

"HEALTH AND DISEASE - THE RESULT OF NATURAL LAWS"

By

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Fifth lecture of the series given at Epworth-Euclid Church by Dr. Weston A. Price on February 24th, 1929.
Subject: Health and disease, the result of natural laws.

DR. PRICE: Mankind has had two principal scourges. The first has been the affliction that comes from the invasion in the body of parasites. These parasites have been of two kinds - animal and bacterial or vegetable. These parasites have preyed upon his body and produced diseases which he has come to recognize as enemies, as great scourges; and since great devastations have occurred amounting to the loss of whole districts in a single epidemic, man has come to look upon the epidemics that have destroyed life as being God-sent.

Probably no one opinion has been more continually dominant in the life and thought of the different generations of the different civilizations than the thought that either a displeased God or an evil spirit had been able to send the scourges upon them. Man has learned in recent years that these epidemics that are called infectious diseases, are not God-sent; they come from very natural causes.

Man's other great scourge has been the degeneration of his body, the degenerative diseases which have destroyed one after another of his organs. He has come to recognize that these organs are destroyed by processes within his body due to the absence from his body of certain chemicals without which he can not live.

We will discuss the latter of these two scourges, chiefly this morning and if you will think for a moment of the history of the epidemic diseases and scourges that have occurred, you will recognize immediately the civilizations that have been wiped out one after another. Deaths that have come from this form of epidemic remind you, for example, of the civilization of Greece that was so distinguished and at the time of its great strength probably had its chief causes of factors in its destruction in malarial fever. If we will look to the great civilizations of other periods of time and take the great civilization of England in the fourteenth and fifteenth century, we will find in one epidemic alone one-half of the population of England was destroyed by the Black Death.

And similarly we might go through a great many instances. Might I remind you that since most of the people in this room were born there has been such a change with regard to such a disease as diphtheria. Physicians who are in the audience will remember that the death rate a few years ago was 25% to 28% of all the cases that were so unfortunate as to get diphtheria. And a great many got diphtheria in those days. If we were to make a comparative study we would find as many children died every year from diphtheria alone as there are children in the City of Cleveland. I mean as many children in the United States died as there are children in the City of Cleveland today.

You will get some idea of the changes that have

come about with the newer knowledge that has made it possible for the people to recognize how to combat typhoid. The older people who are here have either had typhoid or have had friends who have had typhoid. I passed through an epidemic of typhoid in 1894 in which in a town of 6,000 there were 1,600 cases of typhoid and 600 deaths. 10% of the population died in three months and one-fourth of the population came down with typhoid, and yet a great many people of that city were saying what a great scourge had come from God because of some sin committed by somebody in the city. It was simply drinking the water which contained typhoid germs. The sewage of the town higher up the river where they had typhoid came down to this other town.

And so we come to recognize the great law here which Christ gave us, "Ye shall know the truth and the truth shall make you free."

So this morning we will study the newer knowledge which comes to us from a study, intensive study, of those disturbances, those affects and afflictions that we get which are called degenerative diseases.

Here is a verse that was written by Ross at the time he was fighting the Yellow Fever and he had this observance to make: "The painful faces asked, 'Can we not cure'; 'No', we answer, 'No, not yet.' We seek the laws. O, God, reveal through all this thing obscure the unseen, small but million murdering cause." And that man Ross went forward with that great struggle,

trying to find the cause for it. He gave his life in trying to find the cause of Yellow Fever and found it to be caused by the bite of a mosquito which carried the organism which attacked the good cells, which he found made it possible to prevent Yellow Fever, and he said, "This day relenting God hath placed within my hand a wonderous thing and God be praised. I know this little thing a myriad men will save."

What a beautiful thing the coming of truth which has made it possible for the efforts of a few men to save tens of thousands and probably hundreds of thousands of men's lives by coping with one of the scourges. We are not infants damned. Our problems are the degenerations that go on in our bodies.

The next will show somewhat of it. If we would take a group of animals of any kind as we have here. Here are the rats and here the rabbits. These are different forms of disturbances and some will have very great anger and very easily aroused and a great deal of disturbance through the nervous system, and others will have depression, paralysis and whatnot due to something that is lacking in the food the animal gets. Perhaps a minute quantity.

The next slide will show one of the things that will be lacking. We hear over the radio about vitamins, and for just a moment let us run over the vitamins and see what they are. They are substances that are life-producing and if those things are present in our body, certain diseases do not develop.

We have vitamin A. Its properties are that it is fat soluble, and comes to us in foods that contain fat and only certain kinds of fat. It is fat soluble, growth promoting and exorthalmic. Without this vitamin the eyes become diseased, acute inflammation, the eyes become susceptible of infections of all kinds. The eyes become infected and there is a depression of the epithelial tissues all through the body, for remember that the lips, the intestinal tract and the lining of the organs are of epithelial tissue. The lack of this, then, causes colitis, phosphatic renal calculi, and lung infections; also lack of ovulation and disorders of the kidneys. It particularly effects bone and blood structure.

And now we come to a recognition of a great many disturbances. As people get older in life a tenth of the physical conditions that need operations are directly related to an absence of this particular vitamin A in the earlier part of life. Now the chief sources of this vitamin are in liver and liver oils, such as cod, egg yolks and milk, and fat; and in limited quantities in carrots, yellow corn, green leaves and bacterial products.

In the next picture you will see a child with an eye disturbance and that eye will always be blind because this child didn't have enough vitamin A. Probably one-millionth of a gram of vitamin A would have been enough to have kept that child from having this eye disease. This eye is swollen shut.

This is what a great number of that army of children have in so many of those countries in Europe. They have a scarcity of vitamine A and infections readily set in. These eyes become infected, and one can readily observe these facts in traveling through a country which is short of vitamine A because of the eye infections.

The next will show us vitamine B which is divided into two. The properties of B 1 are: Water soluble instead of fat soluble. It is anti neuritic. Heat unstable. Destroyed by ultra-violet irradiation or light. Its deficiency effects are derangement of the nervous system and intestinal derangement, polyneuritis, beri-beri, and paralysis. Its chief sources are in whole grain, milk, eggs, yeast.

That particular vitamine affects a great many children in some parts of the world. I was amazed to find in my reading that 50% of all the infant deaths in the Philippines are caused by an absence of this vitamine, and of the 50% dying from an absence of this vitamine 90% of them are under three months of age, and it occurs mostly among the children that are breast fed. Why? Because their mothers are not having enough vitamine B1, and cannot put it in her breast food and consequently these children die. They die by the tens of thousands and those people, like we did just a few years ago, are blaming God for it. They think this scourge is a great evidence that the Lord is displeased.

We pass now to the effects. We see here symptoms of the absence of this vitamine. Here is a rat that is all

nervous and can't stand up right and has a lot of disturbances, and just by taking from the food a most minute quantity of this particular vitamine.

The next slide will show us another. Here we have a pigeon with its head thrown back. It is a typical case of polyneuritis caused by feeding it rice with the outside polished off. If it hadn't been polished, it would have been all right, because the particular chemical is provided in the part of the rice they polish off.

The next slide is vitamine B2. The Pellagra that is going through the southern part of the United States or at least being recognized in our penal institutions throughout the south is caused by the lack of this vitamine. The properties; By the absence of B2 it causes Pellagra. It is water soluble. Prevents Pellagra. Growth promoting and heat stable. Its deficiency effects are loss of appetite and total lack of vigor; intestinal derangement or atrophy. Its chief sources are found in milk, egg yolks and vegetables, especially peas.

The next will show what the symptoms are. Here is an arm with the typical evidence of Pellagra. Those fingers will probably drop off and die. Gangrene has set in. The Pellagra of the south which took so many thousands of lives during the Civil War and has since taken thousands of lives is now cured just as easily as you prevent yourself from freezing by going near the fire, by getting this vitamine B2.

The next picture will show us an animal, a rat, with this typical condition of Pellagra and you can imagine how people would feel who have it. Now if we were to undertake to estimate the number of children who will die this year in a country like China, we probably would have to use five, six or seven figures to designate the number of those who will die from this one disease. Why? It is not easily recognized in the earliest stages because there are two types, the wet and dry type of Pellagra. In the case of wet Pellagra the person looks well and with that retention of fluid which they have, the boy or girl would be considered not very dangerously ill, and so all the medical measures have been taken to those who have the dry form who are not really as bad off as those who have the wet form. The children throughout China and Mongolia are dying in many thousands every year because of the absence of this chemical from the food.

Now we see the effect upon the intestinal tract. Now, if we will remember, this is the normal appearance. Now this is the normal intestinal tract of a monkey. These are constrictions of the intestinal tract. This is the small intestine and this is the large. Those little constrictions represent the waves of peristaltic motion that pass along the intestinal tract in a normal condition. When you take vitamin B out, it isn't able to carry the food along in that sort of wave. Just so simple a thing as adding to this diet a little of vitamin B makes it possible in this other monkey for a very

great improvement.

The thing I would call your attention to is that a less severe form of that infection is in a great many communities, and a great many people of this community - and they are not the people that can't afford to buy enough of this vitamine or can't be expected to have good enough judgment to eat a mixed diet, but they are so foolish as to want to diet to get thinner - rob themselves of this particular vitamine which, if present, would cause cellular activity to occur. In the absence of a cellular activity it is impossible for them to function properly.

It is then, not necessary that people have the extreme terminal form of this disease in order that they may have evidence of the absence of, say, vitamine B2, and the mild form is a thing that gets people ready for an early death. If you could see as I did, in the northern part of North Carolina those individuals that have lived all their lives with a shortage of particularly vitamine B2, you would see immediately the effect on the population. Why, girls at thirty years of age look to be fifty. They were prematurely old. Nobody lived to be sixty years of age in that part of the country. That whole problem was related to a starvation of certain vitamins.

Next one. We will now take vitamine C - Scorbutamin. We remember the stories of people in olden times coming across on the boats and getting scurvy. People coming across learned to bring a few potatoes, and many a man has given all

his worldly possessions for one raw potato. They could cure a case of scurvy with one potato. Now this lack of vitamine C, then, is the chemical which at present prevents scurvy and it is the chemical you are getting in oranges and your physicians have been telling you and advising you regarding health matters, to take at least one orange a day. You can get this vitamine so easily. It is water soluble, anti-scorbutic. Its deficiencies: cures hemorrhages and soreness of gums, loosening of teeth and scurvy. Its chief sources are: citrus fruits, chiefly in oranges, tomatoes, raw cabbage and bananas, carrots, potatoes and summer milk.

Next. I am passing vitamine D because I want to come back to it. E is fat soluble, anti-sterility vitamine. Small amount is adequate. Its deficiencies are: sterility from lack of function of the placenta with death or destruction of the fetus or possibly a lack of development of the function of the organs of reproduction. Its chief sources are wheat germs, lettuce, beans, nuts, eggs, seeds and grains.

We will pass to the next one. The next is vitamine D. I wish we had time to stop on each one of these longer. We will hurry on to vitamine D because it is perhaps the most important, for vitamine D when it is absent from the food of a child produces rickets, and vitamine D can now be considered, by the absence of it, to cause one of the greatest scourges this part of the country has ever had, for the reason that in the absence

of vitamine D and because of the scarcity of vitamine D 90% of all the children that are born under normal conditions in this latitude have some rickets under two years of age. That is a tremendously high percentage. But that does not occur in Mexico and Porto Rico and Cuba, for example, where they have more sunshine. Is it because the sun shines directly on the individuals or is it because the sunshine of that district puts this vitamine into the food of that district?

So we will take its properties. It is fat soluble, anti-rickets, promotes calcification. Deficiencies: Rickets delayed and effective growth of bones and teeth. Failure of union of fractures, directs calcium and phosphorus assimilation. Its chief sources are: Liver and liver oils, milk especially cream, fish eggs, ergosteril by activation and brewers' yeast.

Next we will see two groups of bones. This is the normal bone of a chicken. You will note the end of the bone is rounded out and quite normal joint, but here you have no bone formation for considerable distance. That is due to the absence of vitamine D. You can see it easily here whereas here the units making up the joint are present.

If now we pass to the next, you see we have a child with a typical expression of rickets. Now, this boy or girl has the typical deformity, the chest drawn in, a characteristic disturbance of all bone formations in the body, with the result that this infant will be typical. When he or she gets to be an adult, will go through life knocked kneed or bow legged,

due to the absence of vitamine D.

Passing to the next we see the shape of this bone. This bone has been fractured here and here. Now, that thing that has happened in this child with the breaking of that bone happens in a large number of people. I was called this last week on the 'phone and sometimes I am in consultation two or three times about uniting bones or fractures which will not develop properly. The thing happening in this child was an instantaneous fracture which is much more common. I was asked to advise what we could do for him. Twice he has had his leg break sitting on the floor playing with blocks. It is not the intensity of the blow that makes it break. It is how strong the bone is that matters and these children do not have proper strength of bone.

Here we have a boy with legs twisted out of shape. We say that is terrible, and yet a great many people are just letting that thing go on, cases not as bad as that, but this very thing develops in their homes and yet they are supposed to be Christian homes and they think Christianity consists of sitting at home and having a long face and doing a whole lot of things which Christ tried so hard to teach us were not the essential things of life. He said, "You must know the truth and the truth will make you free."

This arm has had a fracture. This has had three fractures. Why? That condition of lack of strength in the bones

is one of the greatest dangers of every person in this group; that thing you and I are afraid of some day, being old and having said of us as of some people we know today, "So-and-so has a broken hip because he is old" need not occur. The reason that makes it impossible for older persons to heal a bone is because they have gone into a state of defective calcium balance, causing deterioration in the bones. Nature has built us so that in a case of stress we can go back to the skeleton and get calcium for the bones and blood stream, because we have to have a certain amount every day for our daily use and when we don't get it in our food, we go to our storage bin and then we keep taking a little more and more until finally something breaks. We can't keep on indefinitely borrowing and this effort that people are making to diet is one of the scourges that is going to cause depletion of the body so these tragedies are going to happen.

Passing to the next we see the skeleton of a monkey. Here is the monkey with so little lime in his bones that you can hardly see the outline in the shape of the spinal column. I don't know but what the person who brought that monkey to me is in the audience. I saw her at one of my lectures here. She had three monkeys. She was a great admirer of animals and they all die or become in a disturbed condition. They do not get their natural food. These very vitamins are not in such food as we have had available to give monkeys, like bananas, sugar, etc. You see here the spinal cord and here these vertebrae in the column. You see here these vertical columns of calcium formed

right across. Within three or four weeks time after I put that monkey on a diet giving it vitamine D which it had been lacking, it developed. We can't live without these vitamins. You thought those boys had deformities; look at this deformity in this front leg and this hind leg. They are all grown and twisted out of shape because the monkey didn't have the proper chemicals. God has placed these animals in a natural environment where they can go and get the food which has this particular vitamine and they know enough to pick out the proper kind of food. And this is what happens when we put ourselves in an abnormal environment and when people are trying to get slick and beautiful by robbing themselves. I want to tell you there isn't any scourage that God could call down on people which would be greater than to just mutilate that magnificent structure of their bodies which they could keep perfect if they would learn natural laws. Jesus said, "Ye shall know the truth and the truth shall make you free." You are going to get free by learning the laws of God for you are part of God. God made us and you are part of God's universe and when you come to recognize yourself as God's word, you will find the greatest joy you have ever had in life in serving to find God, and you will find him in the truth and in every place that he is residing.

Next. Here we have chickens and these chickens would normally have been able to stand like that one, but we took out of their food certain chemicals which caused them to

have weak legs. If any of you have been on farms where they have been raising chickens you know how many of the chickens went down with weak legs because of the absence of a millionth part of a gram a day of this vitamine D.

In the next picture we see one down here and in two weeks time it was right on its feet again. That leg is deformed and always will be, but that deformity was caused by the wrong kind of food being supplied to that chicken.

Let us see in the next slide - for here if we take a chicken that is in that form and simply (this is an x-ray of the bone) rub on that chicken's leg a cod liver oil, then that bone calcifies. See how much larger that is? Six days later you find the calcium tissue almost complete. That thing which was in error has been repaired.

In the next we see another important phase of it. This cow gave birth to a calf that couldn't stand up. Why? Have you any idea of the babies that are born in all the civilized countries of the world to say nothing of the uncivilized, that are so defective when born that they don't live? I was amazed to read, in one of the most civilized countries of the day, the total number of children, or of pregnancies that come to termination just before birth or just after ^{that are deficient} is 25% of the total number of pregnancies; and these children are that way because of one or two or three things. Either the mother wanted deliberately to have the bones so small as to have an easy

birth or else that mother couldn't have the food. It wasn't available and she didn't know how to get it, to put the proper energy into her structure.

Look at that cow's condition - straggly hair. She had all the wheat she wanted to eat but she couldn't get the vitamins from that.

The next slide will show another picture of another cow. We gave her cod liver oil and salt mixture. By giving her 2% of the cod liver oil she gave birth to two calves of splendid form, she gave lots of milk for both. That difference is the difference between having vitamins and not having vitamins, because the cow's body to function depends on these elements that constitute life itself.

Now we will take a typical illustration of robbing the body, for I have said to you that one of the greatest dangers will be your robbing your body. Let me put it in rather terse form. I think the time is going to come when you are going to do throughout every year, all the year, what you are doing now every winter and spring, namely, start burning up the furniture of your body. I mean by that everyone of us, unless we are taking an unusual diet, will at this time of the year be borrowing from our skeletons for the lime that is necessary for everyday use. We have to have from one-half a gram to one gram of lime or calcium for every day of our lives. We can not get that one-half gram of calcium in the food, and there is the thing which will be most difficult for you to remember, but the most import-

ant. You can not run your gas car by gas alone. You have got to have a spark. You can not run your body on the food with the calcium and get the calcium out unless you have the spark and the spark is vitamine D. It is only present in a few foods. It is only present in fat soluble foods and a few of them at that. There is no civilization on the face of the earth and no evidence that there ever has been anywhere a civilization where there has not been calcium in the soil or irrigating water that comes to the place where that civilization exists now or did exist, but those people could not use the calcium and get the vitamine D any more than you can use gasoline and get power without the spark.

So here we have the evidence of burning the furniture. These are the bones of the hip of a cow. I was lecturing before an organization in the city of Wooster, before the Dairy Inspectors of Northern Ohio and Health Inspectors at a joint meeting. They had asked me to lecture on the quantity of milk that is necessary in making good teeth and bone. In the course of the lecture I was telling them how one cow lost part of her skeleton in a single milk period, one-fourth of her skeleton. That seems like a lot, but it is true. And after the lecture a gentleman came to me with others and said, "I was greatly interested in what you said about the cow losing part of her skeleton in the milk pail. I am from the department of our experimental station here at Wooster and our most valuable cow has had her hip break down. It happened just yesterday. I

wish you would come over and see what we can do for her." Well, I went over and my first question was, "How many times a day are you milking her?"

He said, "Five times."

"Well, I said "isn't the usual number two?"

"This cow," he said, "has given the most milk that any cow has ever been recorded to give for this length of time. It just lacks six weeks of two years. If we can keep her going for six weeks more, we will get the most coveted gold medal."

I said, "Well, you have the skeleton in the milk pail. You can't have it both places. What kind of a diet are you giving her?"

It was a spontaneous fracture. A great many cows have had their hips or legs break spontaneously when they are trying to break a record.

"We have to do something to keep her going," he said. By keeping this cow going for six weeks more we will get one of the most coveted prizes in the dairy industry. She has been giving a lot of milk for two years. What can we do?"

"First of all, stop milking her. You can't put life back into her and still be robbing her," I said.

"No, we have got to keep on milking her. We can't let her down."

I said, "You can't possibly keep her together. Nature is going to demand calcium for making those repairs."

I said, "When you find what I say has happened, send me some of her blood and we will make an analysis."

That cow must have been doing what thousands and hundreds of thousands and millions of mothers have been doing, - paying too greatly from their own skeleton. And this cow's history was just repeated over and over and over and I can take you around the city to one after another of those mothers who have had two, three, or four pregnancies, one right after another, and they never get paid back to the bones what they have borrowed from the skeleton. Finally there comes a crisis and they are bedridden for the rest of their lives, and I want to say that if Jesus could be right here to advise the mothers of today, he would say, "Know the truth and the truth shall make you free." We do not need to let our motherhood pay in that way if we will furnish them the vitamins as rapidly as they are going to need them.

I was lecturing last Monday in Chicago before a professional society. The next day a gentleman came to me and said, "I enjoyed your lecture very much, indeed, except one thing."

"What was that?" I said.

"I was sorry to hear you advocate birth control."

"What did I say?" I inquired.

"You said women shouldn't have children more often than they can pay the bill," he said. "That isn't according to

the teachings of our church."

Let us think seriously about that. If millions and millions and millions of people in this world are under that impression, we have need that Christ's message shall come, "Ye shall know the truth and the truth shall make you free."

Here is a chart of a chemical analysis of a blood test, which showed a negative calcium balance. After four months of pregnancy, it was here; in six months it showed a minus nineteen and in eight months that bill had been paid back by just putting a few millionths of a gram of calcium, of the activates, into the food and letting her pay the bill. She went on to completion, and gave birth to a strong child. She had another pregnancy and a splendidly developed child since. That difference is the difference between sickness of motherhood and the health of motherhood.

Next please. Here we have the teeth of a child at four years of age, and at eleven years and five months there had been very little growth in the teeth. That problem was that problem of the growth of bones, and the teeth depend entirely upon the presence of a certain amount of these vitamins, especially D in the food. So at eleven years and five months the baby teeth are still present, and in three months time by simply adding a small amount of activates, two baby teeth were shed within a month. The second teeth grew and here we have the root. That child went back to school, liking a variety of foods that he

didn't like before. He is in a military college now and has a splendid physique. Before that he was a mere runt, undersized just because his teeth weren't developing.

You would be surprised - it isn't in the homes of the poor people but among the people that live all through out the splendid section here in Cleveland that have children with defects of this kind. They are not getting the proper vitamins in their food.

I am not here to give you primarily a lecture on that phase of the health problem, but I am trying to show you that Jesus' truth is absolute. We must know His laws. We were created by His laws. We are the product of the environment that He has created for us.

Now, we will look at this boy I showed you once before. He is paralyzed and in convulsions, typical convulsions. Now just by injecting into this dog which also has convulsions a little of this extract of perithyroid from any animal in the world, it might be a fish or any kind of animal that has a perithyroid, the dog wakes up. Why? Because that minute quantity of chemical which its own organs would have furnished if they had had an opportunity, is enough to help the dog.

This dog, then, represents to me the thing that is happening in child life. Who in the room hasn't seen children in convulsions or heard of them? And all of that problem of convulsions of childhood is due to the absence of calcium in the

blood stream because there is not enough vitamine D in the food. It is just as easily prevented. I could give you the histories of numbers of children having as high as fifty convulsions in a day and averaging six. Since one little girl has been getting the activates every day, because her perithyroid doesn't function properly, she has not had a single convulsion and now her teeth are forming.

Next, we have a typical case here. Here we have a deformity of the teeth. These teeth were not properly formed. I want you to see particularly this thing. These teeth are not formed, but from there on they are formed. Why? That boy was having convulsions almost every day of his life until he was four and then they moved away from Cleveland, went into the country and they lived right next to a neighbor that had a cow and he drank lots of milk and played in the sunshine, and immediately you see the change in the structure of the teeth, and the boy's convulsions stopped right away. Then they moved back to Cleveland when he was seven years of age and they had only been here from fall until the following February when the boy went into convulsions again. We started again to give him the vitamins, in capsule form and he has not had a single convulsion since we have been giving him the vitamins.

The thing I want you to see is that the scourge is traveling across the continent. It is in England and on the continent and particularly those parts of Europe where you see

great numbers of children with defective eyes, showing that they didn't have the proper amount of vitamine D.

Here we have a chicken with a broken leg, broken while it stood in its cage all by itself. It isn't because our dear old ladies and old men have had such a hard blow that their bones break, but because they borrow and borrow and borrow that gram or half-gram of calcium for every day from their skeletons instead of getting it out of their food, and the bones get weak.

The next will show an x-ray. Here is the broken leg, a spontaneous fracture of a chicken's leg in a cage by itself. It had other vitamins but not vitamine D.

Here we have a human. This bone is like the piece of bone that comes to you on the platter which has a ring of hard shell on the outside of the bone. That hard ring is the cortical layer and that cortical layer is dense as steel almost. You remember that ring of hard bone that the butcher saws through? This bone isn't like that. This bone is all porous. There is no hard shell.

This woman is 74 years of age and I am justified in giving you the history. The physician came to me from another city, Massillon, and said, "I have the dearest lady, 74 years of age who has a broken hip, fractured across here. It has been nine months and there is no healing of that fracture. What is possible for you to do? Can you help her?" He thought perhaps I could because I had been helping some of the physicians with

this calcium problem. Now the first thing we noticed was this fracture of the cortical layer in the x-ray. The next thing I advised was a close chemical study. We found certain factors were low and we made the showing graphically. Here is No. 1 and here is No. 2. This chemical factor should be up to this line that comes to here, 26 instead of 40; this is 12 instead of 20. I said right away that the chemical qualities are not present to make it possible for the woman to heal that bone. It would be necessary to change the chemical constituents there. The thing I would have you see is that after giving this chemical in capsule form this hard shell of cortical layer could be seen in twelve weeks of time. I think you can all see it. There is no hard shell on this, but here you can see the form.

Now that cortical layer, that hard shell of bone was made possible not because her diet was changed; her diet was virtually the same but we put a small amount of vitamins in her body. Incidentally, she is up and walking on her crutches and she is able to walk by holding her hips. There is no slipping and apparently she is healing. Her mother died at 70 years of age, one year after she had a broken hip.

How often we have seen that same thing happen, - these elderly people have a bone fracture and it doesn't unite, and pneumonia takes them a year or two after.

I am going to ask your wishes in this. This subject involves not only the vitamins but how the vitamins are formed in the food and out of our bodies. They are formed primarily

by means of radiant energy and this energy that comes from the sun that warms our earth and makes life of all kinds possible is the energy that makes the vitamins. I have not divided in the lecture series a particular lecture showing the relation of radiant energy to the formation of vitamins. If you consider it important I will speak about it at some other time. The next lecture will be on "Our Children - How we may add to or subtract from their environment". I think that is too important a subject to miss entirely and I believe, Mr. Merville, if you want sometime at a special lecture I will be glad to give the rest of this lecture to you, for I have only gone through about half the slides I have arranged for this morning.

I thank you. (Applause)