity to rest so the stomach must rest an hour before each meal. It cannot rest so long as there is food in the stomach so it is a physiologic crime, if you please, for a person to take a meal into his stomach when a portion of the previous meal is still there. I was talking to a gentleman about this yesterday and he said, "Why, I very often feel when I sit down to a table as though my stomach was full of breakfast yet". I said, "Then you have no right to go to dinner and eat it." "Well, it is dinner time. I pay for my dinner. Why shouldn't I eat it?" "Well, you will have to pay a double price for it. You will have to pay before and after both." This is one reason why there should be an interval of an hour between the work of digesting one meal and the taking up of the work of digesting the next meal - to give rest. But now there is another very important reason and that is the stomach must be disinfected. When food is taken into the stomach the gastric juice is poured out in abundance. By degrees the gastric juice is absorbed and after a couple of hours it is absorbed quite rapidly so that at the end of four hours there is very little gastric acid left in the stomach. The consequence is the stomach no longer remains sterile and when the process of digestion is about finished

in the normal stomach, the gastric juice has been absorbed, has disappeared and now the germs, which cannot exist in healthy gastric juice but are destroyed by it because it is a germicide, begin to grow and develop in the stomach and if there are some little fragments of food left in the stomach during the hour preceding the taking of the next meal, germs may grow very rapidly and if this happens at every meal after while the stomach will get into a very unhealthy and infected state. This is particularly true of persons whose stomachs do not make enough gastric juice or particularly of persons whose stomachs have ceased to make gastric juice at all. About half of all the people we examine here have too much gastric juice and the other half do not have enough and quite a proportion do not have any at all so this is a matter of very considerable importance. During the hour before the meal if your stomach is still able to make a little gastric juice, if the stomach is empty, there is an opportunity for disinfection but there is no gastric juice because the food is gone. By drinking a pint of water the stomach can be induced to pour out some more gastric juice. The last remnant of food will be rinsed out and the stomach will be made to make some pure gastric juice and there is no food there to absorb or neutralize it and the gastric juice is there in solution and it can disinfect the stomach and prepare for the next meal. This is the rationale of the hot water treatment of indigestion. It is a practice which ought to be revived. I remember very well when we used to have great tin cans of hot water carried around three times a day, before breakfast, before dinner and before supper, and at bed time - four times a day. You would hear the boys going down the hall - "hot water, hot water, hot water" and people had

people had pitchers all the way down the hall, all of them filled with hot water. I am going to revive this custom tonight and that is why I am telling you these interesting things about it because it is an important thing. It is necessary that the stomach should rest and it is necessary that it should be disinfected. I am ready to do this because comparatively recently there have been some very interesting experiments performed which show that the opportunity for disinfection is absolutely necessary. In the old days they knew that hot water would rinse the stomach but they did not know that it would be disinfected but through Pavlov's discovery we know that the stomach through hot water drinking is induced to create a new supply of hydrochloric acid which actually will really disinfect the stomach just as though we put in some chloride of lime or some other good disinfecting agent - it will disinfect it and prepare the stomach to make it clean for the next meal. There is another disinfecting process and that is the formation of mucus. All along the surface of the stomach there is poured out mucus which captures the particles of food left, picks them up and floats them off. You know in a Turkish bath after a good sweat, the <sup>water</sup> ~~rubber~~ goes over you with the bare hand and peels off the old skin and when you have been thoroughly peeled you felt you were thoroughly clean and you were because the old skin peeled off all the dirt and germs and other things adhering to the surface of it. The inside of the body cleans itself in just the same way, only instead of being dry scales that have to be rubbed off, it is a mucus secretion flowing out from underneath and floating off everything that might otherwise adhere to the mucous membrane and produce a state of uncleanness. So there are three things to help disinfect the stomach and clear it - the rinsing with water and the formation of mucus to carry off the detritus and the disinfection by this

secretion of hydrochloric acid which is induced by the water drinking so you see almost everybody may be benefited by drinking a couple of glasses of hot water an hour before a meal, not only by getting the stomach empty, preparing it for the next meal and giving it a chance to rest or disinfecting it, or in cases of hyperacidity diluting the hydrochloric acid so that the pylorus can open up and let the food out but also by supplying the body with the amount of liquid which it needs to secrete the gastric juice and so to aid in the work of digestion.

Q. Explain the difference between the Canadian and Californian methods in the treatment of pulmonary tuberculosis. Which do you prefer?

A. I do not prefer either one. I do not agree with many of the so-called experts in the treatment of tuberculosis. I do agree on many points but I do not agree entirely. In the first place, almost universally the so-called specialists in tuberculosis require patients to eat a great quantity of meat. That is a very great mistake. You smile because you say "Dr. Kellogg has a fad. I haven't any fad. If I have a fad, I deny the fact. I deny that it is a fad. In the first place I don't believe in fads and in the second place I think I hold myself ready to change any opinion I have if I can be shown a good solid reason for doing it. I am not attached to any doctrine of any sort. That is, I don't believe anything because I once believed it or have believed it a long time or because somebody else has believed it or because somebody told me so. I was born I may say a congenital heretic and skeptic. I disbelieve everything until it is proved and it is the most difficult thing for me to believe anything. I have to have the absolute proof of it before I can believe it at all. That is my situation and I presume

v-m

some of you know how to sympathize with it. When anybody comes to me with a new proposition I disbelieve it the first thing. That is my attitude of mind. I have to be persuaded that it is true before I take any stock in it at all because my natural attitude is disbelief and on this question of meat eating I was impressed when I was a boy 14 years old in reading a statement by Cuvier "that man was by nature allied to the higher apes and that the higher apes were fruit eaters and that the natural diet of man was like that of the higher apes, fruits, grains and nuts and tender shoots." That seemed to me so absolutely reasonable a statement of facts that I could not get away from it and I felt <sup>he</sup> had proved his point and I said "I am going to try it" but I confess to you that for twenty-five years I did not know whether it was right or not. For twenty-five years I held it in obedience. I said "I will experiment" and I was not certain but that it might be an error. The fact that so many millions of people followed a different diet

The fact that so many millions of people follow the different dietary the pressure of public opinion all about me, I confess influenced me very strongly. Nevertheless, I carried out the experiment strictly in my own case and induced just as many people as I possibly could to abandon the use of meat because I thought the argument was all on that side. But for the last 25 years I have been convinced it is absolutely right because I have failed to find a single argument that would hold water in defence of flesh eating. I have had during the last few years a pretty severe test on this thing. Prof. Irving Fisher of Yale University wrote me about 15 years ago saying that he would like to write a letter asking me several questions if I would give him permission to do so. I wrote him I should only be too happy to hear from him. I received shortly a twenty page letter of questions and almost entirely about diet, and chiefly about meat eating. I had to sit up till three o'clock in the morning with a verbatim shorthand reporter talking as fast as I could talk and sent him a whole volume. Then I got back another letter and I have followed the correspondence I have had with Prof. Fisher over this question were published, it would make a book as big as Webster's Dictionary, perhaps bigger. The Professor has made us a good many visits and I found that he was a very hearty meat eater, had been a great meat eater all his life and he was very strongly biased in favor of meat eating. He had suffered from tuberculosis and his doctors had taught him to eat meat when he had tuberculosis and he had lived largely on meat and when I undertook to persuade him that meat eating was not natural, scientific or proper, was not scientific, unbiologic and injurious, it seemed to him a very unreasonable proposition and so he has been at work for the last fifteen years in hunting the scientific world over to find some argument that I could not meet and if he were here today he would stand upon this platform and tell you that I have answered every argument he ever brought up and answered it thoroughly and to his satisfaction. There is only one argument that he still clings to and that is once in six weeks or so he has an awful hankering for fried chicken and he wants me to explain that. I

told him, of course, that is like the hankering a man has for liquor who goes on periodical sprees but he is doing it in another way. Instead of going on a whiskey spree he takes a chicken spree. I was out riding once with Prof. Fisher and my friend, Dr. Rogers, the Medical Director of the New York Life Insurance Company, and Prof. Fisher brought up this argument for the fourth or fifth time and he felt there must be some significance in that fact but once in about six weeks he had a real craving for fried chicken and Dr. Rogers spoke up at once and "Why", he said, "That doesn't count for anything, Professor. That argument is not worth a fish. About once in six weeks I have an awful hankering for Newburg lobster salad and it makes me sick every time I eat it." Of course, that is a fact. Now after having resisted all the attacks Prof. Fisher has made upon me I have finally become convinced I am absolutely right about this question, that meat eating is not a natural practice, so I do not hesitate to put forward my views on that subject without uncompromising positiveness. I think the doctrine is absolutely settled. There were a few scientific men in Germany who had been standing up rather stoutly in defence of meat eating and that it was a very interesting thing to me to see when the war came on and the meat became scarce in Germany that these men joined with forty or fifty other scientific men in a statement which was sent out to the German people that meat was not necessary as an article of food, that they could get along without it, be better off without it, be healthier without it, and that in going without meat they were only returning to the practice of their primitive ancestors who were much heartier and healthier than they. This statement was published in an official scientific document sent out throughout all Germany to influence the German people to reconcile themselves to the scarcity of beefsteak so I concluded that these men had, all the while they were recommending meat, a lurking suspicion that it was not a necessary article of food. The physiologists of the present day, every recent physiologist, states distinctly that the question is settled, that

everything that the human body needs for sustenance can be derived from the vegetable kingdom and it is reasonable to believe that the animal does not create food. The animal eats food, consumes food, destroys food just as a locomotive burns up fuel. When you feed corn to a pig, if you began at the very beginning to raise the pig on corn when it was grown up and left to the slaughter, you would get only one fortieth part of your corn back again. It takes forty times as much land to support a man on pig as on corn because the pig uses up so much corn for his own purposes. He rollics about, has a good time in the pasture and he is using up corn all the time. Every jump he makes there is some corn burns up so when you come to kill that pig you only get back a fraction of the corn and you do not get anything that was not originally in the corn except disease and dirt. All the ~~xxx~~ protein in the corn that the pig has came from the corn. All the fat the pig has came from the corn, every bit of it. All the lime the pig has came from the corn. There is not a thing in it except trichina, tapeworm and things of that sort that the pig has accumulated that the corn did not have so I prefer to eat my corn at first hand instead of second hand. Would you rather have a first hand coat or a second hand coat? Why not have first hand food as well?

Q. How much acid as in fruit and fruit juices can a person low in acid safely take each day?

A. It would be difficult to estimate that. One can take as much acid as he finds himself comfortable with. If he finds no discomfort he need not fear any injury because the acid as a food is not acid in the body. It is acid in the stomach but after it gets into the body it is digested and is no longer acid. When one eats starch he would not expect to find paste lying around inside of him, in his brains and other parts. The starch is not starch inside because it is digested, converted into fat, burned up. So with the acid, it is not acid in the blood or the tissues. It is digested and changed and undergoes changes similar to



those which take place in starch and sugar.

Q. What is the result if one has gallstones and they are not removed.

A. The result is the gallstones remain therebut they do not remain quiet. They roll about, produce more or less irritation, agitation and disturbance, and by and by they may produce a cancerous gall-bladder. They may produce cancer and are very likely to produce various other troubles. Some of the happiest people I know are people whose gall-bladders have been collected into bottles.

Q. Why can't we have the lobby warm and comfortable?

A. The thing I have to complain of is it is too warm and comfortable. I suppose one reason is that the front door is opened and we are having a cold spring. We had to take down our outside protection because we thought spring had come and all the sudden winter started in again.

Q. Can gallstones be dissolved?

A. Yes, indeed in alcohol and ether but they cannot be dissolved by any medicine the stomach will tolerate. A lady said "I took olive oil and I got rid of 100 gallstones." Now if you had kept on taking olive oil you would have gotten rid of 10,000 gallstones. Those gallstones were simply little lumps of oil rolled up, a shrewd dodge of a patent medicine faker.

Q. Today for the first time I visited the mechanical Swedish room and vibrated my arm and my hand swelled up and my nails turned blue. Please explain why.

A. Your case ought to be investigated. It is quite possible you are suffering from a very extreme degree of autointoxication. You have heard that word before so I do not need to explain it so that it only requires a slight degree of irritation of the blood vessels to cause this contraction. Some of you have had the experience of putting your  
v-m

feet upon the vibrator and have noticed that after they have been vibrating a few moments your shoes felt too big. The reason is that the blood vessels contract. The first effect of the stimulating influence of vibration is the contraction of the blood vessels and that actually makes your feet smaller. If this contraction became very intense it would have the effect to make blueness of nails and arms or lower limbs so I suppose this thing actually happened and I will be very glad if the patient who has asked this question will come to see me because the probability is there is something that needs looking after. In certain forms of auto-intoxication this thing will occur spontaneously without any application of any kind. The nails will become blue and the fingers blue and after while may become actually white because the contraction is so intense; the blood vessels are in a state of spasm and no blood at all enters the part. It is most likely to occur in the tip of the nose, around the lips, the ends of the fingers and the ends of the toes. Sometimes I think I have seen it occasionally in a few instances on the chin. This is due to poisons circulating the blood, a condition that needs to be looked after. While the vibration produces this contraction of the arteries and a reaction soon takes place and the blood vessels relax so you will have the experience, if your feet are cold, after a few moments they become warm. A reaction takes place just the same as when one causes contraction of the blood vessels by the application of cold water to the surface of the skin. The skin is first blanched and then afterwards becomes red from the reaction.

Q. What might be the cause of an almost continuous dizziness in a person 80 years of age?

A. It very likely would be due to a diseased condition of the blood vessels, hardening of the arteries, so that the supply of blood to the brain has become deficient.

Q. What causes pain in the colon immediately after meals?

A. It is very likely due to colitis which causes contraction of the colon and excites too strong contraction which results in colic in the colon.

Q. Explain why a person's life is shortened by ten years after having typhoid fever.

A. When one has typhoid fever he suffers from the most profound auto-intoxication, intestinal toxemia of the most intense character. That is why the breath is so bad and the tongue coated. The whole alimentary canal is producing deadly poisons swarming with bacteria. The typhoid fever germs produce deadly poisons which have to be absorbed and carried out by the kidneys, worked over by the liver and the liver and the kidneys are damaged by this enormous amount of poison they have to deal with. The whole body is damaged.

Q. What causes pus and gravel in the kidney?

A. It is a disturbance of the fluids of the body caused by an excess of acid in the fluids of the body.

Q. Should every kind of vegetable that is eaten by one who has hyperacidity be taken in the form of a puree?

A. Yes, all foods should be taken in the form of a puree if you have acid indigestion.

Q. What causes mental nervousness and how can one overcome it?

A. The only thing I can advise in such a case is to forget all about it and the only way you will forget it is to get your mind occupied with something else and keep it occupied. That is one reason for our busy program. That is one reason we ask you to get up and exercise before breakfast so that you won't allow yourselves to fall back on your old crutches. We endeavor to keep you busy. If you will follow the entire program <sup>laid</sup> ~~laid~~ out for you here and if you have a little spare time, spend

7  
23

it doing missionary work among other people and help to cheer them up and make them happy and get into the swim generally. If you will occupy yourself in this way, you won't have any time for thinking about these disagreeable things. Leave them all at home. I have written a little chapter on how not to worry in a little book entitled, "Neurasthenia" that I recommend. You can find the book in the library or at the book-stand.

Q. Are there any branch institutions run by the Battle Creek Sanitarium?

A. No. The Battle Creek Sanitarium has no branches anywhere. Why? Because it is impossible to have a branch without having the whole thing. We haven't a thing here but what we need and to establish a branch and to properly represent this institution would require an investment of somewhere from half a million to a million dollars. It simply cannot be done without a large outlay and after you have got the equipment the next thing is to get the organization, to get the faculty, to get the doctors and managers and they are a good deal harder to get than the buildings and the equipment. Our corps of doctors here have almost entirely grown up in the institution, been developed from students and that is the reason why we are able to do team work because we are all working on the same principles, all following the same system. Our system was developed here and our doctors have been trained here so you do not find a great difference here. We are all working in harmony with the same order and principles and plans.

Q. The Chinese use very offensive materials for enriching their soils. Would vegetables growing in such soil be as wholesome as those grown in soil without these fertilizers?

A. No. These fertilizers injure and pollute the soil and ~~before~~ <sup>often</sup> the soil becomes so badly infected that they cannot grow

crops upon it. It has been found that within the last few years that if they will take the unproductive soil and put it an oven and bake it or sterilize it by high pressure steam, the crop can be doubled. The crops are destroyed by the bacteria and the soil suffers from autointoxication, in other words, just as people do and the crops fail for the very same reason. All good greenhouse men now days bake the soil used in their greenhouses and many of them have steam pipes running through the soil so that it can be disinfected by steamin order to kill off the pernicious bacteria that get into the soil and prevent the proper growth of plants.

Q.

Q. What diet do you recommend for the soldiers of Uncle Sam?

A. I should recommend a meatless diet, of course. Meat is not so good for soldiers as it is for almost any other class of men. The soldier wants endurance but meat does not give him endurance but takes his endurance away. Battling Nelson some years ago had been a victor for some little time and finally he was defeated and the next day after his defeat an article appeared in the newspapers giving an account of an interview with Battling Nelson, and the heading of this article was "The Beefsteak did it". Battling Nelson confessed that he ate an extra beefsteak on the day that he had the contest and said "That extra beefsteak made me tired and I could not fight". He was absolutely right about it. There are thousands and thousands and thousands of business men who eat beefsteak for dinner go to their offices are logy, heavy, think they are doing a great amount of business and think they are working awfully hard because they are awfully tired. It is their stomachs that are working too hard, not their brains. Very few people are injured by work. People may be injured by loss of sleep but work does not do any very great harm. Rest will cure all the harm that work does but when a man poisons himself with rotten carcasses of animals in his colon lying about there making a Golgotha of himself, when a man treats himself like a cemetery, takes all kinds of corpses in his body and allows them to lie around and rot, the consequence is that this whole body is deteriorated and degenerated and of course he is tired.

Q. What is Neuritis?

A. Neuritis is a term which is very commonly applied to a pain following a nerve trunk which is increasingly mentioned. This may be due to actual inflammation of a nerve or it may be due to irritation of a nerve set up by poison circulating through the body. It may be due to what is called rheumatism of the nerve. I confess that this condition called neuritis is a somewhat indefinite and vague ~~sy~~ psychological condition. I do not think it is fully understood although from a practical standpoint we perhaps know all that is really necessary now because we know what to do because we know all that is necessary to cure it.

Q. What is Hodgkins's disease?

A. We do not know entirely yet. It is probably due to germs. Perhaps it is closely allied to tuberculosis and may have a certain malignancy. It is not thoroughly understood what it is but it is known that it can be sometimes wonderfully helped by the use of the X-ray in some cases that have been almost cured.

Q. What treatment would you advise for catarrh of the stomach?

A. The most important thing is to give it an easy time. Give it as little work to do as possible, give it rest, and to keep out all causes of infection. Among the causes of infection are putrefactive bacteria such as are found in meats of all kinds. Buttermilk is an excellent remedy for these cases. It has been known for many, many years that a diet of buttermilk with cereals will satisfy that kind of a stomach better than almost anything else.

Q. When there is nervous exhaustion for a year, considerable distress and congestion and the X-ray shows symptoms of gall-bladder conditions, would you operate or wait?

11 27

A. I think I would operate right off quick before any mere diseases got in, because such a case as that is complicated enough already after I should think. There is only one thing the matter after all. Nervous exhaustion. That is what the Doctor said before he found out what was the matter. For a year I suppose the patient was treated for nervous exhaustion because there had not been a thoroughgoing examination and nobody knew what the matter was. It was not nervous exhaustion. Ther nerves were all right. There was considerable distress and congestion. The supposition was there was nothing the matter with the stomach. Finally an X-ray examination was made and it showed the whole trouble due to the gall-bladder and conditions around the gall-bladder and the pain in the stomach was a reflex action from the gall-bladder and the patient felt exhausted because his energy was expended. Lost, wasted, squandered to the pain he suffered. One may be more exhausted by fifteen minutes of pain than by a whole day's work or a whole week's work for pain causes a tremendous outpouring of energy. So the trouble was with the gall-bladder all the time and the thing to do is to remove that gall-bladder or remove those conditions. It may be benefited somewhat by hot applications and a very careful dietary but the ~~praxxky~~ probability is, it must be removed. Every case of so-called a nervous dyspepsia, every case of nervous exhaustion which does not yield to rest and proper regulation of diet, every case of chronic stomach pain that is not relieved by proper regulation of diet or pains in the region of the liver or ~~t~~ between the shoulders that is constant, steady, obstinate, every such case requires a thoroughgoing X-ray examination and it will disclose generally exactly the spot where the trouble is and indicate immediately what needs to be done. It does not always mean operation by any means. I was talking with a gentleman the other day, telling him he ought to ~~m~~ have an X-ray examination, and he said, "Now, look here Doctor", I am not going to do it because I know perfectly well



if I have an X-ray examination it ~~at~~ will show I have a duodenal ulcer and then I will have to have an operation". Of course, he was like an ostrich that sticks its head into the sand so as not to see the hunters coming after it.

Q. If those pigs that ate dead horses instead of having been eaten by men, if they had died because the diet did not agree with them and had been carried all to the fertilizer factory, converted into fertilizer and put on the soil, what effect would it have had on the garden sass?

A. I suppose the ~~answers~~ question is whether that garden would have had a horse or a pig flavor. I confess I never made the experiment. I should have to submit that to some research, perhaps to some Yale University or some other great research laboratory and ask them to investigate it.

Q. How does treatment before or after operation differ from that given in most hospitals?

A. It is quite different. The patient is prepared a week before the operation if it is possible to do it. The important things to be considered in preparation are first, to ~~gain~~ get the alimentary canal in perfect working order and thoroughly emptied and second, to eliminate all impurities of every sort from the body, to get the blood clean. In other words, so that there won't be a great amount of poison left in the body to be dealt with after the operation, because the operation introduces poison. The anesthetic is a poison and it has to be introduced, the patient has to suffer more or less injury from it. Then to get the body saturated so far as possible with carbohydrates, that is, with starch and malt sugar. The reason for that is to prevent a condition known as acidosis and the best possible preventive of that is carbohydrates or starch and sugar. After the operation the patient has an anesthetic that patient is treated

precisely as we would treat a patient if we had a report that there was a lady from, for instance, in her home unconscious lying on the floor and there was an odor of chloroform. We would immediately begin to do something to revive the patient, wouldn't we? We would proceed right off to apply hot and cold to the spine, wet or dry hand rubbing, cold to the head, ice over the heart, something would be done right off to ~~rev~~ revive the person. That is what we do with every person who takes an anesthetic in our operating room. They are not taken to the room and left to recover but they are taken to the room and immediately methods are applied to revive the patient from the anesthetic just as quickly as possible so as to overcome the effect of it and get it out of the system as quickly as possible. Then applications are made to the chest to keep the lungs active and to the heart. Beginning a few hours after the operation, every single hour the patient is put through some breathing exercises to prevent the stagnation of blood which naturally comes from keeping still. Hot foot baths, hot fomentations, hot leg and hip pack are made and various other hot applications, phototherapy, archlight and various other things over the region of the wound and in other parts of the body for the purpose of relieving pain so the patient won't have to take so much narcotic and in this way the amount of narcotic used is reduced to a very small figure indeed. Many patients do not take it at all and in such cases the bowels, the appetite, or the nutrition won't be disturbed and the patient won't have to fight against the narcotic when he begins to convalesce and have sleepless nights to overcome the effects of the morphia he has been taking. This is only the beginning of the methods which perhaps may be considered somewhat peculiar to our hospital. They are methods gradually built up during many years of experience and we think they have a ~~xxx~~ very great bearing on the progress of the patient immediately following an operation, and before the operation

v-k

in the preparation.

Q. How would you feed the soldiers?

A. I would feed them grain. That is one thing. The Roman soldiers who established a universal sway over the then known world built up the Roman kingdom, did their fighting on wheat and one Roman General reported to the Senate how nobly his soldiers had endured the hardships when they had no wheat and were compelled to eat meat. Bread is one thing necessary for them and another thing is vegetables. They must have fresh vegetables. The soldier needs plenty of fresh vegetables and plenty of bread and beans. If they can be gotten at a fair price. At the present time they are rather scarce. Otherwise, I should give the soldiers peanuts. There isn't any cheap food that has so much nutriment in it as the peanut. I learned about this from an experiment made by a German Government and you can just depend upon it the German Government is feeding the soldiers on peanuts at the present time and all they can get hold of. About twentyfive or thirty years ago the German Government made some experiments with peanuts and they discovered that when peanuts were eaten, if there was a small bit of the peanut, as large as the head of a pin, that was not thoroughly masticated it was not digested. It was only when the peanut was crushed into paste that it was digested. That led me to the conclusion that if the peanut was used as a food it ought to be crushed into paste before it was eaten so I crushed some peanuts through a mill and labeled the product "Peanut Butter". That was the first peanut butter ever made I suppose. About twenty years later I received a telegram from New York City from a man, a very large manufacturer of peanut butter who manufactured it by the carload or ~~in~~ trainload, and he telegraphed me, "There is going to ~~be~~ be a convention next week in New York in which there ~~will~~ be gathered together about fifty peanut butter makers of the United States, and as you were the

inventory of peanut butter we want to have you with us to make an address". I found it convenient to be elsewhere as I did not wish to appear as the King of peanut butter. If the peanut is to be eaten, it must be crushed into paste and in the peanut there is more nourishment that can be found than in any other thing that I know of at present at anything like the price. If you buy peanuts at wholesale at eight or nine cents a pound, I don't know exactly what the price is at the present time. Formerly peanuts could be purchased at anywhere from five to seven or eight cents a pound according to the season of the year. In the peanut there is to be found 150 calories in every ounce. The peanut is not half bad. There is a ~~xxx~~ pound and a half of beefsteak in every pound of peanuts and there is pretty nearly threefourths of a pound of butter in every pound of peanuts in addition to the pound and a half of beefsteak. According to that there is half a loaf of bread in every pound of peanuts so you see there is some food in peanuts and you can buy all of that for seven and a half cents. Think what the butter would cost you, say twenty cents, half a loaf of bread, five cents, a pound and a half of beefsteak any price you are ~~at~~ a mind to pay, any price from thirty cents up to a dollar and a half I suppose, depending whether you bought it on the hoof or at a hotel table.

Q. Is death from apoplexy due to high blood pressure?

A. Well, no, I think not. Death from heart failure might be. Apoplexy is not often due to high blood pressure. It is more likely to occur in people whose blood pressure is not so very high but it is due to degeneration of the arteries of the brain. A healthy artery can resist fifty times the ordinary pressure brought to bear upon it and the artery will not break or rupture

Q. Is death from apoplexy or heart failure due to high blood pressure?

A. Well, no, I think not. Heart failure might be. Apoplexy is not often due to high blood pressure. It is more likely to occur in people whose blood pressure is not so very high but it is due to degeneration of the arteries of the brain. A healthy artery can resist fifty times the ordinary pressure brought to bear upon it and the artery will not break or rupture from pressure until after the artery itself has become damaged and deteriorated, changed to fat so that it has lost its elasticity but heart failure may come from high blood pressure because when the pressure becomes high, the heart has to do more work. By and by the heart gets worn out and becomes diseased. Its arteries become diseased and then after while it fails entirely.

Q. What is diabetes insipidus due to?

A. It is due to disease of a small gland in the brain.

Q. Why are we given hot and cold fomentations?

A. You are given the hot fomentation to relieve pain. We do not have cold fomentations. A fomentation is a hot thing. It is necessarily hot. That is the nature of it. A cold application is a compress. We have an alternation of hot and cold compresses or cold compresses and hot fomentations so as to intensify the effect. When a hot application is made a certain effect is produced and when a cold application is made the tissues are restored to their former condition. Then you can make a hot application again and have the same effect again. Thereby alternating you can constantly renew the effects produced by the hot application. It is also a method of pumping the blood. If you put a hot application over the liver it will dilate the vessels of the liver just as those of the skin. Apply cold and it will contract the blood vessels of the liver. Apply heat again and it will relax them again so by this alternating contraction and dilatation we can pump blood through the liver or any other organ of the body.

Q. What causes nose bleed of the left nostril?

A. Probably a sore place in the nose. See a nose specialist and he will probably relieve you.

Q. Why is not osteopathic treatment given at the Sanitarium?

A. I supposed we were using here in this institution all there is in the so-called osteopathy that is of any value except the psychological part of it. Osteopathy means sick bone but the practice has been built up out of the old Ling system of movements. A man who claimed to have invented this method of treatment in Missouri went to Sweden and got some ~~xxxxxxx~~ expert men trained in manual Swedish movements and he took these Swedish movements, made some slight modifications in them, gave a new name to them, called it osteopathy, and that is what the people are being led to believe is a new thing. Honest osteopaths are rapidly getting their eyes opened and finding they cannot kill diptheria germs by twisting the back of the neck and cannot cure blindness by giving a yank to a part of the spinal column. They are beginning to get some sense, intelligent ones, and are rapidly adding first one thing and then another and another, dietetics, hydrotherapy, massage, electricity, and all these things are now a part of osteopathy according to the latest teaching. I have the principal books on hydrotherapy and have looked them through carefully and I think I am speaking by the card when I say that the things that are new in osteopathy are not good and the things that are good are not new.

Q. Do you consider a blood pressure of 220 dangerous?

A. No pressure is dangerous at all but the conditions that make that pressure are dangerous. If this person who has this high blood pressure would look in the lookingglass and put out his tongue, you would see the tongue has a brown coat on it. The tongue ought to look like mine does. Most people have never seen a healthy tongue. Look at your tongue and you find it has a whitish or brownish coat on it and that means you are sick. I met a lady this morning who was supposed to be a healthy woman and she said,

"Doctor, I wish you would tell me what is the matter with me. My head feels kind of muddled all the time." I said, "Let me see your tongue." She put out her tongue and I said, "Your tongue is muddy and of course your brain should be muddled naturally. You could not expect anything else." She said, "How can I get rid of it? I have tried so hard to get rid of it." I said, "I will tell you how I got rid of mine and I recommend you exactly the thing I am trying myself and practice myself all the time. Just eat bran enough and eat it at every meal and take a little paraffin along with it and your tongue will get clean and keep clean and the muddle will disappear from your brain." And she said, "I am going to do it" so I took care to see that she had a good supply of bran. She was one of my neighbors and I got her a stock of bran and paraffin, brose, and she began right off this morning, had her first breakfast and I dare say in a week's time the coated tongue will be a thing of the past. Some of you say "I cannot get rid of my coat so easily as that." It is because it is a more established institution. You have had it for twenty years perhaps and you will have to have a struggle with it but you can get rid of it. You won't begin to get well until your tongue is clean. As long as you have a coated tongue and a bad taste in your mouth, you are not getting well. You may be improving a little but you are making no radical improvement. If you are going to get well, your getting well will begin with getting your tongue clean and your breath sweet and your mouth wholesome and when that time comes you will begin to have a keen relish for food and a keen appetite and when you have that finally accomplished and your flora changed and your alimentary canal gotten into a healthy working order, you will begin a new area of your life. You will feel yourself lifted into a higher sphere of existence and begin to feel what it really is to live and feel a snap and thrill in your muscles and through your body as though you had steel springs under you all the time. Most of you have been sick so long you do not know what it is to feel well or to feel good, have a clear head and to feel a

welling up of energy within you so that you feel you have just got to do something. I remember our friend, Mr. S. S. McClure, came here about seven or eight years ago. He tells the story himself wherever he goes. He came here, a broken-down poor slave; nervous, irritable, neurasthenic, absolutely disqualified for business. He did n't know what in the world he was going to do. He had an awfully coated tongue, flushed face and a bad breath. He just looked in and spent a few hours. After two or three days he took another look and stayed at thattime and he didn't know whether he liked the place or not. He went away and after while he came back again and stayed a week. Then he began to get inoculated with the idea of the simple life. Then he went away and his wife came back here and spent several weeks with us and he left that time and after spending that time with us he left like a new man. Six months later <sup>when</sup> after he came back he said, "Doctor Kellogg, I am so full of energy I cannot get cooled down at night so that I can go to sleep. That is the only trouble I have. I am so full of work, snap and energy I just cannot keep still. It seems to me I cannot get tired." He was a new man. If you should happen to meet him anywhere you would say, if you had ever met a dynamo in human shape, you had found the man. If there was such a thing you certainly had found it. I assure you it pays to take the trouble to put your human machine in good shape, to get the carbon out of your cylinders, if you please, if you know anything about automobiles and to get things running smoothly and quietly and everything in perfect order. When you get up in the morning take a couple glasses of hot water if you have hypopepsia and cold water if you have hypopepsia. An hour before breakfast and dinner and supper take a glass of water and it will help to get your stomach clean and disinfected and prepared for the next meal and you will find it will be of very great service to you. If you have a slow stomach you better take breakfast at 7:30 in the morning and take dinner at 2:30 and cut the suppers out entirely. If you eat anything at all, let it be just a little fruit. Eat nothing else at supper. If you will do that you will find your digestion will begin to go on in a more perfect



manner and your functions will be better performed. You will begin to sleep better, will get more energy out of your food and you will see that you are climbing up. So long as your stomach has to labor with one load after another, you are making no real progress and we have a lot of people in this house right now that are piling dinner upon top of breakfast, supper upon top of dinner and breakfast and wonder why they are not improving. Increase the interval between meals and cut the supper down to a little fruit. The average healthy stomach empties in four hours. That leaves an hour for rest before dinner but the average invalid's stomach doesnot empty in less than six to nine or ten hours and sometimes twentyfour hours.

I thank you for your attention.

END.

v-m

Nature's Method of Combating Putrefaction in the Colon  
by Changing the Intestinal Flora

Germs are man's most deadly enemies. They are the chief means by which is carried out the fiat of the Almighty, "Dust thou art and unto dust shalt thou return."

But there are good germs as well as bad ones. There are protective germs which can defend the body against the deadly parasitic germs which get into the intestine and cause putrefaction and autointoxication, colitis, appendicitis, indigestion, gallstones, and many other grave disorders.

Nature plants in the intestine of every nursing infant a supply of the protective germs which act as a bodyguard against harmful germs and constitute the body's "protective flora." The mother's milk contains lactose (6%), which feeds the protective germs and opposes the growth of the disease-producing germs. So long as this beneficent provision of Nature remains intact, the body flourishes. Breast-fed babies are seldom ill. The death rate of bottle-fed babies is ten times that of breast-fed. A breast-fed baby should have by the time it is weaned a well established protective flora which with proper feeding should be maintained during life. But it is often greatly weakened or lost as the result of dietetic errors and neglect to care for the colon in such a way as to keep it free from putrescible residues. Then the pernicious putrefactive germs gain the ascendancy, the stools become foul smelling from the presence of ammonia, indol, skatol, and other toxic and foul smelling substances which are absorbed and cause bad breath, headaches, toxic fatigue (that tired feeling), autointoxication, and premature senility by wearing out the bodily machinery, liver, kidneys, thyroid and other poison destroying glands, lowers vital resistance and opens the door for a long list of ailments both acute and chronic. This damage or loss of the protective germs renders

necessary a "change of the intestinal flora" so as to restore the body's normal protection against disease producing parasitic germs.

If the protective germs are still present, although in such greatly reduced numbers that they have ceased to protect the body efficiently, a change of diet will be sufficient; but if the protective germs have been lost, as often occurs, a new and hardy culture of acidophilus must be implanted. Fortunately these wonderful lifeguards may be grown in a laboratory in any quantity, thanks to discoveries made in recent years, and given in any quantity desired in food resembling buttermilk. One of these cultures is known as acidophilus milk and is prepared from dairy milk. Another, unusually vigorous and hardy culture, is made by the use of milk prepared from the soy bean and is known as Soy Acidophilus Milk. By feeding liberal quantities, usually a glassful or half pint of Soy Acidophilus Milk at a meal, the lost protective germs may be restored.

It is necessary, however, in order that the reimplanted protective germs shall be permanently maintained, that they should be liberally fed with lactose or lecto-dextrin.

Nature's Method of Combating Putrefaction in the Colon  
by Changing the Intestinal Flora

Germ are man's most deadly enemies. They are the chief means by which is carried out the fiat of the Almighty, "Dust thou art and unto dust shalt thou return."

But there are good germs as well as bad ones. There are protective germs which can defend the body against the deadly parasitic germs which get into the intestine and cause putrefaction and autointoxication, colitis, appendicitis, indigestion, gallstones, and many other grave disorders.

Nature plants in the intestine of every nursing infant a supply of the protective germs which act as a bodyguard against harmful germs and constitute the body's "protective flora." The mother's milk contains lactose (6%), which feeds the protective germs and opposes the growth of the disease-producing germs. So long as this beneficent provision of Nature remains intact, the body flourishes. Breast-fed babies are seldom ill. The death rate of bottle-fed babies is ten times that of breast-fed. A breast-fed baby should have by the time it is weaned a well established protective flora which with proper feeding should be maintained during life. But it is often greatly weakened or lost as the result of dietetic errors and neglect to care for the colon in such a way as to keep it free from putrescible residues. Then the pernicious putrefactive germs gain the ascendancy, the stools become foul smelling from the presence of ammonia, indol, skatol, and other toxic and foul smelling substances which are absorbed and cause bad breath, headaches, toxic fatigue (that tired feeling), autointoxication, and premature senility by wearing out the bodily machinery, liver, kidneys, thyroid and other poison destroying glands, lowers vital resistance and opens the door for a long list of ailments both acute and chronic. This damage or loss of the protective germs renders

necessary a "change of the intestinal flora" so as to restore the body's normal protection against disease producing parasitic germs.

If the protective germs are still present, although in such greatly reduced numbers that they have ceased to protect the body efficiently, a change of diet will be sufficient; but if the protective germs have been lost, as often occurs, a new and hardy culture of acidophilus must be implanted. Fortunately these wonderful lifeguards may be grown in a laboratory in any quantity, thanks to discoveries made in recent years, and given in any quantity desired in food resembling buttermilk. One of these cultures is known as acidophilus milk and is prepared from dairy milk. Another, unusually vigorous and hardy culture, is made by the use of milk prepared from the soy bean and is known as Soy Acidophilus Milk. By feeding liberal quantities, usually a glassful or half pint of Soy Acidophilus Milk at a meal, the lost protective germs may be restored.

It is necessary, however, in order that the reimplanted protective germs shall be permanently maintained, that they should be liberally fed with lactose or lacto-dextrin.

To Suppress Intestinal Putrefaction  
by Changing the Intestinal Flora

Normally there is no putrefaction within the healthy living body. Putrefaction is Nature's scavenger process for destroying corpses and intestinal putrefaction is due to the growth of destructive germs which invade the intestine, just as weeds infest a lawn or a garden. Nature's method of keeping the intestine free from putrefaction is the same method by which we keep our lawns free from weeds. We feed our lawn plenty of fertilizer and sow grass seed so thick that there is no room for the weeds.

An acid-forming germ known as acidophilus (acid lover) serves in our colons the same purpose as grass in our lawns. Putrefaction is an alkaline process, the germs that cause putrid and offensive stools produce ammonia and other poisonous alkaline products. Acidophilus produces the lactic acid of buttermilk, which is harmless to human beings but destructive to putrefaction germs. And so when acidophilus is present and flourishing in the colon, there will be no putrefaction.

Kind Mother Nature brings babies into the world wholly free from germs. The infant's colon is soon swarming with germs, good and bad, which are derived from the air and especially from the mother's breast in the act of suckling. The mother's milk supplies an abundance of lactose or milk sugar (6%), food per excellence for the acid forming acidophilus, which causes this harmless germ to grow so luxuriantly and to produce so much acid that the putrefaction germs cease to grow and soon disappear. It is in this way that acidophilus earns the right to be called the protective germ. It is a wonderful and effective defense provided by an all-wise creator to protect man and other mammals or milk-fed animals against the attacks of the poison-forming and horribly offensive putrefaction

germs which swarm upon and about us everywhere and take possession of our interiors very quickly when we lack Nature's wonderful protectives against them, the remarkable lactic-acid forming germ acidophilus and lactose, its equally remarkable food.

After the infant begins nursing, the bad germs soon disappear, the stools are light in color and slightly sour and the baby flourishes.

The mortality of these breast-fed babies is only one-tenth that of bottle-fed infants.

So long as the acidophilus remains dominant, the stools are not foul smelling and there are not gastric nor intestinal disturbances. When the protective germ is lost, the stools become offensive, often the tongue is coated, the breath bad, and a host of intestinal, gastric, nervous and other disturbances appear.

If the acidophilus is still present, though in insufficient numbers, it is only necessary to feed lactose or lacto-dextrin to suppress putrefaction in the intestine.

14

An Address to the Students of  
Home Economics of Battle Creek College, June 6, 1935

By

JOHN HARVEY KELLOGG, M. D.

The first thing which I consider very important and to which I want to call your attention is that the Battle Creek School of Home Economics is not simply another school of home economics, but it has another mission that is higher and far more important than its educational work, and you will ask "What can that be?" What could be more important than the educational work of an educational institution? And so I must tell you that Battle Creek College is a reform institution and the Battle Creek School of Home Economics is the outgrowth of a long and world-wide research for the purpose of finding out what is best in human nutrition, what is the best food and what is the best way of preparing food and the best way of making use of it.

Battle Creek College and the Battle Creek Idea as it is sometimes called, that we are representing here in this college, is not based upon any creed or any religious ideas or any person's whim or fancy, but is simply a determined effort to follow science, to live up in the most meticulous way to the findings of science, to become



informed as to the very latest findings of science and then to follow them as something that has ethical value as well as something that has merely scientific value. Unfortunately a large number of important scientific discoveries, real steps of progress, are hidden away in the archives of learned societies. A man reads an important paper and it is simply filed away in the proceedings. It is buried up in a voluminous lot of proceedings and nobody ever reads it and no one knows anything about it and nothing is done about it for perhaps a whole generation. You know how it was with the discovery of Mendel.

Let us think intently because the things I am going to talk to you about are fundamental. Battle Creek College has not been started and this department of Battle Creek College was not organized merely for the purpose of educating cooks or dietitians or teaching the economy of the home, but for the purpose of promoting reforms.

The dietary of the American people 60 years ago was something dreadful. I won't attempt to describe it to you what it was. It was lacking in vitamins and lacking in food minerals. It still is for that matter. It was far removed from the normal program of nutrition.

*The Sanitarium*

This institution was started as a diet reform institution.

It was based upon the work of Sylvester Graham to start with. Sylvester Graham was a diet reformer. He was a learned man, a university graduate, a university professor and a man of great learning, and the great uncle of Dr. Graham Lusk. I guess Dr. Graham Lusk's name is quite familiar to you.

I met Dr. Graham Lusk a number of years ago and he said, "Dr. Kellogg, how did you get a start in your interest in dietetics? What interested you in it at the beginning?"

I said, "It was reading a book by Sylvester Graham."

He said, "Sylvester Graham was my great uncle. I am named after him. That is why I am called Graham Lusk because of my uncle Sylvester Graham. And you got his book and read it?"

"Yes, indeed," I said, "it was the thing that gave me an impulse in the direction of the study of nutrition and was a most valuable work, one of the most important and most valuable works I ever read in my life." It is really a most extraordinary book because it foreshadowed a great share of the great discoveries that have been made in recent years. These ideas were foreshadowed by this wonderful man Sylvester Graham.

Dr. Lusk said, "I have been hunting for that book for many years. I should be glad if I could get the loan of a copy."

I said, "I happen to have two copies, so I take great pleasure in making you a present of one" and he was very happy to receive it.

Dr. Lusk himself has given strong support to the low protein idea which was promulgated by Dr. Graham.

Some years ago an interesting question developed in New York. The Beth-Israel Hospital, which had been in the center of the city, proved to be too small and they got money together and built a fine new hospital. While the hospital was being constructed and not yet completed, the president of the board of trustees came here as a patient and he became very much interested in our work ~~here~~ and quite a thorough convert to the idea of living in a biologic or thoroughly scientific way. Even before he came, an interest had developed among the managers of the Beth-Israel Hospital looking toward some change. It was a Jewish hospital and they had to provide for two classes, the orthodox and unorthodox Hebrews, as they are called. The orthodox you know believe in the kosher.

See p. 7

How many of you know what kosher is? I would like to see. I see half a dozen of you do. Most of you do not know. The kosher relates to the Mosaic laws about diet. This required that certain ceremonies should be performed over the animal that was being slaughtered before it was killed and certain inspections should be made, certain rules followed in the slaughtering and a careful inspection made of the entrails of the whole animal; that is, rather a superficial examination, not a microscopic examination, of course, so as to eliminate any evidence of disease and also perhaps for some other religious purposes that are not so easily understood.

One of the laws in relation to the kosher was that milk and meat should not be eaten together at the same meal and should not be cooked together, so they had to have two kitchens to please the orthodox. They could not cook meat in a vessel in which milk had been used or any dairy product. No butter or cream could be taken at the same time meat was eaten. So they had to have two sets of dishes and the cooking had to be very carefully separated in order to satisfy the very orthodox Hebrews. It was very expensive and in order to economize at about the beginning of the war the manager and superintendent gave the

matter very careful study. They discovered the whole trouble was with the meat and by dropping out meat, all the troubles would disappear.

The question arose whether it would be safe to do it. Their board sent a committee, the superintendent and the head physician, up here to spend a few days with us to see if it was possible to live on a diet from which meat was entirely eliminated, and they were very much pleased with what they found here and went back and made a very favorable report, and then the board voted to make a widespread inquiry and they sent out a questionnaire to the leading physiologists of the country and they got replies from these physiologists which I will read to you.

They wrote Dr. Benedict, head of the Carnegie Nutrition Laboratory, about the propriety of carrying on a hospital without meat, and he wrote, "My good friends at the Battle Creek Sanitarium, would, I am sure, assure you that your project is hygienically and physiologically sound. Looking out for the food accessory substances, I should be quite inclined to feel that your plan was a safe one."

Thirty years ago Dr. Benedict would not have written that. Thirty years ago Dr. Benedict was very much opposed to the meatless diet and advocated very strongly a high protein diet. He thought

See  
p. 4.

See p. 12

everybody should eat at least 300 calories of protein a day. He had been an assistant of Dr. Atwater and believed in the high protein diet. Dr. Atwater believed in the high protein diet also.

When I visited the laboratory at Middletown, Connecticut, before Dr. Benedict moved to Boston, I found Dr. Atwater although a man about 60 years of age had been stricken with apoplexy and was hit very hard indeed, so he was deprived of all sense. He was still alive lying in bed, but really a living death, for he had less intelligence than an animal. It was with the greatest difficulty he was taken care of. He lingered in that condition for several years. I think this was very largely because of the high protein diet which he advocated and practiced himself.

I think that experience set Dr. Benedict to thinking somewhat. He wrote and asked me if I would not go to Middletown and go into his big calorimeter that he and Dr. Atwater had developed. They developed the first accurate calorimeter. It was a big iron box. How many of you know about the Atwater calorimeter? The patient would go inside and the air was examined from hour to hour, and oxygen was added. They asked me to come down and go into this calorimeter for ten hours,

that is, to go in before breakfast and to come out somewhere about 6 o'clock in the evening. So I went down for this purpose.

A somewhat amazing incident occurred as I was on the way from the depot early in the morning, going up to the laboratory. I did not know where the college was. I met a man on the street and asked him where I could find the college. He said, "You go down this street a block and turn to the left and go another block, bear to the right three blocks and there you will find the college. But you will find nobody there." It was seven o'clock in the morning. "The professors won't be there before nine o'clock and so it is no use for you to go."

I said, "I had an appointment with the professors. They will be there waiting for me."

He said, "I heard they have been having a great deal of trouble with the boys up there recently."

This gave me a cue. I thought I would have a little fun, so I said, "Yes, they are up there waiting for me and they are going to put me in an iron box without any breakfast and going to seal me up tight as in a bottle with a cork in."

He said, "That's terrible. You must have been on quite a

lark. It is too bad. I know where I can get you a sandwich. I will slip it into your pocket and they won't know it."

I declined his kind offices and went into the box for 10 hours. Dr. Benedict expected to find my metabolism very low. Certainly must be because I was not eating meat and had not been eating meat for 50 years. But he found to his great surprise it was 100 per cent, or rather it was zero. It was clear up to the mark. So he thought he would make a further investigation, and we were able to install here at Battle Creek because of his interest in this matter the first clinical apparatus for testing metabolism. The first apparatus ever used was used here in this institution. I was eager to test everything thoroughly and scientifically, and so I was for years gathering in every instrument of precision I could find. I had instruments made for me in Paris by the best instrument maker in the world, perhaps.

As long as 50 years ago I was making researches with the pneumograph on Indians way out in Arizona and established a scientific laboratory for physiologic research, so I was familiar with the apparatus.

Dr. Benedict helped us in making the instrument, which was the first one used for clinical purposes, the first one outside of his laboratory, in fact, and our very able Dr. Roth went to Dr. Benedict's



laboratory and spent six months with him there and became entirely familiar with the use of the instrument, and I think <sup>he</sup> was the first clinical expert in actual practice in any country in the use of the calorimeter in routine examinations.

Well, Dr. Benedict asked us to send him the results of a study of 100 cases of persons who did not use meat and he found that they were fully up to the average of persons in normal health. There was no lack of activity or deficiency. In fact, he ought to have known that from the activity of the reindeer and vegetarian animals in general, the horse and the rabbit, how the most enduring of these animals are well known to be those that live on a low protein diet. Roosevelt said when he was in East Africa in an article in "Scribner's Magazine" that a horse with a heavy man on his back could run down a lion in a mile and a half any time. Carnivorous animals in general have very little endurance.

This study was made here by the representatives of the Beth Israel Hospital. They sent out this circular and they got a report from Dr. Benedict, and they sent also a circular letter to Dr. Chittenden, and here is what Dr. Chittenden said, "In reply to your letter of June 9, I

beg to state that in my opinion it is quite possible, and indeed a desirable thing, for many reasons, to establish a lacto-vegetarian dietary in the wards of your hospital. There is no question in my mind that such a diet can be made nutritious and healthful.

"With vegetables of all kinds, and milk, bread, and butter, you have at your command all the necessary resources for a nutritious diet."

That is what Dr. Chittenden said. Let me see the date of this book. This book was written in 1923. This statement was made by Dr. Chittenden before that time.

Dr. Graham Lusk said, "I believe that the lacto-vegetarian diet could be established in any hospital without detriment to the health of the patients." *See p. 7.*

Dr. McCollum, of Johns Hopkins, said, "I have not the slightest hesitation in saying that a vegetarian diet, supplemented with fairly liberal amounts of milk, is the most satisfactory type of diet that man can take."

Could you ask for any stronger words than those?

Dr. Mendel said, "If you have ever visited the Battle Creek

Sanitarium, you will have noted that life is possible and good health is maintained without the use of meat.

"I have given some thought to the advisability of introducing a meatless dietary into your hospital régime, and have reached the conclusion that there will be no objection to this upon physiologic grounds."

During the War a question came up of how much food of different sorts was necessary, that is, what amount of food was necessary for maintaining health, and the international committee, made up of a representative from Italy, one from France, one from England and one from the United States, held a meeting in London and the committee decided that no meat at all was required. When it came to meat the committee said that meat is not necessary and that all the protein required may be obtained from milk and eggs and vegetables, so they eliminated meat entirely from the list of necessary foods.

I want to tell you that the work of the institution in relation to nutrition the last 60 years has been to gather in the best ideas and to watch the results of the great laboratories. I got in touch with them. One of the first things I did was to visit the Pasteur

Institute. I became acquainted with Pasteur and engaged one of his assistants, Professor Tissier, to serve as consultant for this institution 25 or 30 years ago, and I have kept in touch with these men. I began taking the "Bulletin of the Pasteur Institute" nearly 50 years ago and have followed very closely the work there because it had such a definite relation to our work here. The work of this institution, the dietetic program we follow and the principles in relation to nutrition that are taught in this school, are not based upon whim or fancy or faddism or anything of that sort. I have taken the greatest care to keep free from everything of that sort and to base everything on a sound scientific basis, upon principles that are generally recognized by scientific men as sound.

That is the reason why you find these men giving their unbiased views, not to me but to a hospital that was anxious to make an experiment. You see they agreed entirely with the things that have been taught you here in this school.

Now, the thing I want to emphasize particularly, my friends, is this: This college has been developed at great expense and as the result of great effort, and the work at the Sanitarium is the result of

more than two-thirds of a century of earnest work and of research from the very beginning, and so the things that are represented here and that are practiced here are not ideas that have been settled upon in a superficial way, but everything has been carefully studied and tested again and again and again before it is put in operation. It has been proven to be valuable or it would not have been here.

The reason why I am saying these things to you is because I feel extremely anxious <sup>that</sup> when you go away from this place, you will be prepared to represent, not simply the ordinary ideas of dietetics, but in addition to what people expect of an ordinarily educated dietitian the things which this institution has been especially active in introducing and ideas that have been tested here and proven to be of value.

Now, across the road if you go over there, you find several hundred people that have come here from all parts of the United States. What do you suppose brought those people here? Nothing except failure to find anywhere else the relief that they wanted and that they sought. Every one of the patients that comes here has been treated by doctors, many of them the most eminent physicians in the country, and they are here because they have got no satisfactory results. When I began my

work, I saw that that is the sort of people I would have to deal with and we must do something more than the average doctor did. We must train the patient, we must teach him the principles of right living, because most of the ailments people suffer from are the result of wrong living and we must find out the cause and remove <sup>it</sup> the cause and then we could cooperate with Nature in an effort to effect a cure. Our success has been entirely due to doing that. That is the reason the institution has grown from a little two-story wooden building up to its present proportions. The depression has lessened the volume of our work. There is no hospital anywhere unless it is some of the army hospitals that has not been compelled to reduce its volume of work. Whole wings in quite a number of the larger hospitals have been shut because they did not have patients to fill them, and this is partly due to the fact that the people have been reforming in their diet. The larger use of lettuce, celery, spinach and other fresh vegetables and fruits within the last ten or fifteen years has had a marvelous influence upon the health of the American people. I think the application of scientific dietetics, the use of vitamin rich foods and foods rich in food minerals is chiefly responsible for this thing.

for the death rate has been reduced from about 15 to 11 and in some regions to as low as 7. When you reduce the mortality one person per thousand, it means the saving of 120,000 lives every year. Think of it. A reduction of one saves 120,000 lives. That is what it means. So we are saving at the present time about half a million lives and I believe chiefly as a result of dietetic reforms that have been effected in the last 25 years, particularly as the result of the discoveries of McCollum and Mendel and Hopkins in England and Steenbock and Hess and others I might mention who have made the wonderful advances that have been made, especially in reference to vitamins. *See p. 16*

Now, my friends, we want you to feel that you are going out to represent these advanced ideas, this newer knowledge of nutrition, as Dr. McCollum calls it-- a very good term. That is the reason why we have a book called "The New Dietetics." How many of you have heard of a book called "The New Dietetics"? I see you have all looked into it. It was written on a bed of sickness, a large part of it, from which nobody expected me to rise. Three thousand pages of manuscript

I wrote with my pencil with the tablet held up in the air during some seven and one-half months I had to lie in my bed with a relapse from tuberculosis which assailed me when I was a boy and destroyed my left lung before I was 20. During the war I overworked to such an extent in order to send my colleagues to the front and took their work over, until I finally broke down and had a return of the trouble that I had fought successfully some 50 years before and no one expected when I left this town in 1918 to see me come back alive. After seven and a half months in Florida I came back. When I was able to walk half a block I came back and pretended to be well. I did not let anybody know I could not walk more than half a block. I remember after I was home for two or three weeks the first time I tried to walk home. I did not dare walk down Manchester street. I went up-- I have forgotten the name of the street-- so that if I collapsed it would not be in so conspicuous a place. I had to stop frequently along the road. I managed to get home and I remember how proud I felt when I got home, and found I was able to walk that distance, a half mile. I steadily went along.

That summer we had here a conference of the great tuberculosis



experts. We had Dr. Trudeau, the son of the famous Trudeau, and we had a meeting of the Trudeau Society of which I happened to be an honorary member. I invited them here. So I had an opportunity to have myself examined by the best experts in the United States, and I said to the first one, "Do you think, Sir, that if I would take a year off from my work and give myself wholly to the work of recovery for one whole year that I could by so doing have five years." I was working on "The New Dietetics" at that time. I was also engaged in some other work, more than I had planned. "Do you think I could have five years more?"

"Oh, no," he said, "you could not count on such a long time as that because your trouble is progressive."

So I consulted another one, and I did not put to him the same question. "Do you think I could have possibly three years in which to work?"

"Oh, no, Doctor, you can't expect so much time as that. Your trouble is progressive."

So I said, "I will try to live a little more biologically and forget all about it and work as hard as I can and as long as I can

and hope I will get something done before I will drop out." So I dismissed the doctors entirely and went to work as hard as ever I could work and simply lived as biologically as I could possibly do and I am here today and they cannot find a thing the matter with me only I have had a bad attack of shingles, a specific disease which is chicken pox in the aged. The same germ that makes chicken pox, causes a general eruption in little boys and girls which they get over in a few days, when it attacks an adult person appears in a form of neuritis which attacks the sensory nerves of one side of the body. It kept me in bed nearly all winter and left me with a horrible neuralgia. I have been getting only an hour and a half to two or three hours' sleep and it made me ten years older than I was. However I am making a great effort to acquire rejuvenation and I think I am getting back a little ways. My skin is getting a little more elastic so it snaps back again. It lost all snap so it stood up in a ridge. Now you see it goes down again, so I feel at least ten years younger than I did six weeks ago and I am hoping during the summer to get on my feet again.

I am making this explanation because you notice my voice is

a little weak. That is chiefly due to a cold I caught since I came up here. We only had two or three days like this last January and we called it real winter. It was the coldest weather Florida had experienced in more than 50 years. So you see it is quite a change for me. You notice I was wearing an overcoat when I came in. Excuse me for so much wandering.

I want to say to you <sup>that</sup> in starting off on a meatless diet or a low protein diet, I did not feel I was doing anything novel at all because Cuvier, the great French naturalist, said, "The natural diet of man is the same as that of the higher apes, fruits, grains, nuts, tender shoots and succulent roots." That is the natural diet of man. That is where I got the idea. I said, "If that is the natural diet it must be right." I have great faith in Nature. I was a boy only 14 years of age, but I was greatly interested in serious things and laying hold of every bit of knowledge I could get from every source because I expected to devote my life to human service and was seeking for every possible help. I said, "This experiment will be simply concerning one small boy and it will make no matter to the world how it does come out. If it is a failure nobody will suffer but myself."

For 30 years I did not feel quite sure whether this low protein diet was right or not. I watched very carefully the developments of science to see if I could find anything that tended to disprove the correctness of this view, for at that time every work on physiology called attention to the real necessity for meat in the dietary. Human beings could not live without meat.

Dr. Austin Flint said salt was necessary and if people did not eat salt they could not live, and he told the story how in Holland at one time prisoners were tortured by <sup>being ed</sup> depriving them of salt, and as a result worms developed in their skin and their bodies were devoured by worms while they were still living. He told us that in his lectures. I did not quite believe him. But there were many other things taught at that time that have since been dropped out. There has been great progress made.

I said, "I will make the experiment at any rate." For the first 30 years I did not feel quite sure it was right, but after trying this low protein diet for 30 years more, some 70 years now, I feel quite satisfied it has advantages, and the great advantage is that it is one of the most effective means that can be adopted-- not the most,

perhaps, but one of the most effective means that can be adopted for suppressing intestinal putrefaction, and that is a very important matter and I feel it is very important to impress upon you. The suppression of the process of putrefaction in the intestine is one of the most important things in relation to human feeding.

It is generally conceded at the present time by scientific men that old age is a disease, a disease that we can fight and hold at bay, and one of the most important things in my experience I find is the suppression of intestinal putrefaction. Now you cannot suppress intestinal putrefaction so long as a person is eating meat, because meat supplies the food for bacteria and not only supplies the food but introduces putrefactive bacteria. In every morsel of meat one eats there are millions, sometimes billions, of putrefactive bacteria. Welch's bacillus is always present wherever putrefaction is going on. There are the bacillus putrificus and sporogenes and dozens more of putrefactive organisms, molds and yeasts and other things that promote the putrefactive process, and so one cannot expect to keep his interior free from putrefaction so long as he is eating meat that is in an advanced stage of putrefaction, and all fresh meat that is eaten,

practically all, is in this condition and much of it is in a very advanced state of putrefaction.

I recall very well a talk I had with the manager of the Cleveland Hotel, the largest hotel between New York and Chicago, a big hotel of a thousand rooms. He came into my office and said he was leaving. He had been with us for three weeks. A month before he spoke to his secretary about taking a vacation and his secretary urged him to go to Battle Creek. He said, "I was much prejudiced against the work here," but his secretary urged him so strongly that he finally decided to come and inspect the place and he learned to love <sup>it</sup> ~~the~~ place. He inspected the kitchen and learned a lot of things about the preparation of vegetables. He never saw such nice vegetables as the cooks prepared.

He said, "I am going away tomorrow and I came to see you as I thought you might give me some further suggestions."

I said, "I could give you one point right away. Instruct your chef to use only the flesh of animals recently killed and avoid that which has been hung a long time and advanced in decay."

"My chef knows all about that, Doctor. He is very particular. You know the meat usually supplied hotels has a beard <sup>of green mold</sup> on it an inch long,

of green mold. My chef is very particular. He never allows the beard to be over a quarter of an inch long."

Well, now, I was talking with another hotel man in Miami a few years ago and he told me that the cost of meat was the principal expense for food. It was more than half the total cost for food. He said, "You know the meat we get has a beard of green mold an inch long and we have to cut away nearly half of the meat before we can find anything that will hang together long enough to cook it. That is what this man told me. It was simply spontaneous testimony. I was preparing at that time to open a sanitarium there and was simply getting costs for raw material, etc.

The world is waking up to find out meat is not necessary, although the packers still insist meat is very important and that we must have meat. Every little while you will find in the papers an advertisement of an eat-more-meat week. A couple of summers ago there occurred a very surprising circumstance. Dr. Hugh Cummings, the Surgeon-General of the Public Health Department, sent out a broadcast, as he does every year at the beginning of the summer, calling the attention of the people to various things they could do to

avoid sickness in the summer. Among other things, they ought to eat little meat, the less the better, and immediately the Secretary of the Treasury got a telephone call from the packers in Chicago demanding that the Doctor should take this back; that he should apologize for it and send out a broadcast repudiating what he said. "Why," they said, "it is terrible to have this thing brought on right now when we are starting our eat-more-meat week." They always have this week in July. I have always been rather pleased they selected that time of year because it is the time when people eat less meat naturally and meat is likely to make them sick. The reason the packers do it is to unload their big warehouses so as to get them ready for the new carcasses that are coming in the fall.

I was very much incensed and disgusted with the poster they sent out a few years ago, an eat-more-meat poster. "Meat is wholesome" and had on it "U. S. Department of Agriculture." I felt it was an outrage because they took these posters, which were printed in Chicago, down to Washington and got the Post Office Department to distribute them and to post up two of those posters in every post office in the whole United States.

So I got out a new edition of their poster and put on the back side of it what people will find in meat. I did not make any remarks about it, but just put down a report of Dr. Roderick's research here in the city, in



which he found not only enormous quantities of putrefactive bacteria but colon germs in all the different kinds of meats he examined and which he had bought over the counter in the meat shops. Every one of them contained quantities of colon germs. Then he examined the droppings of animals from the farm and he found actually a smaller number of bacteria in the droppings of animals than he found in liver and hamburger steak. He found more bacteria in meat than in a specimen of manure.

Well, I sent this poster out by thousands. I printed an edition of 20,000 and sent them out with every letter that went out, and the Meat Board pretty soon began to make a noise about it. I had a letter from the manager saying-- the president of the Meat Board enclosing a copy of this little poster. They sent this to me. "Are you responsible for this?" I wrote right across it, "These are the sorry facts. The people have a right to know them" and signed my name and sent it back to him and pretty soon I got word from Washington. There was quite a stir down there. The meat board man had called on different post office officials and demanded that my <sup>er</sup>posture should be excluded from the mails and they turned him down because they said when they asked if these statements were true he had to admit they probably were true,

"But we don't want the people to know this; it will destroy our business."

And so they went to the Interstate Commerce Commission and started suit.

Now, I happen to know the facts I am telling you. What I have told you so far we learned here from a clerk in the office of the Meat Board. He happened to come up to the Sanitarium as a patient about this time and he stated that when the president of the Meat Board got hold of this little poster he nearly went insane. He strode up and down the room and tore his hair and made the atmosphere actually sulphurous with his profanity. Then he rushed down to Washington and demanded, as I said, that the poster should be excluded from the mail; but he could not get that accomplished and so he went before the Interstate Commerce Commission demanding an injunction. I heard about it right away because it happened that the brother of the secretary of the Interstate Commerce Commission was a friend of mine and so he wrote me all about what was going on. I got inside information.

Pretty soon a burly attorney appeared in my office door.

"Are you Dr. Kellogg?"

I said, "I am, Sir."

Then he shook this poster at me, "Are you responsible for

this, Sir?"

I said, "I am, Sir."

"Well, Sir, the packers have started suit against you and demand an injunction to stop you from circulating this poster. What have you to say about it?"

I said, "I am tickled to death to hear it and shall be glad to go down to Washington and with the whole country as an audience appear before your board and tell a lot more about it."

"What about it?"

"Sit down and I will tell you about it." So I began telling him about it and giving him the facts and sent to the library and got my government documents which give figures bigger than any of these-- books on meat inspection, and showed him facts that he could not possibly dispute. Pretty soon he got very nervous.

"Doctor, this is terrible. I never knew about this. This is awful, simply awful," and he began to get very much worked up and as he went out the door he turned back and said, "Doctor, I hope you will make that poster bigger. The people ought to know this."

I met this gentleman in Chicago six weeks later on the street.

He said, "Say, Doctor, I have not touched a morsel of meat since I came home from Battle Creek."

The people do not know and they have a right to know. Don't you think the people have a right to know?

I was asking our Mr. Howe who studied in many bacteriological laboratories-- I said to him, "When did you find meat had colon germs in it?"

He said, "I found that out here," and, in fact, our Dr. Roderick found it out here, too. When Dr. Roderick came here as bacteriologist, I wanted to introduce him to some new ideas in a most tactful way, and so I asked him to make a research of the meat supplies of the town here, to go around and collect samples and examine them, then simply to report on what he found. Two or three days after he had made his collection he called me up on the telephone.

"Doctor, I found colon germs in the meat. I did not know there were colon germs in meat. I got a piece of mutton this morning for a pot roast and called my wife on the telephone since I found out about it and told her to cook that pot roast five hours"-- usually cook it three.

"That will kill them, I am sure."

"No," I said, "it won't kill them."

"I am sure that five hours will kill them."

I said, "Don't eat it all up. Bring some back to the laboratory and examine it." A couple of days later he telephoned me again.

"I am surprised to find that the cooking did not kill those germs. There are a lot of them there yet."

Of course the cooking on the outside soon makes it a non-conductor and sometimes in the roasting of meat there are more bacteria in the center of it after the roasting than there were before because the heat is not sufficient in the center to kill the germs. When beef is still red, and you know many people like to have meat juicy, it has not been sterilized sufficiently to kill the bacteria in it. Not only that, meat is not cooked enough to kill the animal organisms, the trichinae.

The United States government has stopped inspecting meat for trichinae. They suspended it because they found their examinations were entirely unreliable. They could never say, no matter how carefully they examined an animal, "This flesh has no trichinae in it."

In Germany they make a more meticulous examination and they

do certify whether the meat does contain trichinae and if somebody eats pork and gets trichinosis in Germany, the health officer who made that examination is arrested and prosecuted and punished for having overlooked those trichinae. In this country, however, the government gave up the examination entirely years ago and has made no examination at all for many years now and so the American people are eating plenty of trichinae. The government publishes two or three times a year, or at least once a year they send out a little publication which appears here and there in the papers saying pork should never be eaten without cooking. It should be cooked. They take it for granted that that is going to protect the people against trichinosis. It is not. *The disease* It has spread rapidly among the people and at the present time it is estimated by careful observers who have made a study of this subject that one person out of every six in the United States has trichinae in his muscles.

When I was a medical student over 60 years ago, I found many little white specks in the subject I was dissecting. I found little white specks everywhere in the muscles. I went to Dr. Janeway, the head demonstrator and said, "What does this mean?"

He said, "Put some under the microscope and see what you find."

There was a great serpent coiled up under the microscope. I was astonished to see an enormous snake under my eye. Every little white speck was a coiled up trichinae.

A recent research has been made as to the outbreaks of trichinosis and it has been found that ~~75 per cent--~~ in 75 per cent of the outbreaks of trichinosis, the pork was cooked, and so you see there is good reason why every one of you should put down your foot with reference to the use of pork. It is a shameful thing sending this infected pork broadcast and allowing the public of America to become infected with these horrible parasites. My friends, it is a criminal thing. The only reason why the government does not take a stand against this matter is because they are afraid of the packers. They are afraid of the great wealth that is entrenched in this packing business. Many people despise the German government and there are many things about it certainly not to be recommended, but the German government has at the head of it a man who is not afraid to stand up for ideals. How many of you know Hitler is a strict vegetarian? Hitler is a strict vegetarian. He has been for many years. He does not drink, he does not smoke, he does not take tea or coffee; he lives the biologic

life.

It will interest you to know that Louisa Alcott, the author of "Little Women" -- one of the little women herself-- was a vegetarian. Her father was a pioneer with Sylvester Graham, who was a friend of his. He was a pioneer with the food reformers of one hundred years ago and this movement here grew out of that. I took the matter up and found the people here were interested in diet. They were somewhat faddish, but I undertook to establish a dietary upon a sound scientific basis, avoiding faddism and anything that was not scientifically sound.

When the raw food fad came along, I avoided it as a fad, but I soon discovered there was something in it. I had a patient suffering from autointoxication and his nutrition was very low. He was emaciated, had a horrible breath and a badly coated tongue. He left me against my protest and adopted this raw food diet and came back at the end of three months hale and hearty with rosy cheeks and a sweet breath, a rejuvenated man. So I knew there was something in it, but I felt convinced it was not necessary that the diet should be wholly a raw diet. These people had the idea that there was a vital principle that was destroyed by



cooking. I at once introduced a considerable amount of uncooked food into the dietary, but did not think it necessary to suppress cooked foods altogether. This was long before the discovery of vitamins.

Another observation I made was that our people at the beginning of my work-- a great many people had a prejudice against butter and did not eat <sup>it</sup> butter. I found many of them were getting tuberculosis. They were ill and I began giving them butter and cream and it stopped. There was really almost an epidemic of tuberculosis. It broke out among our workers and every little while a new one would come down with it. I stopped it by introducing cream in the diet in abundance long before we knew anything about vitamin A.

All our work here has been placed upon a scientific basis, and I hope, my friends, that as you go out you are going to stand up for the principles that have been taught you. Take a stand against smoking and against cocktails. Make an effort to lessen the consumption of meat. Tell people the facts about pork. Do not be afraid to tell the truth and to stand up for it. A few years hence you will be proud of yourself for having done that. In 15 or 20 years more there will be a marvelous change in this country in relation to this diet question. A wonderful

change has taken place already. Some of our dietitians that have gone out have had the courage of their convictions and have done a great deal of good. There is an insane asylum at Trenton, New Jersey, that is on the biologic plan, and at Kalamazoo many years ago they introduced the biologic plan into their receiving building and the superintendent told me he was gradually working it into the whole building. I asked one of the doctors there how he liked the meatless diet. "Meatless diet?" he said. "I don't know anything about it." The dietitian told me he had had a meatless diet for three months and had not found it out, so you see it must be very satisfactory indeed.

There is a great opportunity, my friends. Do not be looking simply at the present prosperity or at present opportunities. Stand up for your ideals. Do not fail to improve every opportunity for introducing new ideas. Be on the lookout for a chance to introduce some reforms. You have had a chance to study the subject pretty thoroughly and you have learned the importance of changing the flora. You can not change the flora as long as a person uses meat. An occasional use of meat will restore the bad flora.

We find that about 25 per cent of the people who come here have lost their good flora, and I am going to beg your indulgence for a few minutes to tell you something <sup>in which</sup> I am sure you will be very much interested in. It is the story of the method by which Nature protects the human intestine from parasitic bacteria. Nature's method is the same as that by which we keep our front lawn free from weeds. We sow the grass so thick there is no chance for the weeds to grow. Nature goes a little farther and not only occupies the whole alimentary canal with harmless protective germs, organisms to produce acid, but makes the soil unfertile for the putrefactive bacteria. They can not endure the acid. For instance, Welch's bacillus stops growing when the medium has an acidity of one-tenth of one per cent, whereas the acidophilus will bear an acidity more than one per cent, even so high as one and one-half per cent, for a long time.

Where does the acidophilus come from? Do any of you know?

Where does this protective germ come from? Can any of you tell?

It is quite a mystery, isn't it? I found out where it comes from. I will tell you about that. Every new-born infant gets it from its mother. Every new-born infant gets two things from its mother that

are of great importance, these friendly germs and lactose to feed them so as to enable them to become dominant. At the end of the first week of the infant's life its intestine is swarming with bacteria. I learned this from Dr. Tissier. He wrote a paper about it. I can put into the hands of those of you who read French literature that you will find interesting. Dr. Tissier made the first profound study of intestinal bacteria and of the bacteriology of infancy, especially of the flora of the young infant. He found at the end of the first week the bacteria of the intestine were the same as that of adults, swarming with colon germs, but at the end of the second week they were disappearing and they steadily disappeared until they all disappeared.

Our bacteriologist, Mr. Howe, as many of you know, this winter had an addition to his family, and I suggested to him when this little boy arrived it would be a good chance to study his intestinal bacteria, so we began that study and sure enough found it exactly true. At the end of two weeks there were 80 per cent acidophilus organisms in the stools and at the end of three weeks there were 90 per cent; but then it fell off to 60 per cent and investigation showed the reason for this falling off.

Mrs. Howe was trying to do everything possible for the benefit of this little boy, of course. The doctors were recommending thorough cleansing of the nipple before feeding the baby and bathing with boracic acid, and the result was it killed the bacteria which the baby needed and so it lost its supply of acidophilus and its percentage fell down to 60 per cent. I urged Mrs. Howe to adopt a different plan and cleanse the breast after the feeding but not before and at once the bacteria came back and increased and multiplied so greatly that for the last six weeks this baby's stools have contained 100 per cent of bacillus acidophilus and not a single colon germ, not a single putrefactive organism, and it is a very handsome and thriving child.

I am going to tell you another little story which will interest you. Have you heard of those five little babies up in Canada? Do you recognize these pictures? I want to tell you that I am responsible for these babies being alive. If it had not been for what I have been doing for those babies the last seven months since I left here, since, in fact, ever since last September, the babies would half of them at least be dead. Last September I saw in the papers that little Marie had got bowel trouble. You think that is a pretty bold story. When I tell you the facts you will

see I am right about it. Little Marie got it and pretty soon the rest of them will have it and it is not a very healthy thing for babies to have bowel trouble. For the babies to have bowel trouble after all the care taken you may be sure it will continue and half of them would be carried off. Why? Because the mortality from bowel trouble is so great. The mortality of bottle-fed infants is ten times that of breast-fed infants.

I knew what was the matter. These babies were being fed mother's milk gathered from lying-in establishments in Boston and New York, so they thought they were doing everything possible. They were getting the lactose all right, but they were not getting the mother germs because they were not in contact with the mother's breast. I wrote at once to Dr. Dafoe and I told him just what I am telling you now about friendly germs and their function and all about it, their natural history, and began sending him cultures of soy acidophilus. I send<sup>+</sup> him four ounces every day of freshly prepared culture and I told him I should continue sending it until I heard from him<sup>that</sup> he did not want any more sent. I would feel like a murderer if I should allow those children to die, for I knew what the trouble was and the Doctor did not

know what I am telling you here. It is one of the things we have found out by research. I had a research made and found the acidophilus on the mother's breast and isolated it and know that is where it comes from. If you want to know where it comes from originally, it comes from the mother's colon along with other colon germs.

In about ten days I got a letter from Dr. Dafoe thanking me most heartily for the information I had given him and for the culture, and begged me to continue to send it because he had given it to little Marie and she was well. He sent me some pictures which have never been published. Would you like to hear what Dr. Dafoe says? I will quote what he said: "I have been giving the babies the acidophilus culture ever since you began sending it. Now and then I have stopped it to see what was the effect and invariably they got bowel trouble and they do not do well." The reason why the babies are flourishing so wonderfully is because of the suppression of intestinal putrefaction.

That is the thing that ought to be done for every baby. Half the nursing mothers have not any acidophilus to supply to the babies. At least 25 per cent of them have not and in cleansing the breast and in protecting the baby against bacteria and interfering with the natural

order of things, the baby loses its chance for life. Mothers are actually doing the very thing that will destroy the baby's life.

Every bottle-fed baby must have these cultures of acidophilus in order to give it a fair chance for life. Why there would be saved in this country half of the babies that are dying if they could only have the culture supplied to them because the mothers have lost it. Not only the babies, but the whole population, nearly, need this culture.

There has been quite an effort, as you know, to introduce acidophilus, but it has not been generally successful. It has been so unsuccessful, in fact, I received a copy of a statement they are going to publish in the Journal of the American Medical Association in which they are going to declare that changing the flora by means of acidophilus milk is rarely accomplished. It is because the cultures that are sold are inefficient. Many of them contain no living bacteria at all. Milk is a poor medium for the acidophilus.

I discovered two or three years ago that milk made from the soy bean is a remarkable medium. It is a very potent medium and they grow



in enormously greater quantities than ordinary milk culture. In cultures made from the soy bean, you will find eight hundred million to a billion bacteria per cubic centimeter, and in many cases by taking a little special care, it is possible to obtain four or five billion organisms per cubic centimeter, and they are hardy. The milk cultures die off in two to six weeks. A large establishment that sends out these milk cultures in Miami, the White Belt Dairy, does not guarantee its culture for more than eight days.

Last summer Mr. Howe, our bacteriologist, found in the laboratory a culture of acidophilus that had been on the shelf since the year before. For the last four years I have been employing a bacteriologist every summer-- Mr. Grant for two summers and Mr. Howe now for two summers-- in researches in relation to acidophilus, keeping him busy with this work. Here was a culture left over from a year ago last summer, two years ago the present summer, and had been standing on the laboratory shelf the whole year. Mr. Howe took it down and thought of course it was dead, but when he planted it in soy milk, at once it sprang into vigorous growth. It was in a soy milk culture and it survived during a whole year. The acidity of the culture medium was one and a half percent and yet the

organism was hardy and grew and we have been using it all winter down in Miami, and it is the most hardy and most prolific culture we have ever had anything to do with.

I want you to know about this. It is possible to change the flora by the use of lactose or Lacto-Dextrin and a good culture of acidophilus. You can change the flora in every single case. We have had many patients at Miami with badly coated tongues and a bad breath and it is surprising how rapidly they recover under this regimen, and we have had a considerable number of cases of duodenal ulcer and we have not had to operate on a single case. Every single case of duodenal ulcer has recovered by changing the flora. Duodenal ulcer is simply an advanced stage of chronic duodenitis. Chronic duodenitis is similar to chronic colitis and you get ulceration in the advanced stage of colitis in the same way you get ulceration in the advanced stage of duodenitis, and when the bacteria are eliminated and this infection is cured, the patient makes a rapid recovery. The same thing is true of colitis. There is no trouble at all in curing colitis and no trouble at all in curing duodenitis and no trouble at all in curing duodenal or gastric ulcer if we get rid of the infection.

We had a good illustration of it in a doctor who came down from New York, a very prominent surgeon there, a nose and throat specialist. He had had duodenal ulcer for 15 years and had suffered greatly. He finally went to the Mayos last fall determined to be operated on, but he had such a bad heart he could not be operated. The Mayos did not dare operate on him and so he went home to use the Sippy diet and he had been trying to get along with the Sippy diet, but he was so wretched and miserable he just could not endure it and inquired of the different doctors, and finally met Dr. Vanderveer of Albany, the head of the big state hospital in Albany, and Dr. Vanderveer said, "I will tell you what to do. You had better hunt up Dr. Kellogg."

He evidently had met some cases that had been under my care, and so when he found I was not in Battle Creek he came clear down to Miami, and he came in looking very unhappy. Miss Estill, who is here, I am sure remembers how unhappy the Doctor looked. But at the end of the second day he was entirely free from pain and never had any pain afterwards. He went home at the end of four weeks and was entirely well, and not only well but learned how to keep well by simply keeping his tongue clean and keeping free from intestinal putrefaction.

When you have a patient with a bad breath and a coated tongue it is the duty of the dietitian to see that the patient gets rid of that foul tongue and that bad breath. That always means intestinal stasis and intestinal stasis can always be dealt with in some way. Laxative drugs do not answer the purpose. It has got to be done by diet and by irrigation and the use of the enema, repeated washing out; but when you get the colon clean and keep it clean and stop putrefaction, the tongue is no longer coated, the breath is certain to become sweet and the patient begins to flourish in a marvelous way. It seems almost like a rejuvenation. Not only the face begins to shorten up-- we are, in fact, making a specialty of lifting faces. That is one of my specialties and I give myself out as a beauty doctor because it is certainly marvelous to see the rejuvenating effects of biologic living.

I have in my hand here a letter from Dr. H. C. Sherman that I am going to read to you from Columbia University. I will just read a line or two so you will see the general trend of it.

"It is some time since we have exchanged letters, and this is largely to send personal greetings."

He finally says-- he wants to know whether I have had a full

opportunity for service, etc. I think the Doctor will be out here. It will interest you to know that he is thoroughly in sympathy with the things we are doing here as is Dr. Willard who spoke at the banquet. The Doctor told me how thankful he was he heard me lecture 40 years ago about biologic living. He adopted biologic living and followed it all his life. I said to the Doctor, "You have come in contact with a great many scientific men and scientific facts. You have been right in the midst of it. Have you encountered anything to lessen your faith in biologic living and in the vegetarian diet?"

He said, "No, indeed; but the very reverse."

They have a little girl and he told me they were rearing her biologically, and I expect you will see him up here quite frequently. I told him what efforts we are making here to try to organize a group of people who will become real health aristocrats and who will adopt Dr. Sherman's recently expressed views with reference to how super health may be obtained. I am sure you have all read of the fine rats he has produced, larger and finer than any rats ever produced before, by feeding them double and triple the amount of vitamins usually given, and he thoroughly believes in super health.

If every one of you would set out to develop super health and have everybody you come in contact with develop super health, by and by we would have the beginning of a new human race. We would have started a movement which would antagonize the race degeneracy which is going on so rapidly all over the world so the scientific men in general have given the race up as absolutely hopeless. We would start a counter movement which might result in the development, first of a small group of people who will be willing to live up to science and to physiology and live meticulously in a biologic way and in so doing produce a finer race than the world has ever seen.

Mr. Burbank assured me that in six generations we could have an entirely new man. In the first two or three generations there would not be much change, but in the fourth and fifth there would be a great uplift. We would have men and women so superior to the average man and woman today we could hardly believe it.

I want to make this College and I want to make this School of Home Economics contribute-- that is the thing back of all this work in Battle Creek College, the whole purpose of my expenditure of all my resources in this effort is to make a contribution to race betterment, the starting of

a new human race. I beseech of you when you go out bear in mind the things I have been talking about. Be willing to work for an ideal. Better the human race through living biologically, eugenically. Eugenic marriages-- that is a thing to be thought about. We have not time to talk about that. Dr. West has been telling you about it, I am sure. I hope that you are going to make some contributions, my friends to race betterment.

Begging your pardon for having kept you so long and hoping some of you will be real missionaries for the development of a better race for the future and better habits and customs in relation to eating and nutrition, I am going to let you go this time, but I hope to have an opportunity to talk with you again some time. Thank you.

## THE WORLD FAMINE

There is food enough, but not of the right sort. There is a scarcity of protein and fat. These are the elements which are supplied by meat, and especially by pork. The scarcity of meats of all sorts is due to the drouth, the dust storm due to the close cropping of the great pasture lands of the west and the plowing of these lands and destruction of the protecting sod which prevented erosion by heavy rains and loss of the soil by winds. This condition is not a temporary thing; it has come to stay. The same winds have been blowing for centuries, but they did not do the same harm. The same periodical down-pours of water, cloudbursts, they used to call them in the west, have been occurring for ages, but the tough sod of the prairies kept in place the precious which had been forming during many thousands of years. This has been removed by the plow and killed by grazing which has not only killed the grass but has robbed the soil of its nitrogen and phosphorus, lime and other minerals which are essential for the growing of food crops and have made a good start toward the transformation of our vast fertile prairies into a great American desert. The same causes have been at work elsewhere for centuries and have produced the same results. North Africa was, within historic times, the granary of Europe and the center of the continent was the garden spot of the world, where are now only the sand dunes and siroccos of the Great Sahara Desert.

Our once fertile western lands which in the writer's boyhood attracted settlers by producing 40 or 50 bushels of wheat to the acre, now produce 10 or 12. Our destructive methods of



## THE WORLD FAMINE

There is food enough, but not of the right sort. There is a scarcity of protein and fat. These are the elements which are supplied by meat, and especially by pork. The scarcity of meats of all sorts is due to the drouth, the dust storm due to the close cropping of the great pasture lands of the west and the plowing of these lands and destruction of the protecting sod which prevented erosion by heavy rains and loss of the soil by winds. This condition is not a temporary thing; it has come to stay. The same winds have been blowing for centuries, but they did not do the same harm. The same periodical down-pours of water, cloudbursts, they used to call them in the west, have been occurring for ages, but the tough sod of the prairies kept in place the precious                    which had been forming during many thousands of years. This has been removed by the plow and killed by grazing which has not only killed the grass but has robbed the soil of its nitrogen and phosphorus, lime and other minerals which are essential for the growing of food crops and have made a good start toward the transformation of our vast fertile prairies into a great American desert. The same causes have been at work elsewhere for centuries and have produced the same results. North Africa was, within historic times, the granary of Europe and the center of the continent was the garden spot of the world, where are now only the sand dunes and siroccos of the Great Sahara Desert.

Our once fertile western lands which in the writer's boyhood attracted settlers by producing 40 or 50 bushels of wheat to the acre, now produce 10 or 12. Our destructive methods of

agriculture and especially the livestock industry, are destroying the fertility of the soil and through our city sewers pouring into the rivers which carry it off to the Atlantic and Pacific Oceans.

All the once fertile lands which border the Mediterranean Sea are going through the same destructive change, and this ruinous process will continue until the whole world becomes a dreary waste if we do not cease our destructive and unnatural modes of dealing with great natural resources and adopt natural and conservative ones.

The basic evil is the livestock industry, which has been our undoing in many different ways. It is destroying the very foundations of our economic life. Fortunately, it is also destroying itself, as it has done in older civilizations. There are no great cattle ranches in China and Japan. Meats and dairy products are almost unknown in the most populous Oriental countries, such as South China. These countries learned their lesson long ago, and are in no wise dependent upon a livestock industry. They get their fat and protein from the soil through the plant world direct instead of taking it second hand through the eating of flesh foods. For the four hundred millions of China and several other hundreds of millions in the Far East, that most marvelous of all food plants, the soy bean, supplies an abundance of protein and fat of the finest quality, far superior to the proteins and fats of flesh meats, and wholly free from the loathsome parasites, trichinae, tapeworms, etc., and the filthy colon germs which swarm in fresh meats of all sorts.

From an economic standpoint, the soy bean offers not only a more than complete substitute for meats, but salvation

agriculture and especially the livestock industry, are destroying the fertility of the soil and through our city sewers pouring into the rivers which carry it off to the Atlantic and Pacific Oceans.

All the once fertile lands which border the Mediterranean Sea are going through the same destructive change, and this ruinous process will continue until the whole world becomes a dreary waste if we do not cease our destructive and unnatural modes of dealing with great natural resources and adopt natural and conservative ones.

The basic evil is the livestock industry, which has been our undoing in many different ways. It is destroying the very foundations of our economic life. Fortunately, it is also destroying itself, as it has done in older civilizations. There are no great cattle ranches in China and Japan. Meats and dairy products are almost unknown in the most populous Oriental countries, such as South China. These countries learned their lesson long ago, and are in no wise dependent upon a livestock industry. They get their fat and protein from the soil through the plant world direct instead of taking it second hand through the eating of flesh foods. For the four hundred millions of China and several other hundreds of millions in the Far East, that most marvelous of all food plants, the soy bean, supplies an abundance of protein and fat of the finest quality, far superior to the proteins and fats of flesh meats, and wholly free from the loathsome parasites, trichinae, tapeworms, etc., and the filthy colon germs which swarm in fresh meats of all sorts.

From an economic standpoint, the soy bean offers not only a more than complete substitute for meats, but salvation

from the great economic evils to which flesh eating inevitably leads, evils so mischievous that they threaten destruction to the race by making the world uninhabitable. Here are a few cogent facts:

The soy bean contains 40 % of protein of higher quality than that of the choicest of meats, and 20 % of choice fat, far better as nutrients than of any sort of meat, lecithine and other phosphorized fats which nourish the nerves and the heart, and in such quantity that an ounce of soy flour contains as much of this choice nutrient as does an equal quantity of egg.

The soy bean contains an easily soluble protein resembling that of milk and more easily and quickly digestible.

The proteins of the soy bean are of the basic or alkali ash sort, while those of eggs and meat are acid-ash and so tend to cause acidosis, an evil to which the physiologic chemists have for many years been calling attention. This makes the soy bean a curative food instead of a cause of disease.

In the market one can buy protein in the form of soy beans at one cent a pound, whereas protein in the form of meat costs from \$1.00 to \$2.00 a pound, considering the fact that the water content of fresh meat is about 75 per cent.

It is to be remembered also that to produce three pounds of beef, it is necessary to feed a steer 100 pounds of digestible foodstuffs. In England, the ration is 100 to one.

Another important factor is the fact that the soy bean improves instead of impoverishing the soil. It gathers nitrogen from the air and so enriches the soil.

The soy bean, which in the Orient takes the place in the diet of flesh, fish, fowl, eggs, milk, butter and cheese, and

from the great economic evils to which flesh eating inevitably leads, evils so mischievous that they threaten destruction to the race by making the world uninhabitable. Here are a few cogent facts:

The soy bean contains 40 % of protein of higher quality than that of the choicest of meats, and 20 % of choice fat, far better as nutrients than of any sort of meat, lecithine and other phosphorized fats which nourish the nerves and the heart, and in such quantity that an ounce of soy flour contains as much of this choice nutrient as does an equal quantity of egg.

The soy bean contains an easily soluble protein resembling that of milk and more easily and quickly digestible.

The proteins of the soy bean are of the basic or alkali ash sort, while those of eggs and meat are acid-ash and so tend to cause acidosis, an evil to which the physiologic chemists have for many years been calling attention. This makes the soy bean a curative food instead of a cause of disease.

In the market one can buy protein in the form of soy beans at one cent a pound, whereas protein in the form of meat costs from \$1.00 to \$2.00 a pound, considering the fact that the water content of fresh meat is about 75 per cent.

It is to be remembered also that to produce three pounds of beef, it is necessary to feed a steer 100 pounds of digestible foodstuffs. In England, the ration is 100 to one.

Another important factor is the fact that the soy bean improves instead of impoverishing the soil. It gathers nitrogen from the air and so enriches the soil.

The soy bean, which in the Orient takes the place in the diet of flesh, fish, fowl, eggs, milk, butter and cheese, and

for infants as well as for adults, is beginning to receive some attention in this country. An excellent flour is now being made which, added to ordinary wheat flour, greatly improves the loaf in nutritive values, and at the same time improves its flavor and keeping properties.

Condensed soy milk in tin cans is also now being made and various other most wholesome products, the use of which enables one, if he chooses to do so, to exclude all animal products from his dietary and not only without loss but with an actual gain.

for infants as well as for adults, is beginning to receive some attention in this country. An excellent flour is now being made which, added to ordinary wheat flour, greatly improves the loaf in nutritive values, and at the same time improves its flavor and keeping properties.

Condensed soy milk in tin cans is also now being made and various other most wholesome products, the use of which enables one, if he chooses to do so, to exclude all animal products from his dietary and not only without loss but with an actual gain.

THE ARISTOCRACY OF HEALTH

BASED ON

BIOLOGIC LIVING

Rules for "Right Living"

by

John Harvey Kellogg, M. D., LL. D., F. A. C. S.,

Fellow of the American Medical Association, of the American  
Association for the Advancement of Science and of the Royal So-  
ciety of Medicine of Great Britain, and President of the Race Better-  
ment Foundation

The Race Betterment Foundation

Battle Creek, Mich., U. S. A.  
(fine type)

Copyright 1935



### Foreword

The greatest problem before the world today is "How to save the human race from extinction through degeneracy." The only hope is to create an Aristocracy of Health, that is, to form a group of intelligent men and women who think it worth while to thoroughly inform themselves respecting the marvelous progress made in modern times in knowledge of personal hygiene, eugenics, and race hygiene, eugenics, and to make practical use of this invaluable information in so treating their bodies in everything pertaining to their physical and mental welfare as to develop and maintain the super health and efficiency which modern scientific research (Sherman and others) have shown to be easily possible by meticulous application of established scientific facts to human living; that is, by living in a strictly biologic or physiologic way.

This booklet is a brief summary of more than a half century's search for the right way to live. The writer, now in his 64th year, has devoted his whole life to an intensive study of human habits and living conditions in their relation to health.

With the cooperation of many colleagues, the Battle Creek Sanitarium, of which the writer has been Medical Director since October 1, 1876, has been a center of research, experiment, clinical study and adventures in the fine art of biologic living. Laboratories have been fitted up and provided with the most elaborate and up to date appliances for chemical, nutritional and physiologic research and placed in the charge of trained experts of national and international fame. Close touch has been maintained with the great research laboratories of the world and a constant wide survey made of scientific progress. New discoveries bearing on health have been tested and when found meritorious adopted. More than a million

dollars has been expended in this world wide search and intensive research. Among the practical results of this effort in the direction of race betterment may be mentioned the following: The Battle Creek Sanitarium where more than 300,000 persons have been received for treatment and training, which has grown in 60 years from a small two story frame building with 12 patients to its present proportions with accommodations for 1200 patients. The treatment of these patients in accordance with biologic principles and methods has afforded an excellent opportunity for testing and validating the ~~principles~~ <sup>methods</sup> and ideals presented in this booklet, which in fact represent the winnowed results of this long and laborious research.

The Race Betterment Foundation, a philanthropic organization having for its purpose the promotion of race betterment ideals and projects, one of the most notable of which is Battle Creek College, with its Schools of Nursing, Home Economics, and Physical Education (formerly conducted by the Battle Creek Sanitarium) in addition to the usual Liberal Arts Departments; a student body of nearly five hundred, representing all parts of the United States, with more than 4,000 graduates from its several departments scattered over the whole civilized world. The fine resident student body of Battle Creek College not only study the principles of biologic living but live them and profit greatly by the practical application of biologic ideals.

Food Industries.--Out of this work has also grown the great food industries which have made Battle Creek known throughout the world for its unique and wholesome food products. This special food research, begun at the Sanitarium, is continued in the laboratories of the Battle Creek Food Co.

Finally may be mentioned a great number of health promoting methods and appliances, electrical, mechanical and dietetic, some of which are found in use in every hospital and in many doctors' offices. Among these might be mentioned the electric light cabinet and other light appliances, the now popular sinusoidal electrical current and generator and numerous other electrical and mechanical devices.

The results of the practical application of these biologic methods in restoring to health and efficiency many thousands of chronic invalids who had been regarded as incurable has created a wide demand for a brief epitome of the Battle Creek Idea of right living which is the occasion for the publication of this booklet.

A full account of the technic of "biologic living" will be found in the writer's recent volume "How to Have Good Health" and in other works.

The monthly magazine Good Health, edited by the writer for more than 60 years, and the Battle Creek Sanitarium News present a popular account of practical biologic methods and of the most recent discoveries and advances.

Those who desire further information about biologic living or suggestions for health training at home are invited to write to us with the assurance that their inquiries will receive without charge, courteous and competent attention since the Battle Creek Sanitarium and its allied health activities are purely philanthropic enterprises devoted to the extension of health promoting ideals and race betterment.

Address. The Aristocracy of Health,  
Battle Creek, Mich.

The Battle Creek Idea

Biologic Living. What It is

Biology is the science of life.

Biologic living is the art of right living.

We study the biology of our horses, cows, pigs, and chickens, and feed them and care for them scientifically, that is, biologically. In consequence, we have the most wonderful horses, cows, pigs, and chickens the world ever saw. But we forget that we have a biology of our own, a way of life peculiar to our species, a diet specially suited to the genus homo sapiens, a regimen and environment to which we are by nature adapted, which belongs to us.

In the development of civilization, human living habits and conditions have been chiefly dictated by chance, taste, fancy, convenience, economy, fashion, rather than by considerations of health or biologic adaptation.

In consequence of our abuses and neglects, the human race is becoming dwarfed and weezened, neurotic, daft, dyspeptic, and degenerate and according to the eugenists is doomed to extinction. We are progressing downward instead of upward. President Nicolas Murray Butler thus writes the epitaph of the average man, "Dead at 30, buried at 60."

Biologic living is not an innovation. It is simply a return to the "old paths" from which the perversions of our modern civilization have gradually diverted many millions of men and women, perversions that are responsible for the multitudinous maladies and degeneracies which yearly multiply in number and gravity.

Biologic living means health, comfort, efficiency, long life. It means good digestion, sound sleep, a clear head, a placid mind, and joy to be alive.

To live biologically is simply to treat one's body in a natural or physiologic way. What more sensible thing can one do than to cherish and develop and make wise use of all his physical powers, in other words, become a health enthusiast and in time a real health aristocrat?

Tens of thousands of men and women, through adherence to biologic principles, have been delivered from feebleness, misery and inefficiency and brought to the enjoyment of stable and exuberant health.

To those who hesitate to adopt new habits, especially in diet, we commend the following observations by that noblest of Roman sages, the wise Seneca, who, like Pythagoras and Socrates, lived a biologic life:

"There is nothing against which we ought to be more on our guard than, like a flock of sheep, following the crowd of those who have preceded us, going, as we do, not where we ought to go, but where men have walked before. We live not according to reason, but according to mere fashion and tradition. \* \* \*

"We shall recover our sound health if only we shall separate ourselves from the herd, for the crowd of mankind stands opposed to right reason-- the defender of its own evils and miseries. Let us ask what is best, not what is most customary."

#### Biologic Living a Safe Road to Rejuvenation

We grow old prematurely because we depart from the simple, economic ways of Nature which make small demands upon the life mechanism, especially those highly essential viscera, the liver, kidneys and heart, load the body down with unnecessary work in the disposal of excess, and especially the elimination and destruction of poisons generated in infected colons, duodenums, gall bladders and other organs which often become the seat of germ infections and

incubators of parasitic bacteria and their venomous products.

Anything which lightens the load on the overworked viscera, promotes rejuvenation and length of days. It is this that gives the vacation its value as a means of recuperating wasted energy. Recreation we call it, not realizing the full significance of the word recreation, a renewal of the wasted energies and depleted body. The vacationist returns to his task looking and feeling younger, and that very often in spite of the fact that he has continued to smoke, drink coffee and perhaps cocktails and to do many other things against the best interests of the body.

Biologic living is simply conforming not to a part only, but to the whole code of physiologic living. This is not at all a hardship. It is a most delightful experience. It does not require any sacrifice. It simply replaces harmful ways for wholesome ones which are not merely equally enjoyable but far more delightful. It is not, for example, an abandonment of gustatory pleasures, but an acquaintance with new and even more delightful ones. And the results in relief of headaches, gastric miseries and other ills and the return of youthful pep and appetite and the disappearance of some annoying wrinkles and "that tired feeling" are so prompt and so pleasing that satisfaction and enthusiasm grow with each day's experience.

The soundness of this philosophy of physiologic rectitude which has been worked out at the Battle Creek Sanitarium during the last half century has been proven in the experience of tens of thousands of intelligent men and women among the more than a third of a million persons who have entered the doors of this university of health.

To watch the transformation of this sick and often despairing throng of suffering men and women from invalidism with all its helplessness and miseries into healthy, happy and useful people, has been

the chief factor in giving to the institution such a degree of success that without endowment or gifts, except from its managers and workers, it has grown from its beginning in 1876 in a small two story building with a few cottages and a dozen patients to the largest sanitarium in the world, drawing patients from every part of the globe, at the rate of <sup>16,000</sup> 6,000 to 12,000 a year.

And among the rest have come many notable people, such as Sir Horace Plunkett, Fellow of the Royal Society and Member of King George's Privy Council and Minister of Agriculture for Ireland, who was sent to the Sanitarium by the King's physician, Lord Dawson of Bondon; Jacob Reis of New York, the civic reformer; Dr. Stephen Smith, founder of Bellevue Hospital and of the American Public Health Association, John D. Rockefeller, Jr., the world's greatest philanthropist, who, although not sick, desired to learn how to live and who still adheres to the biologic way as do many others of the country's most eminent statesmen, and not a few of its leading scientists and educators.

#### Start Today on the Road to Rejuvenation

And why not begin today? If you could know the happy experience that awaits you, you would start at once. It will be a delight to feel the headaches and backache, weariness and dullness, lack of zest and pep and a hundred other miseries one by one slipping off and a sense of returning youth taking their place. Rejuvenescence is what you need, and through natural living you may reasonably expect to find it. Benjamin Franklin tried it. Through biologic living when a boy, to which he was led by reading the writings of a pioneer diet reformer, he became a model of vigor and endurance and laid the foundation for his amazingly active and successful career. In his prosperous old age he departed from the simple wholesome ways of his youth and became so

badly crippled with rheumatism and gout that at 70, as he wrote his wife when 74, he found himself so ill that he felt sure he would soon reach the end of his career unless he made a radical change. He returned to the simple biologic habits of his youth and as the result was able to report to his wife, "I have walked back four years so that you may now consider me as 66 instead of 74."

ptel

Biologic living is the only road back toward youth and health and all the felicities associated with a sound mind in a sound body.

#### How to Begin

##### Make a survey of yourself and your surroundings.

Take an inventory of your knowledge about health and conditions which promote physical well being.

Look over your library and see that it is supplied with up-to-date health literature from a dependable source.

Get in touch with your State Board of Health and read the literature the secretary will send you.

Visit your family physician or the best physician available and have a thorough examination of your heart, lungs, blood, blood pressure, urine, every organ and function. Don't be satisfied with an ordinary cursory examination, but find out everything you can about yourself. Repeat the examination at least once every year.

Very few people are perfectly well even though they feel no discomfort. The early or so-called "little symptoms" of disease often pass unnoticed long after they are discoverable if carefully looked for by an up-to-date physician aided by up-to-date diagnostic appliances.

Carefully Consider Your Habits,-- do they tend toward health or disease? Resolve to eliminate every disease-producing factor, to cultivate health, to fight disease, and to make this a part of your



daily program.

Read and Reread.--Not only read, but reread and carefully study each one of the 66 rules of this booklet. Reread it from cover to cover, once a week until each one is well fixed in the mind.

Become a Health Enthusiast.--After you have read, reread and studied carefully this booklet, make a list of your defects and set to work systematically to correct them. Resolve to become a real health aristocrat, to enjoy not simply comfortable health, but the super health which results from meticulous attention to health culture.

#### THE RULES

1. Breathe Deep. Take a dozen deep breaths several times a day; several times an hour is better.

Taking a deep breath is like blowing a smoldering fire. It brightens the vital flame. Deep breathing does more. It gives the liver a hearty hug and compresses and sucks the stagnant blood out of it and sends it on its way to the lungs.

Deep breathing is an important aid to the heart. The chest is a blood pump as well as an air pump, and so deep breathing helps the heart.

Deep breathing aids the elimination of residues. Each breath pushes along in the colon the unused remnants of foods and other residues which are eliminated through the bowels. Every deep breath gives a little push. Exercise helps bowel action by inducing deep breathing.

2. Work, play, read, study, and rest in the open air.

Do your work in the sun or under the trees instead of behind doors and opaque walls. Dig in the garden, explore the woods and hills. Follow the brooks, watch the squirrels and learn the songs of the birds. If compelled to remain indoors, be sure that the living

and work rooms have an ample, continual supply of fresh moving air. The lower the temperature the better, so long as the body is kept comfortably warm. Temperatures much above 70° are depressing.

#### Sleep in the Open Air

Fix up a sleeping-porch or a balcony and so take an outing all night long and every night, and don't move inside when frost comes. Outdoor sleeping is one of the best life-preservers known.

#### 3. Take a sun bath often enough to keep the skin well browned.

In the warm months take a good sun bath once a week at least. Don't be afraid of getting slightly sunburned. No harm will result except a temporary inconvenience from skin irritation. A sunburn is a solar erythema and not a real burn. It does not destroy the skin as does a true burn and leaves no scars. Expose the skin to the air and the sunshine as much as possible. The skyshine is highly beneficial as well as the sunshine. A mild "sun burn" increases immunity (Hill).

#### About Eating

#### 4. Eat what you like; that is, food which you can relish.

Food must be well relished as well as wholesome to be well digested. The taste and the odors of foods if agreeable, cause the saliva and gastric juice to flow. "The mouth waters" and the stomach also. The "appetite juice" thus formed, even before the food reaches the stomach, is the most active agent in gastric digestion. Says Pavlov, "Appetite means juice."

#### 5. Prefer natural foods.

Use the same good sense and judgment in feeding yourself as in feeding your dog, a pet canary or a prize winning horse. Primitive man ate his food as he found it prepared for him in the forest. In other words, he ate all his food in a raw or natural state. We cannot easily

do this, but may profit greatly by eating largely of foods which are edible in a natural or uncooked state, such as lettuce, celery, cabbage, carrots, turnips, fresh fruits, nuts and dairy products.

Biology teaches that man's natural diet is the same as that of his nearest relatives, the primates, such as the gorilla, the chimpanzee, the orang-utan and the gibbon, viz., fruits, grains, nuts tender shoots and succulent roots (Cuvier, Buffon and other naturalists) rather than meats.

6. Avoid too much protein

The daily amount of protein required is small compared with that of other food elements. An ample amount is supplied by such foods as bread and other cereals, beans, peas, soy beans, supplemented with the proteins of milk, soy beans, soy bean milk or nuts to insure good nutrition. A pint of milk or soy milk daily or three or four ounces of nuts or two of soy beans taken with plenty of other foods will amply supply all the protein needed and of excellent quality.

7. Avoid meats, fish, flesh and fowl because they are unnatural foods and hence not well adapted to man's use as are natural foodstuffs. Here are other good reasons:

(1) Meats are very deficient in vitamins and lime. The iron of meat is of an inferior sort. Meat eating animals suffer most from pernicious anemia.

(2) Lean meat contains uric acid (14 grains to the pound) and about one-fourth of its weight of other harmful toxins and tissue wastes. When fed to mice, this material causes nephritis in a few days.

(3) Fresh meats are grossly infected with colon germs during and after killing. Ordinary cooking kills only part of the colon germs of meat, which in some meats, such as hamburgersteak, may outnumber

those in animal droppings.

(4) MacMillan, the Arctic explorer informed the writer that the meat-eating Eskimos are short lived-- old at 50 and worthless at 55 years. Stefansson's meat-eating stunt, performed for the meat packers, was a shabby fake. His diet was three-fourths fat and only one-fourth protein, according to the official report. A diet of lean meat only made him sick. He refused to eat it.

(5) Bright's disease is most frequent in meat-eating countries (Hindhede). The same is true of cancer.

(6) Meats, especially pork, are often infected with living parasites. The pork parasite, trichina, is spreading rapidly, 15 to 25 per cent of all persons living in the United States having trichinae in their muscles (U. S. Government Bulletin). Government inspection has failed to stop it and has been abandoned and all pork is dangerous. The government warning to avoid eating raw pork is insufficient. All pork is dangerous. Ordinary cooking does not kill all the parasites. Most outbreaks of trichinae infestation are caused by eating cooked pork (22 out of 24, U. S. Dept. of Agr.). The sale or use of pork as food should be forbidden.

#### Eggs

8. Use eggs sparingly, and only when known to be perfectly fresh. They may be discarded without injury if care is taken to provide sufficient protein, iron and vitamins by the use of nuts, soy bean milk and plenty of green vegetables.

Infected eggs cause colitis. According to Tissier of the Pasteur Institute, most eggs are infected. The hard boiled yolk of egg is more wholesome than the white. Raw eggs encourage intestinal putrefaction. Avoid egg-nog.

Milk--Dairy Products

9. Cow's milk disagrees with many persons. In the case of a person suffering from hyperacidity, large hard curds are often formed which are difficult of digestion and encourage intestinal putrefaction and so-called "biliousness." Many persons are sensitized to cow's milk and cannot make use of it without headache, constipation, asthmatic attacks, skin eruptions, coated tongue, or other unpleasant symptoms.

Boiled milk is often less objectionable than raw. A small portion of cream or buttermilk often causes no inconvenience. Sometimes cottage cheese or cream cheese may be safely eaten by persons who cannot eat ordinary milk.

Persons who discard meat may make sure of getting an ample amount of "complete" protein by using daily from a pint to a pint and a half of milk. When dairy products or eggs are eaten, meat is wholly superfluous.

stet  
Milk may be replaced by milk prepared from nuts (malted nuts, almond cream) or the soy bean (soy milk, soy acidophilus milk) which has been in use in Oriental countries for thousands of years with entire success as a substitute for dairy products.

Many persons, including the author, have found it highly profitable to dispense with animal products of every sort, practically excluding from the dietary eggs and dairy milk as well as fish, flesh and fowl, which have been discarded for 70 years. It should be noted that such a restriction of the diet requires a carefully balanced and varied bill of fare.

### Butter and Other Fats

10. Give preference to vegetable fats, excepting butter. Butter is an important source of vitamins A and D. Other animal fats are less wholesome than vegetable fats and much less digestible. Tainted butter or other rancid fats, either animal or vegetable, are harmful. Fats, other than butter, generally lack vitamins and should be supplemented by carrots, spinach or tomatoes.

Nuts and nut emulsions (almond cream, malted nuts, nut butters) are excellent sources of easily digestible fats. The soy bean contains 20 per cent of an exceptionally fine fat which is rich in lecithin.

The actual fat requirement is very small when greens and carrots are eaten freely to supply the fat soluble vitamin A. It is well to add wheat germ, which is rich in all the vitamins except C.

### Cereals--Bread and Breakfast Foods

11. Avoid free use of cereals. Bread and breakfast foods are cheap and concentrated sources of nourishment, but contain an excess of phosphoric acid and when used too freely tend to cause acidosis. Whole meal or graham bread, wheat flakes, bran, bran flakes, shredded wheat, and rice (preferably unpolished) are the best cereals, but they should not be made the chief sources of nourishment. Eat less cereals and more potatoes.

Raw starch is not easily digestible. For this reason, unripe fruit is usually very unwholesome when eaten raw. Bananas, which are usually eaten before becoming fully ripe, often disagree for this reason.

12. Restrict the use of cane sugar. Carbohydrates in the form of sugar are attractive on account of their sweetness, but not always wholesome. There are five food sugars,-- cane sugar (white or granulated sugar, brown sugar, beet sugar, molasses, syrup, raw sugar, maple sugar, sorghum); malt sugar (maltose, malt syrup); milk sugar (lactose), found

only in milk; corn sugar, glucose, (made from corn starch); and fruit sugar, levulose, the sugar of sweet fruits and honey.

Cane sugar is least wholesome. Taken in concentrated form, as usually eaten, it irritates the stomach and encourages infection of the stomach, duodenum and gall bladder.

Malt sugar is the natural sugar of the body, being produced in abundance when starch is digested by the saliva, the pancreatic juice and intestinal juice. It is digested and absorbed much more quickly than cane sugar.

Milk sugar, although least sweet, is one of the most important of all the sugars. It is provided by nature not only as a carbohydrate food for the infant mammal, but as a nutrient for the protective germ, the Bacillus acidophilus, which combats putrefactive, pus-forming and other disease-producing germs in the intestine, thus preventing the development of putrefaction and infection in the intestine. By the liberal use of this sugar, bottle-fed infants, older children, and adults may enjoy much the same protection against colitis, appendicitis, and other intestinal infections, as have breast-fed infants. Ordinary milk sugar has little sweetness.

A recent discovery makes it possible to make lactose three times as sweet and three times as soluble by converting it into beta-lactose, sometimes commercially known as B-Lac, which is excellent for table use in place of cane sugar.

Dextrose or glucose is less sweet than cane, malt or fruit sugar, and in its pure state as found in fruits, requires no digestion.

Fruit sugar is of all sugars the sweetest and the most easily assimilated. It requires no digestion-- is ready for immediate absorption.

#### Green Vegetables

13. Make fresh green vegetables a part of every meal because

of their richness in vitamins and food minerals, of which they are the chief source. At least one fresh uncooked food such as lettuce, celery, cabbage, carrots or cucumbers should be eaten at every meal. It is a good plan to make at least one meal daily consist largely of uncooked foods. The juice of the raw turnip and other vegetables is most excellent. auer-  
kraut juice has little value and contains too much salt.

#### Fresh Fruits and Fruit Juices

14. Make fresh fruits or fruit juice a part of every meal. Of highest value are the orange, grapefruit, apple, and tomato. Canned tomato juice is nearly as good as fresh juice. Eat very freely of all fresh fruits in their season. Such juicy fruits as apples, citrus fruits, peaches and melons may be eaten at any time as well as at meals. They require little digestive work.

#### Bulkage Foods

15. Eat bran or other bulkage freely to encourage colon activity. The natural unprocessed bran is most efficient. Fresh fruits and vegetables have value, especially berries, prunes and figs, but the hemicellulose of fruits and vegetables is digestible. Wheat bran is more efficient because its woody or cork cells are indigestible. It may be made a part of every meal by most persons with great profit. It is best to take it at intervals during the meal so that it will be thoroughly mixed with the rest of the food, thus avoiding impaction. For a like  
reason mineral oil is often needed with bran and other bulkage. Agar is also useful. Psyllium seed is highly efficient. Paraffin, a paraffin oil which melts at the temperature of the body, has the advantages that it is active in smaller amounts and that it does not leak or cause "accidents."

16. Food Combinations. Do not forget that a variety of foods



is necessary to insure a complete assortment and abundant supply of all the needed vitamins and food minerals as well as the necessary protein, starch and fat required for tissue building and energy production. Ignore the current notions about food combinations. It is an error to suppose that fruits and vegetables should not be eaten together, or that starch and protein are a bad combination, or fruit acids with starches unwholesome, or acids and milk indigestible. Fruits and vegetables agree perfectly if thoroughly chewed. Fruit acids do not prevent the digestion of starch. Starch and proteins are associated in normal foodstuffs. A meat and bread diet is unwholesome. It causes acidosis.

#### How Much to Eat

17. Be careful to eat enough but not too much. Never eat so much as to cause dulness or drowsiness or a sense of discomfort. The amount of food needed depends upon the age, size and activity of the individual. Men need more food than women because they are larger and use their muscles more. Children need more in proportion because they are growing.

The individual requirement may be determined by reference to ration tables (See Appendix). The energy value of the ration may be determined by multiplying the normal weight for a person of the given height by 14. This gives approximately the total number of calories required. Of the energy value of the food, (calories) one-tenth may be protein, three-tenths fat and six-tenths carbohydrates. Less protein is sufficient.

18. Estimate your food needs by comparison of your bills of fare with model menus shown in the Appendix, which see.

Hard muscular work requires one-third more food or even more.

Mental work requires little more food than loafing.

After 80, the food requirement is about half that of middle age.

19. Weigh once a week. Consult table of heights and weights (See Appendix). If 5 to 10 per cent underweight, be thankful if over 40 years, for you will live longer; if under 30, eat more, especially of carbohydrate foods (See Appendix).

20. Masticate thoroughly. Every morsel of food should be chewed until it becomes a smooth puree or semi-liquid in the mouth. Thorough chewing greatly aids digestion and will cure many cases of indigestion. Tasting and chewing the food cause the gastric glands to pour out their secretion and stimulate the colon to push its contents along and so aid bowel action. Careful mastication affords opportunity for the nutritive instincts to select the food and food elements adapted to the body needs, and to say "Enough," at the proper moment. Hence, give preference to dry foods. Sip liquid foods slowly, taking care to insalivate thoroughly. It is advantageous to take liquid foods like milk through a straw or small glass tube to insure admixture of saliva.

21. Be careful to balance the bills of fare.

For protein, fats and carbohydrates. Although protein is a highly essential food element, there is little danger of a deficiency, as the amount needed is comparatively small, not more than one-seventh by weight of the total ration, and not more than one-tenth of the energy value (calories). Even the potato, cabbage, beet, parsnip, carrot and the humble pumpkin contain the requisite amount of protein and of excellent quality, while bread offers an excess. One egg, a glass of milk, an ounce of soy beans or a small handful of nut meats in addition to ample meals without meat will insure an intake of all the protein the body can utilize.

The amount of fat may be greatly varied without injury. One-tenth the water-free weight of the daily intake is ample. The body can make its own fat from starch and other carbohydrates.

Carbohydrates, chiefly starch, make up three-fifths of the total normal ration (energy value) and are the body's chief source of heat and energy.

For all vitamins, A, B, C, D, E and G.

For A, by use of butter, cream, greens, carrots and tomatoes.

For B, by use of fruit juices, greens, bran, yeast and yeast extract (Savits, Marmite).

For C, by fresh fruits and vegetables and their juices, especially orange or lemon juice, tomato, turnip and cabbage juice.

For D, by use of butter, greens, and irradiated foods.

For E, wheat germ.

For food lime, by free use of greens, dairy milk, soy beans, whole grains and fresh vegetables. For food iron use freely, greens, egg yolk, wheat flakes, bran flakes, Krusty Bran, shredded wheat, oatmeal, raisins, dates, figs.

For chemical balance make the chief constituents of the bill of fare consist of fresh fruits and vegetables, avoiding meats and eggs and excess of cereals.

#### Things to Avoid in Eating

22. Avoid condiments-- mustard, pepper, pepper sauce, cayenne, capsicum, vinegar, hot, irritating sauces, and spices of all kinds. All hot sauces must be wholly discarded. They irritate the stomach and cause gastric and intestinal catarrh, duodenitis, duodenal and gastric ulcer, colitis, and damage to the liver and kidneys.

23. Avoid free use of denatured foods such as fine flour bread, new process corn meal, polished rice, corn starch, tapioca, lard, refined sugar. Use instead whole meal cereals, raw or unrefined sugar, maple sugar, honey, and sweet fruits, malt sugar, milk sugar (lactose, lacto-dextrin, beta-lactose).

24. Avoid rich and highly seasoned dishes, sauces, fried foods and flaky pie crust. They are highly indigestible.
25. Avoid many varieties and dishes at one meal, but also avoid a monotonous diet. Vary the diet from day to day.
26. Avoid poison-containing foods. Vinegar and foods pickled in vinegar are indigestible and interfere with the gastric digestion of starch. Pieplant and sorrel contain oxalic acid, an active poison which arrests starch digestion. Death has been caused by pieplant greens, and acute and fatal relapse in cases of Bright's disease by an ordinary serving of stewed pieplant.
27. Common salt, or chlorid of sodium, should be used sparingly. According to Richet and others, the food naturally contains all the chlorid of sodium actually required by the body, so that the addition of salt to the food is necessary only to please a cultivated taste. A safe rule is: The less salt the better. Persons who have dropsy, Bright's disease, arteriosclerosis, gastric ulcer, hyperacidity, obese persons and epileptics should discard salt entirely.
28. Avoid use of beef tea, bouillon, chicken, oyster and other animal broths. They have practically no food value but consist almost exclusively of extractives or tissue wastes. The composition of bouillon is practically the same as that of urine. One is an extract of flesh made by the kidneys, the other by the cook. The most eminent French and English physicians condemn the use of animal broths as did the late famous Dr. Austin Flint, Sr. of New York. Good extracts of brewers' yeast (Savita, Cenovis) supply a similar and better flavor together with the highly important vitamins (A and G), of which it is the richest source.

29. Avoid irregularity of meals. Food should be taken at regular intervals to insure regular evacuations of residues. It is especially harmful to take meals too near together, thus introducing food into the stomach before the previous meal has passed out. It is desirable that the meals should be so spaced that the stomach may be completely emptied for at least a half hour before a new meal is taken.

30. Eat when hungry; never eat simply because it is mealtime or because invited to eat. When appetite is lacking, eat fruit and bulkage, avoiding much protein and fats. Remember that food must be well relished to be well digested. According to Pavlov, "appetite juice," which is produced by stimulation of the nerves of taste by palatable food, is the most important factor in gastric digestion.

If the tongue is coated, clear the bowels daily by enema or irrigation and change the flora (See Appendix).

31. Eat at regular hours to help maintain the normal intestinal rhythm of three daily movements of the bowels. Rather than omit a meal entirely eat some fruit, or a cake of Laxa with fruit juice, or some other simple nutrient which will keep up the peristaltic procession and rhythm. Never take food into the stomach when it contains the undigested remains of a previous meal.

32. A good plan, especially for sedentary persons, is to eat twice a day, 8:00 A. M. and 1:00 to 3:00 P. M.; or at 11:00 A. M. and 5:00 P. M. if the retiring hour is necessarily late. When breakfast is omitted or taken very late, it is an excellent plan to take some fruit soon after rising.

33. If you eat three meals a day, take the heartiest meal at noon. The breakfast should be substantial, the evening meal very light, especially avoiding pastry, fats, rich sauces, and hearty foods. If troubled

with insomnia, make the last meal consist chiefly of ripe or cooked fruits, liquid foods, and such cereals as boiled rice or cereal flakes. Avoid pastry. Do not eat hurriedly nor just before retiring. A ten minutes' nap after dinner is not objectionable, but long sleeping after meals is harmful. Elderly persons should rest an hour after meals.

Eating a little fresh fruit half an hour before retiring encourages bowel action.

34. Dismiss worries and annoyances while eating. Good cheer promotes good digestion. Anger, worry, and irritation stop digestion.

#### Water-Drinking-Beverages

35. Take three or four pints of water a day, including liquid food. Take a few sips whenever thirsty. It is a good plan to drink a glassful of water on rising in the morning, on retiring at night, an hour before each meal, and each time the bladder is emptied.

36. Sip cold water at meals if you wish. The chief object in drinking at meals is to refresh the sense of taste. Cold increases nerve sensibility. It is for this reason that cold drinks are preferred. Small sips of cold or even iced water refresh the mouth and do no harm. Drinking much cold water at meals hinders digestion.

#### Exercise

37. Do some good, hard muscular work every day, enough to produce slight muscular fatigue and free perspiration, but avoid exhaustion. Walking, housework, gardening, farm work, ordinary laborer's occupations are excellent forms of exercise. In walking, always hold the chest high and carry it well to the front. Swing the arms moderately and walk fast enough to hasten the breathing a little. Nine miles walking a day at the rate of three miles an hour is the necessary amount for the average adult. Most housekeepers and laborers do more. Rapid walking and hill climbing are excellent for young and middle aged persons; stair climbing

is good.

Working in the open air is one of the best forms of exercise, especially working in the garden, digging, hoeing, pruning, etc.

For persons advanced in years, walking, horseback riding and bicycle riding are excellent exercises, practiced in moderation.

38. Develop the abdominal muscles by some simple exercises, such as walking on tiptoe with the chest held high, or running round the room "on all fours"; or lying on the back, hold the legs straight and raise them to the perpendicular, repeating thirty to forty times three times a day. Then raise the body from the lying to the sitting position with the hands placed upon the back of the neck. Repeat ten to twenty times three times a day, gradually increasing the work from day to day.

The Health Ladder (phonograph records) is a good health trainer for daily practice.

39. Practice deep breathing with the chest well expanded and clothing removed or loosened, several times a day. Hold the chest high and breathe as deep as you can ten or twenty times every hour or oftener to develop the lungs and to keep the chest walls flexible. Stimulate the lungs by exercise for a few minutes several times a day with sufficient vigor to cause quickened respiration. The best "breath" gymnastics are swimming, hill or stair climbing and running or rapid walking. Always breathe through the nose.

#### Posture

40. Always sit erect, with chest held high and the small of the back supported. Sit as little as possible. Standing and lying are more natural and healthful positions than sitting.

When standing, hold the body erect, the hips well back, the chest forward, the chin drawn in.

In sitting, do not slump, but keep the chest up. This requires an effort which becomes tiresome if long continued, unless proper support is given to the lumbar spine or so-called hollow of the back. To keep the shoulders from dropping forward and flattening the chest, support should also be given to the upper spine between the shoulder blades.

A chair constructed so as to support the lower back and the upper spine will hold the body in perfect position when completely relaxed as is necessary for complete rest. Such chairs are now available.

#### Rest and Sleep

41. Learn to relax both mentally and physically. Merely stopping work does not secure rest if "tension" continues. This is especially true of vocations which do not involve much muscular effort. It is a good plan to lie down and relax completely with the eyes closed in a cool, darkened quiet place for half an hour in the middle of the day. Very arduous occupations require a short rest at more frequent intervals. Practice deep breathing while resting and not asleep.

42. Avoid long periods of strain, mental, nervous or physical, and especially avoid overstrain. The effect is likely to appear later in premature mental or nervous breakdown.

43. Make the weekly <sup>rest day</sup> sabbath a day of complete rest from work. Spend most of the day out of doors if possible. Take a half day off for an outing in the middle of the week.

44. Sleep 8 hours each night. Elderly persons need 9 or 10 hours or even more. One who is not strong or is neurasthenic should rest or sleep an hour before dinner. An hour's rest in the horizontal position is very refreshing, even without sleep.

Growth, assimilation and repair are most active during sleep. The nerve and brain storage batteries are recharged during sleep.



Surroundings at night should be quiet. Sleep amid noises is not refreshing as it should be.

The best position during sleep is lying on one side, preferably the left, unless a meal has been eaten within two or three hours. A cushion and sand bag at the back, another in front against the abdomen and a cushion between the knees aid relaxation and hence promote sleep.

The bed should be neither too hard nor too soft. Avoid feathers. The covers should be dry, warm, light and porous. Avoid overheating by excess of clothing. Use a thin pillow and discard bolsters. A sand bag at the back aids relaxation.

Provide an abundant supply of outdoor air during sleep by means of wide open windows, a window tent, a fresh-air tube or a sleeping balcony.

To insure sound sleep at night empty the colon at bedtime (by enema if necessary) and avoid late and heavy meals. A fruit supper is conducive to sleep.

#### Clothing

45. Avoid too much clothing. Over-heating is depressing. Dress according to the temperature and weather, regardless of the season, and do not slavishly follow the fashions. Dress for health and comfort.

The clothing should be loose, comfortable, light and porous. Restrictive clothing is necessarily damaging. The trunk of the body when in action is continually changing in form and size. Wear porous cotton underclothing next the skin. Avoid waterproofs except for temporary protection. Clothe the extremities so as to keep them always warm and dry.

46. Use care in selecting footwear. Avoid shoes with high heels

or narrow toes. Wear shoes with broad soles, low heels and a stiff shank. Flexible shanks cause flat feet. If the feet ache from long standing or walking, have them examined by a good foot specialist.

Great harm may result from neglect. Sandals are most healthful. If you have flat feet, wear Chinese slippers at home. Have your shoes properly adapted to your feet by a dependable specialist.

47. Cleanse the mouth and teeth thoroughly before and after each meal, on rising and on retiring. A foul tongue and decaying teeth indicate mouth infection and intestinal autointoxication and general low resistance. Diseased teeth often cause rheumatism, neuritis or heart disease.

48. Bathe daily at night in warm weather. Twice a week in winter take a warm, cleansing bath before retiring. If the skin is dry and irritated, apply <sup>ointment.</sup> Lanolin Cream, of which the following is the formula:

|               |         |
|---------------|---------|
| Lanolin       | 2 drams |
| Boreglyceride | 1 dram  |
| Cold cream    | 6 drams |

49. Keep clean. Always avoid so far as possible any contact with infectious material. It is to be remembered that the risk of contamination is especially great in visiting a public water-closet, or, in fact, any toilet or lavatory.

50. Take a cool or cold bath on rising to set the vital machinery in motion. Young and robust persons may take a plunge in a bath tub or swimming pool. Elderly and feeble persons may rub the body with the hand dipped in cold water in a warm room or with a dry towel in a cool room.

51. For the hands, use a good soap and rinse well with soft water. If rough, apply Lanolin Cream (See above).

52. Cleanse the anal region after bowel movements by washing.

This is the universal practice in India. If hemorrhoids are present,

cleanse well and then apply carbolated vaseline as an antiseptic after every bowel movement.

#### Colon Hygiene

53. Move the bowels at least three times a day.-- after each meal. Visit the toilet regularly after eating, on rising, and before retiring at night. Do not wait for a "call."

54. When a "call" is experienced, respond immediately. Five minutes' delay may postpone action indefinitely.

In moving the bowels, use a low toilet seat or support the feet on a stool before the seat, and after the bowels have moved, observe the results. The stools should be ample, soft, never hard or lumpy and should have little or no odor, and there should be no mucus present.

Putrid, foul-smelling stools are an indication of intestinal auto-intoxication, and are due to an excess of protein (meat or eggs) or of decay due to stasis or stagnation in some part of the colon.

Such a condition always breeds disease and indicates need for a "change of flora" (See Appendix).

55. Once or twice a week test the intestinal "motility" by taking at breakfast one or two five grain capsules of carmine. Note the time required for the red color to disappear from the stools. More than 24 hours indicates delay and resulting putrefaction of residues and need to "change the flora" and increase bowel activity. (See Appendix).

56. Never go to bed with a loaded colon. If necessary, empty the colon by a succession of enemas. If carmine has been taken at breakfast, repeat the bedtime enema until the red color is practically absent when the water returns. (See Appendix, "How to Take an Enema.")

*Important to Avoid*

The Health Aristocracy Taboos

57. <sup>every</sup> Alcohol in all forms. It is not a stimulant, but a narcotic. It is not a food. It is not a remedy for any disease. It hinders digestion, weakens the heart, lessens strength and endurance, dulls the brain perverts the judgment, <sup>and</sup> blunts all fine sensibilities, is an enemy of health, intelligence and morals and of all human welfare interests and progress. It is public enemy No. 1.

58. <sup>Avoid</sup> Tobacco. This baneful drug is used, aside from smoking, for nothing else but to kill things. It is an excellent insecticide. The farmer, the horticulturist, and the market gardener could hardly get along without it. But for man, it is a heart poison, a nerve poison, a muscle poison. It raises blood pressure, shortens life, and is a leading string to vice. Said Tolstoy, "I never had a twinge of conscience after the third whiff." Do not permit yourself to be fooled by the "moderation" delusion. There may be excess and moderation in the use of food and other wholesome things, but use of a poison in any quantity is excess. Beware of "denicotinized" cigars. They all contain nicotine in harmful quantities. The smoking mothers of infants poison their offspring.

59. <sup>Do not drink</sup> tea, coffee, cocoa and mate. All these <sup>drinks are of a poisonous</sup> ~~drugs~~ contain poisons which raise the blood pressure, cause insomnia, indigestion, trembling, and nervousness, lessen endurance and hasten senility, <sup>wrinkles and</sup> ~~and wrinkles~~.

Roasted cereal coffees are not wholly free from objectionable qualities. Decaffeinated coffee contains much less caffeine than ordinary coffee, but is open to other objections. Cereal coffee if prepared without roasting, may be used in place of coffee, but it is better to overcome the taste for coffee and to take in place of it such wholesome substitutes as hot fruit juices or vegetable bouillon prepared from yeast

*stet*

*stet*

*stet*

*stet*

*nature*

extract (Savita) and fragrant herbs such as the delicious Kaffir tea from South Africa. *stet*

*Avoid*  
60. Nostrums and Patent Medicines. The habitual use of any drug is harmful. Very few drugs have any real curative value. The essential thing is right habits, biologic living, removal of causes.

*Avoid Especially*  
61. Sleep-Producing Drugs, "tonics" and so-called nerve stimulants. They are all nerve-foolers. "Tonics" do not increase strength, but lessen it. Hypnotic drugs do not cure insomnia, but tend to aggravate the disease and make it more chronic. All sleep-producing drugs are depressing agents. Use only when prescribed by a wise physician.

*Avoid*  
62. Pain-Relieving Drugs unless prescribed by a physician. Most pains can be wholly relieved or very greatly mitigated by harmless means. One of the best is applications of heat. The habit of using aspirin and various other drugs for headache and other discomforts is most harmful. The proper thing to do is to seek out the cause of the pain or other symptoms and to remove it.

*Avoid*  
63. The Habitual Use of Laxative Drugs. They cause colitis, appendicitis, duodenitis, indigestion and worse constipation. Use only non-irritating food accessories. Cultivate normal bowel habits by a visit to the toilet after each meal and the use of laxative foods, increasing the quantity of bulkage until the desired effect is produced. If necessary use the enema. It is practically harmless while all laxative drugs are injurious. *stet*

#### Mental Hygiene

64. Do not worry. Think, concentrate, study, but do not worry. Worry wastes energy, stops digestion, causes constipation, colitis, insomnia, and does no good.

65. Concentrate on your problems, study them, do your best to

solve them, pray about them. "Cast thy burden upon the Lord and he shall sustain thee." (Ps. 55:22).

It is just as natural to pray as it is to breathe. There is a scientific basis for faith and prayer. Every creature that has a voice is led by a universal instinct to appeal to its Maker for help when in trouble. If food did not exist, there would be no hunger. If there was no water, there would be no thirst. If there were no source of help for a creature in trouble, there would be no universal instinct to appeal for help by a cry of distress. ~~Every creature that has a voice turns to its maker for help when in trouble. It is as natural to pray as to breathe.~~

The Infinite Intelligence that created us remains with us to keep the heart beating and to energize all the vital machinery. Prayer is a means by which available help may be facilitated.

66. At least two or three times every day, concentrate the thoughts upon your personal welfare, physical, mental and moral, on some one of your serious problems. If done in a reverential and appealing attitude of mind, such concentration of the mind is real prayer. Earnest prayer is the most intense concentration. Make a note of the new ideas that come to you when meditating or praying, or after. Especially note the first thoughts on awakening after a refreshing sleep. The subconscious works while we sleep.

#### Helps Toward Biologic Living

The human body is the most intricate, delicately constructed and finely balanced machine in existence. Its scientific care is a fine art. At no place in the world has the subject of physiologic living been so long and so closely studied as at the Battle Creek Sanitarium which in fact for more than half a century has been virtually a research

laboratory in which the quest for health promoting modes of living and helps thereto have been a major objective. More than a million dollars has been expended in this effort. The result has been many new and highly important discoveries, some of which have made the name of Battle Creek known throughout the civilized world, and have made a little town the world center of the breakfast food industry. Not only new foods but a "new cookery"-- new methods of preparing foods for use-- has been created, which provides a bill of fare wholly free from harmful qualities but at the same time even more attractive and satisfying than the unwholesome viands which it displaces.

Methods of treatment and health training have been devised whereby many thousands of persons regarded as hopelessly ill have been restored to health and usefulness and had their lives greatly prolonged.

To the Reader.--If the reader has become convinced of the truth of the teachings of this booklet and desires to earn the rich rewards for physiologic living by following them, he should begin at once a serious study of the subject by the aid of dependable books and other literature and should provide himself with the needful appliances, accessories and other helps whereby he may be enabled to make a successful venture in "high living" of a sort which insures greatly increased efficiency, comfort, real joy of living, and a notable increase in longevity.

The sole purpose of this booklet is to spread information which will aid those who desire to know the truth about right living in their efforts to find the right way and to walk in it, and in so doing successfully combat disease and hold at bay Old Father Time and so attain to the highest degree the joy of living and the maximum life extension.

b

If you will address the Health Extension Department of the Battle Creek Sanitarium, you will receive farther information.

10-11-25

IMPROVED APPARATUS FOR IRRIGATING  
AND FLUSHING THE COLON

The purpose of this invention is to provide a means by which irrigation, or flushing of the colon, may be accomplished more efficiently, safely, and conveniently than is possible by the means in current use.

The almost universal prevalence of constipation in civilized countries and the frequency of resulting crippled conditions of the colon which render necessary the mechanical emptying of the colon by flushing ~~of the colon by flushing~~ with water and treatment by irrigation with hot or cold water, or other liquids, either plain or medicated, has led to the development of various means and methods for facilitating these modes of treating the colon, but none of these devices or methods have proved to be capable of meeting the various indications presented by cases commonly met with and overcoming certain serious inconveniences, even danger and other disadvantages.

The purposes of irrigation and flushing of the colon are

1. To empty or cleanse it.
2. To apply cleansing or soothing solutions or other liquid medicaments or healing agents in liquid form.
3. To train the delinquent or incompetent colon to function in a more normal and efficient manner.

To accomplish these purposes thoroughly and safely, that is, without causing either transient or more definite and lasting injury. ~~For this~~ it is necessary to know constantly



*introduced into the colon*  
the temperature of the liquid introduced into the colon, the amount which has been returned and by <sup>the</sup> difference, the amount retained in the intestine, and <sup>also</sup> the positive or negative pressures to which the intestine is subjected.

The temperature of the liquid administered is by methods in common use, generally more or less <sup>approximately</sup> accurately controlled, and sometimes the pressure is observed; but no convenient method has heretofore existed whereby the amount of liquid retained in the intestine could be constantly and accurately known. While this apparatus offers many unique and useful features which contribute to its convenience and efficiency, and help to make it an instrument of scientific precision and therapeutic potency, <sup>Special</sup> emphasis is laid in our claim for original invention <sup>in</sup> to the means provided for accurately showing the amount of injected fluid retained in the intestine. This is accomplished by weighing both the inflow and the outflow by a <sup>scales</sup> special device adapted to the purpose.

The construction of my device is clearly shown by the accompanying photographs, drawings and detailed description.

(Drawing or photo)

A WORM THAT BORROWS WEAPONS FOR DEFENSE

Many years ago, when cruising in a small schooner on the Gulf of Mexico in the vicinity of Key West, the writer noticed a large number of polyps floating on the water. Such wonderful creatures they were, with their long, iridescent arms and rainbow tinted bodies, that the temptation to seize one as a wave now and then brought a small group within reach, was irresistible. I was well punished for my temerity. In a few moments my hands were swollen and smarting as though stung by nettles. I discovered that the delicate creature that looked so harmless was provided with a formidable means of defense, consisting of a covering of fine, stinging hairs.

There are many creatures of this sort known to biologists, some of which live in fresh water. One of these is known as Hydra. At a recent meeting of the National Academy of Sciences (Science News Letter, November 20), Dr. Kepner of the University of Virginia, and two of his associates, gave a most interesting account of a discovery which reveals some amazing facts wholly new to science in which the Hydra plays a prominent but passive part. The fresh water Hydra lives in ponds and sluggish streams. It has a neighbor enemy, a worm which the scientist call Microstonum, which is very fond of Hydra, not as a friend, however, but as an article of diet, although to tell the truth, it does not seek the Hydra to satisfy hunger but to get possession of the little stinging bayonets which cover its slender arms, and by means of which it paralyzes and captures the defenseless creatures upon which it preys and defends itself against the many enemies which surround it in the densely populated waters where it makes

its home. The Microstomum, though in appearance a defenseless worm, protects itself by secreting, when attacked, a substance which makes it immune against the stinging hairs of the Hydra. This enables it to seize and eat the poor polyp, stinging hairs and all.

Of the three types of **stinging** cells, one sort is useless for defenseless purposes, and these are eaten up and disappear. The other two kinds of cells are picked up by the leucocytes, or white blood corpuscles, and carried to the surface of the worm's body, where they are arranged and fixed in such a way as to serve as a formidable means of defense.

The most surprising thing of all is that this "acquired character," a borrowed armor, obtained by banditry,--assassination and theft, having once been acquired in this savage and surreptitious manner, by a worm that had no gadgets of the sort on its family tree, passes the stolen weapons on to its progeny, and not to its immediate descendants only, but to the third or fourth generation at least.

There is no end to the marvels of the natural world, in which the eye of modern science sees not a blind automatic mechanism at work, but a Creative Intelligence, an Infinite Personality that creates, builds, maintains, repairs and directs in all its infinity of detail the phenomena of living things, both animal and vegetable. Scientists are no longer sceptics. The whole universe of animate and inanimate things eloquently proclaims the wisdom and the beneficence of a personal Director.

A Worm that borrows Weapons for Defense

Many years ago, when cruising in a small schooner, on the Gulf of Mexico, in the vicinity of Key West, the writer noticed a large number of polyps floating on the water. Such wonderful creatures they were, with their long, irridescent arms and rainbow tinted bodies, that the temptation to seize one as a wave now and then brought a small group within reach, was irresistible, and I was well punished for my temerity. In a few moments my hands were <sup>swollen and</sup> smarting as though stung by nettles. I discovered that the delicate creature that looked so <sup>harmless</sup> defenseless was provided with a formidable means of defense, consisting of a covering of fine, stinging hairs.

There are many creatures of this sort known to biologists some of which live in fresh water. One of these is known as the Hydra. <sup>(Science News Letter, Nov. 20)</sup> At a recent meeting of the National Academy of Sciences, Dr. Kepner of the University of Virginia, and two of his associates, gave a most interesting account of a discovery which reveals some amazing facts wholly new <sup>to</sup> science in which the Hydra plays a <sup>prominent but</sup> passive part. This ~~fresh~~ fresh water <sup>ponds</sup> ponds and sluggish streams. ~~The~~ Hydra has a neighbor enemy, a worm which the scientists call ~~the~~ Microstomum, and which is very fond of ~~the~~ Hydra, not as a friend, however, but as an article of diet, although to tell the truth, it does not seek the Hydra to satisfy hunger but to get possession of the little stinging bayonets which cover its slender arms, <sup>and</sup> by means of which it paralyzes and captures the defenseless creatures upon which it preys and defends itself against the <sup>many</sup> hostile <sup>enemies</sup> creatures which surround it in the densely populated waters

where it makes its home. The Microstomum e, though in appearance a defenseless worm, protects itself by secreting, when attacked, a substance which makes it immune against the stinging hairs and eat of the Hydra. This enables it to seize the poor polyp, stinging hairs and all.

Of the <sup>three</sup> ~~new~~ types of stinging cells, one sort is useless for defenseless purposes, and these are eaten up and disappear. The other two kinds of cells are picked up by the leucocytes, or white blood corpuscles, and carried to the surface of the worm's body, where they are arranged and fixed in such a way as to <sup>serve as</sup> ~~be-~~ ~~come~~ a formidable means of defense.

The most surprising thing of all is that this <sup>a</sup> acquired character, a borrowed armour, obtained by <sup>banditry,</sup> ~~bandit~~ assassination and theft, having been once acquired in this savage and surreptitious manner, by a worm, that has no gadgets of the sort on its family tree, passes the stolen weapons on to its progeny, and not to its immediate descendants only, but to the third or fourth generation. at least.

There is no end to the marvels of the natural world, in which the eye of modern science sees not a blind <sup>automatic</sup> mechanism at work, but ~~an infinite~~ <sup>builds,</sup> Creative Intelligence, an Infinite <sup>in</sup> Personality that creates, ~~builds,~~ maintains, repairs and directs ~~to it with~~

all its infinity of detail the phenomena of living things, both animal and vegetable. *Scientists are no longer sceptics.*

*The whole universe of animate and inanimate things eloquently proclaims the wisdom and the beneficence of a personal Director.*