HEALTH AND STRESS

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PRICE, POTTENGER AND McCULLY: CARIES, CATS AND CORONARIES

KEYWORDS: "Darwin of Nutrition", cooked vs. raw foods, Lost Horizon, Shangri-La, "fuel" vs. "protective" foods, homocysteine, folate, "enriched" and "fortified" flour, Ultragrain.

As previously explained, the space limitations and format of our printed Newsletter has necessitated omitting important information on most topics as well as references that readers frequently request. A recent issue on "Diseases of Civilization" is a good example since we could only devote a few sentences to the remarkable research of Weston A. Price and were unable to include the crucial contributions of others like Francis M. Pottenger and Kilmer S. McCully.

Sometimes referred to as the "Darwin of Nutrition", Price started his dental practice in North Dakota in 1893 and subsequently moved to Cleveland. Over the following few decades he noticed a progressive rise in cancer and cardiovascular disease in his adult patients and an even more impressive increase in caries and other dental disorders in children and adolescents. He suspected that all these problems were due to nutritional deficiencies resulting from dietary changes during this period. He was intrigued by reports from earlier explorers, traders, sea captains and missionary physicians that cavities and degenerative diseases were rarely seen in primitive groups in various parts of the world whose diets had not significantly changed for centuries. All these sources also confirmed that protection from such problems was rapidly lost when Western diets and lifestyles were adopted.

In the early 1930's, Price and his wife embarked on a pilgrimage to places where dietary habits had remained essentially stable for generations to determine the accuracy of these accounts. His first visit was to the Loetschental Valley in an isolated part of the Swiss Alps, where he found about 2,000 people living primarily on whole rye bread and cheese and butter made from raw cow and goat milk. They also raised salad greens and drank water coming off the glaciers. Meat was usually eaten only on Sundays and the bones and scraps were used to make soups for the remainder of the week. Price was impressed with their excellent physiques and freedom from dental and degenerative diseases and how robust the children were. As he later wrote in *Nutrition and Physical Degeneration*:

ALSO INCLUDED IN THIS ISSUE

> "The sturdiness of the child life permits children to play and frolic bareheaded and barefooted even in water running down from the glacier in the late evening's chilly breezes, in weather that made us wear our overcoats and gloves and button our collars. Of all the children in the valley still using the primitive diet of whole rye bread and dairy products the average number of cavities per person was 0.3. On an average it was necessary to examine three persons to find one defective deciduous or permanent tooth. The children examined were between seven and sixteen years of age. They have been taught little regarding the use of toothbrushes. Their teeth have typical deposits of unscrubbed mouths; yet they are almost completely free from dental caries."

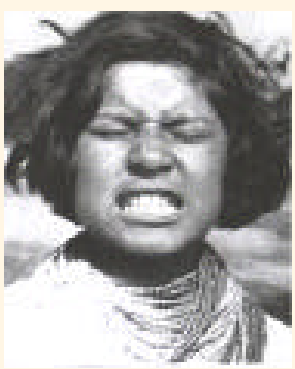
The only young people with tooth decay problems were those who had previously lived in the city and then returned to the valley. This was in sharp contrast to others living ten miles away in a community with a paved road that provided constant contact with civilization. In these people, who ate pastries, jams and canned goods, Price found an average of six cavities in each mouth. Their jaws were narrower; causing misshapen dental arches that led to crowded teeth and impacted wisdom teeth. They were also more susceptible to tuberculosis and other diseases not seen in the Loetschental Valley. Over the next eight years, Price studied and photographed more than a dozen other isolated groups and found the same freedom from dental and degenerative diseases. These included the African highlands, Peruvian coastal settlements, Eskimos in the Arctic, Seminoles in the swamps of Florida, Gaelics in the Outer Hebrides of Scotland, Melanesians in Fiji, Polynesian islanders, Maori in New Zealand, mainland Australian aboriginals and Torres Straits Islanders living north of Australia. Climate was obviously not a factor nor was any specific diet responsible. Some were primarily flesh and seafood eaters; others subsisted on fruits, vegetables, wheat, oats, or large quantities of dairy products but none were vegetarians.

Price attributed this to the fact that although these diets were very different, they all supplied abundant amounts of vitamins and nutrients in contrast to Western convenience foods filled with sugar, white flour, pasteurized milk as well as artificial additives and preservatives designed to improve appearance or increase shelf life. **On average, native diets of fresh and frequently raw foods provided over FOUR times the water soluble vitamins, calcium and other minerals, and at least TEN times the fat soluble vitamins from animal foods such as butter, fish eggs, shellfish and organ meats.**

In Africa, Dr. Price discovered seven entire tribes comprising over 700 individuals without a single cavity or malformed dental arch. However, when natives moved to the cities and consumed modern foods tooth decay and crowded teeth in their offspring became common, as did susceptibility to malaria, dysentery and sleeping sickness. Primitive tribes not only had immunity to these and other infections but also rarely suffered from chronic diseases. A doctor in charge of a government hospital in Kenya told Price that in his many years of experience among primitive people he had seen no cases of appendicitis, gall bladder disease, or duodenal ulcer. More recent surveys have confirmed that Africans who consume large quantities of fiber rich foods are virtually free from all colon complaints including constipation, diverticulitis, hemorrhoids and cancer. Dr. Joseph Romig, a physician in Alaska with four decades of experience dealing with "primitive" and "civilized" Eskimos and Indians similarly said he had never seen a single case of cancer in primitive tribes until they began eating refined foods. Acute infections and tuberculosis were also rare in contrast to those who adopted Western ways. When modernized Indians developed tuberculosis Romig sent them back to their original homes and diets where most recovered while those who remained usually died. As a result of his research, Weston Price came to the following conclusions:

- Dental decay is caused primarily by nutritional deficiencies.
- Although radically different, the 14 native diets devoid of "civilized" devitalized or refined foods provided almost complete protection from dental decay and increased resistance to degenerative diseases.
- Laboratory analyses revealed that all of these diets were unusually high in protein, vitamins, minerals and especially in fat soluble factors found in animal fats.
- Contact with civilization, followed by adoption of the "displacing foods of modern commerce" was disastrous for all groups studied.
- Rampant dental caries was followed by progressive facial deformities in children born to parents consuming refined and devitalized foods.
- These changes consisted of narrowed facial structure and dental arches, along with crowded teeth, birth defects and increased susceptibility to infectious and chronic disease. Significantly, when some natives returned to their traditional diets, open cavities ceased progressing and children that were conceived and born again had no tooth decay and perfect dental arches.

The photographs below were taken by Dr. Price of Seminole Indians in the Florida Everglades who lived mostly on animal foods-fish, birds, reptiles and game with a relatively high fat content. The photo on the left is of a Seminole girl raised on the traditional diet whose facial features resemble those of her ancestors. The photo on the right is someone of similar age from the same tribe who was born after her parents had adopted a Western diet. Note the marked narrowing of the face and crowding of the teeth. This is the result of nutritional rather than genetic influences since it shows up almost immediately in the next generation due to dietary changes. (Photographs courtesy of the Price-Pottenger Foundation and Sally Fallon of the Weston A. Price Foundation. For additional information see www.price-pottenger.org and www.westonaprice.org)



PRIMITIVE SEMINOLE ←

MODERNIZED SEMINOLE →

Pottenger's Curious Cats

At the same time Price was touring the globe learning that refined foods contributed not only to dental problems but impaired immune responses and chronic diseases, Dr. Francis M. Pottenger Jr. was conducting his studies on the effects of cooked versus raw foods. Pottenger was a physician who had established a laboratory to assay the potency of adrenal hormone extracts. At the time, these were obtained from animal adrenals but the efficacy of adrenalin preparations varied too much to allow their safe clinical use for the treatment of shock. In order to improve standardization Pottenger had to remove the adrenal glands of cats and determine how much of this batch of extract was required to keep those particular cats alive and functioning normally. All of his cats were hygienically housed and fed on cooked slaughterhouse meat and organs to preclude parasitic infections. They also received Grade-A pasteurized whole milk and daily doses of cod liver

oil to prevent vitamin deficiencies as well as adrenal extract. Despite these attempts to provide good care, most cats were usually sick and some died, which he attributed to the stress of surgery and/or the absence of the adrenal glands.

As his business grew so did Pottenger's need for more cats. He eventually required so many that he had to build additional pens to house new arrivals. Being overworked, he did not bother to cook their meat but just fed it raw as it came from the slaughterhouse. Amazingly, these cats thrived and appeared quite healthy. Pottenger was so impressed that he decided to do a small study. He divided his cats into four groups to observe the result of feeding: raw meat/raw milk; raw meat/pasteurized milk; cooked meat/raw milk; cooked meat/pasteurized milk. He found that those fed on cooked meat who got raw milk did a little better than controls on all cooked food. Cats on raw meat and pasteurized milk were also healthier but could not compare to felines on all raw food who seemed exceptionally fit. Pottenger also noticed that cats consuming only raw foods had good temperaments, were very fertile and lived much longer, usually dying of old age rather than pneumonia and other infections. When cats that had been on raw food were placed on cooked food, life expectancy was greatly shortened and there was a marked change in their offspring. Overall size decreased, teeth deteriorated, reproductive organs did not develop fully and they had progressively smaller litters. Within three generations, cats on all cooked food could no longer reproduce, the females often refused to nurse or mother their young if they did get pregnant. Cooked-food cats also developed nasty temperaments and gender differences tended to disappear as females became more aggressive and males more docile. Pottenger found the same health problems developing in his cooked-food cats that Price had described in people eating refined foods such as narrowing of the dental arches with crowded and crooked teeth, under bites and overbites. Price had also previously noted that primitive peoples who had abandoned their traditional diets developed disease patterns, reproductive and behavioral problems very similar to Pottenger's cats on cooked foods.

RAW FOOD COOKED FOOD

In Pottenger's studies, cats developed dental deformities, weak bones, various diseases, behavioral problems and infertility when they were put on a diet inappropriate for cats. These studies serve as a warning of what will happen if we continue to eat the displacing foods of modern commerce—we are already seeing an epidemic of chronic disease, behavioral problems and widespread infertility.

McCarrison, The Hunzas, Stress And Shangri-La

Price, Stefansson and others who carefully observed isolated peoples also commented on how happy and free from stress they were despite encountering various hardships and adversities that were part of their daily lives. One of the most compelling accounts was provided by Sir Robert McCarrison's report on the Hunza natives in the Kashmir. During the early 1900's, he had been assigned by the British Army to establish a hospital and health care delivery system in the region. An unusually alert and perceptive physician, he was astounded by the magnificent physical and mental status of the very elderly, some of whom allegedly lived to the age of 140. He traced family records, conducted detailed interviews, performed careful physical examinations, and kept meticulous records on their

lifestyles and diets for almost a decade. After reviewing all the information he had gathered, McCarrison concluded that the unusual longevity and extraordinarily good health of the Hunzas well into the eighth and ninth decades was due not only to their diet but also freedom from the stresses of contemporary civilization. As he wrote in his 1921 *Studies in Deficiency Disease*,

> ". . . and they are far removed from the refinements of civilization. Certain of these races are of magnificent physique, preserving until late in life, the character of their youth; they are unusually fertile and long-lived, and endowed with nervous systems of notable stability. . . . Cancer is unknown."

This description of the Hunzas was the stimulus for James Hilton's 1933 best seller *Lost Horizon*. It was so successful that a few years later it became the first paperback book ever published and was made into the movie *Shangri-La*. President Roosevelt was so impressed that he named what is now Camp David, Shangri-La. McCarrison was also well aware that other isolated groups with superior health and freedom from cancer subsisted on very different diets and he did not advocate any particular food, noting,

> "The Esquimaux on flesh, liver, blubber, and fish; the Hunza or Sikh on wheaten chappattis, fruit, milk, sprouted legumes, and a little meat; the islander of Tristan on his potatoes, seabirds' eggs, fish, and cabbage, are equally healthy and free from disease. But there is some principle or quality in these diets which is absent from, or deficient in, the food of our people today."

The nature of these essential nutrients was not clear but he offered the following explanation of "fuel" and "protective" foods by providing an analogy with "feeding" a car.

> "Food has two functions: the first, to provide materials--carbohydrates, fats, and, to a lesser extent, proteins--from which energy is generated for the vital activities; and the second, to provide materials--proteins, mineral elements, and vitamins - needed for the growth, maintenance and repair of the body as a whole and of its constituent parts, and for, the regulation of its processes. In accordance with these two functions, the food-stuffs available for our use are divisible into two classes: "the fuel foods" and "the protective foods.
>
> The fuel foods are those rich in energy-bearing substances. They include the cereal grains, bread, potatoes, sugar and animal and vegetable fats. They may be likened to the petrol with which we provide our cars. Their combustion produces the energy needed for the work; of the body, as the combustion of petrol produces the energy needed for the work; of the car. And just as the engine of the car needs a suitable fuel-mixture, so does the engine of the body. The protective foods are those rich in protective substances — proteins, mineral elements calcium, phosphorus, iron, iodine, etc., and vitamins. They are so-called because these substances protect the body against deterioration of its structure and functions. They may be likened to the oil, grease, adjustments and other attentions needed to maintain the efficiency of our cars. Without their adequate provision structure and function will assuredly suffer: disease will result, for disease is disturbance of structure or of function of organs or parts of the body. The protective foods protect us, therefore, against disease: disease most likely to arise while the body is growing. The chief protective foods are milk and its products, green leaf and root vegetables, fruit, legumes, eggs, fish oils, and meat--particularly glandular organs. Some of these are rich in one or more kinds of protective substances; some are rich in others. Their proper combination ensures the presence of all.
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> In this country everyone gets enough fuel foods, chiefly in the form of white bread,

potatoes, margarine or butter; and nearly everyone gets enough protein in the form of meat of one kind or another. But many millions do not get enough of the protective foods. Consequently, they are prone to suffer from disturbances of structure or of function of organs or parts of the body, just as a car will when adequate oil, grease and attention are denied it."

McCarrison described in detail what these "protective" foods might be as follows,

"There is, therefore, no longer any doubt as to what the right kind of diet is. It is one made up of the following eight classes of foodstuffs:

- Whole or lightly milled cereal grains; whole wheat flour and bread made from it or standard bread or bread containing the germ of the wheat and a proportion of the outer skin of the wheat grains; rye bread; oatmeal; semolina.
- Milk and the products of milk: cheese, butter, skimmed milk, curds and buttermilk.
- Pulses: peas, beans and lentils.
- Fresh, green leaf vegetables such as spinach, lettuce, watercress, cabbage, parsley, turnip tops, nettle tops, and young dandelion leaves.
- Root vegetables, particularly potatoes, carrots and onions.
- Fruit, both fresh and sun dried; with the fruit may be included tomato.
- Eggs.
- Meat, including glandular organs such as liver, fowl, and fish, particularly the herring."

McCully, "Macaroni Wheat" And Coronary Heart Disease

Three decades ago, Kilmer S. McCully, a young pathologist at Harvard Medical School, proposed that increased blood levels of a chemical called homocysteine could cause coronary heart disease. Autopsies on children suffering from a hereditary disorder that causes high homocysteine showed they had died from heart attacks due to severe and generalized arteriosclerosis usually seen only in elderly individuals. Homocysteine seemed to act like sandpaper on the interior lining of arterial walls and he was amazed to find that after rabbits were injected with homocysteine they developed coronary atherosclerotic plaque within weeks. Homocysteine is derived from methionine, an essential amino acid found in meats and dairy products. Under normal circumstances, folate and other B complex vitamins metabolize methionine and homocysteine into compounds that are useful and harmless. These water soluble vitamins are found mainly in fruits and vegetables and if their intake is inadequate, the resultant high homocysteine levels could eventually cause damage. McCully believed this could readily occur in those Americans who primarily consumed meat, dairy products and canned, processed or preserved foods, especially since most attempts to increase shelf life also destroyed these and other essential nutrients.

McCully's claims ran counter to the prevailing postulates that a high fat diet and elevated cholesterol were what caused coronary disease. The powerful cholesterol cartel of lipid lowering drugs and low fat food manufacturers had considerable clout on NIH research grants, academic medicine and the media. There was a lot at stake financially as well as for the reputation of leading authorities and organizations who received large sums for perpetuating this dogma. Despite the fact that McCully's findings were increasingly being corroborated by researchers all over the world and Australian investigators had now shown a definite correlation between high homocysteine and coronary heart disease in humans, McCully's NIH grants were not renewed. Funding from other sources also suddenly disappeared, his staff was cut and his laboratory was moved to smaller quarters in the basement of Massachusetts General Hospital. Since he had no financial support the hospital Director told him to leave and "never to come back" and his Harvard affiliation was also terminated in 1978. When subsequently interviewed about his research on a

television program he promptly received a phone call from the Public Affairs Director of the hospital who told him to "shut up" and that "they didn't want the names of Harvard and Massachusetts General Hospital to be associated with my theories."

Although obviously well qualified for many positions that were being offered and despite the fact that he did well on numerous interviews, he was unable to find employment for two years. When he and others who had recommended him made appropriate follow-up inquiries there was a stone wall of silence but repeated rumors of "poison phone calls" from Harvard began to surface. I have detailed in a prior Newsletter proof of persistent persecution by powerful vested interests as well as prominent physicians whose livelihood and reputations might be jeopardized. For those of us who know Kilmer to be a reserved, conservative and very cautious and careful researcher, it is an incredible saga. After the threat of a lawsuit from a leading Boston attorney, things suddenly changed and he was able to resume his research at the Veterans Administration Hospital in Providence. Since then, the contribution of homocysteine to heart attack, stroke and accelerated atherosclerosis has been steadily confirmed, as well as links to a host of other disorders including dental caries and cirrhosis of the liver. He has been the recipient of numerous awards and honors and many feel he should be considered for a Nobel Prize.

I was therefore intrigued by his fairly recent article entitled "Significance Of Wheat In Dakota Territory, Human Evolution, Civilization, And Degenerative Diseases", since it apparently had little to do with homocysteine or his research interests. It begins with the story of Judah Litwinenco, who arrived at Ellis Island with his family from Odessa around 1890. He worked as a hod carrier in New York and after he had saved enough money, set out with his wife, Marie and three small children for the Dakota territory. He had been told by friends back home that the climate and conditions there were very conducive to the cultivation of the very desirable durum or hard spring wheat of the Ukraine. This was sometimes called "macaroni wheat" since the hard kernels rich in gluten were considered to make the best pastas and bread. Judah had sewed or otherwise concealed some supplies of this precious commodity in the pockets of his overcoat to prevent detection by customs inspectors. When they reached the end of the railroad line in Aberdeen he purchased a horse and wagon and headed west to what would later become the northern portion of South Dakota. There were no towns or human settlements and the only thing that could be seen was chest high prairie grass waving in the wind under the bright blue sky from horizon to horizon. The immense herds of buffalo that previously roamed this territory had been slaughtered decades before, and the only signs of life in this wild paradise were birds, and occasional deer, badgers, foxes and other small game. The Homestead Act of 1864 permitted settlers to occupy and own a section of this land and receive title for the property after 10 years of residence. Judah and Marie Litwinenco became the first white European settlers to occupy any of the fertile land between Aberdeen and the Missouri River in 1890.

Life was harsh under these primitive conditions since there were no trees, stones or bricks to build dwellings for protection from the harsh Dakota winter. Wooden houses did not start to appear until 15 years later after the railroad was extended to the Missouri River. The only thing available was the wild prairie grass sod that was so thick and matted together that it could be used to build a covered dugout shelter. Giant plows called sodbusters were needed to turn this sod into open fields for cultivating wheat. When the thick matted roots were unearthed, there was an underlying layer of rich, brownish -black humus one to two feet deep. Durum wheat was planted in this fertile soil in the Spring and rapidly grew up to three feet high to produce a thick crop that ripened in early August. An acre usually yielded 20 to 30 bushels weighing 60 to 63 lbs. each. In contrast, a bushel of fall wheat planted in Kansas and adjacent Southern states averages around five pounds less. This is because spring durum wheat has more protein and less water, which

makes it superior for producing higher quality and more nutritious pastas and baked products. Spring wheat from Dakota, Alberta and Manitoba is considered to be unsurpassed in the world, including the finest wheat grown in Ukraine, Argentina and Australia.

It was not until the conclusion of the article that the connection with Kilmer McCully became clear. As he explained,

> "Judah and Marie Litwinenco brought a human legacy to Dakota in 1890 as well as durum wheat. Three generations were sustained by their homestead during the century that followed. Although Marie died of a rare cancer at 64, Judah lived to be 89. Many of the children lived to be 95 to 102 years of age because of their healthful lifestyle, the hardness of the well water, and the superb quality of the food consumed on the farm. Among their ten children, one son became a prominent physician in California. Three of their daughters and one son produced a total of seven grandsons, four of whom became physicians and one of whom became a dentist. One of these grandsons is the author, who discovered that two of the B vitamins of durum wheat, vitamin B6 and folic acid, prevent vascular disease by lowering the level of homocysteine in plasma."

Most of this fascinating essay is devoted to the history of agriculture and breadmaking and its importance in human evolution. McCully emphasizes that "One of the most important revolutions in human history occurred about 10,000 years ago in the 'Fertile Crescent' of what are today Turkey, Syria, Jordan and Iraq." It was around this time that farmers discovered how to domesticate a wild strain of wheat with rigid stalks and seed pods that held the kernels firmly until ripening was complete. Using primitive scythes, they could harvest and store large quantities of grain that were full of nutrients. Prior to this Paleolithic man was a hunter-gatherer nomad who followed migrations of wild animals, harvested wild grain wherever he could find it and was entirely dependent on these and other natural resources to survive. The ability to grow, and store wheat and other grains assured a ready food supply that now allowed Neolithic man to domesticate animals for food, farm work and transportation. There was no longer any need to constantly travel to subsist and small communities and later cities sprung up at different sites and trading and commerce between them began to flourish. Over the next five thousand years these practices spread north to the Balkans, south to Pakistan, and by 2500 B.C. had reached Scandinavia and Britain.

The Greeks and Romans harnessed streams and rivers in the first century B.C. for water powered mills that could grind grains between large stones to make flour. Windmills for the same purpose began to appear in Europe in the 11th century and became increasingly common over the next 600 years. The stone grinding process crushed grain smoothly into elliptical bran particles that evenly distributed the natural oils, vitamins and minerals throughout the gently warmed flour. Unlike wheat kernels that can be kept for long periods, stone ground flour has to be consumed within a few days since it contains oils that become rancid on exposure to air and prolonged storage is associated with contamination by mold, other microorganisms and insects. In contrast, grain millers discovered over 100 years ago that even without chemical preservatives and refrigeration, highly refined white flour could be stored without spoiling for months. However, this is so depleted of essential vitamins and minerals that even insects and rodents cannot live on it.

The very first item on McCarrison's list included whole cereal grains, whole-wheat flour, as well as bread and other products containing the germ of the wheat and some of its outer skin. I suspect the reason for this emphasis stemmed from the growing popularity of refined white flour that had little nutritional value. This was due to the introduction of steel roller mills shortly before 1900 that were increasingly being used to convert whole

grains to white flour. Driven by steam and later electricity the steel rollers were much more efficient than grinding grains between stones as had been done since antiquity. A few months ago, Archaeologists found traces of barley, wheat and other grains in the seams of a grinding stone in the flooded ruins of Ohalo II, a 22,000 year old fishing camp on the Sea of Galilee. Other discoveries at this site suggest that the residents "collected wild grain, pounded it into flour and possibly baked bread at least 10,000 years before the advent of cultivated crops." In ancient Greece and Rome, a form of white flour could be obtained to make a white bread by sifting out husks, bran and chaffs but this was time consuming and expensive. The tightly fitting steel rollers solved this problem by bursting the wheat kernels to release the white starch granules that could then be readily separated from the bran and wheat germ rich in important nutrients. High-speed steel roller mills can produce heat up to 400 degrees Fahrenheit, just under the temperature that will burn and discolor the flour but which still destroys many vitamins. To make bread whiter, flour is now treated with a chemical bleach similar to Clorox that leaves toxic residues shown to cause nervousness and seizures in experimental animals. The bleaching process also destroys any vitamins that have survived the high heat and while bleaching is banned in Germany and other countries it is the mainstay in the U.S. Indeed, over 30 different chemicals are approved by the FDA that are routinely added to bread to extend shelf life, despite the fact that little is known about their long-term cumulative toxicity when taken together and that similar chemicals previously thought to be safe have been reported to be carcinogenic.

White bread is a lot different than the Bible's "staff of life". Dr. Cranton notes on his web site: "Experiments were reported in a major British medical journal, *The Lancet*, showing that dogs fed exclusively on white bread died of malnutrition within two months. Dogs similarly fed only bread made with stone-ground, whole-wheat flour lived indefinitely in good health." Coronary heart disease was practically unknown in the U.S. in the early 1900's but became increasingly common and escalated to epidemic proportions in the 1950's and early 60's. Rates started to decline shortly before 1970 and since then coronary deaths have decreased two and half fold. Although there was no significant change in fat intake or cholesterol levels during this period, the drop mirrors the increased fortification of grains and cereals with folate and vitamin B6, providing further support for McCully's homocysteine hypothesis.

Epilogue

Some Food For Thought About The "Staff Of Life"

The significance of bread as more than food in our lives is illustrated by phrases such as someone's "bread and butter" being their man source of sustenance. In ancient Egypt, bread was used instead of money. The workers who built the pyramids were paid in bread and "bread" and "dough" are stills synonyms for cash. When people "break bread" they share more than a meal and come together in spirit. There is little doubt that white flour contributed to the caries as well as many of the degenerative disorders described by Weston Price but refined white sugar, canned and other "civilized" alterations in natural foods also played a significant role. Natural rice is one of the best foods in the world and one of the richest sources of vitamin B complex, whereas white "processed" rice is simply starch containing no nutrients. American missionary wives in the Philippines unwittingly killed hundreds of prisoners in local jails by substituting polished rice for the customary natural product. Today, we are subjected to additional damage from high fructose corn syrup, hydrogenated trans fats, refined vegetable oils, and other denatured foods in addition to additives, preservatives, contamination with pesticides, herbicides, industrial pollutants, hormones and other man made products.

While fortifying denatured foods with vitamins and nutrients or taking supplements can help prevent or ameliorate certain problems these are no substitute for obtaining such

substances from their natural sources for several reasons. In some instances, the activities of an essential nutrient may depend on the presence or absence of other substances. Bioflavonoids significantly enhance the effects of vitamin C, which is why they are found in the same foods. On the other hand taking iron and vitamin C supplements together may not only decrease vitamin C's antioxidant activities but cause it to be a pro-oxidant that increases free radical damage. Synthetic folic acid is not the same as the folates found in foods. Individual vitamin needs also vary depending on age and numerous other factors and it is naïve to believe that fortified foods or supplements will provide optimal amounts of each for everyone. Our knowledge of vitamin toxicity is rudimentary and there are concerns that consumers could be harmed, especially children. Beta-carotene was always considered safe, even in large doses, because there were no short term adverse side effects. We now know that excess amounts of beta-carotene interfere with the absorption of lutein, lycopene and other important nutrients and are readily converted into carcinogens, especially in smokers.

Although powerful financial interests have been successful in maintaining the status quo, there are some encouraging signs. The Danish equivalent of the FDA recently rejected applications for 18 new cereals and cereal bars made by Kellogg "because they contain levels of vitamins and minerals that could cause consumers to exceed safe levels of the nutrients in their overall diet." The Department of Agriculture is considering a recommendation that consumers drastically cut consumption of fortified grains used to enrich a wide variety of food products, particularly white bread. This would dramatically change the base of the food pyramid, which calls for six to 11 servings daily of bread, cereal, rice and pasta. What is needed is a recommendation to eat more whole grain products, but this could drastically reduce the need for wheat which could have significant financial repercussions. It takes 1.8 bushels of wheat to make 100 pounds of whole-wheat flour but 2.4 bushels to make the same amount of white flour.

A recent report confirmed the link between white bread consumption and the current epidemic of abdominal obesity, diabetes and other manifestations of metabolic syndrome that will be discussed in a subsequent Newsletter. Despite this and other obvious drawbacks, there is little doubt that most people, and especially children, prefer soft, easily digestible white bread. The problem is that when grain is made into refined white flour, more than 30 essential nutrients are largely removed. Only four of these are added back to make what is deceptively called an "enriched" product. In his essay, McCully noted that " It is reassuring that within the past 20 years several companies in North Dakota and Montana are now producing high quality flour, bread and pasta from this world class wheat by improved methods for increasing the extraction of essential nutrients." Two months ago a flour called Ultragrain was introduced that its creators say "will allow bakers to make bread with the taste and appearance of more popular white bread, but with the improved nutritional benefits of whole wheat breads." It utilizes a new milling process that uses the whole grain but makes particle size uniform resulting in a white wheat which company officials say tastes milder and sweeter than most traditional wheat varieties. Ultragrain flour has 3.5 times more dietary fiber than refined wheat flour and 11 times more vitamin E, four times more niacin and five times more magnesium.

However, this is hardly the solution. Other products making similar nutritional claims are sure to follow because of potential profits rather than any real health rewards. The public is bound to be confused and what is required is educating them about the need not only to avoid harmful artificial products but also to increase their dietary intake of natural wholesome foods, identifying what these are and how they can best be obtained and prepared. Useful resources in that regard include publications offered by The Price-Pottenger Nutrition Foundation, 7890 Broadway, Lemon Grove, CA 91945 (www.price-pottenger.org) and the Weston A. Price Foundation, PMB#106-380, 4200 Wisconsin Ave. N.W., Washington, DC 20016. (www.westonaprice.org) as well as the following references.

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