

The FELIX Letter

A COMMENTARY ON NUTRITION

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A recent issue of *SCIENCE* (2 October 1981) describes the manifestations of a new era in psychiatry, one in which, according to Joseph Schildkraut of Harvard Medical School and the Massachusetts Mental Health Center, "clinical laboratory medicine is starting to make an impact on the practice of psychiatry." Schildkraut and his friendly rival, James W. Maas of the Yale University School of Medicine, have been measuring concentrations of specific compounds in body fluids, to aid other psychiatrists in diagnosing mental illness, determining appropriate medication, and monitoring therapy. In the early 1960's when Schildkraut entered psychiatry, he recalls "the whole notion that one could measure anything in urine that would give any information about the biochemistry of the central nervous system seemed quite farfetched." Nevertheless, he and others were convinced that understanding brain biochemistry was fundamental, and their pioneering work led to an hypothesis in 1965 which became a focal point for research during the next decade. They proposed that mental depressions are associated with a deficiency of the neurotransmitter norepinephrine at important receptor sites in the brain, and suggested that specific tests of patients' body fluids might provide a biochemical index to the diagnosis of manic-depressive illness. The years since have seen a growing acceptance in the profession of the concept that imbalances and abnormalities in brain chemistry may indeed play a role in the etiology of mental illness; but the adherents are still in a minority, and the conflict with proponents of the psychogenic theory (emotional conflict as the origin of mental disorders) is not unmarked by acerbic exchanges and bitterness.

Orthomolecular Psychiatry

Another group as early as the 1950's were following a tangential Yellow Brick road, which led to the kingdom of orthomolecular psychiatry. There, vitamins and other nutrients have become the

chief weapons replacing psychoactive drugs in the battle with schizophrenia and other serious mental diseases. The rationale is given by Linus Pauling in an earlier *SCIENCE* (19 April 1968):

Orthomolecular psychiatric therapy is the treatment of mental disease by the provision of the optimum molecular environment for the mind, especially the optimum concentrations of the substances normally present in the human body The functioning of the brain and nervous tissue is more sensitively dependent on the rate of chemical reactions than the functioning of other organs and tissues. I believe that mental disease is for the most part caused by abnormal reaction rates, as determined by genetic constitution and diet, and by abnormal molecular concentrations of essential substances.

Of the growing number of psychiatrists who recognize the importance of aberrant brain chemistry in mental disorders, few are as yet willing to accept the key role that nutrients may play. Interestingly, the October 2, 1981, *SCIENCE* article, while not discussing the brain-nutrient aspect, does note that a biochemically determined condition found in 30% of manic-depressive patients, called the "lithium defect,"

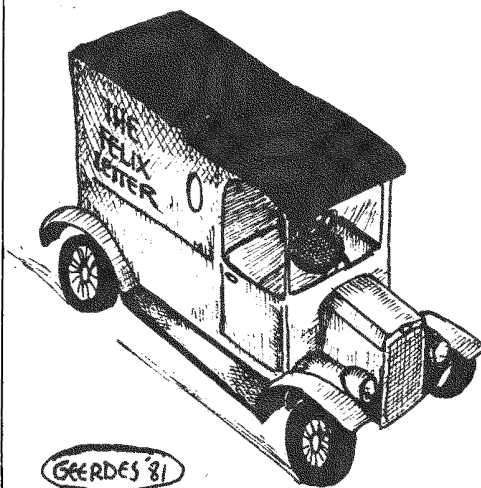
has recently been associated with an abnormality of cell membrane composition, specifically a *low concentration of phosphatidyl choline*. Phosphatidyl choline is a chief ingredient in lecithin which our bodies synthesize. For years, 'radical' doctors and nutritionists have been suggesting dietary lecithin to augment waning body supplies, and as an added source of choline which we can make into the neurotransmitter acetylcholine. Dietary lecithin has also been found to have valuable alleviating effects on a tragic disorder called tardive dyskinesia, which develops in some psychiatric patients from years of tranquilizer use and as yet has no cure.

FOOD FOR THE MIND

In October, I attended a conference in Berkeley by the University of California's School of Public Health on *Nutrition and the Brain*. Participants were not necessarily believers in ortho-molecular medicine but were convinced that specific nutrients can affect such critical brain functions as sleep, memory, and behavior. Clinicians, researchers, and social scientists explored aspects of nutrition in early brain development, childhood intelligence, and sociopathic behavior.

Children and Sugar

Gary Franklin, M.D., postgraduate Fellow in Nutrition at U.C. Berkeley's School of Public Health, spoke on sugar, mood, and learning. Taste buds begin to develop at 14 weeks of age in the fetus, and even in one-day-old infants very strong preference for sweet tasting liquids is seen. [Sugar consumption currently is around 120 pounds a year per person. Most records of U.S. sugar consumption begin at the turn of the century — apparently when official trade figures were first being kept — and show Americans then to be consuming about 90 pounds, which implies a "normal" consumption rate. However, British trade records spanning many centuries show that until 1815, sugar was a rarity, with no more



than 10 to 15 pounds a year available per soul.] With the advent of refining technology around 1860, mankind began catering to its sweet tooth on a scale clearly unattainable in the natural world. Dr. Franklin said that children from six to 23 months of age are now consuming sugar at a rate *seven times greater than adults*, in terms of grams of sugar per kilogram of body weight. "This high sugar consumption in the very young must be looked at very critically in the light of new information on how susceptible the brain is to the things we eat."

In a 7-day dietary study with a group of hyperactive and normal young children observed through one-way mirrors, destructive and aggressive behavior in the hyperkinetic children was correlated with high sugar intake, but even the normal children showed some of this effect. The nervous system continues to develop for at least the first two years of life and probably till the age of 10 or twelve, primarily in the interconnections of processes between nerve cells of the brain. There is scanty data, Franklin said, on why learning-disabled kids are that way and when those lesions developed. "No one has really looked at whether in fact early nutrition could have an effect on hyperkinesia or specific brain disabilities."

Choline and Memory

During panel discussion, Jeffrey Bland, Ph.D., professor of nutritional biochemistry at University of Puget Sound, Tacoma, asked what are the implications in "natural" human aging, if the aging process is associated with 70 years of chronic malnutrition? For example, memory loss may be caused by lowered body production of acetylcholine, which declines with age. Enhanced choline dietary intake has been found to increase acetylcholine production. In a new animal study, old, senescent mice who didn't remember very well were given a choline-augmented diet, and they remembered better than *young* mice on a choline-deficient diet!

Dr. Franklin noted that older people have been given choline successfully to treat memory loss, but suggested that when choline is used in very high doses, it may be using up coenzyme A that binds up with choline to make acetylcholine. The B-vitamin pantothenic acid provides coenzyme A generously, so should always be given with high doses of choline. Jeff Bland suggested that when dietary lecithin is used to increase acetylcholine synthesis,

the most effective lecithin will contain 25 to 30 percent by weight of phosphatidyl choline so lecithin labels should be read carefully.

The Additives Controversy

Benjamin Feingold, M.D. (Chief Emeritus, Dept. of Allergy, Kaiser Foundation Hospitals, Northern California) spoke on food additives and childhood behavior. Advocacy of the "Feingold Diet" has become a nationwide grass roots movement among parents of children suffering from hyperactivity, a term used to denote behavioral disorders where great difficulties in concentration, high levels of aimless activity, disruptive behavior, etc. create problems for parents and teachers alike. The chief offenders in diet, Feingold stated, are the artificial colors, flavors, and preservatives contained in about 80% of our processed food supply. Hyperactivity is only one manifestation, he said. Other symptoms in children that have cleared up when the diet was corrected are:

RESPIRATORY: Rhinitis, nasal polyps, cough.

SKIN: Hives, itching.

GASTROINTESTINAL: Canker sores in mouth, enlarged tongue, heartburn, flatulence.

EARS: Recurrent inflammation.

GENITOURINARY: Enuresis (bedwetting).

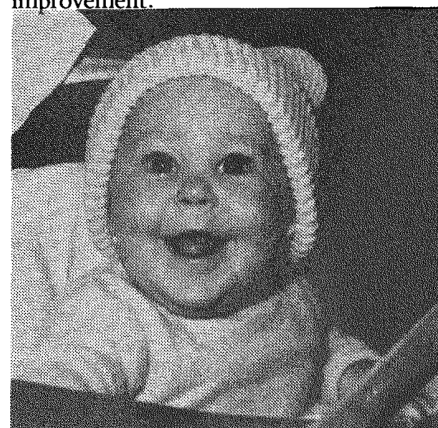
NEUROLOGICAL: Headaches (very common), seizures, retardation.

SKELETAL: Arthralgia with edema (pain and swelling in joints).

Dr. Feingold believes that placing the child on an additive-free diet can best be accomplished if all the family wholeheartedly follows the same program. The removal of foods containing natural salicylates is also recommended, but Feingold feels that when a child shows a good response to both these measures, eventually the salicylate foods (which include otherwise excellent foods such as almonds, apples, apricots, berries, cherries, grapes, raisins, nectarines, oranges, peaches, plums, prunes, cucumbers, and tomatoes) should be very gradually reintroduced, except in those who have a known sensitivity to aspirin.

The child's reactions to chemical additives in food are NOT allergic ones; the immune system is not involved. "They are *pharmacological* reactions. This means that *any* individual — anybody in the world — has the potential to react adversely to these compounds."

Feingold has found that the younger the child, the more rapid and complete the recovery. In new infants, a common manifestation is sleeplessness. The baby will sleep an hour or two at a time, and will cry a good part of the night. "In a great many of these children, we found the cause to be pediatric vitamin drops which are *synthetically colored and flavored*. Remove these, and they respond within 24 to 36 hours. Prognosis is usually complete reversal of symptoms. If you challenge them [i.e., administer the drops again], the whole pattern returns in a matter of hours." If this kind of irritable, colicky pattern occurs in a breastfed child, removing artificial colors and flavors from the *mother's* diet may bring about improvement.



The Nutrition Foundation (created and funded by the food industry) and other scientists have challenged Feingold's hypothesis, but the growing network of parents who form the nonprofit Feingold Association chapters apparently feel strongly about the benefits to their children. The difficulty in assessing these changes objectively by academic scientific parameters is, nevertheless, a problem with no easy solution. On this, Feingold says:

A lot of what I've described is on the basis of clinical experience, and I'd like to point out that it is extremely important to those of us who are practitioners, clinicians, and teachers — NOT academicians, that we not confuse the clinical with the academic. Clinical medicine, we must recognize, is not a science. It is an art. In part, it's structured on very limited scientific knowledge... augmented by experience, intuition, and art: that's the practice of medicine. ■

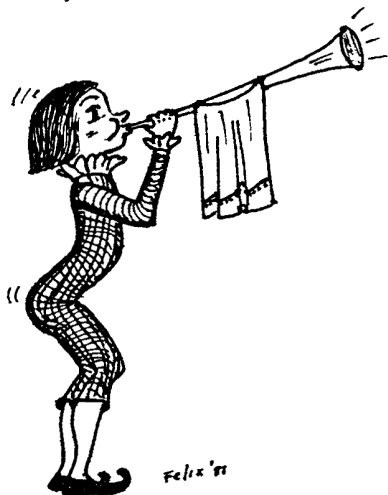
Note: For bibliography of *Nutrition and the Brain* conference and related topics, send me a stamped self-addressed envelope.

MARC AND THE TONSILS 'MIRACLE'

In the October *FELIX LETTER*, I talked about going back to school and getting my degree in nutrition in 1977 at the University of California at Berkeley. To those of you who may not be aware of the killer pace in the science curricula of today's universities, let me state simply that my middle-aged college days were only a touch more fun than having teeth drilled *sans* novocain. Apart from being a 4-star masochist, I had to have had some pretty impelling motivation to keep me hanging in there, and it was this: I was going to be a card-carrying member of a scientific discipline which had caused miracles to happen in my life. These dated from the first Adelle Davis book I had read in 1955, *LET'S EAT RIGHT TO KEEP FIT*, and I wanted to be a nutritionist just like that great lady. Little did I know until enlightened by my first instructors in Morgan Hall: she was anathema to the nutrition department! — a name to evoke curled lips (with all the others injudicious enough to flee orthodox nutrition for the primrose path of the counter-establishment). She had lost credibility with them because of her 'unfortunate' tendency to act on theory before all the evidence was in. Very soon, I learned that my professors, by and large, did not buy my 'miracle' concept of nutrition. As it turned out, they weren't a strikingly healthy-looking group; several were ponderously overweight; quite a few smoked. At the weekly department tea, Oreo cookies were standard fare. Nobody waxed rhapsodic about alfalfa sprouts and vitamin C. Nutrition was their *work*, not — as it had been for me — a captivating avocation. Their attitudes reflected the sobering years in laboratories pursuing elusive increments of knowledge, in the face of struggles for funding and the usual network of academic red tape. There were no easy answers in their world. They were not amused by the facile claims of the nonorthodox nutrition enthusiasts.

I liked and respected them and finally understood their concern that students not confuse the ready solutions proffered by Adelle Davis and others with the necessary long, cautious process of the scientist. But I wanted to say to them: Don't sell your own field short. Nutrition *does* produce miracles. It may not be possible to substantiate them on the basis of present knowledge, and for the time being they may better fall within the province of folklore, but they HAPPEN. They have to do with the subtle, pervasive forces that begin to work in a person (or an animal)

when nutrition wrongs are righted. Sometimes it's a single nutritive factor, more often it's a whole panoply. Sometimes it involves the removal of certain nutrients; other times it's the added ones which effect the transformation. The process may take months; or it may happen with great speed, like a sudden shaft of sunlight turning an object bright gold. When I look back over the experience of twenty-five years of accumulated wonders, I feel they should be heralded by a clear flourish of trumpets — not by the windy and skeptical dirges of the academic nutrition community!



There has to be a place for 'miracles' in science. Perhaps university nutrition departments should seriously consider taking on the task of evaluating nonscientific phenomena falling under the heading of therapeutic nutrition. The richness of medicinal folklore, as well as the more current crop of anecdotal miracles, could be gathered and examined by whatever parameters were most applicable. The material could then be variously classified as *WORTHY OF FURTHER INVESTIGATION...CAN WE SET UP A STUDY ON THIS?...INTERESTING — LET'S KEEP AN EYE ON IT...TOO GOOD TO BE TRUE...WHAT A CROCK!*...and so on. Student researchers and interviewers might enjoy the process, and the profession would have a start in dealing with a body of information which at present only sets its teeth on edge.

Nutritional folklore has always been with us. Only nutrition as a science is new; it's hard to believe the methodical analysis of nutrients began only a few generations ago. Someday, if we're lucky, this young discipline will enable us to comprehend the biochemical pathways of healing forces in nutrition — presently so dimly understood that we sometimes call them 'miracles.'

In 1955, Marc was four-and-a-half and my own children five, seven, and nine years of age when I married his father, a year after Marc's mother had died of polio. Since babyhood, his father explained, Marc had been plagued by earaches and sore throats, and the pattern continued when I became his stepmother. First came the colds, with sore throats and earaches quickly following. The clinic scheduled him for a tonsillectomy when he was five, the doctor describing Marc's tonsils as swollen and cryptic (full of diseased pockets) and a continuing source of infection. Just before the scheduled date, he came down with chicken pox so surgery was postponed. Soon it was summer; doctors avoided performing tonsillectomies then, fearing an increased risk of polio for the child.

Meanwhile, back in their San Fernando Valley home, the not-really-wicked stepmother, having just been hit by her first Adelle Davis book as with a bolt of lightning, was beginning to see the family's health problems with new eyes. Page after page of *LET'S EAT RIGHT TO KEEP FIT* dealt with the common garden variety of ailments which had always plagued my own three children as well as my stepson despite conscientious medical attention...and explained in unfamiliar but understandable biochemical terms how the lack of a single nutrient or group of nutrients could be a crucial factor in each disease. To be truthful, other than an awareness as a college biology major of severe deficiency diseases such as rickets, scurvy, pellagra, and beri-beri, I had never before connected illness with nutritional lacks, nor health with any particular dietary replenishment. No doctor had ever hinted to me of any such association. Adelle Davis was a biochemist as well as a trained nutritionist, and she was saying with great logic and plenty of case histories that the right foods plus vitamin and mineral supplementation could make people and animals well.

The concept that I now could utilize a simple weapon to fight the endless mysterious and petty ailments that soured our lives was stunning. I did a sweeping review of our kitchen cupboards and refrigerator. Candy, white flour, sugared cereals, and jelly donuts went in the trash, and I found my first health food store in the yellow pages. The great experiment had begun.

In a matter of weeks, I was confidently feeding the family (including, of course, my little stepson) with whole-grain-everything, liver once a week, heaping bowls of vegetables cooked and raw, wheat germ

pancakes, yogurt, honey, and plenty of fruit. Along with the dietary change came daily heaps of supplements administered like sacramental wafers: vitamins A, E, B-complex, lots of C, and tablets of calcium, magnesium, and essential trace minerals. Alas, there was also a fiendish high-octane Adelle Davis special called "tiger's milk," which blended blackstrap molasses, brewer's yeast, lecithin, milk, and bananas in a brown brew that could raise the dead. The kids hated it, to a man. It took martial law to get it down. As solace, they got home-baked cookies in which similar nutritious time-bombs were so cleverly insinuated that the children thought they were being rewarded.

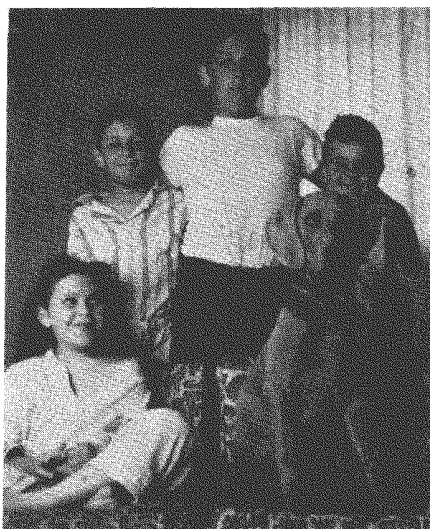
Would you believe it? All four of them essentially stopped having colds. The few they had were done with quickly, no longer complicated by bronchitis, tonsillitis, or earache. It took about six months, but the continuous round-robin of "normal" respiratory infections that had haunted all the years of my young motherhood was ended. When I took Marc for his checkup his tonsils were small and free of infection. Because it was nearly a year since the tonsillectomy had originally been scheduled, the doctor said that Marc had outgrown his problem as many children do.

The years went by, with few and minor cold for all the kids, and no earaches or tonsillitis for Marc...until he hit the stormy adolescent years. The drug explosion was beginning, but like most parents then of moderate habits, we assumed our children were protected by reasonably good example. The roof caved in on us one day when we learned Marc had been playing hooky and smoking "pot" regularly with some older boys. To frightened parents in those days, marijuana was barely a step removed from heroin. At considerable financial sacrifice, we enrolled Marc in a highly recommended ranch school in Arizona where we hoped wholesome country surroundings, horseback riding which he loved, new companions, and personal counseling would straighten out the unhappy 15-year-old.

Marc, however, felt he had been banished. Hurt and defiant, he went to great pains to cease any form of cooperation with the enemy, including taking the daily packets of supplements which I had hopefully tucked in his suitcase. It was only a matter of weeks before we were receiving bills from the school infirmary:

Marc had developed tonsillitis and an ear infection. During the months of his exile, he had at least three such episodes. They stopped only after he came home, was back on the family diet, and reinstituted his daily supplement regimen. In a short while, the infections ceased and his tonsils shriveled to normal size.

Unquestionably, there was a stressful emotional component in Marc's exile which compounded the picture, but anguish and puberty can go hand in hand, and none of the children was so fortunate as to be a stranger to traumatic emotional upsets. Simply, as long as they followed the family dietary practises, they hardly ever got sick. They all kept their tonsils.



Elissa, Josh, Elliot, Marc . . . and Ben

Does any of this qualify for a miracle? I suppose not. It only felt like one in 1956 to a tired young mother who had been struggling for nine years with children's runny noses and croupy coughs, and endless middle-of-the-night vigils with frantic little ones whose ears or throats hurt. It doesn't qualify as 'hard' scientific evidence, either, by standard parameters. Yet the question we might ask ourselves is this: if many thousands of households across the country have undergone similar transformations in health because of comparable dietary changes (as indeed they have), isn't it important that this information routinely be made available through professional channels to physicians and clinical nutritionists?

At present, this doesn't happen. Professional journals in nutrition and medicine generally do not deal with this kind of anecdotal material. Except for patients who may share experiences of this nature with their doctors, the information is restricted to popular nutrition publications . . . the ones we were specifically warned against for their unscientific approach in my classes at U.C. Berkeley. Nor can these magazines by any stretch of the imagination be considered recommended reading for medical students, doctors, or other health workers. Unless the health professions are full of "closet" food faddists, the chances of this material filtering down to the clinicians remain dim.

Twenty-five years after my first nutrition 'miracle,' tonsils are still being routinely yanked when they offend. Impeccably designed double-blind studies "prove" that vitamin C doesn't do a lot for colds. Currently, the scientific community is showing interest in the "new" possibility (NEW?) that certain nutrients may directly affect the immune system. Several groups are attempting to investigate this theory (in rats), nutrient by nutrient, before interest and research funds run out. Good luck!

Yes, I understand that science is unable as yet to set up studies that can manage the multitude of factors in anecdotal material like my 'tonsils' account and sort them out with any kind of verifiable conclusions. Epidemiologic studies, which are designed to extract information about large populations, sometimes do attempt to deal with an unwieldy number of variable factors, but they can serve only as statistical straws in the wind to indicate possible trends.

Nevertheless, I'm still hoping some intrepid researchers will come up with a flawlessly designed study to determine the effects on diseased tonsils in children (and why not in adults as well?) of a dietary program using whole grains, good natural foods exclusively, daily supplements of minerals and vitamins with lots of C, and an awful tasting drink called "tiger's milk." I know they'll say it can't be done — the experimental design would sink in a sea of "variables" — but I want to believe that nutrition scientists, someday soon, will come up with this miracle, too. ■

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