What We Know For Sure About An Optimal Diet For Human Beings

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WHAT WE KNOW for sure about an optimal diet for human beings could produce a prodigious or a meager paper. It is an intriguing title.

The World Health Organization defines health as follows: "A state of complete physical, mental and social well being and not merely the absence of disease or infirmity."

The National Research Council states that if optimum nutrition depends on optimum diet, "this becomes distinctly significant if one recognizes that health . . . has quantitative characteristics involving efficiency, reserves and the capacity not only to avoid diseases but to attain maximum inherited potentialities."

My own definition of an optimal diet is that which would provide man with the nutrients essential to regenerate his body cells; to enable him to mature regularly as determined by normal osseous, physical and mental characteristics; to resist disease; to reproduce his kind in homogeneity, and to enable him to produce a livelihood for himself and his family.

Healthy human beings have been known to fulfill these standards on various dietaries: vegetarian, with small amounts of eggs, milk, meat or fish; carnivorous, (including marine: fish, Crustacea, mollusks, etc.) with small amounts of vegetation; and the omnivorous diet including many combinations of the vegetarian and carnivorous foods.

Let us glance backward at civilizations that have maintained physical perfection on the various known dietaries. Lacto-vegetarian people such as the Hunzas ate the root, the stem, the leaf and the skins of vegetables; the seed, the nut, also fruits, as well as a small portion of animal products such as milk and butter and a little amount of the flesh of goats on feast days. They lived a very long life and enjoyed excellent health. The modern chemist would undoubtedly find that these diets were adequate in all requisites. (They counted on the pulverized rock in their irrigation systems for replenishing their soil.)

Price has reported marine life has sustained peoples in optimum health. These peoples have eaten mollusks, crustaceans and fish, including the visceral portions such as liver and milt as well as eggs. Since some vegetable matter is needed to round out the diet, one of the numerous varieties of edible sea weed and kelp have served such a purpose, as well as land vegetation.

Meat diets have been known to support peoples in optimum health. To make such a diet complete, visceral as well as muscle meats must be consumed. Steffansson has described Eskimo tribes living untouched by modern civilization whose exclusive diet was fish, walrus and caribou, and who ate as the vegetable portion the moss found in caribou stomach and the sea weed from the stomach of the walrus. Their death was almost universally due to accident, not disease.

With whole races of people prospering on the aforementioned diets, it would seem logical to assume that a combination of these foods could support man in health. The well-to-do Chinese have accomplished a combination with artistry and nutritional adequacy.

The American people have been great faddists about diet. What may be a medical necessity for some frequently becomes a fad for others not in need of the treatment. To cite a few familiar instances, when I was a child, cod-liver oil was considered essential for all children. The chemist discovered that other oils contained similar physical properties and the cult of cod-liver oil waned. About the time I entered medical school, salt was popularly credited with causing high blood pressure, and some diets were restricted in salt; this theory also waned until recently, when again salt-free diets are in vogue in some quarters with the belief renewed that salt, especially sodium, contributes to high blood pressure. In the twenties, protein was suspected of causing nephritis, and many people embraced a low-protein diet. When chemists discovered that fish oils caused toxic symptoms it was a long time before it was shown that only when the oil was rancid did it cause this problem. Meanwhile, chemists were able to concentrate vitamins A and D, then assumed to be the important fraction of cod-liver oil, from fish livers, and the vitamin preparations began their ascendancy, and have remained popular, as vitamin after vitamin has been synthesized. When dentists demonstrated that sugar caused tooth decay there was a prompt decline in the use of sugar. Shortly after World War II a reversal in the attitude toward protein in the diet came about. One of the most important recent observations is the assumed role of cholesterol in the production of atherosclerosis. This theory has thrown into disrepute the use of all cholesterol-bearing foods including animal fat, cream and butter, eggs, and by implication, all fats. Recently, however, the unsaturated fatty acids, especially those in vegetable oils and

cod-liver oil, have been shown to reduce cholesterol in the blood stream.

Despite fads and prejudices, the enlightened families of America possess the general knowledge, though not necessarily specific, that an adequate diet should be fresh as possible, contain adequate protein, fat, carbohydrate, vitamins and minerals. In general, the public looks to the physician to prescribe therapeutic diets containing the proper amounts of the known necessary nutrients for the nutritionally ill, such as the diabetic. Among the older generations, family dietary habits are fairly static and a large segment of the population follows these habits without awareness of recognized standards for nutritional adequacy. Whether these dietaries are optimal is, then, a matter of accident, but in the families of great physical and mental stability it must approach the optimum.

I want to establish the premise that the metabolism of every individual determines his optimal dietary. **"Metabolism is the sum total of metabolic processes that maintains an individual in a state of health or disease."** The response of his body to the weather; the effect of physical exercise; the reaction to emotional stress and stimuli, and the rate of replacement of cells in his own body or his kind will all play a part in determining whether any given dietary is optimal.

O. V. Batson, professor of Anatomy at the University of Cincinnati during my medical training, impressed upon his students that use produces structure. This fact accounts for the structural habits of human beings familiar to us. Before the turn of the 20th century, in the era of Clarence Day's LIFE WITH FATHER, manpower, not mechanical devices, supplied the labor for the farm and the city. Heavy labor required ample food. With a high caloric intake, physical output could be high. Using a menu for an evening meal and a cook book of the day, I asked the maitre d'hotel of my Los Angeles club the cost of preparing such a meal today, totaling about 4000 calories. He said, "I cannot procure all of these ingredients, but by substitution, it would cost about $12.50 apiece for eight." Another chef computed the cost at $20.00 apiece for eight. It is plain to see that these dietaries are an economic impossibility in 1958, however optimal they may be.

When my Father founded his Sanatorium in 1903, he served his patients an abundance of food, though they were at rest for the treatment of tuberculosis. A day's ration as offered would include, for breakfast, fresh fruit, prunes, ham and eggs or a breakfast chop or steak, whole grain cereal, potatoes and fresh raw milk with toast and butter; for luncheon, soup, stew-meat, two cooked vegetables, salad, milk and dessert; for dinner, soup, side order of fish, rare prime-rib roast, potato and a green vegetable, salad, milk and fruit for dessert. This amounted to over 4000 calories. He maintained his own farm to assure the freshness of the products. Patients enjoyed the meals, many got well, most gained weight and only rarely grew fat. As they improved, they took daily walks, some being able to walk as much as ten miles before they returned, cured, to their homes. This was apparently an optimal diet for those who metabolized it.

When I joined the staff of the Pottenger Sanatorium in 1930, I took charge of "special diets." Patients were still offered a high caloric diet, roughly 3800 calories, but on the whole, they consumed less. Patients continued to get well, a few got plump though most did not, on a ratio of one part fat, one part carbohydrate and one part protein. This, too, was probably an optimal diet for many of the patients.

When I was a student at Otterbein College in 1922, I was sent to solicit funds for the College in a rural area in Adams County, Ohio. The breakfast provided by my farmer host was prodigious. The dinner consisted of golden chicken soup with pieces of eggbag and giblets; fried chicken as only Ohio housewives know how to prepare; mashed potatoes, gravy, side meat, home-cured ham, beets, home canned succotash, cucumber pickles, pickled green tomatoes, pickled water melon rind, jelly and jam, corn bread, fresh home-made bread, fresh butter, a pitcher of milk, and pie. I have never forgotten that meal. Accustomed though I was to my Father's sanatorium fare and to my Grandmother's groaning table at New Baltimore, Ohio, I made a poor showing to my host and even his ten-year old son. However, they gave me a tour of their farm where it was apparent that the amount of physical labor required to raise the chickens, hogs, grain, vegetables and fruit, as well as to maintain the dairy animals, do the preserving and canning and keep the house and outbuildings in their excellent condition would demand a high caloric intake for achievement. One could surely believe that these people were consuming and metabolising an optimal diet.

Since I entered practice in 1930, America has entered an age of wide-spread mechanization, from the farm to every department of city living. O. V. Batson's teaching that use determines structure still obtains. The automobile provides practically effortless locomotion, labor-saving devices throughout the home have lessened the physical exertion of women; modern technology in all categories of labor has reduced physical output of both men and women. Hence the caloric requirement to perform labor has been materially reduced.

Many women and young girls, caught in the web of modern fashion for the slender silhouette, have gone to great extremes in dieting. Without medical guidance they have undertaken self-imposed diets providing as little as 700-900 calories a day. There is an alarming number of such women and girls who begin the vicious circle of lowered energy, menstrual irregularities, poor skin, nervous exhaustion, irritability, frequent

colds, anemia, and a host of unpredictable disorders when they attempt to live on such a low caloric intake. To their confusion, they may not reduce but may gain especially in size. They may employ hot baths, massage or reducing pills with some loss of weight, but with concomitant loss of energy until it is often necessary to seek medical help. This is a perilous experience for women in the menopause. It is a far more hazardous experience for developing girls and women of child-bearing age. They upset their metabolism and set the stage for difficult pregnancies and delicate infants. Though it is medically possible to reverse the trend by establishing these young women on an adequate diet, this is not always simple after a regimen of self-imposed starvation. The appetite may have failed, making a normal food intake a hardship. They may have diminished the enzyme content of their digestive juices due to lowered vitality which may make it necessary to put the patient to bed and begin a gradual program of feeding, with a goal of 3000 calories a day, as the patient regains strength and the ability to exercise. I personally would supply these calories as one part protein, one part fat of which 10 per cent should be unsaturated fatty acids, and one part carbohydrate. A return to normal energy level would indicate that the dietary was more nearly optimal.

In my experience, there is no more important place to make sure that a diet is optimal than for a pregnant woman. She carries within her a foetus whose normal development depends largely on her nutrition to determine its future health. Supply her a diet of adequate nutrients, make sure that she is physically active without over-tiring, and emotionally serene and you are planning for a vigorous baby. One sign in the later part of the pregnancy that the mother is in good condition is that the infant will kick vigorously **in utero.** In the early stages of pregnancy, guard this woman against nausea and infections for they may leave their mark on her child.

I know for sure that breast milk from a healthy mother is the optimal diet for infants. Breast-fed babies generally develop in an optimal manner provided the mother is metabolizing an optimal diet and thus producing agreeable milk. To those who would abandon nursing at the first sign of colic or eczema, let the doctor first seek the cause of the problem in the mother's own dietary, her general state of health and her emotional adjustment. Lucky is the mother whose obstetrician in cooperation with her pediatrician has convinced her that nursing is the best plan for the baby, and has taught her to prepare her breasts for lactation. For these, a high percentage of successful nursing will ensue. Lucky, too, is the mother who, upon some threat to the nursing, can rely on her physician to first institute immediate treatment to her personally to correct an apparent disagreement of her milk for the infant. As an example, a breast-fed infant may develop eczema. To me, the first mode of attack is to make sure that the mother's diet is adequate and that she is able to metabolize the unsaturated fatty acids. To immediately place the infant on a formula may entail weeks or months to clear the eczema.

In this modern era, we know well that only a small percentage of young women will be won by the scientific logic of nursing their babies. In 1904 hospitals that discharged at least 300 patients a year, only 16 per cent of the mothers left the hospital with the baby at breast in 1956. No statistics were available as to how long these women continued to nurse the infants after leaving the hospital.

Consequently, the business of providing an optimal diet for the new-born becomes a vital consideration. Much can be done to develop a healthy infant. When it is necessary to remove the baby from the breast before a normal span of nursing has occurred, I would place the infant on raw certified milk where available, with suitable digestants. Depending on the blood count, I would early place the infant on raw liver and/or brain tissue, instructing the mother how to recognize healthy liver. I would not add muscle meat until the fifth or sixth month. I would let him chew on a chicken bone when he could grasp it, to toughen his gums. I would encourage his shoulder girdle development through exercise. By the end of the year, the child is ready to partake of some of the normal family fare, and to metabolize at least the recommended 1000 calories a day, and by the end of the second year, 2000 calories a day.

What goal is one seeking on this regime, obviously different from the familiar pattern of powdered or canned milk formulae, canned fruits, vegetables, and tinned meats? We are working to develop hard muscles and tight ligaments which are an index of optimal nutrition. We are working for a hearty appetite so that the child will properly metabolize his food and maintain an optimal development, resist his environment including disease.

For a diet to be optimal, it is essential, then, that the individual himself be capable of metabolizing such a diet from birth. If the visceral capacity of the individual is not optimal, basic damage has been done to his nutrition. If early, this can be visualized in his body contours especially the skull and the teeth. A lost tooth can never be replaced. A narrow nares, though it may have been improved by surgery, is rarely an effective airway. A child with a poor appetite, although served an optimal dietary, does not consume enough nutrients to develop a normal physique. If the infant lacks the intelligent parental stimulation to develop his musculature

in utero but especially after birth, he will not develop a firm skeletal, ligamentous frame so essential to support the other bodily structures. Tight ligaments cannot be overstressed. They are an index of optimal nutrition. Hard muscles are essential to the championship athlete. Two of the Navy's most strenuous services are the submarine and frogman services. They want men whose bodies are heavy when weighed in water. The boy or girl who subsists on diets sub-minimal in proteins and fats develops a soft musculature and gelatinous fat with a poor, easily torn skin, poor in connective tissue fibers, in contradistinction to the individual with a high metabolic drive capable of utilizing an optimal diet. The latter has a thin, pliable, tough skin, resistive to injury with an adequate but not excessive layer of oily fat. Our modern social structure robs most growing children of the physical activity to produce the desire to consume an optimal diet, even if their mothers had been able to provide them with an adequate nutritional background to the time of weaning.

If in childhood there was an adequate physical activity and an optimal diet, the adult can survive on semi-starvation rations for a certain time until he has lost muscle and fat, then he is in trouble from loss of the specialized fat that provides the pressure pads of the body. Then his strength diminishes, his joints, ligaments and muscles begin to fail him, and if he can still move about and carry on a moderate amount of exercise in spite of his discomfort from his loss of pressure pads, maintaining himself on a relatively low carbohydrate diet and a fair degree of metabolic activity, he will remain thin as he continues to degenerate.

On the other hand, the individual with a lesser metabolism, commonly the female who has tried to reduce on low caloric diets may gain in size and weight as she continues to degenerate. Men are more likely than women to see the logic that they must consume more food to produce more energy.

I know for sure that the factors of flavor, custom, availability, religion, processing, storage and preparation affect the gustatory habits of people so that their diet may or may not be optimal. The biochemist by laboratory measurement evaluates food according to its biochemical content, and that is essential information, but the subtler evaluation of taste appeal and attractiveness of preparation is equally important to us in determining an optimal diet Though the natural flavor factor may in no way affect the nutritive quality of food, the savory aroma of a well prepared meal is recognized by physiologists as most important in stimulating the appetite juices. So it is also that the art of the use of dietary adjuncts such as spices may make the difference between the consumption and/or assimilation of an inadequate or optimal meal.

One of the primary problems of young couples today is the terrific competition for their earned dollar. The glamour advertising in magazines and on television and radio of labor-saving devices, home furnishing, luxuries of every description, lures a big share of the income. The attractive packaging of foods with so-called "maid service" features—TV dinners, ready-to-serve food stuffs, both frozen and canned, causes foods to sell at a premium above raw materials. The whole problem of preserving freshness in raw fruits and vegetables obtainable at public markets is a subject in itself. To teach young women to shop so that they will procure the maximum value nutritionally from their food dollar is a major project and one in which we physicians wish we could elicit keen interest. To teach these same young women to take care of vital foods, to prepare them for consumption with the minimum loss of their essential properties: amino acids, fats, carbohydrates, vitamins and minerals, not forgetting that physical stimulus necessary to create the demand for an optimal diet, is another urgent matter. Where will we find people qualified to instruct and ears willing to hear? How can we relate all of these things to an optimal diet?

We know for sure if we are to be a nation of healthy human beings that can fulfill the dietary standards of the World Health Organization, the National Research Council and those I have given as my own, it will require that we as a nation do much soul searching in order that the unborn generations of America may be able not only to have available, but to metabolize, an optimal diet.

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