WE were talking about the causes of weakness in women, and especially the tendency to disease which we find among civilized women. Missionary physicians who have practiced medicine among primitive people and among savage people, have reported an almost entire absence of disease among savage people. There are special diseases due to special customs prevalent among these people, but I will talk about that at another time. But the diseases which civilized women suffer from, are exceedingly uncommon among savage tribes,—such troubles as retroversions, displacements, and even the complications which attend child-birth—such diseases are exceedingly uncommon among savage tribes or among healthy women. The reason of this is, that healthy women are not especially subject to pelvic diseases, any more than they are to any other diseases.

The reason we become sick in any part of the body, is because the body has lost its power to keep well. When any part of the body is sick, all the rest of the body unite to heal it and take care of it; the healthy part of the body heals the sick and enfeebled part. The life is in the blood, so the healing power of the body is in the blood, and if the body is in such a state that the blood is kept well and healthy, and the functions of the body are properly performed, if any part of the body is sick, it will be healed by the blood of the healthy part. It is only when the general health of the body is depreciated that chronic disease of any kind can find a foothold in the body.
The reason why women suffer from pelvic diseases, and other special disorders, is not because she is a woman, but because she is weak—and when we come to investigate the matter more thoroughly, we will find that the real foundation of the disorders of the pelvis, or the pelvic organs, do not arise from any pathological condition which directly concerns the pelvic organs, but from pathological conditions of other parts of the body. And right here we will begin this part of our study: How does the weakness of the civilized woman produce pelvic disease? I think I have already remarked to you that woman possesses about half the strength of a man. The weakness of woman is not in the legs; it is in the internal organs. The muscles of the legs contain about half the strength of the body, the arms, one fourth the strength of the body, and the trunk the balance. The muscles of the legs of women are proportionately stronger than those of the other parts of the body; they constitute a little more than half the strength of the body, in women.

A number of years ago, I made a study of this subject, and wrote a paper upon it, which I will put in your hands. In this paper I have stated the relative strength of the muscles, etc.

The great weakness of women is in the muscles of the trunk, and the reason of this is, that the civilized woman does not engage in employments necessary for the development of the trunk,—for instance, such exercise as chopping, digging, and moving, lifting and carrying weights upon the shoulders—these are all occupations which strengthen the muscles of the trunk. Women don’t have much of this to do. Most of their work is with the legs and arms. The legs of women have about the same amount of work that the legs of a man have, because the principal part of the work of the legs is to sustain the weight of the body. The arms of women, on the other hand, are little used in anyGb@e, because the principal part of the work of the arms is to move the weight of the body. Therefore, the muscles of the arms of women are not as strong as those of the arms of men, and the muscles of the legs of women are not as strong as those of the legs of men. Therefore, the muscles of the body of women are proportionately weaker than those of the body of men.
body and carry it about from place to place. Women are a little heavier, in proportion to their height, than men, consequently the muscles of their legs have a chance for development; but the muscles of the trunk, in women, are weak.

We find that most women have a small waist. This is principally due to lack of development and other causes. This thing (the slim waist) is so common among civilized women, that the idea has become general that women have, naturally, small waists, and that that is an indication of feminine beauty. I think we can scarcely find a woman with a small waist who is not proud of it—and yet it is not an element of beauty at all, but an evidence of weakness. No matter how large the chest is, how broad the shoulders are or how narrow the hips are—if a woman has a small waist, the woman is contented, and proud.

It is remarkable how strong a hold this feeling has upon men as well as upon women. I read a paper upon this question, some years ago before the American Medical Association at Washington, also presenting some charts and outlines if the human figure which I had made. After I had finished reading my paper, the first one who spoke was Dr. Opie, who was Professor in a medical college in Baltimore Medical College. He denounced my paper vigorously, saying that it was an advertising scheme, in bringing those pictures there,—that any naturally body could make pictures—and the idea that women had as large a waist as men, was preposterous. He said, "I have always been an admirer of small waists, for my mother and sisters have small waists, and it is an element of feminine beauty. I was very glad that the next speaker was a woman,—a lady doctor connected with the medical college of the city—and she complimented the paper very highly. Every other speaker, and there was a number of them, were on my side of the question,
and Dr. Opie was "mowed under," upon that occasion, and I was glad to see it. One of the lady doctors, a teacher in the Physiological High School, was very much interested, and asked me to explain the charts and outlines to the girls of the high-school, which I did. So I had a chance to give a talk upon this subject to 1500 young ladies in the Washington High-School. So, I am glad to say, that my views upon this subject were well received there.

I have made a considerable study of this question, and I have found, in taking the measurements of the Venus de Milo, the Venus de Medici and ancient Grecian models which are looked upon universally, as models of art and symmetry, and I found the proportion of the measurement of the waist measurement to that of the height, to be 47.6 percent. I then took this number for a coefficient in the measurement of women. I measured a number of Chinese women in San Francisco, and also a number of women among the Uma Indians, some twelve or thirteen years ago, and found the study of the subject to be very interesting. I found this same proportion among the Chinese women, and the women among the Uma Indians,—the same proportion as that of the Venus de Milo,—the waist measurement being 47.6 percent of the height. I found the same thing to be true among the Nubian women of the Nile,—women as black as a coal, and who had worn no clothing until they came in contact with civilization. It is very interesting to note that we find the same coefficient in these women as in the women of ancient times—two or three thousand years ago—ancient models—we find the same coefficient in the women of to-day who have had the same chance for development as had the women of ancient times.

I also made a study of the Apollo Belvidere, and some six or

seven other interesting models of men.
seven other models of men, and I found the waist-measurement to be 45 and a fraction percent of the height, and I was surprised at that, for I didn't know it until I found it out by actual observation. When I had measured a large number of men, and I found it to be true that when men and women are reared in a natural state, the men have smaller waists, in proportion to their height, than women have. At first, that seemed so be preposterous, still I ventured to speak of it. But later, I got hold of some very interesting facts that have been worked out by European anatomists who have made a very careful study of this subject. They have shown that the viscera of women are larger, in proportion to the weight of the whole body, than those of men. The average woman has, in proportion to her weight, a larger liver (more than 25% larger), a larger stomach, larger pancreas, larger spleen, larger kidneys, larger colon, and longer small intestines, than has the average man. The volume of the weight of the internal organs of a woman is greater than the weight of those of a man.

The question would arise, "Why should this be so, in proportion to the height?" And you will see an immediate answer to the question, will be, that, in proportion to the height, the legs of women are shorter than those of men. In walking, women take a shorter stride than men, because their legs are shorter. So the sitting height of women is greater, in proportion to their height than men. Women have longer and larger bodies than men, and consequently their viscera are larger in proportion to their general weight and height.

Why does the average woman have a larger stomach than the average man? Why does the average woman have a larger stomach than the average man? Because the stomach of the woman must sometimes do digestive work for two. During the period of pregnancy, there is a new being to be thought of, and this new being must be fed, and the nutriti-
ment is absorbed from the blood. The woman, during pregnancy, must digest for two, so the organs must do double work. The placental blood contains the waste substance of the foetus, and this is all carried into the mother’s blood, and carried out by the liver and kidneys. So the viscera of women must be larger than those of men.

The large and vital viscera are located in the upper part of the trunk, just underneath the diaphragm and behind the waist. We sometimes talk about the “waist-line,” in women; but there is no natural waist-line in women. Men have no waist-line, neither have women—unless it is manufactured. The natural figure presents no waist-line. A waist-line can be easily made at the center of the body by constant pressure there, because that is the most flexible part of the body. You cannot make a waist-line above the waist, because of the bony cage in that vicinity. Seven of the ribs are attached to the breast bone, and five are attached to cartilages, or “floating,” so that the lower half of the chest is flexible. That is for the purpose of allowing for expansion. (Explaining by diagram.) Here the diaphragm is attached. Here there must be an opportunity for great change in order for the admission of air. The head rests on the top of the chest, and here is the rigid breast-bone, which cannot be moved much. Here is the heart, located at the upper part of the chest, but the heart does not move much, consequently the upper part of the chest is not very movable. The lower part of the chest, which is farther removed from the chest heart, may have great mobility without inconvenience of any kind. This allows the largest degree of latitude in breathing. This makes it possible for the waist to be compressed at this point. (Diagram.) Here are these organs right together—here are these large organs, and the pressure comes right here. These or-
gans cannot rise into the chest, for the chest cannot increase in size, so they must go down.

So it is generally claimed that women must have a small waist, --if it is not small naturally, it must be made small artificially. And this notion leads women to the practice of waist-constriction, a practice which is productive of a large portion of the evils which women suffer from in civilized life.

But all these evils must not be charged to the use of the corset altogether. The corset is the least of the evil ways in which women suffer from waist-constriction. It is not the corset which does the most serious damage, for the corsets worn nowadays make a pretty equable pressure upon the abdomen, the waist and the whole trunk which is compressed by the corset, hence the displacing effect of corset-constriction is not nearly so great as the displacing effect of the belt--the belts of skirts, or the belts worn about the waist--the leather belt which has come to be so generally used by women. You will see that almost every woman wears a belt, and I have been astonished to find how many women--good women, too--are really guilty of the very serious crime of waist-constriction without being conscious of it. I even convicted Dr. Lindsay of waist-constriction, one time, and it embarrassed her very much, when she found it out. She wasn't able to expand her waist a quarter of an inch, by reason of the belt that she wore. The pneumograph showed that she was not breathing much with the lower part of the chest. The greatest evil in waist compression comes from constricting bands--skirt-bands and belts, and not from corsets. The corset is bad enough, but a woman will say, "I don't wear a corset." But such women have done something worse; they
have brought to bear the pressure of little bands. If the pressure had been made by a wider band, less damage would have been done. Some women will say, "I never wore anything tight in my life," and she will lift her skirt and say, "Don't you see how loose it is?" Sure enough it is loose then, but the skirt and band that has been relaxed fall back until they find a place of rest, and then they are tight; otherwise they would fall off the body. The only reason they don't fall off is, because they are tight, and the body is wedge-shaped, so that the band cannot drop off, but they keep dropping till they find a place where they are tight; and they are pulled down by skirts or heavy garments until the bands are tight. These narrow bands do more harm than the corset, for the reason that they seize upon the contents of the abdomen and gradually drag them down. You will find such women shaped very much like this (Diagram.) I am going to show you some such people as this, so you will see that this diagram is no exaggeration. This is a common type of women about forty years of age; you can hardly find a woman of that age to have not some such shape as this. It is only the women of this age who have been trained in correct sitting and standing, and how to assume a correct attitude, and whose poise has been properly developed—these are almost the only women and even thirty, who are about the age of forty, who do not have this shape. I have often seen worse shapes than this. Now the corset does not produce such a bad shape; the shape produced by the corset is like the corset itself. But the thing that surprises me, i.e., that the women who wear the modern corset find any place for their dress, because the whole abdomen as well as waist is compressed. But the woman who does not wear a corset, and wears skirts and a band looks like this (Diagram.)
Here is a constricting band; the heavy skirts keep up a dragging-down process, and there is a gradual working down and constriction here,—and the heavier the skirts, the more active this process, and the weaker the muscles, the more rapidly this process takes place.

Q. Is a constriction just above the hips injurious?

A. It is not likely to be injurious,—and there is often an advantage in it. When I was among the Mexican women, I was surprised that I didn't find prolapsed stomachs. They often wear their clothing quite tight, and I was much surprised that among women wearing no corsets and nothing suspended from the shoulders,—among these women, after careful examination and study, I could find no prolapsed stomachs, no movable kidneys. Such troubles are extremely uncommon among Mexican women, notwithstanding their constriction and hard work. I found that their constriction was below the saggy organs, so that the viscera, when compressed, had an opportunity to slip up into position and to remain in place. So there is no opportunity for injury from constriction at this point. Gymnasts often apply a belt at this point, but no woman would care to have her waist-line located here. (A lady: "That is the style.") I have not been keeping up with the fashions, and and I was not aware that that was the case. Some years ago, I was in Paris, and I was looking about for a pair of French-heeled shoes; I thought they would be very common there, but I couldn't find them in any shoe-shop in Paris—I couldn't find a pair of shoes with French heels in the shoe-shops. I finally asked one shoemaker if they didn't make such shoes. "Oh, yes!" said he, "we make them for theatrical people. The common people don't wear them; even fashionable people don't wear them." I found it would cost me $3.9 to get a pair of such shoes in Paris, so I thought I would wait till I got back to New
York, where I could get "high-heeled French shoes" for $2.

How ridiculous is this matter of following the fashions? If people only knew what these changes of fashions are gotten up for,--they are gotten up by manufacturers, in order to compel people to buy clothing. They used to change the fashion once a year; then they had the Spring fashions, and the Winter fashions, etc.,--and now I think they change them once a month--every time the moon changes, the fashion changes.
Gynealogy, Con, Oct. 2, 1902.

Human figure.

J.H. Kellogg, M.D.

--- X ---

Take a good, sharp look at this chart—it is an exact copy of a chart prepared by Ziemsen the great anatomist. The tissues between the ribs are cut away, so as to show the different viscera in place, and their relation to each other. Here is the liver, rising up to the sixth rib. And here is the upper line of the stomach, which comes up almost to the fourth rib, etc. (Explaining chart and locating organs.) Not one of these organs naturally falls below the lower border of the ribs.......

One does not, at first, appreciate what a terrible thing is the wearing of tight clothing or constricting bands. It seems to me that any woman who really understands this, could easily be persuaded that the least bit of constriction about the waist is a crime against nature, and a crime against God.

(Chart.) Here is a figure which represents the shape that the body must necessarily assume when the dress that is ordinarily worn by women is applied to the waist body. By the ordinary dress, the internal viscera must assume this shape; it is impossible for any other result to follow. This is not an extreme representation of constriction; it shows the ordinary "comfortable" dress. You hardly ever find a woman who will admit that she wears anything "tight" that she uses cosmetics or dyes her hair, or waxes with peroxide, etc. And men don’t like to admit the things that they ought to admit.

But the point that I want to emphasize, is the fact that a very moderate degree of constriction of the waist will produce a displacement of the viscera of the upper abdomen. Now suppose the cloth-
ing is made just the size of the body. I think a woman would feel that she was a fanatic in the matter of hygienic reform, if she should have her dresses made just the size of her body. There must be allowance made for extraordinary expansion. After breakfast, the body is larger than it was before breakfast, and after dinner, it is larger still. And there is sometimes a little distension, fermentation and distension of the stomach and bowels with gas, so that the trunk necessarily enlarges, so that if a person wishes to hurry or make a little extra effort, there must be extra breathing, and, with a little more air held in the lungs, is taken into the lungs the waist must expand.

So there should be two or three inches allowed for expansion. This seems to be reasonable and sufficient, but if you ask that woman to take a deep breath, she will not do so—if she can, but it would be very difficult for her to do so. Every dress should be made actually larger than the woman herself. Even health-reform dress—dress-reform women—can be easily convicted of tight lacing. I should be almost afraid to ask this class, even, who are all supposed to be very far advanced dress reformers—past mistresses (or mistresses) of dress—reform—I should feel afraid to ask them to submit to a test of waist-expansion, to see how much they could expand their waist; but I will only ask them to investigate the matter, and ascertain how much room there is for waist expansion in the ordinary dress. Women accustomed to wearing the ordinary dress are unconscious of pressure—even of a ring. If you examine a person who has worn a ring for a number of years, you may see that there is a furrow under the ring, and yet there has been no pressure, and yet there is a furrow there. What is the cause of the furrow? Simply the weight of the ring, which has been sufficient to cause an atrophy of the tissues underneath the ring. Nature
absorbs tissue wherever there is pressure. The very hardest tissues of the body can be made to absorb by continual pressure. You can even, by the constriction of a rubber band around a tumor, cut it off. The pressure of a rubber band upon my finger, if made there continually, would cut it down deep into the flesh. One sees the influence of pressure in typhoid fever cases, and sometimes in fever scroes. Some time ago, I had a patient brought into the Surgical Ward. The patient complained of pain; and had a fracture. I had the patient withdrawn and made an examination. I found the patient lying in bed, and the pressure of the weight of the limb on the heel, where it had rested, had caused the tissues to die, so that there was a deep slough clear down to the bone of the heel—just simply the weight of the limb resting upon the flesh. So you see that a very moderate degree of pressure is enough to cause atrophy of the tissues, and you can hardly find a civilized woman with the ordinary amount of adipose tissue upon the surface who does not show an absence of fat about the waste; at the point where the waist band comes, the fat is almost entirely absent. There is fat above and below that point, but there is a waist-furrow there, which you find in almost every civilized woman.

It is not simply the fat that is influenced by this pressure at the waist, but also the muscles underneath. All the muscles and tissues which fall underneath the pressure are influenced by it. The circulation is interfered with. The pressure disturbs nutrition, and there is necessarily a weakening of the waist. The majority of women who have worn the ordinary tight clothing, when they are induced to adopt loose clothing, at once complain that they suffer from lack of support, and feel as though they were going to fall to pieces.
They will say, "I can't get along without some kind of support; I feel as though I was falling to pieces; I can't sit up straight; I am tired; I can do nothing." This is an evidence of the great weakness which the muscles have acquired as the result of motion or activity, and continued pressure upon them. We might illustrate this by a simple experiment: Let each one grasp the forearm firmly, and try to shut the fingers and try to shut the fingers,—you see there is a constriction, and the fingers don't close easily. Now constricting bands about the waist produce exactly the same effect, for, by this constriction, there is produced a loss of power of the muscles,—a loss of freedom of movement which is necessarily followed by degeneration.

So the ordinary dress,—the conventional dress,—the fashionable dress but the ordinary dress worn by civilized women,—must be to a great degree productive of disease by producing weakness of the abdominal muscles, and, as a result, the falling down of the viscera of the upper part of the abdominal cavity. Now if the liver, stomach and other organs in the upper part of the abdominal cavity fall down, what must be the effect upon the organs below them? It must be, to push them further down. Now remember that the pelvic cavity is not a cavity by itself. There is no division between the abdominal cavity and the pelvic cavity; they are one cavity. The thoracic cavity is divided from the abdominal cavity by the diaphragm. The diaphragm is a flexible partition, so that really there is but one cavity of the trunk; the diaphragm is simply a curtain, so that there is but one cavity. Now, when the chest cavity is filled with air, the diaphragm comes down, and all the viscera is pushed down. So there is a continual movement of these organs, as the diaphragm moves up and down. This movement is normal and physiological, and healthful, for
Each downward movement of the diaphragm results in the compression of the bloodvessels of the abdominal cavity, every downward movement of the diaphragm compresses the bloodvessels of the whole abdominal cavity, every organ within the abdominal cavity is squeezed by this movement of the diaphragm. When the abdominal muscles have the proper tension, then the downward pressure of the diaphragm compresses the viscera against the abdominal muscles; the viscera are continually undergoing alternate compression through the intersection of the diaphragm and the muscles—abdominal muscles. The tone of the abdominal muscles keeps them tense then they are in a normal state; then, as the diaphragm comes down when we take a deep breath, it swells up, and there is an opening when we breathe, and we draw the air in, the same thing happens as if you blew into a rubber bag and filled it with air and it expands, because the cavity and the trunk are really all one, and when we take the air into it, the contents are greater than they were before, so it must swell out and there is an expansion—the whole trunk expands; it is as if you had a rubber bag and blew into it—the whole rubber bag expands. So, when you take air into the lungs, you are increasing the contents of this flexible, extensible sack which we call the abdominal cavity, and there is a dilatation. In this manner the contents of the chest are rarified because as the diaphragm moves down the chest moves out so there is this rarefaction of air within the chest, for the atmospheric air rushes in, restoring the equilibrium, and that is done, the inward movement ceases. Below the diaphragm there is compression—the bloodvessels and all the organs below the diaphragm are brought under pressure between the abdominal muscles and the diaphragm; the abdominal muscles are tense, and the diaphragm crowds the organs down against the abdominal muscles.
It is like the squeezing of a sponge. (Illustrating.) The organs are compressed by the downward movement of the diaphragm. The more vigorous the diaphragm is forced downward, the more finely the organs are compressed, and the more perfectly the blood is squeezed out. Where does the blood go? (Illustrating by diagram.) Here is the liver. Here is the portal vein, which comes from the stomach and other organs. The blood comes from the stomach, enters the portal vein, is carried by the portal vein to the liver, and from the liver it is carried by the hepatic vein to the ascending vena cava, and then to the heart. Now when the diaphragm descends, it compresses the liver; the blood cannot go back, so it goes on, and is forced into the chest cavity. As the diaphragm descends, there will be rarefaction by the air, and dilatation. There is diminution of the pressure here (referring to diaphragm.) As it (the diaphragm) descends, it increases the pressure in the abdominal cavity, or compresses the organs, and that has a tendency to force it up. So here is a diminished pressure, and here is an increased pressure; here it is plus, and here it is minus. So here are two things acting in harmony—a suction (if there is such a thing) and a compression—here is a compressing action. It is important to have these things clearly in mind, because they will come into daily use in dealing with gynecological cases; you cannot possibly overestimate the importance of this principle.

Now the influence of the ordinary dress is to weaken these muscles. The muscles of respiration are weakened so that the chest cannot expanded so fully as it ought to be. And as these muscles are weakened, the action of the diaphragm is weakened, too. Suppose I have paralysis of the flexor muscles,—what will be the effect upon the extensors? (They will be come weak.) Yes. Wherever we have a set of
muscles weakened, the antagonizing muscles become weak. If these
cut muscles become weak, the action of the diaphragm must also become weak;
and if this is the case, the respiratory movement will be weakened, be-
cause the excursion will be smaller, for the diaphragm has but little
contract resistance—-it does not come down so forcibly as it did if the ab-
dominal muscles become weak, what is the effect upon the diaphragm?
(It does not ascend so high.) When the muscles are so weak that they
don't contract as they should, the diaphragm does not ascend so high
so the lungs would not be completely emptied, because the downward
movement would not be so great as they should be. So that, under these
conditions, the excursions of the diaphragm would be small, instead
of large. This, naturally leads to what kind of respiration? ("Shal-
low respiration.") So we find this kind of respiration in most
women continually,--shallow respiration, or superficial respiration,--
what is the proof of that? ("The respiratory movement is in the up-
per part of the chest.") This movement in the upper part of the
chest requires a bending of the sternum, and of the ribs that have
short cartilage, and it is impossible for the excursion to be large,--and
it must be large in order to admit of proper breathing. Many women
should breathe in this way (Illustrating.) But there is no movement in
the lower abdomen, because the ribs are so much confined.

But we find another evidence of the result of confining the
waist. Suppose the air becomes a little close and bad in a church,--
and one woman faints away,--is it a little boy or girl? No; it is always
a woman who faints away,--and the woman who wears the tightest cor-
sets faints away first. This is because the breathing is so superficial,
and it is rendered necessarily so by the tight clothing; and that
compresses the waist to such an extent that when there is a ne-
cessity for a little deeper breathing, it is physically impossible, so
the woman in a church or crowded assembly cannot get air enough, and faints away. This occurrence is so common, that it seems extraordinary that we don't attach more importance to it. ("I should think it would have a tendency to induce consumption.") Certainly. One of our choir boys once fainted away in church, but there was not sufficient fresh air. They had introduced a fine stained-glass window, but they had forgotten to introduce sufficient fresh air. The heating of the church had been put in by contract, and it was arranged in a very economical way. There was a register just behind the preacher, and a pipe went from that to the furnace, and from the furnace air was distributed to different parts of the church. So the air that went to the furnace went to the rooms, and came down behind the preacher stood, and the singers stood, went down through the register and went back to the furnace again, and the room was heated again. It was economical, for if you got the air heated once, that was enough,--well the boy fainted away, and that led to a serious investigation. I was at that time a member of the State Board of Health. The citizens were greatly over the occurrence, and the preacher recommended ventilation, for the people were afraid to go to church because a boy had fainted.

So we see what is happening in these days--women are fainting away, and have to have their clothes loosened before they can be brought to. A woman faints and some one whispers "Cut her corset-strings." Did you ever hear of a man fainting away? Sometimes a man faints away from loss of blood, but I have never heard of a man fainting in church because the air was a little too much confined,--and if he did, you would never hear any one say "Flip up the back of his vest and give him a chance to breathe." No one thinks of removing a man's clothing so as to give him a chance to breathe. But every one knows if a woman faints, it is because her clothing is too tight.
Women should take warning from these facts, and not have their clothing made too tight. All women should take warning by these experiences—for instance, if a woman has a kidney displaced because of tight clothing, women should take warning by that fact, and not have their clothing made tight.

(Chart.) This figure does not represent an extreme case. It represents a case of an ordinary woman who has worn an ordinary conventional dress. This woman had worn a "Health-corset;" she had never been addicted to tight lacing, but, under the pressure of the conventional dress her muscles had gradually yielded until displacement had occurred, as you see here. The abdominal muscles become weak because they cannot antagonize the muscles of the diaphragm, the excursion is lessened, and hence the amount of air taken in is much less than it should be; there is abnormal resistance to the air, and it cannot get in without bending the sternum. The muscles have been weakened, so they have but little power, consequently the breathing is superficial. No wonder women have consumption. What is the cause of consumption? It is caused by the lowered resistance of the abdominal cells, or may be lowered by poisonous gases from the lung cavity. When the air of the lungs is not changed as often as it should be, it becomes charged with carbonic acid gas and CO₂ so that the cells become asphyxiated and intoxicated by the poisons, and lose their power to resist the attacks of microbes which march into portions of the lungs not well ventilated—and this leads to consumption.

Another way in which the breathing is seriously interfered with by the ordinary dress, is, in constricting the waist in such a way, that while there is an attempt at expansion of the chest to expand, the movement of the chest being in an abnormal direction, the
effect is, to actually suck air down out of the upper chest, the air not being allowed to come freely into the lungs—the air is actually pumped out of the arteries. This is especially true when the body becomes relaxed, so there cannot be a proper expansion of the ribs.

An exceedingly common thing in women whose lungs have become weak, is to sit in a rocking-chair, and the chest is not sufficiently expanded, etc. But I will speak of this again. Whatever compresses or congests (?) the organs of digestion, or causes stasis must tend to produce disease, because resistance is diminished and vitality is lowered. I have already shown you that the breathing movements of the diaphragm are a means of emptying out the venous blood. Now, if the diaphragm contracts with insufficient force, and the abdominal muscles are so weak that it is impossible for them to maintain tension in the abdominal cavity, the result would be a venous stasis or congestion.

What are the consequences of that condition? One of the consequences is gallstones. You can find gallstones more frequently in women than in men. This arises from congestion, and the diminished resistance of the liver, so that the germs of the intestines travel up the biliary ducts into the liver, and thus, catarrh is formed—a mucous is formed, which obstructs these ducts, and the bladder becomes the subject of catarrh, and that forms the nucleus, for calculi which accumulates in the gall-bladder. Gallstones are four times as frequent in women as in men; this is a well-known fact. Then we have catarrhs of the stomach and intestines, congestions, etc., of the uterus, ovarian tubes, etc., of various organs of the pelvis—these are simply the common lot of all the viscera of the lower half of the trunkal cavity—and congestion in one part will produce a corresponding congestion in...
So here is a predisposing cause of trouble in the abdominal cavity, and one to which it is very necessary to call your attention, and cannot be emphasized too much. When you talk with women on the subject, they will say, "My clothing is loose; I don't lace tight; no sensible woman would lace tightly these days; everybody knows that tight lacing is bad." I will tell you how to test it: Take a tape-line and put it around the waist of a lady and ask her to take a deep breath, and when she takes a deep breath (or rather, tries to do so) and notices how much the waist does not expand. It is very rare indeed that you will find a woman whose waist will expand one half an inch, or whose waist circumference will be increased half an inch when she takes as deep a breath as she can; there will be plenty of expansion at the upper part of the chest, but at the waist there will be but little expansion. Come up here, Mr. . . . and let us see how much you can expand your waist, breathe out—4 1/2 inches. That is normal. You won't find one woman in a thousand who can expand her waist two inches when wearing the ordinary dress. Miss Sage, I will ask you to investigate this question and report to us the average waist expansion of ten young women whom you run across the next day or two, take it just as they are dressed. Don't give them a chance to make special preparations, but measure them just as they are dressed, outside of their ordinary clothing, and report to us what you find.

This is a question that we smile at, and yet it is one of tremendous importance. There are thousands and thousands of women who are invalids simply because they don't dress right, and yet I have met so many of them who claim to have correct ideas upon this subject, and to dress right. I will put into your hands a little pamphlet which I have prepared, entitled, "The Influence of the Conventional Dress."
GYNECOLOGY, Oct 3, 1902.

Pelvic Diseases--Causes of.

J.H. Kellogg, M.D.

--X--

We will speak of the causes of pelvic disease. Perhaps we have said as much as we have time to say about the influence of dress, but certainly this is something we will have to study continually, and struggle against continually. Every woman who comes to us to be treated must be labored with on the question of dress, and I think the proper position for us to take is, not to have anything to do with a case, unless the patient will reform in this respect. Miss ....... What have you found the waist expansion to be, among "reform-women?" ("An inch and a third to an inch and a half.") The average woman makes whatever expansion she does make, at the top of the chest; and whatever effort she makes to expand, is made at the top of the chest. She ceases to make efforts to expand the lower part of the chest, because the movement of breathing is abnormal, and the muscles have been trained to move the upper part of the chest. Every woman must be taught to expand the waist, so that there will be a lifting of the chest involuntarily. Breathing with the upper part of the chest never will expand the waist. There are some good, conscientious women whose best dresses are all made "quite loose enough," and yet, having no room for waist expansion. What is to be done? Here are all these nurses and lady doctors, and lady medical students, I am sorry to say--prospective lady doctors--we are still in the clutches of fashion. They don't date to allow their waists to expand. They have not acquired the right to breathe. The papers say that President Roosevelt's sister has acquired the right to vote in Connecticut, and other women expect to have the right to vote by-and-bye. But a woman has a right to breathe as
freely and as fully as a man, but she does not exercise that right. I don't think women will ever have a right to vote until the exercise their right to breathe. Every woman takes care not to have a big bungling garment about her. I don't mention this to condemn any one, but to show you how unconsciously women are bound and restricted in the matter of breathing, without being aware of the fact that they are restricted. So you have not only got to convince women that the principle is right, but also, of the necessity of change in their own cases, and we have great difficulty in this matter. They will say, "I don't lace tight,"--I don't believe in tight lacing; I would not wear tight clothing for anything." "But your clothes are tight." "Oh, no! Don't you see how loose they are,--how much room there is?" Then they lift their stomachs up into their chests, so you can see "how much room there is." You will have to labor hard with them upon this question, and I want to speak very emphatically upon this point,--that you must labor with every woman you treat, in reference to this matter.

Some years ago, finding we were making no progress in this matter, I prepared some outline charts. And the study of these, have done more to reform women with whom I have labored, than anything that I could say. They could see what ugly figures are produced by the conventional dress, and the publicity which the charts gave to that fact, advertising to the world the fact that every woman who wears the conventional dress has a horrible figure, and these truths seemed to have some influence. So I emphasized, as much as I could, what horrible figures women have, who wear the conventional dress.

Q. It appears from the chart, that the organs are higher in one than in the other, so it seems as though, if the corset were worn, it would push up the stomach when it has been pushed down.
A. It could not do that, for the corset is made tight at this point. When I was among Mexican women, as I have said, I didn't find a case of prolapsed stomach or prolapsed kidneys. The constriction was applied so low that the organs were not dragged down by it.

Q. Could not the organs be displaced upwards by such constriction (at the hips?)

A. No, they could not be displaced upward, because of the bony cage of the chest, which is unyielding.

Let us consider some other causes of pelvic disease. Women suffer disease, as the result of sitting so much. Women are weak and subject to pelvic disease because of the sitting habit, which is exceedingly common among women. Women prefer to sit at their work, if possible, especially in sewing. Women can stand, at their work, if they choose, but it is tiresome to stand, and so women are in the habit of sitting, especially in the rocking-chair, if they can find one. I don't think they prefer the rocking-chair because they wish to lie down in it, but because the rocking-chair is lower than other chairs. Our chairs are most of them made too high, and here we get deformities of the spine—sitting in chairs too high for them—sitting on chairs that are so high that the feet cannot touch the floor. Women generally prefer the floor—safa or a rocking-chair, because it is lower than other chairs. These chairs should be cut down so as to be adapted to each member of the family. Women require lower chairs than men, because their legs are shorter. Still the habit of sitting in the rocking-chair is a bad one. Sitting in a rocking-chair has the effect to relax the muscles of the trunk, and in consequence of this, the chest is carried down. (Illustrating by diagram.) Now let us take the rocking-chair—how much comfort would there be, in this position. (Illustrating.)
You would not be comfortable while sitting up straight. You must relax and lie down in a rocking-chair, in order to be comfortable. So the only way in which you can use the rocking-chair and be comfortable, as to do yourself harm. One should never lie down when sitting up. That is one of my prescriptions. If you are going to lie down, lie down in a horizontal place, but don't lie down in a partially upright position, because when you do that, gravity begins to operate, and the large viscera of the upper part of the abdomen are dragged down. Rocking-chair sitting is unquestionably the cause of pelvic disease. Let us see what happens when we increase the convexity of the posterior line of the body by sitting in this position: We produce a concavity of the anterior line, while the posterior line is convex; there is a concave line in front where there should be a convex line. That necessarily shortens this line, this is the way the chest should come (referring to diagram.) This causes the chest to collapse, and if we allow the chest to collapse, it shortens this space here, consequently there is not room for the organs of the chest, so they are forced down. The diagram should come there, and it takes this shape, and the organs in the upper part of the chest are carried down out of place. That is why we have this bulge below, because the heavy organs are carried down. As the chest drops down, the sternum and the ribs are forced in, and consequently these important organs just under the ribs are brought down, and this is the rocking-chair does. So the rocking-chair is unquestionably a cause of pelvic disease. The rocking-chair is nowhere found except in America—it is a Yankee invention.

Q. How about the hammock?

A. The hammock is not so bad as the rocking-chair, because when lying in the hammock, one is in almost a horizontal position. The
more nearly you approach the horizontal position, the better, for the least injury will result, because gravity will have less advantage in that position than in the other. In the rocking-chair, the body is in pretty nearly the perpendicular position, but in a perfectly relaxed position. So by lying in the hammock, I think the injury is much less than in the rocking-chair, because the position is more nearly horizontal.

I am inclined to think that sitting is an entirely abnormal, as well as evil habit, and that chairs are unnatural, artificial and unwholesome. I usually say to the feeble patient, "Don't sit, when you are tired, lie down." You will be surprised to find how many will be benefited by that advice. I can do more in a horizontal position than in a sitting or standing position.

Q. What are the evils of reading when lying down?
A. I will illustrate: I will try and read this book while lying down, and you watch and notice my hand, and see if it moves while I am reading. (Reading while lying down.) Do you notice any movement? ("Yes.") What is the cause of that? It is my heart-beats. Every time my heart beats a motion is forced into my hand and arm, and it has a tendency to straighten at every heart-beat. So, as you hold up your book, it is being continually thrust away from your eye, so that the eye is being continually kept in the act of accommodation. It is very much like riding on the cars,--the constant jar and movement of the cars keeps the eye continually adjusting itself, and in doing this it gets tired and congested. How can that be obviated? ("Have a stand and rest the book against it."") Yes. My custom is, when I lie down and read, to press my book against some stationary object. This obviates the difficulty of reading while lying down.
Q. When the eyes are turned up, is there not a muscular strain?

A. Yes; but one can obviate that by putting a pillow under the head. Any constraint about the head would affect the eyes more or less. Notice the position of the chest while sitting in the rocking-chair (illustrating.) Notice the effect upon the lower abdomen,—it necessarily protrudes.

Q. Is the savage custom of squatting, heathful?

A. As a rule, the savage reclines,—he does not squat. Sometimes you will see a picture of savages squatting round a fire, but that is unusual; the savage reclines, or lies down. It is so in oriental countries. In Egypt and Turkey, at the present time, do not sit at the table when they take their meals,—but they recline. But I am satisfied that the chair is an unnatural thing. Chairs do not grow; they were not produced ready to sit down upon, when man was created. Of course there are stones upon which we can sit down, but after all, you will find the savage man lying upon the ground when he is tired; that is a common thing. It is a most natural thing, too, when a person is tired, to throw himself upon the ground; I would rather do that when I am tired than to sit in a chair. I would much rather recline than sit down upon a stone or a log. Natural instinct leads one to do the right thing; but natural instinct has become perverted by custom.

Late hours must be mentioned as another cause of pelvic troubles,—the habit of sitting up late; fashionable dissipation and loss of sleep is unquestionably a cause of pelvic disease. You notice a person who has not had proper sleep, and what do you observe; you can tell by the looks of a person that he has not had sleep enough
such is the case. ("He has dull eyes and a pale face.") What is the
cause of the pale face? ("The blood has not been sufficiently oxidiz-
ed.") ("Low blood tension.") I don't know that we should say low
blood tension, exactly necessarily. ("There is a contraction of the
peripheral vessels.") Yes, there is an irritation, and the peripheral
vessels are contracted,--and what is the state of the internal ves-
sels? ("Congestion.") Yes,--anything that produces vesicle congest-
ion is a predisposing cause of pelvic disease.

I might mention, as another predisposing cause of pelvic
disease, carelessness in reference to the condition of the bowels. This
is more common in women than in men. Women have too little exercise;
the abdominal walls become weakened, and the consequence is, the colon
becomes distended with gases to an considerable degree--excessive degree,
so that it loses its natural motility and tone. Its wall become very
much distended. Some years ago, I was called upon to remove a large
ovarian tumor from an elderly lady. Shortly after the operation, she
said to me, "Doctor, I think you have deceived me; I think you only
took the water out of the tumor, and I seem to be just as large as I
was before the operation." Her abdomen was enormously distended. She
had begun to eat oatmeal gruel,--they allowed patients to eat oatmeal
gruel in those days; they didn't know any better than to eat oatmeal
gruel then. She had had fermentations from eating this half-cooked
starch, and her colon had become so distended with gas that the place
which the tumor had occupied, was filled. The colon had been distend-
ed four or five inches,--five or six times its ordinary capacity, the
space where several gallons of water had been, being filled; the entire space which had been occupied by the tumor was filled, this was
due to the fact that the abdominal walls had been stretched by the
steadily increasing tumor, and they did not recover their tone; so that, after the operation, the abdominal cavity was like a loose sack—there was no tension. The abdominal walls were wrinkled and flaccid. But the gases increased until the tension was restored, and the tension outside the bowels was equal to that which was within.

Now when a woman has indigestion and neglects to secure the regular movement of the bowels, the abdominal muscles become weak. Then follows a gradual distension of the colon until by-and-by it loses its normal tone and activity, and then women upon enemas or cathartics to move the bowels, the muscular walls having become attenuated, atrophied and wasted until they have lost their power, and the result is constipation. This condition of constipation is conducive to congestion, because the fecal matters press upon the veins, so that there is a damming back of the blood and consequent congestion of organs, and naturally the organs of the upper part of the abdomen suffer most, consequently the expansion of the chest relieves the congestion of these organs. The hardened masses are largely found in the sigmoid flexure and the lower part of the colon,—and here is where the pressure of these fecal matters upon the veins would have the greatest effect to disturb the circulation. Further than this, the pelvic organs and vessels sometimes entangle the uterus and the ovaries,—they become entangled in the impacted masses of fecal matters, and the straining movements for relief of the bowels force the ovaries and the uterus down. (Explaining by diagram.) The straining movements downward, to relieve the bowels very naturally crowds the uterus down. I have met many cases in which the uterus was crowded down by this means. I have seen many cases in which the uterus was impacted in a mass of fecal matters, and the efforts of the patient to force these fecal matters down, will
necessarily force the uterus further and further down, and thus it will be carried down as far as it can be. I have seen it carried down to this point (referring to diagram) where it turned and made a half-circle and more,--it had moved back and described more than half a circle.

I think women are generally more liable to constipation than men, perhaps because of their excessive use of condiments--they are fond of pickles, pepper, pepper-sauce, mustard and similar articles; they are more addicted to condiments than men are--they love candies and other sweets, which produce catarrh of the bowels, leading to the degeneration of the muscular walls and a weakening of the bowels, so that peristaltic activity is lessened.

Carelessness in reference to menstruation is another cause of pelvic trouble. Women, during this period, allow their feet to get wet, and this has a very detrimental effect upon the circulation of the pelvic viscera. The soles of the feet are closely related to the viscera and its circulation--the vasomotor nerves of the soles of the feet are closely connected with the vessels which control the pelvic organs. The soles of the feet are most richly supplied with vasomotor nerves of all portions of the body. There is no portion of the periphery of the body so richly supplied with vasomotor nerves as the soles of the feet.--that is an anatomical fact, consequently the chilling of these cells has a very pronounced influence upon the whole body. You know how easy it is to get sore throat from chilling the feet. Now, if the throat, which so small in area, and remote from the feet as possible from the soles of the feet, is so easily influenced by a disturbance of the circulation in the soles of the feet, you can readily see that the pelvic viscera is much more liable to injury from this
During the
cause. Now about the menstrual period, women are particularly liable to
injury from wetting their feet. The sudden checking of the menstrual
flow leaves the system liable to disease. How thick is the mucous
membrane a week previous to menstruation? It is about an eighth of
an inch thick. How thick does it become just before the menstrual peri-
od? A quarter of an inch thick. It also becomes wrinkled, because
it is so large, it becomes wrinkled and crumpled, like the skin of an
apple when wilted.

Suppose a woman takes cold just at the menstrual period; while
this evolution is taking place, the bloodvessels become enlarged in this
thickened membrane, the vessels become varicose, and the bloodvessels
become so dilated that they become visible to the naked eye. This takes
place just about the menstrual period, and when that comes, the mu-
cous membrane is softened down and discharged, that is what constitutes
the menstrual period; it is by the softening down, the solution and
the discharge of the mucous membrane by the process of digestion by
the leucocytes—phagocytes. Leucocytes are poured into the mucous mem-
brane in great numbers, leucocytosis occurs and the mucous membrane is
digested, broken down and converted into a fluid substance, which is
discharged from the body along with a large amount of lymph.

Dr. Johnson studied this subject some time ago, and came to
the conclusion that the uterus is a lymph sac; that the lymph outlet is
deficient, and so there must occur, at each menstrual period in women,
this discharge of lymph. I don't know whether that is proved or not; it is
simple theory.

This is what occurs normally, at the menstrual period: The
uterus is enlarged, so as to accommodate this growing membrane. The
menstrual period is really a period of childbirth on a small scale—
the development, the discharge and the return to normal conditions, in
connection with the change produced by menstruation,—just the same as childbirth, only on a small scale. Now suppose a woman takes cold just before, or during the menstrual period, and the menstrual period is not completed (referring to diagram.) Here is this large uterus,—instead of returning to its normal state, it remains enlarged—the process of involution is incomplete, and so it is left in that incomplete state, and the uterus remains enlarged, and at the next menstrual period there is another enlargement. And there are other pathological conditions which take place, until the uterus becomes considerably enlarged; I have seen cases in which it was two or three times as large as it ought to be, because of this menstrual subinvolution. Remember, the uterus has round ligaments attached to it; they run through the inguinal canal and are attached to the pubic bone, externally. When these ligaments—the uterus enlarges, these ligaments enlarge also—just as they do during pregnancy. These ligaments become larger and longer, when the uterus becomes larger,—the uterus and all the tissues connected with the uterus enlarge. So you see, the weight of the uterus has increased, while the natural supports of the uterus have lost, to some degree, their efficiency by being elongated, so that all the structures of the pelvis seem to be relaxed, because they are overgrown—they are longer than necessary. Now the uterus is too heavy, and the structures which hold it in place have lengthened, so that it has fallen. And when this occurs the fundus falls backwards, and the uterus naturally falls back, naturally, and then the small intestines get down in front of it, and the sigmoid flexure slips round in front of it, so the fecal matters which have accumulated in the sigmoid flexure have the effect to force it backward, and by-and-by it gets backward so that the fecal matters have a still greater effect upon it, and the movements of the bowels
continually forces it downward further and further. I am satisfied that the accumulation of fecal matters in the sigmoid flexure, and the straining movements of the bowels have much to do with displacements, especially in connection with cases of this sort.

It is surprising to see what wonderful things are done by this peristaltic movement. I remember a case of a large ovarian tumor that was attached by a little pedicle—there was a great tumor, and the tumor was black, and a portion of it had become gangrenous, and was grown fast to the abdominal wall. What was the cause of this? There was such a minute pedicle—only about as large as my little finger, and the circulation was cut off—I found that the pedicle had been twisted round three times—and how had that been done? ("Peristalsis.") Yes. There was a continued turning round in the same direction—it always turns in the same direction. When you find a tumor like this (referring to diagram) it always turns in the same direction. You remember, we had such a case, and I explained it to you, and you could readily see that this forcing movement of the fecal matters along the alimentary canal is a mechanical force which has power to rotate the whole. A big tumor has the power of forcing the uterus down; if the fecal matters surround the uterus in such a way that they get hold of it, then they can easily force it down out of its position, and this thing unquestionably often occurs. But women are apt to be careless; they have to be taught over and over to take care of themselves during the menstrual period.

But it is not simply setting the feet during the menstrual period that causes this trouble—it is getting cold—getting chilled; chilling the limbs, or any part of the surface of the body, is sufficient to produce an internal congestion. But, in addition to the question
Why is it that the menstrual period ceases when a woman gets her feet wet? Why does it decrease the flow? we have to consider the reflex effect of chilling a reflex surface. By the application of cold to the soles of the feet, what would be the effect upon the periphery of the pelvis? ("Congestion."") ("Constriction."") Here are the feet (illustrating by diagram); here is the spinal cord; here is the uterus and here are the vessels distributing to the interior of the uterus. Here are large trunks running all about; there are small vessels distributing to the interior of the uterus, and from which the hemorrhage occurs. Now when the vessels are made to contract, what is contracted? ("The peripheral vessels.") It is the small vessels where the vaso-motor disturbance occurs. So when the sole of the foot is chilled by the reflex action, the small vessels are made to contract by reflex action—the small vessels of the pelvis contract. There are also small vessels located in the interior of the uterus which contract. It is not the large vessels of the pelvis which contract, it is the small vessels which are made to contract by the chilling.

There are two other things which happen in a case of this kind—reflex action, and fluxion. The effect of taking cold contracts the vessels, so there is less blood in the foot than there should be, and according to the law of fluxion, what should we find? ("More blood in the pelvis.") But at the same time, the periphery of the uterus, by reflex action, is rendered anaemic—there is no outlet for the blood, so it is dammed back. So there are these two things which increase the congestion of the pelvic vessels (Not understood.)

Do any of you know what is likely to happen during the menstrual period when the flow is suddenly interrupted by application of cold to the feet, by application of cold to the uterus, or by the
application of astringents to the uterus—anything which prevents the 
outflow of blood through the uterus will produce—("Hemorrhage of the 
lungs?") That sometimes happens, but we now talking about pelvic con-
gestion. (Decomposition and infection?) In relation to the circula-
tion,—a rupture of the bloodvessels sometimes occurs; sometimes there 
is pelvic haematocoele; sometimes a clot of blood, and even a fatal hem-
orrhage may occur...Pelvic haematocoele occurs because of inflamma-
tion of the surface of the interior mucous membrane—the internal 
periphery, and an inflammation of the external periphery, both occurring at the same time—do you see how these two things co-operate to 
do mischief. The vasomotor effect—the reflex effect first causes a 
constriction and an anemic condition of the lining of the uterus 
through which the outlet of the blood occurs. At the same time, the 
limbs being chilled, the blood is forced into the pelvic vescera by the 
law of fixation. There are two reasons,—While there is no outlet for 
the blood, all the tissues in the body are congested. The body of the 
uterus and the vessels coming into it are full of blood, and the woman 
suffering in this way will have a sense of heaviness in the pelvis, be-
cause of the great quantity of blood, also a feeling that they would 
feel better if they could flow more. She feels anxious about this, 
and the reason is, that she is conscious that if there were an outlet 
for the blood, she would be relieved. In these cases, women often 
go to the doctor for help to flow more, because of pelvic congestion. 
During these periods, women are often careless in reference to the sudden 
cooling of the hips, feet or legs—and a chilling of the arms may be 
sufficient to set up a reflex effect which will cause a constriction of 
the vessels of the mucous membrane of the uterus, while, at the same 
time, the large vessels of the pelvis are distended with blood to an
abnormal degree.

When we make an application of cold to the surface and produce a reflex effect, that effect is not produced upon all the vessels, but upon the small vessels which are distributed to the internal surface. The effect upon the large vessels will be, to increase the blood, while it is the small vessels only, which are interested, to a large extent.

I wish to say here, just a word upon sexual abuses: These are also one cause of pelvic trouble in women. These abuses, perhaps do not prevail to so large an extent among women as among men. I am confident that sexual abuses do not prevail are not so common among women as among men, and that they are not so common among them as has been supposed.

There are other causes of pelvic diseases in women, which we will take up next time, the most important of which are childbirth and abortion, maltreatment and infectious diseases.
Pelvic Diseases—Direct Causes.

J. H. Kellogg, M.D.

---

We have been talking about the predisposing causes of pelvic diseases in women; now let us talk a little while about the direct causes of these diseases. Gynecologists usually put down "Childbirth" as the leading and efficient cause of pelvic diseases,—that this is the most common cause. But I am satisfied that this is a mistake,—that childbirth is not the most common cause of pelvic diseases. I think that some of the "predisposing causes" of pelvic diseases in women should be classified as direct causes, for example, taking cold at the menstrual period, or allowing the bowels to become constipated, so that there is violence done to the pelvic viscera. But, unquestionably, childbirth is one of the most common causes of pelvic disease of the pelvic viscera in women.

How does childbirth produce pelvic disease? If the woman who becomes pregnant were a healthy woman, I cannot believe that childbirth would be the cause of pelvic disease, except under some extraordinary circumstances. The fact is, that during pregnancy, the woman naturally becomes more vigorous and healthy than usual. She gains in flesh, and there is a general feeling of wellbeing. The organic nervous system seems to be particularly active during this period, so that the blood-pressure and circulation is usually strong and vigorous. There is a feeling of life and vigor which is so great, during this period, in some instances, as to transform invalids into strong and healthy women. This well known fact induces some doctors to advise fertile women to marry for the purpose of improving their health, with the idea of improving their physique during pregnancy, and that
there will be an improvement of all the nutritive processes which will result in a general renovation of the system. This is sometimes true. Many a woman who has been feeble, pale and sallow, after childbearing becomes a strong and vigorous woman. I have seen this, in numerous cases, but it is very likely to be the reverse. A feeble woman usually is not equal to childbearing; her system is not able to bear the strain of supporting two lives instead of one; she will break down and become a very feeble neurasthenic woman.

We must notice the dangers of childbirth, from traumaism, etc. If the woman's resistance is low, the laceration of tissues at childbirth opens up a great number of doors for infection. If the resistance is low, the tissues are readily infected. There is almost certain to be some laceration of the cervix—a slight laceration of the external genitals, of the perineum, probably—at least, of the mucous membrane there will be some tear. Of course there is a large tear when the placenta is torn out, by which germs must always be introduced, to a greater or less extent. If the resistance of the tissues is lowered, the result must be, infection. The reason why so many women escape infection from these causes, is, that the natural secretions of the vagina are antiseptic and able to destroy germs. And if germs have so accumulated that the woman has a coated tongue, and the colon is filled with virulent bacilli—if the woman is in this condition, she is very likely to suffer from infection at childbirth, because her system is not able to resist the invading germs, and there is almost certain to be more or less infection. The proximity of the rectum to the vagina, and the presence, in the intestine (separated from the internal tissues only by a thin wall) of virulent organisms, streptococci of various sorts, and the colon bacillus which becomes very
virulent in the presence of active decomposition. This is a constant menace to a woman's health and life,—in fact the healthiest people are constantly menaced by the colon bacillus and other pathological organisms which grow in the colon; and when a person is living upon a low diet principally, there will be fragments of meat left in the colon imperfectly digested and undergoing putrefaction, and which encourage the development of these pathogenic organisms. That is the reason why a vegetarian diet is so much more likely to be followed by a safe parturition, because, if the woman adheres to a vegetarian diet, the resistance is high, and the alimentary canal is in a clean condition, instead of being filled with decomposing flesh, and a system flooded with toxins,—her chance for escaping infection is much greater than is that of the woman whose dietary is composed largely of flesh foods. This is perhaps the principal reason why a pregnant woman who adheres to a non-flesh dietary, has a high resistance. When the resistance of the body is so low that the tongue is coated, then we may judge that the secretions of the mouth and vagina, like those of the mouth, have lost their germicidal power. A coated tongue is not necessarily an indication of indigestion. A great many people say, "Doctor, my stomach is all right,—why is it that I have such a coated tongue?" This coated tongue does not usually indicate indigestion. A foul tongue generally means a foul stomach also, but does not necessarily mean a disordered stomach. When a person has such a low state of the body that his stomach has lost its disinfecting power, and the fluids are no longer antiseptic in character, the mouth is in the same state, and the intestinal mucus is in the same state, and the whole body is in a state of low resistance, and the reason that the fluids of the mouth are not germicidal and antiseptic, is that the products which are received...
from the blood are not aseptic. Antiseptic properties are due to certain substances secreted from the blood, and if the fluids do not contain these substances, it is because they are not in the blood; it is because they have been exhausted by the battle of the body with toxins which have been taken in from decomposing substances in the alimentary canal, from unwholesome food, such as cheese, etc. You all know that when a child is suffering from diphtheria, if you treat the child by antitoxins, there will be a very marked effect produced upon the disease — the child is immunized. It is possible to immunize the system by the introduction of an antitoxin — do you know how much antitoxin is required to render a child immune. Antitoxin is described by units, and runs as high as 2000. This is sometimes repeated twice a day in very urgent cases, and even more often than that. Five hundred units repeated, twice a day, at three or four doses, is supposed to be sufficient to immunize a child — it depends upon the age of the child. I mention this so you will see that a certain amount of antitoxin is required to combat a certain amount of toxin. A certain amount of antitoxin is required to combat a certain amount of toxin. The body is alive while making toxins to combat and destroy germs and toxins. But the body has not power to make an infinite amount of antitoxins; it is only able to produce sufficient antitoxin to destroy a certain amount of toxins, and to antagonize a certain number of germs. Suppose the body is manufacturing sufficient antitoxin only to destroy an ordinary amount of poisons and germs, and the amount of toxins present in the body is more than the ordinary amount, then the amount of antitoxins produced by the body will be insufficient — the resistance of the body will be broken down, and it will be the prey of toxins and germs.
This is the condition of the pregnant woman who is eating meat. We have here, then, an important factor which is operating in the civilized woman to produce disorders during the parturient period, and the wonder is, that any woman escapes.

Now the parturient savage woman escapes under the most extraordinary conditions of infection. Here is a pregnant woman in savage life exposed to infection. Her tribe is traveling, and the Indian woman finds herself about to be confined—she drops out by the wayside in the afternoon, gives birth to a child, rests—takes care of it, wraps it up and rests over night, straps it to a board and takes it on her back and starts out in the morning, and overtakes her tribe by night, and the next day she goes on with the rest. While in Naples, some years ago, I visited the large lying-in establishment there. I found that it was the custom there to send women out on the third day after having given birth to a child. She was made to get up on her feet the next day after the confinement, and on the third day she was sent out of the hospital to go on with her duties. A friend of mine, a sea-captain, once told me in Cuba, that he noticed the washerwomen going every day to a stream which was two or three miles out in the country to wash their clothes. A woman would gather her clothes up into a bundle, put them on her head, take them out in the morning and at night come back with them dry and clean. They dipped their clothes in the stream and rubbed them on a flat stone right at the edge of the stream, the whole lake or river forming the washtub, and the flat stone forming the washboard. The same thing is done in Spain and also in Egypt—you will see the women washing in this manner on the bank of the Nile. He said he noticed one woman with a child astride her shoulder washing her clothes by trampling them with her feet.
They were washing and singing and happy as any one could be. This sea-captain saw a woman go to the river and wash her clothes, and she came home at night with her clothes and a baby on the top of her bundle. I have already told you about the women who make fire-brick in Lye, Eng.

These women suffer but little during confinement or from childbearing; they do not suffer from pernicious fever, from which civilized women suffer. And they don't suffer from the uraeemic convulsions, suffered by civilized women at childbirth. They have no difficulties at these periods, because their tissues and their bodies are resistant. They are exposed to infections from the invasions of certain microorganisms, but the microorganisms don't get a foothold, because they cannot thrive in a healthy body; an organism which is inhospitable to germs, and they are destroyed.

What is the difference between the civilized woman and the uncivilized woman? The uncivilized woman possesses high vitality, while the civilized woman is living on the border-line of disease all the time—she is living close to the yawning chasm of death—just walking by the side of a precipice, and only a little puff of wind is necessary to make her miss her balance and fall over the precipice. Life is only a little flickering flame among civilized people, and it takes only a slight breath to blow it out, while the savage enjoys a more sturdy life—a more vigorous life, so that the perils of childbearing that attend childbearing among civilized women are not natural to savage women. They are unnatural. Childbearing should improve a woman's health, instead of breaking it down; it is not really and legitimately a cause of ill health. It is because of the pervers
conditions under which civilized women live, that childbearing becomes a serious cause of disease.

What are the causes of disease in childbearing among civilized women? I think we should first speak of lacerations, tears, etc. We will begin with one of the most common of all. The pregnant woman finds herself burdened with a new life—a second life which she is not prepared to support; not being strong and vigorous; her own life being poorly supported; her stomach is so weak that it does not support her own body well—her digestion is poor; her food is poor; her habits are sedentary, and her condition has become so impaired—she is not able to furnish her own body with an amount of nutriment necessary to maintain health and vigor. May be the blood-supply, or the haemoglobin will be too low—perhaps 80% instead of a hundred. Perhaps the blood-count will be only four million instead of 4,500,000, so her vitality is at a low ebb. Now she becomes pregnant, and here is an additional burden for which she is not prepared. The whole vitality of the body should be given to the encouragement of the functions of the body to such a degree that there will be an improvement. Many women tell me that their appetite was better, and that they enjoyed better health while pregnant than when under ordinary conditions. We see this in the civilized woman—that there are some peculiar inconveniences attending pregnancy. One of these symptoms is "morning sickness." Morning sickness is due to the stimulation of the sympathetic centers, and is wholesome; it is intended by nature to increase the activity and vigor of the nutritive functions so as to support the additional burden, and prepare the stomach to digest for two, and to prepare the kidneys and liver to do work for two.
But the civilized woman is so nervous and sensitive, and so easily unbalanced that this powerful stimulation from this new function that is developing is something that she is not able to respond to, and she is not able to maintain her equilibrium, and the result of this is the "morning sickness." And there may be vomiting at this period. This may go on until the woman dies of it. I once knew a talented young woman who was pregnant, and who commenced vomiting, and this continued until she died. She was a very fine, plump, fine-looking young woman, but she had a feeble nervous system, and was a neurasthenic. She was married and became pregnant, commenced vomiting and this continued for several months, and she became very much emaciated. She sent for me to come and see her. She lived at Chicago. She was brought to the Sanitarium and we did everything we could for her, but she died, and everything we knew how to do for her in those days, but she died. She vomited everything—even her enemies. If we had had a stomach tube, we might have saved her life, but we did not understand the proper measures to be taken in such cases then. I have known of two or three cases of women who have died of irrepressible vomiting during pregnancy. This is due to the perverse condition of the body—the pathological state of the body—before pregnancy begins, and other weaknesses from which civilized women suffer, as well as from a weak constitution which is common to civilized men as well as to civilized women.

Another peril of childbirth is the weak condition in which the abdominal muscles are left after childbirth. I think we might call it subinvolution of the muscles. When the uterus empties itself of its contents at childbirth—before childbirth, the uterus is large; its weight is two or three times the ordinary weight of the organ, but when it empties itself of its contents, it naturally returns to its proper
size in a very short time. This return to the natural size takes place not because of atrophy, but because of leucocytosis which liquefies the tissues and then these enter into the body—(for when the uterus enlarges during pregnancy, new tissues are formed, which enter the body and become a part of it); and at childbirth—in fact, before the act of childbirth begins—there is a process of solution commenced; the tissues are gradually softened, and finally become liquefied, and are absorbed by the action of the leucocytes which swarm in, to a marvelous extent, just before the childbirth begins. After childbirth is over, this process, within a few days, reduces the uterus largely, in its volume, and within a few weeks it returns to its normal size;—and sometimes below its normal size.

While this change takes place in the uterus, some changes also take place in the ligaments. All these ligaments have been hypertrophied during the period of pregnancy, after which, the same change takes place in them. Now if this process of involution be too long neglected (?), the uterus remains large; the round ligaments remain too long, the uterus sags down, and the vagina remains too large. The walls of the vagina, which have been enlarged and relaxed in preparation for childbirth, remain large, and the perineal muscles become relaxed so that the vaginal orifice remains open, and the anterior pelvic floor is almost obliterated,—there is but little support in the pelvic toneal floor which has been almost obliterated. I am satisfied that the same thing applies to the abdominal muscles as to the peritoneal muscles and the vaginal muscles—a state of what we might call muscular subinvolution. The muscles of the pregnant woman naturally become strong. The pregnant woman can do more work, if she is a normal woman, than under ordinary conditions; her muscular power is greater; she has more energy, and is better able to work. The abdominal muscles
ought to be prepared for the parturient act. The muscles have become stretched, and their tone must be increased, in the normal woman, in order to support this abnormal weight of the abdominal contents. The muscles are elongated very considerably. The pregnant woman is enormously increased in size, as compared with the natural size, especially as regards the circumference of the waist. This results in the elongation of the recti-muscles, and of the abdominal muscles in general, they are elongated, and they must undergo a physiological change. These muscles are relaxed so much that the contents of the abdomen are not supported by them; they are like potatoes in a loose bag—not supported, the abdominal muscles don't contract with vigor—that is the reason of this condition of the viscera.

Experience has shown that the civilized woman needs the binder, every civilized woman needs the binder, because of the abnormal condition of her muscles; she needs the binder just as much as she needs clothes. The conditions of civilization have lessened the condition of the body to take care of itself.

The sitting position involves the weakening of the abdominal muscles, and after childbirth, these muscles of the civilized woman do not readily return to their normal length and tone, but, in the majority of women, remain relaxed—more or less relaxed, especially, in the woman who is freely developed, these muscles are enormously relaxed; they don't seem to return at all to their normal position—condition; they remain elongated and relaxed. So there is a loss of tone, and the intra-abdominal tension of the muscles is gone. The consequence of this is, that the civilized woman, after childbirth, suffers enterophtosis (which she did not have before) the stomach, kidneys and bowels fall down, and the liver may fall down, and the natural consequence is,
that the pelvic organs also fall down. In some of your text-books you will find it stated that women sometimes suffer at childbirth because they are abnormally large,—that they are troubled with an abnormal accumulation of an embryonic fluid—that that is one cause of their difficulties. We ask the woman, in a great many cases of this kind—for instance, a woman who has had one child—I found the abdominal muscles extremely relaxed—I asked her if she was abnormally large during pregnancy. "No," she said she was not. It might be that she was larger than her normal condition, and the distension which occurred was more than her weak muscles were able to bear; the enlargement of the abdominal cavity was too much for her.

It is again said in the text-books that this condition is brought about, sometimes, by bearing too many children. That is strange. One child is too many for an imperfectly developed civilized woman,—a woman who is poorly developed—while a strong and vigorous woman would not suffer at all from this cause in childbearing, because, at each time, their muscles returned to their normal state, and the woman suffers no ill consequence. Of course a feeble woman might be able to bear one child and recover, but probably she could not bear two children and recover, and could not bear six or eight children and recover,—but this is simply a relative matter, not one of these evils being, in itself, a necessary evil. I hope you will think of these matters, because some of them you will not find in the text-books.

When I find a woman has borne children, and examine the abdomen, and find the abdominal wall relaxed, I know I shall find the perineum relaxed also, and I am certain that I will find the stomach, bowels and kidneys retracted displaced, so I don't see any reason why
I should not find the uterus out of shape also,—and it is sure to be out of place; if it is not in a state of retrocession, it is generally in a state of prolapse, and if the perineum is badly torn, then the uterus will be pressed upon and invited to descend,—it will be pushed from behind, and its descent will be facilitated by the lack of resistance in front, and so the uterus will continue to fall down until procidentia occurs and the uterus protrudes into the world.

I think this is a more common cause of disease than laceration,—this relaxed condition of the abdominal muscles which is left after childbirth by a woman with weak abdominal muscles.

The woman with the modern dress, who has had no chance to make the muscles of the trunk strong and vigorous to maintain a high state of tone of these muscles,—such women are almost certain to suffer from the effects of childbirth, and from pregnancy... We see that the uterus returns to its normal position state by means of deoxygenosis. Just as we expect the muscles to be active at this period, we expect deoxygenosis to be active in these muscles, and the abdominal walls. If the muscles have been stretched five or six inches, there must be a considerable process of growth in order to a return to the normal state. (Explaining by diagram.) I think we may safely say that the recti-muscles will be increased five or six inches, at least. Now suppose you try to stretch the biceps muscle until it is six inches longer than normal,—or take the rectus femoris and try to stretch that until it is six inches longer than its normal length, and try to maintain that length?... It seems reasonable that there is a process of development taking place in these muscles during pregnancy,
and that there is a change which should take place after childbirth, and that there would be just as much liability of retrograde menstruation as there would be that a retrograde would occur in the uterus itself;—but I have no histological researches to back up this theory. I believe I will take that matter up and think about it...
GYNECOLOGY, Oct. 20, 1902.

Neurasthenia.

J. H. Kellogg, M. D.

--- ooo ---

In dealing with invalid women, it is very important to consider not only the special diseases pelvic diseases from which women suffer, but diseases to which they are especially liable. There are two diseases which have a large share of symptoms, and these are Neurasthenia and Hysteria.

In the first place, what is neurasthenia. This subject has been very widely discussed, and there seems to be quite a difference of opinion as to what neurasthenia is. Some consider it as a state of nervous exhaustion, but it seems to me it is better to say of neurasthenia, that it is a state of weakness of the nerve-centers, an inability of the nerve-centers to send out vigorous impulses; it seems to me that that is a better definition of neurasthenia than to call it nervous exhaustion, because neurasthenia is sometimes due to other causes. We may have a state of neurasthenia resembling exhaustion, but which is not exhaustion. A man may appear to be tired who has not done any work, and the same istrue of the lower animals—for instance, when a dog has worked hard, he is tired. If you inject a portion of the blood of this dog under the skin of a dog who has not worked, and he will show symptoms of weariness, although he is not fatigued—he cannot be fatigued, because he has not worked—he cannot be tired unless he has worked, can he? But after this injection, he is in a condition exactly resembling exhaustion, although he has not worked.

Thus it is with many neurasthenics—they are often found in a state resembling nervous exhaustion when they have done no work. Some of the worst cases of neurasthenia are cases of whom we have not done
any work worth mentioning, except to walk the streets, and go shopping, and of girls who have done but little except to read novels. So neurasthenia cannot be defined as a state of exhaustion. Here is a man who is strong and vigorous. Inject a dose of morphia beneath his skin, and immediately he becomes weary and tired, he appears to be exhausted—he appears to be in a state of fatigue, although he has done no work. The cause of this symptom is this—the man is simply in a state of poisoning. Many neurasthenics are in this state of poisoning.

Women suffer from neurasthenia, especially, because, in the first place they have feeble constitutions—the majority of them, as the result of the perversions of civilized life. Another reason of such suffering is because of being required to do work which they are not prepared to do—especially in school. Many parents have the idea that education consists in the acquisition of knowledge, and accomplishments; that a special supply of information, and a sufficient number of accomplishments is all that is required for education. But that is a wrong idea. Education is a preparation for life, and the most important part of that, is a physical preparation, development of the body. But this principle is not considered in the schools. In the great majority of our schools, the great aim is to get through so many pages of so many books, and to get the credit of "passing examination," and when that is accomplished, that is all that is required. Education is usually regarded in the light of simply the putting on of so many literary clothes, so to speak—the acquisition of certain literary degrees, as a lady puts on a silver breast-pin or a gold ring. A mother wants her child to have the credit of doing a certain amount of work in school, because that carries with it a cer-
ain social standing,—but that is a mistaken idea.

The first requisite to a good education is to be a good animal. The next thing is to be a useful animal. This, it seems to me, is the foundation of a good education. I don't mean to say that this is first in importance, but it is first in time, at any rate. A girl should first be a good vigorous animal—a strong and vigorous girl, having strong limbs and strong abdominal muscles, a well-developed chest and strong nerves. Such a girl is not likely to have neurasthenia. Neurasthenia is not a very common thing with young girls, and it is conspicuously absent in old women among old women. Girls and old women, as a rule, do not have neurasthenia. It is only young women, and middle-aged women who have this trouble. And the same thing is generally true, as regards hysteria,—it is not common among young girls, and it is rarely ever seen among old ladies. I don't think I ever saw a case of hysteria in an old lady; but I have seen many cases in young women, and I saw one of the worst cases once in a girl ten years old,—but that is very uncommon.

Now let us consider some of the causes of neurasthenia in women. In the first place, the cause is a weak nervous system. This, girls inherit from their mothers. And a weak constitution is also cultivated by an indoor life, by long hours of study, and forcing educational graining in school, and no chance for physical exercise, and an outdoor life which is necessary for health.

Another reason why women suffer from neurasthenia is because of the over-taxation to which they are constantly exposed—subject, especially a nursing mother, who has, at the same time, the care of a family, at the same time nursing and taking care of a child, involving staying awake nights and looking after the little one. It is a wonder how the mother gets through with all she has to do, while
rearing her children and keeping track of her family. The whole thing is artificial. The nursing mother should be relieved from the care of a family until her child gets to be at least a year old. She has enough to do to care for the infant and give herself the proper amount of out-door life and exercise, and freedom from worry and irritation; she ought to have almost nothing else to do except to care for the child during the first two years of its existence. But the average mother has to carry on all the rest of the duties of the daily care of the household, so they become neurasthenics from the exhaustion and the extreme strain which is made upon their physical energies.

Again: Women become neurasthenic from too frequent child-bearing. The average civilized woman is not fit to bear children; she has not the physical stamina to support a strong, vigorous life for herself, to say nothing about supporting another life, and pregnancy in many instances, breaks a woman down completely. There is many a woman who seems to be well until she bears a child, but is never well afterwards. Many women remark, "I have never been well since my child was born." The reason of this was, that there had been a slight laceration, but not serious—a slight tear of the perineum, but not serious. The uterus is not tender. There is perhaps a little rectocele, but there is no evidence of it doing harm. But this woman has not been well since her child was born. But the tax and strain to which she was subjected was more than she could bear.

Surgical operations are sometimes sufficient to produce neurasthenia; I have known such cases. You must examine and find the cause. You may find no great amount of injury of any sort. The operation resulted well. The patient has been operated upon for laceration of the cervix, perhaps, or it may have been an abdominal operation. But the patient becomes neurasthenic
But the patient becomes neurasthenic, and never recovers from that condition. This is especially likely to happen after an abdominal operation. I remember such cases, in which the patient regretted the operation, because she had not been well since the operation was performed. So we should consider an operation of this kind, a serious matter; a woman sometimes becomes insane after an abdominal operation, I have known several cases of this kind, although I did not know the reason why the patient became insane. I had one experience of this kind during the first ten years of my practice; during that time, I had two or three cases of insanity after an abdominal operation. I think operations in those days were performed as rapidly as at the present time, so the insanity could not be attributed wholly to this cause. Dr. Tait once told me that five per cent. of his laparotomy cases became insane, and it is an open fact that patients who have abdominal operations are more liable to become insane than without the operation. If a lady is low-spirited at the time of the operation; if she has fright and mental anxiety, and so on, the nervous system may break down, and the woman may be rendered either a neurasthenic, or insane even insane. So, when advising a woman in regard to the advisability of this operation, we should take these things into consideration. I think it is generally considered that a woman is more likely to become insane or broken down when an anesthetic is used, than when it is not used. I could easily recall a dozen cases in which women have said to me, "I have not been well since I took the anesthetic. The anesthetic might have been administered for curetting, for a slight tear of the cervix, or something of that sort, and the woman has not been well since taking the anesthetic." He says, "Terrible
feelings came upon me during the time I was under the anesthetic, and I have never been myself since, I took that anesthetic; it gave such a shock to my nerves that I have never gotten over it." I have had this experience with patients in quite a number of cases; so, as I have said, these things should be considered in advising patients to have an abdominal operation.

Never give an anesthetic unless it is necessary. A woman can bear curetting better without an anesthetic, although it gives pain severe pain, than with the anesthetic—if the patient has courage to endure the pain of the operation, it is better to do so than to receive an anesthetic, because, as I have said, an anesthetic is a serious thing.

What does an anesthetic do? Recent studies and investigations have shown that when an anesthetic, or alcohol, is introduced into the system, within fifteen minutes it travels up the nerves and retraced the dendrites, and the connection between them is broken, their relations have been broken in a number of places, and are never repaired, and so, because of this broken connection, the nervous machinery is weakened, and never recovers its power. It is like an electric battery when a little verdigris gets on its post—the contacts are broken and the current is weakened. So anesthesia lessens the number of these contacts, and there is a disturbance of the nervous machinery.

Q. Some minor operations might be performed without an anesthetic?

A. Last year, some of the women had curetting without an anesthetic. My plan is, where we can get a good, forcible dilatation, and can do so, to curette without an anesthetic. But if the uterus is
and the patient is very sensitive, very sensitive, so that the movement is painful, you cannot perform an operation without an anesthetic; but if the patient is not over-sensitive and the uterus is not sensitive when it is moved, and it is not sensitive when a sound is introduced—in other words, if there is no paresthesia—paresthesia of the uterus, and it opens quite freely so you have not got to lacerate the tissues of the uterus by twisting, then you can get along without an anesthetic—and, perhaps in a large number of cases, you can do so.

But it often happens that the patient must also have shortening of the round ligaments at the same time with curetting, and I think that may frequently be done without an anesthetic—I believe I shall do the operation of shortening the round ligaments more frequently than I have done, without an anesthetic. Of course it is more pleasant for the surgeon to operate upon a patient who is profoundly anaesthetised, because you feel that you are not giving pain. It rather unnerves one when he feels that every cut he makes gives pain, because you can imagine how you would feel if it were done to yourself. It took me a long time to be able to make a cut when I knew I was giving pain. I remember very well the first time I ever did a surgical operation. The operation was for a little abscess on the jaw—I saw the man on the street the other day, and he reminded me of it. After a great deal of screwing up of my courage, I succeeded in touching the abscess with the point of my knife, hoping it would make a exit, but it didn't. Then I came back the next day and touched it, but it didn't run, so I had to touch it again, and I think it was only until I made the third trial that I got an opening large enough to let the pus out. But I probably gave as much pain as I would have done if I had made only one good thrust. I remember the first time I
had a chance to do a surgical operation; A boy wanted a tooth pulled. He tied a string to his tooth and asked me to pull it, but I couldn't pull it. So he tied the end of the string to the door-knob, jerked his head back and pulled his tooth. The idea of cutting human flesh seemed a terrible thing to do. Of course the surgeon after a while gets over that feeling to a certain degree, but it is hard to operate upon a patient when you know you are giving him pain.

In those cases where a patient has had curettage, if the patient is an unmarried woman, and the cervix is small, and there is an anteflexion (?) you will have a hard time in dealing with it without an anesthetic, because when you pass a sound, it gives pain, and so with the dilator, which strikes against the internal wall, the internal os is small, and it would be painful; the anterior wall is short and you must straighten it with the dilator, and the spreading of the dilator gives extreme pain. So, in most of these cases, an anesthetic is required.

Women sometimes become neurasthenic from worry, misbehaving husbands, and so on; her husband, perhaps, is frequently intoxicated; he does not come home until ten or twelve o'clock, perhaps, and perhaps he does not come home at all, and so she worries and sleeps in a fitful way. At every sound she hears, she does not know but what the drunken husband has come home, and she must be careful, or he may kill someone, or set the house on fire, and her life is in danger. This is the cause of neurasthenia in many cases; the only wonder is that such women don't become insane. We all know that these cases are not uncommon among certain classes of people.

Sometimes a sudden shock causes neurasthenia. This is not true of the normal woman, but it is true of the civilized woman...
Autointoxication and enteroptosis also are causes of this trouble. Autointoxication arises from indigestion, and enteroptosis arises from tight-lacing. These, and the injuries resulting from long continued constipation and neglect of the bowels, are common causes of neurasthenia, as well as the reflex disturbances arising from autointoxication.

What are the symptoms of neurasthenia? If any of you have ever had the experience of going several nights without sleep, you will know what neurasthenia is. You will have strange feelings in the top of your head, a feeling of lifting, or bursting, and if you are not able to see well by reason of some defect of the eyes, as astigmatism or asthenopia, it will be still more troublesome, on account of lowered nerve-tone.

Persons suffering from neurasthenia are likely to have numb sensations, crawling sensations, tingling sensations, and trickling sensations as though water were trickling over the skin, a sensation of insects crawling over the skin. Sometimes there will be a feeling of intense heat. There will sometimes be sudden flushings and so on, the results of vasomotor disturbances. It is important to know these symptoms, as they might be supposed to be due to erosions of the cervix, which might be a mistake. It is often attributed to pelvic diseases when it is not due to that cause. It was formerly supposed that these troubles were due to pelvic disease, because doctors had then just discovered what might be called minor disturbances or changes in the genito-urinary apparatus in women—the external genitalia. Doctors had just begun to learn about these minor changes, and they said, 'This must be due to nepart,'
erosions or to a cicatrix of the perineum, or to a leukorrheal discharge—*all these minor changes were then held accountable for these great effects. So it is important to note these symptoms. We cannot deal with invalid women without understanding the fact that these neurasthenic symptoms are usually quite common and pronounced in women.

Now note the vasomotor symptoms in these cases: sudden heat and colds, sweating, sudden terror, cold hands and feet, palpitation of the heart, palpitation of the aorta—these are very common symptoms—pains of various sorts. Sometimes these palpitations of the aorta are so extreme that a woman will think she has an aneurism, and I have treated several cases in which women had been sent home supposing they had an aneurism, because of this palpitation of the aorta—their physicians had told them they had aneurism, whereas it was nothing but a strong palpitation of the aorta. These are sometimes so strong that patients cannot sleep; they lie awake by the hour, and the aorta palpitates very strongly every time the heart beats, but it is not a palpitation of the heart. The patient has palpitation elsewhere—I once had a patient who had palpitation in the heel, and sometimes palpitation in the elbow, or in one or other of the inguinal regions. I remember a case of palpitation of the internal iliac. These cases are simply vasomotor disturbances which are due to what you might call irregular innovations of the nerve-centers. One set will be passive, while another set will be active and excited, so that the part of the vascular system with which it is connected will be thrown into violent exercise. One would hardly think there was enough muscular substance in the walls of the aorta to produce this palpitation. The vessel-walls contain involuntary fibers, and how could you have such violent action as to cause the throbbing of the temples from this cause? We can
hardly understand how this can be. It seems to be a wave coming from the heart. The walls of the artery dilate, perhaps, in such a way that this wave swells out and manifests itself to an unusual degree. I don't know why it is so, but we know that it occurs.

Various pains and sensations occur in these patients,—I have mentioned some of them,—paresthesias, a feeling of numbness, tingleings, crawlings, etc. There are also pains in the back and shoulders. Tenderness of the scalp is very common; a tenderness in the ovarian region; a tenderness in the submammary region, particularly on the left side. For some reason the left side appears to be the particular seat of pain in the neurasthenic woman—and also in the neurasthenic man. There is no particular reason for that, that I am aware of, unless it is, that the left side of the body is weaker, in some respect than the right side of the body. I believe the left side is more fully developed nervously than the right side, and that the right side is more fully developed muscullarly than the left side. The left leg is not quite so strong as the right leg, although sometimes the muscles may be stronger, so one may be, so to speak, right-handed and left-legged. In a majority of cases the left leg is a little stronger than the right,—there are some muscles in the left leg stronger than the corresponding muscles in the right leg, in the average man or woman, but the left side, as a whole, is weaker than the right side ...

Pains which are felt in the left ovary may not be due to disease of the ovary; and so of pain in the sub-mammary region and between the shoulders—these are neurasthenic pains. I have known many cases of this sort,—in which women complain of suffering ovarian pain which was simply neurasthenic pain with no disease of the ovaries.

In these cases there are digestive disturbances which occur: Patients have
nausea, vomiting, etc. There is one common characteristic of these patients,—they are nervous and cast down, a few hours after eating. They usually feel better immediately after eating, but three or four hours after eating they feel dull and confused, and are unable to concentrate their attention upon any subject, and, as a result, there is a loss of memory. In some cases, these symptoms are present all the time; in other cases they are not present except after breakfast and dinner, or when they have been under some especial strain.

One characteristic of the neurasthenic woman is, that she feels perfectly well, when resting quietly; but, as soon as she has company or a child becomes tiresome, or some friend visits her for an hour, or the husband is cross, or something else happens that is not agreeable, she breaks down—she is completely exhausted in an hour or two. She goes shopping for an hour (and that is usually a very pleasant occupation for women) and after shopping an hour, goes home completely exhausted; she finds herself so exhausted that she cannot even don her hat to go to church. Abnormal apprehensions are very common in these cases,—the patient dreads to cross a bridge; she dreads to take a journey; she dreads riding in a carriage, or going on the street; she has a chronic terror of something without exactly knowing what. I remember a lady who had this trouble for two or three years; she was afraid to be alone. She was not afraid of any particular thing, but was in a state of terror when alone. Her husband had to stay with her all the time, and it interfered with his business. He brought her here, and they remained here until she was better, and then he went home to his business, and left her here to get well,—he was glad to do that—and she did get well. She was an excellent and a
cultivated woman. She made an excellent recovery and has been in good health ever since.

There are other symptoms of neurasthenia; but these symptoms must not be attributed to disease of the pelvis or of the uterus, and yet these symptoms may exist at the same time with diseases of the pelvis, and may have something to do with this condition. I have noticed some women who have uterine trouble have some of these symptoms. The patient woman gets over chronic uterine trouble after the menopause, and then she gets through with neurasthenia. You will never find an old woman suffering from neurasthenia. It is a curious thing, that there are certain diseases which old people seem to have outgrown, in a certain way. One would think they would get worse, and that an old man or woman would suffer from neurasthenia more than a young man or woman, but it is a very rare case, when they do.

There is a certain relation between insanity and neurasthenia. You will find the neurasthenic woman very much depressed and distressed, because she is afraid, and apprehensive, and very despondent. But that is a very different thing from melancholia. It is simply melancholy, but not a state of melancholia. Melancholy and melancholia are very different things. A woman may be extremely depressed to-day, but tomorrow she is all right. The feelings of the neurasthenic person are often as changeable as the weather of April. They are up and down. Their courage is good, while they have a store of energy; but when that is gone, and their weakness comes upon them, everything looks dull and dark. The person who has melancholia, however, is depressed all the time.
Monomania is very common with women, more common with women than with men, I think. The person who is neurasthenic, and depressed, and talks about his troubles, may get a little courage and hope now and then, but a person with monomania has one state of mind all the while,—his or her mental condition remains continually the same. That is the difference between monomania and neurasthenia. But neurasthenics sometimes become insane. The conditions which produce neurasthenia, after a while wear out the nervous system, and insanity results from this disturbance of the brain. Usually, people do not die of neurasthenia; but there is a new form of neurasthenia, called "neurasthenia gravis," of which people sometimes die,—but that is uncommon.

Now for the treatment of neurasthenia: These patients require but a few things, but these few things are very essential. First, the cause must be found and removed; and that means, among other things, that the patient must be taken away from home; they must be taken away from their cares and everything that tends to bring about this neurasthenic state; there must be a change of scene, a change of place, and a change of air, as well as change of associations.

The second thing that must be provided for these patients, is proper diet. These women are often neurasthenic because they are starved; they are trying to live on an insufficient and unwholesome diet,—they are trying to live on a diet of tea and toast." Some women consider this a necessary diet, but it is not,—and it is injurious, for the toast is constipating, and the tea is depressing. It affords only temporary relief, as the thirst is assuaged and the sense of hunger is numbed, and so the patients are deluded and satisfied, thinking they are getting better, whereas they are getting worse all the time. For such cases, cold water and an out-door life are essential.
cold water must at first be applied in very small doses and gradually increased. For these patients, cold water is generally necessary; but, in some cases, hot water is necessary for an enema in constipation. Generally, constipation is primarily due to one of two things—either a weak, dilated colon, or a contracted colon. If it is due to a weak, atonic colon, cold water should be applied. If it is due to spasms, and the patient complains of the pain in the abdomen, the probability is that there is a spasm of the colon which causes the constipation, and as the patient requires a warm enema to relax the contracted muscles. Then there are general cold applications to be applied in a graduated way, as, cold mittens frictions, cold towel rubs, wet sheet rubs, etc., should be applied until the patient, until the patient can take vigorous applications, especially cold water to the spine, for instance, the cold spinal pour. Perhaps the patient has cold hands and feet, let him sit on the side of the bath-tub, while hot water is first poured over the spine, then rubbing, then cold water is poured over the spine with a dipper followed by rubbing dry. This application can be taken at home. The application of cold water to the spine is better for the feeble neurasthenic, than cold water applied to the whole surface of the body. (Illustrating by diagram.) Here are two centers, each of which sends out a branch. The anterior branch distributes nerves to the body generally, and the posterior branch distributes nerves to the back. You must apply water to the whole anterior of the back, including the limbs, in order to reach the anterior branches, but the posterior branches are all centered in the back. So the back is a sort of keyboard by which you can play right on the nerve-centers of the spine. I have often thought the back was made for the hydraulic doc-
You can stimulate every nerve-center by applications to the back. That is the advantage of this application. The neurasthenic has an extremely sensitive vasmotor system, and when we apply water to the whole surface of the body, the vasmotor centers will be overstimulated. He will have headache, his heart will be excited, and perhaps the reaction will be so intense that the patient will have sweating and lose too much heat. We can get a complete stimulation by an application to the back, which is valuable in these cases of neurasthenia. A patient cannot stand a cold application to the whole surface when he can stand it on the back. If a cold bath is too much, a cold rub to the back will greatly relieve the patient and help him. But by making the application to the whole surface, the patient will only be depressed.