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## Use and Abuse of Nutrition Research

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In 1915 at the ripe age of 88 died one of the most remarkable women that America has produced. Her name was Ellen G. White. Although she had only a few months of formal schooling when a child, her list of books even today numbers about 60. Some of these are books about her or compilations from her lectures. Unfortunately these writings are buried in a few stores dealing with religious books and listed in a catalogue entitled Spirit of Prophecy Volumes. The chief book of Ellen G. White which deals with nutrition is entitled COUNSELS ON DIET AND FOODS. This work consists of excerpts starting in 1863, at the time of our War Between the States and extending until 1909 or nearly until World War I.

During the first half of her life Mrs. White suffered much from ill health. This probably led to her firm conviction nearly a century ago that there was a relation between the food we eat and our physical and spiritual welfare. I am certain she was also more aware than are most people today, that the physical condition and the spiritual outlook have a profound influence upon the utilization of the food we eat. This is well illustrated by an experience of one of Cornell's researchers who was studying the calcium balance in a group of women students. All except one were storing calcium upon the given diet. As the weeks passed this one stored the element to a lesser extent. Investigation revealed that this woman had been disturbed emotionally and this disturbance had increased as the weeks passed. It also makes me recall the informal discussion of L. B. Mendel at Yale many years ago in regard to troubles with digestion when some

person has passed away in a family and no one can eat because the gastric juice fails to be secreted. Under such conditions he advised the taking of hydrochloric acid as one does in cases of achlorhydria or absence of acid which occurs in about a fourth of our older people.

The writings of Ellen G. White have been cited because they provide a guide to nutrition that comprehends the whole body. Much of this wisdom of the past is not understood today, and we attempt to attain miracles by eating vitamin tablets, mixtures of trace minerals or protein concentrates. Ellen White died before modern biochemistry had unfolded many of the mechanisms of the chemistry of the body and the composition of foods, but if people followed her plan even today they would be far better fed than they are in their attempts to eat bad diets and then compensate by miracle foods. She advocated simple, natural diets low in fat, low in salt, well prepared and modest in amount. Gradually she became a vegetarian, but included eggs and milk in her food pattern.

Today nutrition is in much the same state as medicine was two centuries ago. Men knew much about anatomy and physiology, but this could not contribute to a sound system of medicine because the medical knowledge was very deficient in certain areas such as bacteriology. Furthermore, medicine of two centuries ago was led astray by defective theories such as those behind the practice of blood letting. I often think that if I had been sick two hundred years ago I would have been better off in the hands of a medicine man of the American Indians than I would have been in those of a European

physician. The Indian would have given me mental therapy, food and herb remedies. The European would have drained away my blood.

Nutrition is in somewhat the same position as early medicine. We have learned much about the biochemistry of living matter and foods, but we do not comprehend the whole either in relation to food composition or the body of man. As Dr. Fred Miller says, "We do not know how to put humpty dumpty together again." In fact, we understand very little about the interrelationship between humpty dumpty as a whole and the food he eats.

Finally in nutrition we are faced with the same dilemma which afflicts the whole western world. Our physical-chemical sciences have progressed faster than our knowledge of physiology, morals and sociology. Hence on the pretense of improving man's welfare we are attempting to dump chemicals into the water, the food and the air we breathe. The primary motive in moving these chemicals into the body of man is because it makes dollar profits for special groups. These parasites hope that the host can stand it and they can become rich. As one of my friends in psychology wrote me after I had shown him the list of allowances for pesticides, "If the physicists don't eradicate the white race, the chemists will."

At the basis of much of the premature feeding of chemicals to animals and the spraying of plant foods is the desire to produce a maximum weight of meat or grain or vegetables at a minimum cost. This may have been justified in an era when we could sell our agricultural surpluses at a profit in the world market. For years however, we have been troubled with surpluses that we cannot eat nor sell. The recent conference in Washington was quite disappointed that all scientists did not shout that we should eat more. Some shouted we should eat less per capita and reduce our girth individually. As a nation, a lowered production of higher quality food would probably stabilize our agriculture and improve our health.

Therefore, why do we have to follow a single questionable practice such as feeding arsenicals to poultry or stilbestrol to beef cattle? Wouldn't it be better to be able to enjoy chicken liver without wondering if one is eating too much arsenic or to enjoy a beef steak without wondering if the producer stopped feeding the stilbestrol long enough to clear the tissues before the steer went to market?

Fortunately the producers of arsenicals for poultry made a careful study of chicken livers and if one reads the literature he knows how much arsenic he is getting in his giblet gravy. In many cases this is not done and one has no way of knowing the amounts ingested. A few years ago when dogs were poisoned and paralyzed by residues of a compound named Megasul, which was carried over in the mixer from poultry to dog feeds, no one could tell us how much of this toxic agent was stored in the livers of chickens and turkeys. Perhaps one should not worry, since the turnover in the use of these toxic compounds is so rapid that one would learn about one such as arsenic when his knowledge would be obsolete, because a new compound such as a nitro furane would have entered the picture.

One problem that is never resolved is that concerned with the interplay of toxic residues. Regulations usually set a limit in parts per million upon the amount of residue that can be contained in a fruit or vegetable. Never have I seen an attempt to evaluate the effects of ten or twenty toxic compounds contained in as many different foods.

There recently appeared an article in a Canadian journal which showed that the feeding of stilbestrol to beef cattle left residues that could be measured easily if the meat were assayed 24 hours after the feeding, but these residues could not be measured if the feeding of stilbestrol had stopped 48 hours before slaughter.

Before leaving the subject of stilbestrol it may be worth mentioning that rodents used in research, such as cancerous strains of mice, must now be fed with special diets to avoid reproductive failure due to stilbestrol. Special mixtures for such mice are now being marketed and these contain no meat scrap, because this product is the carrier of both stilbestrol and salmonella organisms. No one is certain how this stilbestrol gets into the meat meals, but it is there and has been during the past several years when steers have been fed stilbestrol.

It seems obvious that in a nation that produces too much food we would be better off if we turned our attention toward less quantity and more wholesomeness. The same seems true for milk, poultry, fruits and vegetables. A nation that is producing too many potatoes or too much grapefruit can certainly take the risk of under-production from attempting production with smaller amounts of

sprays and biological control methods. What better investment could be made at this time when Washington is talking about checking the depression by building roads and houses than by diverting some of these funds into research that looks far ahead to the control of pests by means other than chemical sprays?

The real problem is that most agricultural research laboratories in colleges have had their labors so directed toward making two blades of grass grow where one grew before that they have forgotten about the quality of the grass.

Another tremendous problem is the great gulfs that separate governmental agencies concerned with action programs. When spraying to control gypsy moths was in progress in the Long Island area we found that one group had their eyes only on the trees and the moths. Orders were to spray lone trees in the midst of pastures. Those who sprayed only thought of the trees and failed to think about the cows that were eating the lush pastures around the trees and the hay that was being made from the surrounding fields. Evidently they also failed to think about the destruction of the oysters, because the spray residues destroyed the enemies of the star fish. The disruption of ecological relationships seems impossible of comprehension by many men.

At the same time few study the total contamination of milk. One laboratory measures Sr90 and fallout; another studies antibiotic residues from treating the udders of cows; another evaluates insecticides used to control flies in the barn, insects in the hay or moths on the shade trees of the pasture.

The problem with milk is more difficult than with many other food products. The problem of the control of chemical residues in foods or even regulation seems very remote at present. After many years of delay, the recent news release of "Indefinite postponement of the scheduled hearings on chemical food additives by the Health and Science Subcommittee . . . has resulted from the group involvement in the FCC investigation," is no surprise, since it comes from Washington.

The one hopeful sign that we may get some government protection against food additives comes from New York state, where the governor has drawn up a bill. The chemical industries are bound to fight such a bill vigorously, but when they face the possibility that all of the states may pass different bills they may

be willing to compromise slightly in Washington in the hopes of having national uniformity in labels.

The current bedlam in regard to chemical additives may be a dark cloud with one silver lining. The confusion may stimulate more thinking people to produce more food in their gardens, on their bushes and in their private orchards at home. They will then know what spray materials they have used and are liable to eat. Thousands of people have moved to the country and can produce excellent food if they are not indifferent. Fruit and berry plants make just as good landscaping as bushes that are only beautiful. If such people do not like the additives to their flour let them grind their own and bake their own bread. If they wish to avoid poisoned air, let them run their lawnmowers and garden tractors with pure gasoline. If they wish to reduce the air pollution, let them conserve gasoline by using small cars. These trends are underway and carry many angles of more wholesome living.

Before leaving this subject of chemical additives in food, one should give some attention to the ever-increasing importance of labels telling what is in products that we buy. Industries constantly fight such labels on the grounds that the consumer is too ignorant and lazy to read labels. I am convinced that labels are more important every day. They should tell what spray residues are contained in a product, and not merely what chemicals have been incorporated in wrapping materials. They should tell what chemicals and dyes have been added to every food. Finally they should tell the composition, so that the consumer knows how much milk, eggs, sugar, hydrogenated fat and other products are contained in products such as candies, soft drinks, doughnuts, cake mixes and bread. It is very difficult to get consumers to realize that these products should be stated in terms of weights and percentages. It does little good to merely list ingredients without quantitative values.

From chemical additives it may be well to consider the subject of bread. Apparently the use of high nutritive value white bread and whole grain breads continues to increase, because the American Baking Institute has intensified its propaganda to get the public and the school lunch directors to avoid specification breads and buy ordinary bakers bread. A unique twist has been given to these attempts inasmuch as they are attempting to justify their program on the basis of some studies by McCance and Widowson in feeding German war or-

phans. These were reported in Bulletin 287 of the British Medical Research Council. The authors realized that the results had little application except in the feeding of hungry German war orphans. They stated, "It cannot be emphasized too strongly that the results themselves apply only to the particular conditions under which the investigation was carried out."

However, during the past ten years the results have been twisted to suit the desires of those who have something to sell. The studies gave no indication that the "enrichment" of ordinary white flour by the addition of three water soluble vitamins in this country had any value. However, a writer in Washington some time ago, cited the studies to prove the value of enrichment.

The war orphans were fed no bread in which the quality of protein was improved by increased amounts of milk, soy or wheat germ, but in recent lectures before the directors of the school lunch programs of the nation, Dr. Bradley of the American Baking Institute has cited these studies as indication that school lunches should be supplied with only ordinary white bread commonly sold by the bakers. Bradley does not mention the negative results in relation to "enrichment." In reply to a recent letter from the soy association of Hudson, Iowa, in which they complained of their failure to get improved bread into use in Iowa, I suggested they try to get the ABI to give a series of lectures against the use of such bread in their state. Lectures against the use of whole grain breads would probably be very helpful. More power and a long life of lecturing to them.

Mrs. Persia Campbell has told me that the American Baking Institute has promised to be very cooperative in regard to the activities of the Consumers Council Office of Governor Harriman of New York. I wonder how. Will they attempt to drive good bread out of the school lunch and mental hospitals of New York state?

From bread we may turn our attention to a piece of writing that deserves a medal from Vance Packard, the author of "The Hidden Persuaders." A very clever article has just appeared in *Nutrition News*, published by the National Dairy Council. Written by a physiology professor from the heart of the cola industry, it describes some Scandinavian work of several years ago, in which it was shown that sticky candy produced more tooth decay than sugar in solution. Along with this, animal research is cited, that indicates the same thing. What is left out is that sugar

in solution will promote tooth decay and no mention is made of the erosion of teeth by the acids of soft drinks. Not mentioned at all is the fact that milk will give complete protection against decay by sugar dissolved in the milk, but will not give protection against solid sugar or sugar fed separately in solution.

After reading this article we wondered if the National Dairy Council was going to advocate the peddling of soft drinks from milk wagons, instead of citrus juice.

For 30 years we have taught that the value of milk lay chiefly below the cream line. We have believed that cows should be bred to produce more milk and less fat instead of the reverse. We are now glad to see many of the nutritionists adopting this attitude.

However, we are informed that substantial funds are being assembled to promote the use of the usual hydrogenated fats, but have read that the dairy industry has not subscribed. Likewise, we have been informed that a special agency has been created to increase the use of refined salt in the food. No justification for any action of this sort by the ordinary person has ever existed.

At this point one might say a few words about fluoridation. The old arguments justifying the right of health agencies to put chemicals in water supplies have continued to be used by false analogies to water chlorination and vaccination. These rights were given health authorities to prevent the spread of contagious diseases. The public has never given authorities the right to control nutrition by adding such compounds as copper, selenium, magnesium or fluoride to water supplies. Likewise they have given no control to health authorities over the food to be eaten or over such matters as the control of expanding populations through birth control methods. It will be only a few years until contraceptives will be available for addition to food or water. Probably a larger percent of our people feel the need for tranquilizers than need fluoride for the control of tooth decay in children, but no one suggests these be added to water supplies.

Fluoridation can be attacked from straight scientific grounds, but it need only be attacked on the grounds of morals, because most people must use the water supply. Therefore there is but one purpose of a water supply, to provide pure water.

The solution of the fluoridation problem would seem to be to (1) keep the water supplies for water

only, (2) provide fluoridized salt, sugar or tablets in grocery stores, (3) take the propagandists who present only one side of questions to the public, off the tax rolls.

This introduces the problem of how all of us can defend those scientists who honestly try to protect the public interests but are constantly threatened with destruction if they take a position against fluoridation of water or against carcinogenic agents in foods. This need is especially evident among state and federal civil servants. It is less needed in universities, because there is a tradition of freedom among the better institutions. The right of the professor to express himself in the area of his specialty are usually respected in better universities. However, these institutions are under never-ending pressure to conform to the wishes of those who donate money. This pressure grows from year to year as research expands and the operation of universities becomes more expensive. During my 30 years at Cornell, I have never in a single instance, had any pressure brought upon me by the university to warp my publication or statements of what I believe to be the truth.

As one looks around at this dangerous world in which we now live he realizes that Malthus would worry little in modern America about enough food, but if Malthus were well trained in chemistry and physics he might well wonder which would be the most effective in eradication of the population of North America.

The growth of chemical additives to food follows the pattern of what the chemist has long called an autocatalytic reaction. This merely means that the reaction behaves like the speed of a satellite. It starts very slowly and then increases to a faster and faster rate until it attains a peak. If we look back to the time of our grandfathers we find only a few chemicals added to food as preservatives. Meats were smoked after the addition of salt or nitrate. Sugar or honey was used to make jams and preserve fruit. A little sulfur was burned to make the dioxide for sterilizing wine casks. Some alum or bone meal might be added to flour or bread. Toxic copper salts might be added to make vegetables greener after cooking. This concludes the list.

Today the autocatalytic reaction has only started, but public hearings commonly mention 700 chemicals in use. The real number is much higher. But the reaction has hardly started and this number will appear modest even 10 years from today. In the laboratories the chemists already

have compounds under study that will prevent conception when added to food. New compounds are already under study to be fed to meat animals along with stilbestrol, antibiotics and poisons to kill parasites. Tremendous efforts are being devoted to the creation of both tranquilizers and compounds to create special mental states in man. The "satellite" of chemical additives has hardly left the ground. This may seem like the thoughts of an alarmist, but I am certain it represents down to earth realism.

Just as great a menace as the changes that are being made in what we are eating and breathing, are the advances in the areas of psychology that can force these products upon us without our knowledge. Many have read "The Hidden Persuaders." Others are aware of the use of slight flashes upon television that last but a fiftieth of a second but send us off to buy more popcorn or soft drink or alcoholic beverage. During my lifetime the subtlety of advertising has increased greatly, but I am certain this area is still in its infancy. How soon will these flashes be used to influence our religion and politics?

One of the greatest menaces is the presentation of half truths in journals devoted to popular science. The fluoridation issue has provided an excellent example of this. I can cite an excellent example from the American Chemical Society to which I have belonged for 38 years. With our dues we must take the so-called "News Edition." This has had a number of articles dealing with fluoridation, but has not presented a single article dealing with unfavorable effects or reasons that nations such as Switzerland and Sweden have not put fluorine into their water supplies. Many chemists believe that our society is controlled by and for the industries and not for our membership of chemists. This would seem to justify this outlook.

Two remaining questions justify brief consideration. The first concerns how we can know about what is happening to our food, water and the air we breathe. The second concerns what we can do about it.

Fortunately we can still read. I hope the journal *Natural Food and Farming* develops as much circulation and becomes the same size as a Sears, Roebuck catalogue. This will put a tremendous burden upon the competency of the writers and the ethics of the editors, because as the journal grows the pressures will grow even faster to force them into conformity with the food and chemical industries as well as the psychologists who serve the advertisers. Before this

journal reaches adult size it may be well for all of us to take more interest in the Federal Register. Here one can read the allowances for spray residues upon our foods and learn much about the activities of those who are charged with protecting the public in Washington. Finally one can read with advantage some of the strictly advertising, trade journals such as the *Food Field Reporter*. Such journals are not meant for the public, but they help the food industries keep informed about events in food processing, chemical additives and the action of government agencies. I myself subscribe to a couple of German journals that are concerned with such matters as chemical additives and fluoridation. There is far more interest on the part of physicians in Germany about these matters than there is in this nation.

One may ask what can an individual do to protect himself. In the first place all of us can read critically. We must be more and more informed not only about foods but about the activities of the psychologists who force us to buy given products or accept certain philosophies. In the next place we can refuse to look at television and much of the current advertising. I know not how to avoid billboards, but if it is possible I believe we should devote our time to looking at birds, trees, flowers and gardens. They will not sell us whiskey by virtue of our admiration for the pictures of handsome but somewhat stupid looking, well-dressed men.

Thirty years ago I came to believe that the cooperative groceries and feed stores would provide the solution for providing us the best foods. Such stores would seem to have no interest except to sell their owners and customers foods that would promote their health and welfare. We have one of the best of such stores in the country in Ithaca. However, most of our merchandise is the conventional type of food forced upon us by the tremendous national advertising programs for which we must pay. In our store the same low grade candies are sold from the same type counter to entice the children that one finds in most of the other stores. About 5 per cent of the products sold in our store are superior and special. This helps those who are intelligent enough to select them, but most of our members are slaves to the conventional advertising of the large magazines, radio and television. We have never been able to do a very effective program of nutrition education in our community, although it is probably better than average.

Health Food Stores seem promising for providing superior foods for discriminating customers. However, they are badly in need of more help from well-trained and honest nutritionists. Many are now selling some products that cheat the consumer because they are made by ignorant quacks. Many are advertising and promoting some "health specialists" and "nutritionists" who have no education nor claim to knowledge in these areas. Bad products are hard upon the many worthwhile items sold by health food stores. Association with quacks through such stores puts the trained nutritionists at a great disadvantage because they are damned by association. I believe the health food stores need a central agency of genuine experts to help them avoid these difficulties. The second problem of health food stores is that their turnover is often so small they must operate with high profit margins. This keeps them from serving the masses of people that really need them.

I believe that individuals should produce much of their own food at home. Then if one eats spray residues it is the result of his own activities, except when he is subjected to mass spraying of whole areas. I am constantly shocked as I drive through the countryside and see the thousands

of people who have moved to the edges of cities, but are too indifferent to have a modest garden or to landscape their homes with fruit trees and berry bushes. They merely mow their lawns, breathing the fumes from leaded gas as they mow. They are too indifferent to even select and pay a premium for purer gasoline. We can be grateful that many are buying smaller cars which pollute our air to a smaller degree and help decrease the ever-growing consumption of our national oil reserves.

As one concludes and looks at the total picture he will certainly remain very pessimistic. However, there may be some sunshine behind the clouds. Some of the large religious groups may take an interest in chemical additives when they are introduced into foods for birth control purposes. Some of the religious groups that have long advocated diets of natural foods may grow in influence. Religious groups may even curtail the activities of the subtle psychologists when they come to realize that they can turn their influence against a given sect just as effectively as they can sell more soft drinks.

The realization that the children of America are inferior to those of Europe in physical development may make us realize the importance of

better foods and better ways of life, including more exercise. In time we may even turn our eyes toward some of the small nations, such as Switzerland, that protect their people from exploitation as much as possible. For 50 years Switzerland has had an excellent law to control chemical additives. For many years Switzerland has taxed refined white flour and paid the money to dark flours. Hence, white bread is dear and dark bread is cheap in Switzerland.

Our nation can very profitably study the laws and activities of some of the smaller countries such as Switzerland.

We can also very profitably look more upon nature and less upon the works of man. We can read over and over again the writings of such leaders as Ellen G. White, who taught the importance of good food for health and the essentiality of a healthy body if we are to have a good soul.

Finally, we may well remember the epitaph on the grave of G. von Bunge, who laid much of the background of modern nutrition science. This epitaph on the simple tombstone over the grave near Basel, Switzerland, reads, "We harvest much that we did not sow and we sow much that we will never reap."

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