

Feeding Mothers

CHAPTER XXXVI

The vital importance of pre-natal life is beginning to receive recognition and we have begun to recognize that a woman is not necessarily physically and otherwise fit to be a mother, merely by reason of the fact that she is a woman.

In many important particulars the most important period of the physical life of an individual is the pre-natal period. It is during this period that all the foundations are laid, all the tissues and organs are formed and cellular activities are at their highest. The heart, lungs, liver, brain, nerves, eyes, ears, teeth, skin, bones, muscles, kidneys and other tissues and organs are formed and prepared for their functions during the nine months of intra-uterine life.

From a minute mass of "protoplasm" 1/125 of an inch in diameter, by the orderly processes of cell multiplication, cell specialization, combination, and organization there is built up, step by step, in orderly sequence, the complete and perfectly formed infant. Food is the material out of which the body of the infant is built and this material is supplied by the mother.

Nature has made a wonderful provision for nourishing the developing embryo. In women the maternal structures directly, without the intervention of a special apparatus, supply nourishment to the fertilized ovum, which is the potential child. Very early, however, in uterine life a peculiar mechanism is formed through which passes from the mother's blood stream, to the embryonic or fetal blood-stream, the nutrient materials needed by the developing child. This structure, known as the placenta (after birth), is developed partly by the mother and partly by the child.

The placenta acts in the double capacity of pulmonary and intestinal mucous membranes; taking up both oxygen and food carried in the mother's blood. The fetus then receives its nutritive materials from the placenta. The mother does not give even a drop of her own blood to the child. The latter forms its own blood, from the food material supplied through the placenta. The function of the placenta is chiefly absorptive but partly eliminative, for through it the fetus eliminates its waste.

MOTHER-CHILD SYMBIOSIS

An amusing argument has been carried on by the scientists over the question: Is the fetus a true parasite in its relation to the mother, or does it develop in harmonious symbiosis giving some compensatory physiologic benefit to the mother? Both sides and the middle have been ably defended, but the truth seems to be that the fetus can be parasitic or symbiotic, depending on conditions.

For example, it has been shown that there is a reciprocity between the internal secretions of the mother and fetus. In diabetes in the mother, the pancreas of the fetus is able to compensate for her own lack of pancreatin.

The pancreatic glands were removed from a group of dogs and they all promptly died of diabetes except one slut. She was pregnant and manifested no signs of diabetes until the birth of her whelps, whereupon she also promptly died of diabetes. The pancreatic glands of her embryo pups supplied the needed pancreatic hormone to her body so long as they were within the womb. When their connections with the mother were severed, she could no longer draw upon them for this hormone and, so developed diabetes and died. This is a remarkable example of the harmonious symbiosis that exists between mother and fetus.

Dr. Feldman says that "during asphyxia of the mother, the fetus sends oxygen to the maternal blood." The amounts of both nitrogen and phosphorus retained by the pregnant woman is greater than during her non-pregnant state. The same is true of iron and sulphur and perhaps of all elements of the body. It is the rule that a woman's nutrition is improved during pregnancy and it is not uncommon for her ailments to disappear during this period. Investigators claim to have demonstrated the existence of placental antibodies in the mother's blood. Antibodies are supposed to increase the resistance to germs and toxins.

PARASITIC FOETUSES

Within certain limits, pregnancy may prove positively beneficial to a woman. On the other hand there are conditions in which pregnancy will prove to be her undoing. There is a vigorous tendency of the embryo to maintain, at whatever cost to the mother, the calcium content of its own organism. This is the reason that the pregnant woman, inadequately supplied with lime salts, loses part of her teeth. In severe

cases of deficiency, she may even develop osteomalacia.

There will be a loss of lime, iron and other elements from the pregnant woman's tissues unless her own diet is rich in these. The fetus behaves somewhat as a parasite if the mother is not well-fed. If the food is insufficient or deficient, or if other unhygienic factors disturb the mother's nutrition, the metabolic balance will become disturbed in favor of the fetus. Depletion of the maternal bone-calcium occurs where the mother's diet does not contain a sufficient amount of assimilable calcium. The feeding of inorganic calcium (lime water and other lime containing drugs) to the pregnant woman does not benefit.

Experiments with rats have shown that the calcium content of fetal rats remains normal when the mother's are inadequately supplied with lime salts. When the diet of female rats is deficient in calcium it does not affect the calcium content of the young rats unless the deficiency has persisted for a long time prior to pregnancy. If such prolonged deficiencies have existed, the entire development of the young is seriously impaired.

Dibblet, feeding diets very poor in calcium to pregnant dogs, found the skeleton of the new born dogs possessed a normal calcium content, although the mother invariably suffered with osteomalacia, so greatly had the vigorously growing fetuses robbed her blood and bones of lime to supply their own bone-building requirements. As much as 30 per cent of the calcium was withdrawn from the mother's bones.

Whether the fetus is to develop in harmonious symbiosis, or antipathetic symbiosis (parasitically) depends upon the mother's nutrition. It lies within the power of the mother to determine whether her child shall be a parasite or a symbion. She is eating and living both for her child and herself. Surely this is a subject worthy the study of every prospective mother.

CALCIUM

Hinds will often eat the shed antlers of the buck. In Mr. Macpherson's book on Red Deer, he says: "The immense quantities of bone deer will eat is proved by Mr. Williamson's statement to Mr. Harvie-Brown, that in a few months they had completely eaten the bones of a horse in the Hebrides, and Mr. Harvie-Brown remarks that this great appetite displayed may be accounted for by the total absence of bone-producing elements in the geology of the Hebrides."

Hinds, when gravid and while suckling their young, require considerable lime, and where the soil is deficient in this element so that it is lacking in their regular diet, they turn to bones. In certain parts of the British Isles the hinds will eat the horns off the heads of living stags, so lacking in lime is the soil. P. Y. Alexander, M.A., L.L.D., quotes one Whitaker as saying "both bucks and does will pick and chew shed horns. I have seen them also chewing old rib-bones of beef."

A sufficient restriction of calcium in the diet of gravid rats renders delivery so difficult and painful that they die in trying to give birth.

Dr. Melville C. Keith, who was much ahead of his time in his dietary views, has left us this observation, *Seven Studies*, 1900; "Caries, or rotting of the teeth from insufficient material, is more familiarly seen, and more universally experienced, in the woman who bears children and is fed with scanty tooth material while the child is growing within her. The skeleton of the child demands bone and it is not in sufficient quantity in the blood of the mother. And, the mother's body being unable to respond to the demand for the bone material, her own bony system is drawn upon, and hence the disintegration of the teeth to supply the child with the needful bone material. So, also, are her bones absorbed for the same reason.

"The direct cause and effect are to be seen in the shell of an egg. Take a hen and deprive her of all material containing lime, and the egg will be so very soft shelled as to mash up when it is laid. Not having shell material enough, the egg shell is deficient and the hen, if not supplied, will die after laying a few months.

"When the shell is very soft, give the hen powdered oyster shells, or lime, or old bones, in a shape for the hen to swallow, and the eggs will soon have a tough, thick shell.

"So with cattle. I have seen cows on the Prairie of St. Landry, Louisiana, devote a couple of hours to chewing up a bone while they were carrying a calf. The proper thing in these cases is to supply these animals with bone producing material."

This should show us how urgently necessary it is to supply the pregnant mother with adequate calcium in her diet. As phosphorus is as essential as calcium to the bones and the latter is usable in proportion to the amount of the former that is present, it is equally essential that the mother's diet contain ample phosphorus. Women who crave something sour during pregnancy and who insist on satisfying this craving with pickles, vinegar, etc., rob their bodies of calcium instead of supplying this needed element. Those who satisfy their craving for sweets by eating candy, sugar, cakes and such, instead of eating dates, figs, raisins, bananas, etc., are thereby assisting in the calcium depletion of their bodies. White sugar is especially a calcium-thief.

The use of lime water will not help either the mother or the fetus in such cases. Indeed, the use of inorganic lime-salts, with the exception of calcium carbonate and tri-calcium phosphate, produces "acidosis." Large doses of calcium chloride induce severe losses of calcium from the body and may even result in osteoporosis or osteomalacia. Chloride of lime, if given for a long time, results in severe losses of calcium,

even in bone deformity. Calcium chloride induces hyperacidity within the body and the alkalies of the bones and other tissues are used in neutralizing the acids. There is only one source from which to secure your calcium--namely, natural foods.

SOURCES OF CALCIUM

It is now the vogue to feed pregnant and nursing mothers milk to supply them with lime for their babies. Year after year, this milk is narrowed down, more and more, to pasteurized milk, which supplies practically no calcium. Dr. Claunch gave it as his view that if a pregnant woman takes a glass of milk a day during her pregnancy, she will have a large baby, one too fat for an easy birth. Besides producing an over-sized baby, milk is by no means the richest source of calcium.

Physicians also prescribe calcium tablets for mothers in order that they may secure sufficient calcium with which to build the bones and teeth of their babies. This calcium is in the form of an inorganic salt and is not only not useful, but is positively injurious.

The need for calcium by the pregnant mother is greatly exaggerated. The amount of calcification, both of the bones and teeth, of the baby before birth is not great. Calcification has hardly begun in the teeth at the time of birth and the bones are still soft at this time.

Most fruits are considerably lower in calcium than is milk. The same is true of nuts. Yet if a mother received no more calcium than she derives from a diet of fruits and nuts she will secure all the calcium she and her baby require. There are several vegetables that contain twice as much calcium as milk. Some of them run nearly three times as much calcium as milk. All of the following vegetables are much richer in calcium than milk: Cabbage, red cabbage, savoy cabbage, celery, dandelion, dill, Jerusalem artichoke, lettuce, romaine lettuce, okra, both large and small radishes, sorrel, sugarbeet leaves, swiss chard, tomatoes, turnips, turnip leaves, water cress. A number of other vegetables contain as much or nearly as much lime as milk. All of them contain sufficient to meet the needs of the mother and baby.

IRON

Not only must the mother supply the calcium or lime salts and phosphates, so essential to the development of the teeth and bones of the child, both before birth and during the nursing period, but she must supply every other element the child requires. She must supply the vitamins. She must supply the child with sunshine. And where she fails to secure these for herself, the child will also be deprived of them.

If the mother's diet does not contain sufficient iron, the fetus will draw upon her blood and tissues for its supply. Many anaemic women improve during pregnancy, but if the mother's diet is lacking in iron there is a tendency to anaemia during the latter months of pregnancy.

SOURCES OF IRON

Milk is low in iron. To feed milk for calcium does not supply the needed iron. It will be best to secure calcium and iron from the same sources--this is to say, from fruits, nuts and vegetables. Taking iron tablets is of no avail. Sorrel, lettuce, black salsify and spinach are the richest sources of iron, but all green vegetables are well supplied with this element. Fruits and nuts are lower in iron than vegetables, but contain sufficient amounts to meet the needs of the mother and baby. Asparagus, artichokes and kale are high in iron content. Raisins, despite the advertising slogan, "have you had your iron today," are not rich in iron.

OTHER MINERALS

Eating a diet of fresh fruits and of fresh vegetables, particularly uncooked vegetables, will not only guarantee an abundance of iron and calcium, but will, at the same time, guarantee an abundance of the other needed minerals and of all the vitamins required. Taking sodium or phosphorus tablets, vitamin pills, etc., will be of no avail. Stick to nature's products for best results.

Professor Sherman of Columbia University, in his *Chemistry of Food and Nutrition* states: "The necessity of a generous supply of vegetables and fruits must be particularly emphasized. They are of the greatest importance for the development of the body and its functions. As far as children are concerned we believe that we could do better by following the dietary of the most rigid vegetarians than by feeding them as though they were carnivora. If we limit the most important sources of iron--vegetables and fruits--we cause a certain sluggishness of blood formation and an entire lack of reserve iron, such as is normally found in the liver, spleen and bone marrow of healthy, well-nourished individuals."

VITAMINS

Due to the rapidity with which the child is growing, whether before or after birth, and to the fact that the mother has already attained full growth (at least she should have done so before becoming a mother), food deficiencies affect the child much quicker than they do the mother.

Pregnant animals fed on a scurvy producing diet, develop the disease much more rapidly than non-pregnant ones, and they often die of scurvy before the time of delivery. The sacrifice of minerals by the mother's body may continue to such a state that grave disease such, for example, as the change from compact into cancellous bone-tissue (osteoporosis), may develop.

When Ingier fed pregnant pigs on a diet "deficient in C," the fetuses developed typical infantile scurvy in ten to twelve days. He found that if the pigs were properly fed until close to delivery, a sudden change to a scorbutogenic (scurvy-producing) diet does not affect the fetuses. These will be born normal. But the milk proves to be inadequate and the young pigs quickly develop scurvy. The circus lioness, when fed on meat alone, brings forth cubs with cleft palates due to calcium deficiency.

Dr. Percy Howe in a paper (1922) on "Decalcification of Teeth and Bones and Regeneration of Bones through Diet," refers to some of his experiments on guinea pigs and states that the use of a scorbutic diet, one containing an excess of carbohydrates, "resulted, in a number of cases, in the absence of eyes in the young. I have had several animals born with only one eye, or one good eye and other sightless or imperfectly formed. Many are born with spots on the outer coating of the eye, which clear up under proper feeding."

Howe also says: "In animals on the scorbutic diet, eye trouble follows even to the point of pus welling out over the eye during eating. Feeding orange juice is followed by complete clearing up of the trouble."

The vitamins in milk are not synthesized from the mother's own body, like the main nutrients, but are derived unaltered from her food. It is essential that the pregnant and nursing mother's diet contain sufficient of these to meet the needs of her child without robbing her own tissues of their stored supplies. Fruits and green vegetables are the best sources of these. Many children suffer handicaps, defects, deformities and vital weaknesses, as a result of failure to secure in infancy and before birth a diet adequate to supply their needs. An abundance of fresh greens and fresh fruits is essential for the pregnant and nursing mother and for the nursing child.

PROTEIN

If the mother's diet, though containing a sufficiency of protein, contains these in a form which is not fully adequate for promoting growth in the offspring, the maternal organism supplies the foetus with what is lacking by drawing upon the maternal tissues.

The amount of supplementary protein required to make good the inadequacies of the proteins of such foods as corn, cereals, seed, bananas, carrots, etc., is very small. It is much less than would be required if the supplementary food were the sole source of protein. Mothers whose diet is largely cereal require some supplementary protein, but not large quantities of this.

CUMULATIVE EFFECTS

We may go beyond the immediate results of a deficient diet during pregnancy or during lactation. It is really necessary to begin right eating before birth, even before conception. Repeated experiments with animals and numerous observations on humans have demonstrated that certain long-continued dietary deficiencies result in serious impairment of the generative organs. Animals so fed conceive less often and have smaller litters than well-nourished animals. Exclusive diets of fats and proteins and carbohydrates and lime-poor diets have such effects. Defective nutrition may lead to degeneration of the mammary glands with resulting changes in the composition of the milk or a failure of the milk supply.

Short experiments are of little value in determining the value of a dietary. In animal experimentation it has been found that on a given diet the animals may seem perfectly healthy and apparently well-developed and reproduce their kind, and in the third or fourth generation symptoms, the outcome of deficiencies of organic salts, make their appearance. Control animals under the same conditions, except that they are adequately provided with the element or elements deficient in the experimental diet, remain free from the degenerative symptoms.

Osborn and Mendel, as well as McCollum, have repeatedly stated that the thriving of a single generation on a diet is no guarantee that it is a satisfactory one. It may be only slightly inadequate and its effects may become apparent only after the passing of several generations. After the passing of a few generations on a slightly inadequate diet, the animals suddenly cease to conceive so often, and give birth to weakly and short-lived offspring. Finally complete sterility or failure of lacteal secretion occur.

It is often only after the lapse of several generations that all of the evil effects of an unbalanced diet become apparent. It is only then that lessened fertility shows up and the offspring are weak and short-lived. Ultimate sterility and inability to secrete milk ends the line.

Undoubtedly the increasing inability of civilized mothers to nurse their babies is the result of the denatured diet they have been existing on for the past two or three generations. Defective nutrition may even lead to degeneration of the mammary glands with resulting changes in the composition of the milk.

Berg says: "From a communication made to me verbally by Urbeanu I learn that he saw barn door fowls, provided with what seemed a bare sufficiency of calcium, develop for three generations in a way that appeared perfectly normal, but the birds of the third generation were sterile because their eggs had no yolks. Control birds were still entirely normal in the fifth generation" Who can estimate the amount of "degeneration," deformity "hereditary disease," inability to nurse, to conceive or procreate, inability to give birth, nervous and mental disorder, etc., that is due to the faulty diet of those who have gone before? The fathers have eaten inadequate diets and the children's teeth have holes in them.

The effect of deficient diets reach through more than one generation. Female dogs fed on a diet which produces rickets gave birth to pups which were so strongly predisposed to rickets that the feeding of good food for a considerable period did not remove the tendency to rickets. The dietary deficiencies also increased the susceptibility of the young to respiratory troubles, such as catarrhal conditions (these often extending into and impairing the digestive tract) and pneumonia.

Physicians of experience have all seen instances of thin, poorly developed women, who have been sick all or most of their lives and who have conceived, perhaps, only after six, eight, ten or more years of married life, give birth to babies apparently normal, but weak and not able to eat. They have juggled the diets of such infants in every conceivable manner without success, because these children should never have been born and in many instances will not be able to live. I have seen two such children from one such mother and one such child from another such mother. Strangely enough the desire for motherhood is often stronger in these women, who should not have children, than in normal women.

Children born of well-nourished parents have good digestive powers; whereas children of poorly nourished parents are likely to have poor digestive powers. This fact is also attested by stock raisers with reference to their stock.

Well-nourished mothers (this does not mean over-fed) give birth to well-nourished and, therefore, well-developed and vital children. Not merely are the bones and teeth and respiratory organs involved in the results of adequate or inadequate diets, but every tissue in the body is weakened or strengthened, as the case may be, by the mother's food. Mother's nutrition is the real prenatal influence.

McCollum has pointed out that a slightly deficient diet eaten over a period of generations, lowers vitality, predisposes to premature old age, and shortens life. Grant and Goetsch found a slightly deficient diet, when eaten over a long period of time produces pathological conditions which never result from extreme dietary deficiencies. They found that young animals have rickets only when the diet of the mother is of a type which leads to rickets. They proved that the mother's diet governs absolutely the decreased resistance of the young to the effects of deficiencies in their own food. Rickets they found, will not develop in young animals whose diet is deficient in bone material, providing they are born of well-nourished mothers. The rapidity and severity with which rickets develops in young animals, depends very largely upon the depletion of the mother's nutrition during pregnancy.

"Poorly nourished cows frequently give birth to weak, puny calves which are hard to raise," says the U. S. Dept. of Agriculture. "The feeding of the calf, therefore, begins before it is born."

The facts here stated as true of cows and calves are equally as true of human mothers and their infants. The food elements essential for the development of the infant are taken into the mother's stomach, digested and absorbed into her blood, from which they are transmitted to the fetus, through the umbilical cord. If the mother does not consume food of a character to maintain her in a vigorous condition, and at the same time supply the needs of the infant, both she and the infant will suffer. In endeavoring to rear healthy, vigorous children many mothers handicap themselves at the start by not eating properly.

The facts given in this chapter by no means cover all the troubles that may be produced in the offspring by faulty feeding of pregnant women. They are enough, however, to reveal the urgent necessity for mothers and mothers-to-be to intelligently consider and adequately study the vitally important subject of prenatal feeding.

Let the mother not forget that not alone the teeth, but the bones and all the other tissues of her child, its future growth and development, its susceptibility or "resistance to disease," its chances of survival and much else depend upon the food with which she supplies it during the nine months of ante-natal life. Her own health and the integrity of her own tissues, perhaps, even the integrity of her mind is wrapped up very largely in her diet during this period. The mother's responsibilities are great and she cannot shirk them without paying a heavy penalty; and without, also causing her child to have to pay. It is not just a matter of her teeth or of her child's teeth.

DIET AND INTELLIGENCE

Dr. John. Monroe, of Long Island University, during sixteen years of experiment and investigation, subjected five thousand school children to tests at various periods of their lives, and followed seven hundred of these through college and into business. He sums up the result of his work in these words: "Intelligence is not constant, nor is it entirely hereditary. Much of the present shortage in intelligence may be alleviated when it is recognized that the physical and chemical surroundings of the germ plasm prior to birth may hopelessly condition

that plasm into idiocy after birth; that the expectant mother probably does require food and health care for the developing embryo in order to produce children of high intelligence; that the vicious food conditions, the sanitation and hygiene, the brutality of many homes appear to be the conditioners of moronity and border-line dullness; and rapidly developing intelligence must be stimulated on all levels incessantly if it is to come to full development."

In Vol. 5, of this series, this subject will be dealt with at greater length. Mother's nutrition conditions to a greater extent than has ever been suspected, the future intelligence of her child.

DIET DURING PREGNANCY

Women who will eat properly and care for themselves hygienically during pregnancy will not only save their teeth and preserve their health and assure themselves healthy, vigorous children, but they will make childbirth safe, easy and, providing, they are normally developed and live fully right, make childbirth painless.

Some years ago a theory was propounded that as a means of making childbirth easy, even painless, the mother should eat no foods during pregnancy that would harden the forming bones of the fetus. The mother's own bones were also to undergo a softening process in order to decrease the resistance to the passage of the child at birth. It was explained that by a proper course of diet after birth, the bones of both mother and child would quickly recover and the bones of the child would become strong enough to support him.

Fortunately, the practice that grew out of this theory was better than the theory. The diet that was thought best adapted to bring about these desired results, was one of fresh fruits and green vegetables. Apples, grapes, lemons, oranges, figs, raisins and other fruits in season were eaten in abundance. Potatoes, beets and other tubers were excluded for it was thought that foods that grow under ground were less fit for food than the foods growing above ground. An exception was made in the case of onions. All vegetables were used abundantly. Cereals were used exceedingly little. No bread at all was permitted and but little meat. Distilled water was used for drink.

The reader will see that such a diet supplies an abundance of bone-forming material. An excess of bases will be introduced into the body and plenty of vitamins will be present. The mother's bones, teeth and other tissues and her health would not suffer mineral losses due to a commandeering of these by the fetus, as would occur if a diet were fed to secure the effects they set out theoretically to secure. The theory was wrong in principle. The practice was good but not based on the theory itself.

Along with this diet went sunbathing, gymnastics and good general hygiene. The result was that many women, who followed out the complete program, reported absolutely painless childbirths. It is unfortunate that the great majority of women possess so little regard for their own and their children's highest welfare, that only one in ten thousand is willing to forego their favorite indulgencies in order to have painless parturition and a healthy vigorous child. Although I am convinced that childbirth should cause no more pain than swallowing or a bowel movement, in a well-developed woman, I have been able to secure this effect in only one case, due to the fact that I have been able to get but one woman to follow instructions to the letter and not only partially. In this case three prior births had been long and unusually painful. The fourth was over in twenty minutes and was painless.

Women who are poorly developed or deformed, due to faulty food, lack of sunshine, insufficient exercise, and the deforming influence of corsets or other tight clothes, during the period of development, cannot expect perfect results; but all of these, by proper eating and proper care during pregnancy, will have safer and easier births and assure better health in both themselves and their offspring.

DIET WHILE NURSING

The child depends on the mother's nutrition for its food supply, after birth, for as long as it continues to nurse. Her own diet is as important to her child during the nursing period as before birth. These two periods--gestation and lactation--may be considered, from the trophologic viewpoint, as one. They are one both as regards the mother and as regards the child.

Observers have recorded cases where infants at the breast became affected with scurvy although their mothers were in apparent health. Sucklings have been known to be affected with beri-beri while their mothers were in apparent health. This is attributed to vitamin deficiency. It does not matter whether it is a lack of vitamins or calcium; the mother's diet is certainly inadequate. Children may become rachitic or may develop xerophthalmia (a dry and thickened condition of the conjunctiva) because the mother's diet is inadequate.

That undernourished mothers cannot nurse their babies is proven by the results of fasting, by the experience of mothers in certain parts of war-ravished Europe, by animal experiment and by examples existing all around us. A fast quickly reduces the quantity of milk and impairs its quality. Experiments have shown that after 14 days of fasting the amount of milk secreted is only about one-seventh of the normal amount. The milk becomes poorer in water, protein, sugar and mineral salts. The fat content remains practically unchanged. Lusk found that in fasting goats, the fat content increased. Others have found the fat content of milk to remain practically the same in cow's milk, although the other elements all decreased.

Within wide limits the composition of milk is independent of the food eaten by the mother. For, so long as the needed tissue-building elements are present in the mother's own body, she will be able to produce milk of a definite composition. The mammary glands manifest great energy in extracting the needed materials--whether fats, proteins, sugars, minerals or vitamins--from the tissues of the mother and the source of milk does not "dry up" so long as the mother's organism can yield up the requisite materials for its production.

The quantity of milk produced is greatly influenced by the mother's diet, but this will not greatly affect its quality, so long as her own tissues may be drawn upon to make up the deficiencies. When the supply of any tissue building element fails, the quantity of milk falls off, but the composition remains practically unchanged. If there is complete failure of only one tissue-building element from both the diet and the maternal organism, the secretion of milk is arrested.

Carl Rose carried on experiments on goats over considerable periods. He states that he could not find that extensive variations in the diet resulted in any changes in the composition of their milk. It is certain, however, that no female animal can provide, indefinitely, food elements in her milk, if these are not supplied by her diet. The persistent robbing of her own tissues, to supply the needs of her young, results in their exhaustion, and in serious disease in the mother. The milk suffers and this produces, as shown by Steenbock and Hart, grave debility in the young. Long continued malnutrition in mothers results in degeneration of the mammary glands, as was seen in Central Europe during World War I.

Kauppe, in Germany, examined the milk of a number of nursing mothers during the war, and found the fat content practically normal. He resorted to a fanciful interpretation of psychic influences as an explanation for the failure of infants to thrive on their milk. In Central Europe the half famished mothers during the war were unable to nurse their children. How ridiculous to call in "psychic influences" to account for what was so evidently due to partial starvation.

PRACTICAL CONSIDERATIONS

The energy displayed by fetal organisms in securing the nutritive materials requisite for life and growth even under the most unfavorable circumstances, and the energy displayed in the same direction by the milk glands, the organs chiefly responsible for the nourishment of the young organism immediately after birth, demonstrate how intent nature is upon providing for the "younger generation." One generation exists simply for the next and is sacrificed, if need arises, for the next.

What these facts lead to, as a practical proposition, is the necessity, on the part of the mother, to eat an adequate diet both during pregnancy and lactation. For, if she does not do this, her own body suffers, and after it has been "bled white," the body of her child also suffers.

The mother can supply to the fetal and nursing organism only what she possesses. If its needs are not supplied by her diet, her own tissues and stored reserves become the diet of her child.

Pregnancy and lactation are not "diseases." They do not call for special diets, or for special care or treatment. The mother should simply be careful to observe all the rules of hygiene and the rules for eating and for combining her foods, as given elsewhere in this book. She should supply herself and her child with an abundance of vitamins and minerals, by eating plenty of fresh fruits and green vegetables--largely or wholly raw.

Too many babies are born puny and feeble and lacking in the vigor and sturdiness that should characterize the beginning of life, because mothers are not properly fed. If too little of the fruits and green vegetables are fed during the prenatal period and during infancy and childhood, there results a lasting weakness which shows itself when the child is exposed to stress or strain.

Berg advises "from five to seven times as much vegetables, potatoes, and salt-rich fruits (apples and pears are poor in this respect), as of meat, eggs or cereal products--for otherwise an adequate excess of bases cannot be guaranteed," to supply the needs of growing children.

This standard will be found to be an ideal one for the pregnant and nursing mother. Undernourished or inadequately nourished mothers cannot hope to produce healthy offspring, or to nurse them properly after they are born.

Berg records that "when, at the sun-bath station of the Viennese University Clinic it became necessary during the winter to restrict for eight weeks the supply of fresh vegetables, scurvy appeared with positively explosive violence." This serves to emphasize the tremendous importance of fresh fruits and green vegetables in the diet of everyone, but especially in the diet of mothers.

Cereals, especially, seem to induce defective teeth, particularly when not counter-balanced with large quantities of green foods and fresh fruits.

McCullum says: "There is good reason to believe that the common practice of confining the diet to too great an extent to bread, meat, sugar, potatoes, beans, peas and cereals (before birth and during the nursing period) is in no small measure responsible for the failure of many mothers to produce milk of satisfactory quantity and quality for the nutrition of their infants. There is no hardship (but great benefit) in the restriction of the intake of meats, etc., and the increase of milk, fruits and green vegetables, and the mother who does so will greatly

minimize the danger of a break in the healthy growth of her baby."

Mothers are not likely to undereat on starches, proteins and fats, although, on a one sided diet, they may eat only inadequate proteins. A varied diet will prevent this. The food elements that are most likely to be lacking in the diet of civilized mothers are the minerals and vitamins. Living largely on refined and denatured and cooked foods, as they do, mineral and vitamin depletion is one of the greatest evils connected with the mother's diet.

Let her eat acid fruits if she has a craving for something sour. Pickles are not food and will not nourish her child. Sweet fruits will satisfy her craving for something sweet; use these instead of sugar or candy. Every nutritional demand can be supplied by natural foods and by nothing else. Canned fruits are confectionary and not fruits. Their food value is small. Eat fresh ones.

In leaving this subject, let me again emphasize the necessity of good general hygiene of both the mind and body. Abnormal mental states will impair the mother's nutrition as certainly as defective food and, in this way, cripple her child. A want of fresh air or of sunshine, a lack of rest and sleep, overwork, emotional overirritation, sexual abuse or any other enervating and devitalizing influence, will result in a perverted metabolism, toxemia and trouble for both mother and child.

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