LAPIS LAZULI LIGHT

Total Health Care Collection (4)

Diet For A New America

For FREE DISTRIBUTION

FOREWORD

By Joanna Macy, author Despair and Personal Power in the Nuclear Age

AFTER READING THIS book for the second time, I took a walk on the beach below the oil refineries on San Francisco Bay. Seagulls careened in the afternoon sun. A tanker hooked up a half-mile out on the jetty. As I watched idly, my thoughts still occupied with the book, a strange fantasy arose in my mind.

It was a scenario of what would happen if Americans no longer found animal products attractive. Say they simply woke up one day and found meat and poultry and dairy products unappealing. Given U.S. eating habits, that speculation borders on the absurd, I know. But suppose some

magical transformation took place that would diminish our attraction to animal-based foods, and at the same time increase our appetite and enjoyment for other foods, which really nourish, and are far better for us.

What would happen? What would it mean for our lives and our world? Would that tanker, for example, still be making its deliveries of imported oil? Would those refineries stretch back for as many miles as they do now? Would there be as much DDT in the gulls overhead or in my own body? Would they and I be likely to live longer and healthier?

The research that John Robbins has done for us in this book, gathering and distilling an extraordinary amount of

little known but vital information, allows us to deduce what would happen in such a scenario. From the evidence accrued in hundreds of recent medical, agricultural, economic and environmental studies. Which he presents in terms easy for the lay person to grasp, we can indeed estimate the results if Americans were to change their eating habits and kick the habit of over-consuming animal proteins and animal fats.

I imagine then the scenario, as I walk along the water's edge.

The effects on our physical health are immediate. The incidence of cancer and heart attack, the nation's biggest killers, drops precipitously. So do many other diseases now demonstrably and causally linked to

consumption of animal proteins and fats, such as osteoporosis, a major affliction among older women; my mother suffers from it; I fear it. The hormonal imbalances causing miscarriages and increasing aberrations of sexual development similarly drop away, as we cease ingesting with our meat, poultry and milk the drugs pumped into our livestock. So do the neurological disorders and birth defects due to pesticides and other chemicals, as we begin to eat lower on the food chain where these poisons are far less concentrated. Mother's milk, where they concentrate in greatest intensity, becomes safe again; we can nurse our babies without fear. Since these toxins attack the gene pool itself, causing irreversible damage, the change in diet improves the health of my

children's children's children and generations to come.

The social, ecological and economic consequences, as we Americans turn away from animal food products, are equally remarkable. We find that the grain we previously fed to fatten livestock can now feed five times the U.S. population; so we have become able to alleviate malnutrition and hunger on a worldwide scale. We discover what it is like for us to sit down to eat without feeling guilt. Once relieved of it, we realize how great was that burden, that unspoken sense of being watched and judged by those who were hungry. We find ourselves also relieved of fear. For on a semiconscious level we knew all along that the old disparities in consumption were turning our planet into a

tinderbox, breeding resentments and desperation that could only eventuate in war. We breathe easier, letting ourselves be emotionally in touch again with all our brothers and sisters.

The great forests of the world, that we had been decimating for grazing purpose (that was, we discover, the major cause of deforestation), begin to grow again. Oxygen-producing trees are no longer sacrificed for cholesterol-producing steaks.

The water crisis eases. As we stop raising and grinding up cattle for hamburgers, we discover that ranching and farm factories had been the major drains on our water resources. The amount now available for irrigation and hydroelectric power doubles, Meanwhile, the change in

diet frees over 90% of the fossil fuel previously used to produce food. With this liberation of water energy and fossil fuel energy, our reliance on oil imports declines, as does the rationale for building nuclear power plants.

As expenditures for food and medical care drop, personal savings rise-and with them the supply of lend-able funds. This lowers the interest rates, as does also the drop in oil imports, which eases the pressure on the national debt.

A less obvious effect of our meat-free diet, but perhaps more telling on the deep psychological level, is the release that it brings from the burden and guilt of cruelty inflected on other species. Only a few of us had been able to face directly the obscene

conditions we inflicted on animals in our farm factories and modern slaughter houses; but most of us knew on some level that they entailed a suffering that was too much to "stomach".

We can appreciate now what it did to us to eat animals kept long in pain and terror. Because the mass methods employed to raise and kill animals for our tables were relatively new, we did not fully realize the deprivation and torture they entailed. Only a few of us guessed that the glandular responses of the cattle and pigs and chickens pumped adrenaline into their bodies and that we ate with their flesh the rage of the chickens, the terror of the pigs and cattle. It is good for our bodies, our relationships and our politics to have stopped ingesting fear

and anger. Acting now with more respect for other beings, we find we have more respect for ourselves.

As I picked my way over the shale and driftwood, I thought to myself, "This scenario is wildly, absurdly utopian. It is also clearly the way we are meant to live, built to live." And I wondered what the means could be that could alter our taste for animal food products and increase our appetite and appreciation for the foods that really are good for us. Then I stopped short, realizing with a laugh that the means is here at hand. I had just read it. It is this very book!

One might argue that information alone is insufficient to alter patterns of behavior. But information of this kind weds itself with both compassion and

self-interest. Fifteen years ago such considerations were enough to prompt our whole family to stop eating red meat. Our concerns then were world hunger concerns: a pound of beef costs ten pounds of grain. That change did not strike us as any kind of sacrifice; as a matter of fact, we felt better physically and found our food costs dropping substantially. Now I see how reading John Robbins' book has changed our eating habits again for the better. Like many of our friends, we, who had once relished barbecues and roast beef, bacon and eggs, and a chicken-every-Sunday lifestyle, we are changing our eating habits without any trauma or fanfare.

Still, I did not know how much was at stake until I read Diet for a New America. For this book reveals the

causal links between our animal food habits and the current epidemics of cancer, heart diseases and many other modern health disorders. It reveals as well the role these habits play in the present ecological crisis-in the depletion of our water, topsoil and forests. It shows how the production of animal foods puts toxins into our environment and how our consumption of these foods increases in turn our susceptibility to these toxins. Eating high on the food chain can be seen now as a kind of vicious circle, in which the chemicals we inflict on the environment and other life forms mount exponentially, and in which we ourselves as consumers become progressively more vulnerable to them.

It was clearly not an easy book to

write, as John Robbins acknowledges. For he uncovers not only a massive horror in what we as a society are doing to other beings and to ourselves; he uncovers massive deception as well.

The information he gives us about what he calls the Great American Food Machine amounts to a powerful indictment of the meat and dairy industries, both in regard to their cruel and dangerous methods of food production and in regard to the falsehoods they purvey. Through their advertising and especially through the "educational" materials they distribute and get taught through our public schools, these industries persuade us of dietary requirements that are inaccurate and promote dietary habits that shorten our lives. In

his expose of their corrupt and corrupting practices, John Robbins stands in the fine American tradition of courageous whistle-blowers, like Ralph Nader and Rachel Carson. In this case, it is both ironic and strangely fitting that the message comes from-or through-the scion of America's largest ice cream company.

A major contribution of a Diet for a New America is the welcome news it brings that we need far less protein than we thought we did. Many of us who turned from meat protein in an effort to live more lightly on the earth, believed we should compensate by eating an equal amount of dairy and vegetable protein and by combining grains and legumes to produce it. France Moore Lappe, in the first edition of her milestone book Diet for

a Small Planet, showed us how to do that. Robbins' book is an equally significant milestone, for it shows convincingly that our actual protein requirements are far lower than previously assumed. Using a plethora of recent medical studies, including research and revisions by Lappe herself, Diet for a New America debunks what it calls the protein myth, shows we can not only survive on less protein, but live healthier lives. The incidence of osteoporosis, to take an example, declines with lowered protein consumption.

I am grateful that this book is not a sermon. It is too important for that-too important for our health as individuals, as families, as a society and as a planet. John Robbins does not scold or moralize; he takes us on a

journey with him, sharing his love for life and his reverence for all life forms, ours included. While he shares as well his surprise and pain at what he discovers in the Great American Food Machine, he wisely lets us draw our own conclusions about how we want to live.

The title is appropriate. There is a new America taking birth in our time. I encounter it everywhere I go in this land, in cities and small towns, in churches and schools, where folks are fed up with violence and disease and alienation, where they are creating new forms, new lifestyles, determined to live in ways that lend meaning and sanity to their lives. This new America takes seriously the values of individual dignity, freedom and justice that were heralded at the birth of our nation. It

wants to share these values with all being-knows it must share them in order to survive. It is fed up with consuming over half the world's resources; it is sick of being sick. That is why, I suspect, the fantasy that occurred to me on the beach may not be so unrealistic.

The white man must treat the beasts of this land as his brothers. For whatever happens to the beasts soon happens to man. All things are connected."

--- (Chief Seattle)

INTRODUCTION

I WAS BORN in the heart of the Great American Food Machine. From childhood on it was expected that I would someday take over and run what has become the world's largest ice cream company Baskin-Robbins. Year after year I was groomed and prepared for the task, given an opportunity to live the Great American Dream on a scale very few people can ever hope to attain. The ice cream cone shaped swimming pool in the backyard of the house in which I lived was a symbol of the success awaiting me.

But when the time came to decide, I said thank you very much, I appreciate the kind offer, but "No!" I had to say no, because something

else was calling me, and no matter how hard I tried, I could not ignore it.

There is a sweeter and deeper American dream than the one I turned down. It is the dream of a success in which all beings share because it is founded on a reverence for life. A dream of a society at peace with its conscience because it respects and lives in harmony with all life forms. A dream of a people living in accord with the laws of Creation, cherishing and caring for the natural environment, conserving nature instead of destroying it. A dream of a society that is truly healthy, practicing a wise and compassionate stewardship of a balanced ecosystem.

This is not my dream alone. It is really the dream of all human beings who

feel the plight of the earth as their own, and sense our obligation to respect and protect the world in which we live. To some degree, all of us share in this dream. Yet few of us are satisfied that we are doing all that is needed to make it happen.

Almost none of us are aware of just how powerfully our eating habits effect the possibility of this dream becoming a reality. We do not realize that one way or the others, how we eat has a tremendous impact. Diet For A New America is the first book to show in full detail the nature of this impact, not only on our own health, but in addition on the vigor of our society, the health of our world, and the well-being of its creatures. As it turns out, we have cause to be grateful, for what's best for us personally is also

best for the other life forms and for the life support systems on which we all depend.

The more I have uncovered about the dark side of the Great American Food Machine, the more appropriate it has felt to have decline the opportunity to be part of it. And the more urgent it has seemed that people are made aware of the profound and far-reaching consequences of their eating habits.

Diet for A New America exposes the explosive truths behind the food on America's plates. These are truths the purveyors of the Great American Food Machine don't want you to know, for in many cases they are not pretty truths. But if exposing them makes America healthier, the world a kinder

and more life sustaining place, then so be it.

Increasingly in the last few decades, the animals raised for meat, dairy products and eggs in the United States have been subjected to ever more deplorable conditions. Merely to keep the poor creatures alive under these circumstances, even more chemicals have had to be used, and increasingly, hormones, pesticides, antibiotics and countless other chemicals and drugs end up in foods derived from animals. The worst drug pushers don't work city streets-they operate today's "factory farms."

But that's just the half of it. The suffering these animals undergo has become so extreme that to partake of food from these creatures is to partake

unknowingly of the abject misery that has been their lives. Millions upon millions of Americans are merrily eating away; unaware of the pain and disease they are taking into their bodies with every bite. We are ingesting nightmares for breakfast, lunch and dinner.

Diet for A New America reveals the effects on your health, on your consciousness, and on the quality of life on earth that comes from eating the products of an obscenely inhumane system of food production. You don't have to forego animal products to derive great benefit from this book. You don't have to be a vegetarian to be concerned about your health and to want your life to be a statement of compassion.

It s not the killing of the animals that is the chief-issue here, but rather the unspeakable quality of the lives they are forced to live.

The purveyors of the Great American Food Machine don't want you to know how the animals have lived whose flesh; milk and eggs end up in your body. They also don't want you to know the health consequences of consuming the products of such a system, nor do they want you to know its environmental impact. Because they know only too well that if word got out the resultant public outcry would shake the foundations of their industry.

But I want you to know. I'm letting the cat out of the bag. I don't care about their profits. I care about your health,

your well being, and the welfare of our planet and all its creatures.

Eating should be a pleasure. It should be a celebration and a communion with life. The information in this book will provide you access to a whole new sense of pleasure in eating-a pleasure all the deeper for being at no one's expense, a pleasure all the more wonderful for being productive of radiant health.

Exciting things have been learned in the last few decades regarding health and food choices. There have at last been enormous breaks through in the science of human nutrition, and for the first time now we are receiving irrefutable scientific evidence of how different eating patterns affect health.

We've always known that it was best to eat a "balanced diet" , but now we are finding out just what a balanced diet really is, and it's not at all what we had thought. Thousands of impeccably conducted modern research studies now reveal that the traditional assumptions regarding our need for meats, dairy products and eggs have been in error.

In fact it is an excess of these very foods, which had once been thought to be the foundations of good eating habits, that is responsible for the epidemics of heart disease, cancer, osteoporosis, and many other diseases of our time.

Diet For A New America is the first book to reveal the latest findings of nutritional research in a language

anyone can understand, and at the same time document these findings so you can rest assured of their legitimacy. It takes into account the marvelous and undeniable fact that you are a unique person, with your own special tastes, needs, and biochemical individuality. It does not sell you short by presenting rigid rules you have to follow obsessively. On the contrary, the goal is for you to be truly healthy and happy in every dimension of your beings and to be free from any kind of compulsion. Diet for A New America contains no dogmatic list of should and shouldn't, but instead gives you information that will help you select and enjoy foods that day by day will make you healthier and happier. It shows you how to protect yourself against heart attacks, cancer, osteoporosis, diabetes, strokes, and the

other scourges of our time. It shows you how to keep your body free from cholesterol, saturated fat, artificial hormones, antibiotic-resistant bacteria, pesticides, and the countless other disease-producing agents found all too often in many of today's foods. It shows you how you can enjoy eating food that leaves your mind and heart clear and unpolluted.

As Americans we are indeed privileged to have the option of selecting the optimum diet. But for most of the world, the struggle is a far different one; it is survival itself. Diet For A New America shows you how your food choices can be of tremendous benefit, not only to your own life, but to the less fortunate of the world as well. No self-deprivation is called for, but simply the

understanding that the healthier, tastiest, and most nourishing way to eat is also the most economical, most compassionate, and least polluting. Heeding this message is without doubt one of the most practical, economical and potent things you can do today to heal, not only your own life, but also the ecosystem on which all life depends. You benefit the rest of humankind benefits, the animals benefit, and so do the forests and the rivers and the soil and the air and the oceans.

There is enormous suffering today that stems from people feeling isolated and alienated from nature. Diet for A New America is a statement of our inter-existence with all forms of life, and provides a means to experience the profound healing powers of our inter-

connectedness.

You'll learn how to care for your health and to improve the quality of your life. You'll see that very eating habits that can do so much to give you strength and health are exactly the same ones that can significantly reduce the needless suffering in the world, and do much to preserve our ecosystem. And you'll discover the profound liberation that comes from bringing your eating habits into harmony with life's deepest ecological basis. You will become increasingly sensitive, and increasingly able to live and act as an agent of world spiritual awakening.

Few of us are aware that the act of eating can be a powerful statement of commitment to our own well being,

and at the very same time to the creation of a healthier habitat. In Diet For A New America you will learn how your spoon and fork can be tools with which to enjoy life to the fullest, while making it possible that life, itself, might continue. In fact, you will discover that your health, happiness, and the future of life on earth are rarely so much in your own hands as when you sit down to eat.

When I declined to be a top cog in the Great American Food Machine, and turned down the opportunity to live the American Dream, it was because I knew there was a deeper dream. I did it because I knew that with all the reasons that each of us has to despair and become cynical, there still beats in our common heart our deepest prayer for a better life and a more loving

world. The book you hold in your hands is a key that will enable you to be an instrument of this prayer.

John Robbins

Summer, 1987

"People often say that humans have always eaten animals, as if this is a justification for continuing the practice. According to this logic, we should not try to prevent people from murdering other people, since this has also been done since the earliest of times." ~~~
(ISAAC SINGER)

THE RISE AND FALL OF THE PROTEIN EMPIRE

"Think of the fierce energy concentrated in an acorn! You bury it in the ground, and it explodes into a giant oak! Bury a sheep, and nothing happens but decay!"
(GEORGE BERNARD SHAW)

"You put a baby in a crib with an apple and a rabbit. If it eats the rabbit and plays with the apple, I'll buy you a new car."
(HARVEY DIAMOND)

I am sitting in elementary school. The teacher is bringing out a nice colored chart and telling all us kids how important it is to eat meat and drink our milk and get lots of protein. I'm listening to her, and looking at the chart which makes it all seem so simple. I believe my teacher, because I sense that she, herself, believes what she is saying. She is sincere. She is a

grown-up. Besides, the chart is decorated and fun to look at. It must be true.

Protein, I hear, that's what's important. Protein, Lots of it, And you can only get good quality protein from meat and eggs and dairy products. That's why they make up two of the four "basic food groups" on the chart.

That day at lunch I feel like doing something good for myself and the world, so I spend the ten cents I have left of my weekly allowance for another carton of milk.

Now I am an adult, and looking back, I know my teacher had all she could handle to keep control of the classroom and teach a few basics. When teaching aids were given to her

that helped get the class's attention, and helped ease her burden, she was grateful. Not for a moment did it occur to her to wonder about the political dynamics that lead to the development of those aids. Neither she nor any of us little kids could have imagined that the pretty chart was actually the outcome of extensive political lobbying by the huge meat and dairy conglomerates. Nor could we have imagined the many millions of dollars, which had been poured into the campaigns that produced those pretty charts. My teacher believed what she taught us, and never for a moment suspected she was being used to relay industrial propaganda.

Our innocent and captive little minds soaked it all up like sponges. And most of us, as planned, have been willing

and unquestioning consumers of vast amounts of meat and dairy products ever since. Even those few of us who have come to experiment with vegetarian diet-styles are often still haunted by the voices of our teachers and the lessons of those charts. When things aren't going well, a voice in the back of our mind whispers: "Maybe you aren't getting enough protein..."

STEP RIGHT UP, STEP RIGHT UP

Of course, just because the concept of the "basic four" food groups was promoted by the National Egg Board, the National Dairy Council, and the National Livestock and Meat Board, doesn't mean it is necessarily false. Just because there were hucksters in our classrooms doesn't mean the hucksters lied.

But it does mean their motives were a little less pure than we thought, and their "concern" for our education a little more self-interested than we knew. It might cast a shadow upon the wisdom of unquestioningly accepting the "truths" we were taught. It might mean, for example, that we should consult sources of information less biased than the Egg Board, or the Meat Board, or the others who applied so much political and economic pressure to get those nice pretty charts to say what they wanted them to say.

Since I've discovered that the National Dairy Council is the foremost supplier of "nutritional education" materials to classrooms in the United States, and seen in a thousand other ways how heavily organizations specifically trying to promote the sale of animal

products influence our "nutritional education", I've had to wonder whether we might have been misled about our protein needs. Feeling a little unsure, I've turned to the light of recent unbiased scientific research, to get a better understanding of what our protein needs might actually be. These are studies produced by groups without a product to sell.

I've found that not all authorities agree on a precise figure for our daily needs of protein, but their calculations do fall within a specific range. It is a range that runs from a low estimate of two and a half percent of our total daily calories up to a high estimate of over eight percent. The figures at the high end include built-in safety margins, and are not "minimum" allowances, but rather

"recommended" allowances.

Interestingly, I have found there is a great deal of controversy in the scientific community about the wisdom of including such safety margins. Not everyone thinks it's necessary. One passionate nutritional commentator, Dr. David Reuben, spoke for many informed scientists when he was asked who it is who needs the extra 30% allowance of protein. He answered:

"The people who sell meat, fish, cheese, eggs, chicken, and all the other high prestige and expensive sources of protein. Raising the amount of protein you eat by 30% raises their income by 30%. It also increases the amount of protein in the sewers and septic tanks of your neighborhood 30% as you merrily

urinate away everything that you can't use that every day. It also deprives the starving children of the world the protein that would save their lives. Incidentally, it makes you pay 30% of your already bloated food bill for protein that you will never use. If you are an average American family, it will cost you about $40 a month to unnecessarily pump up your protein intake. That puts another $36 billion a year into the pockets of the protein producers."

Other authorities hold the view that the 30% safety margin is important to protect those few individuals whose proteins needs are unusually high. But there needn't be any conflict if we bear biochemical individuality in mind. Clearly, some people, owing to their biochemical individualities, will

need the extra 30%. But just as clearly, others will need 30% less than the norm. Fortunately, we do not have to arrive at a single figure that would ostensibly be best for everyone.

Roger Williams, the biochemist and nutrient researcher who has probably contributed more to our understanding of biochemical individuality than any scientist alive, suggests that the range of protein needs among people may vary as much as four fold. Interestingly, a four- fold range is just the span covered by the extremes of current scientific thinking. For if we top off the highest figures to make room for the extra protein needs of the most extreme cases, we have a spectrum ranging from two and a half percent at the low end up to ten percent at the

top. Science tells as that the protein needs of the vast majority of people would be easily met within that range.

Nature, it seems, would agree totally. Human mother's milk provides five percent of its calories from protein. Nature seems to be telling us that little babies, whose bodies are growing the fastest they will ever grow in their life, and whose protein needs are therefore at a maximum, are best served by the very modest level of 5% protein.

WHAT IF WE NEED A WHOLE LOT?

But what if we happen to be one of those people whose biochemical individualities are such that we need a whole lot of protein? What if we are at the high end of the spectrum? Don't we need to eat meat in order to get enough? And if not meat, do we then

need eggs or dairy products?

The answers to those questions are shown quite graphically in the chart on page 176, which shows the percentage of calories from protein in various non-meat, non-dairy foods.

Even in fact, were we at the very top end of the spectrum in terms of our protein needs, needing to derive a full ten percent of our calories from protein, unless we are trying to live only on fruits and sweet potatoes, vegetarian foodstuffs easily provide for our protein needs. If we ate only brown rice, and if our biochemical individualities required the maximum of protein, then, of course, we would fall a little short. But if we do nothing more than include beans or fresh vegetables to complement the rice,

then our protein needs are easily and well satisfied without recourse to any animal products. This is true even in the most extreme case, where our protein needs are at the very highest end of the spectrum.

If we ate nothing but wheat (which is 17% protein), or oatmeal (15%), or pumpkin (15%), we would easily have more than enough protein. If we ate nothing but cabbage (22%), we'd have over double the maximum we might need.

In fact, if we ate nothing but the lowly potato (11% protein) we would still be getting enough protein. This fact does not mean potatoes are a particularly high protein source. They are not. Almost all plant foods provide more. What it does show, however, is just

how low our protein needs really are.

There have been occasions in which people have been forced to satisfy their entire nutritional needs with potatoes and water alone. I wouldn't recommend the idea to anyone, but under deprived circumstances it has been done. Individuals who have lived for lengthy periods of time under those conditions showed no sign whatsoever of protein deficiency, though other vitamin deficiencies have occurred.

LEARNING TO SHOUT HOORAY FOR MEAT AND MILK

I am back in my elementary school again. The teacher is telling us kids that animal protein is superior to vegetable protein. It's the only "complete" protein. That sounds

good. I have learned to root for the "good guys" on television shows, and now I learn that "good" protein comes only from meat and dairy products. Inside I shout "Hooray!" for meat and milk. At lunch I wish my mother had put more bologna on my sandwich, so I could be stronger and better at football.

Since then I have learned that the belief in animal protein as superior to vegetable protein goes back to 1914, when Osborn and Mendel did some of the earliest laboratory research on protein requirements. They were studying rats, and (in studies I do not ethically condone) found the rats grew faster on animal protein than they did when the source of protein in their diet was plants.

It wasn't long before investigators began to classify meat, eggs, and dairy foods as "Class A" proteins, and to classify plant origin proteins as "Class B."

Studies in the 1940's clarified the matter further when researchers found the ten particular amino acids which are essential to the growth of rats If any of these particular substances were removed from the rats' diet, they found the rats' growth was impaired. By laborious experiments, the optimum proportion of amino acids, which produced the fastest growth, was determined and the amino acid pattern that emerged was similar to that found in animal protein, particularly to that found in eggs.

There was no way to duplicate these experiments on human subjects. So while we now knew the optimum amino acid pattern for rat growth, we had no equivalent information for human beings.

Based on what we knew for rats, however, it was assumed by some investigators that the proportion of essential amino acids, which promoted the most rapid growth in rats, would be the best for human beings as well. No serious investigator took this to be more than a working hypothesis, but it did at least give us something to go on. Meanwhile, with less than uncompromising respect for the truth, the National Egg Board took the opportunity to begin actively promoting the idea that eggs were the ideal protein food.

It wasn't only the Egg Board that saw a chance to jump on the bandwagon. The Dairy Council, the Livestock and Meat Board, and virtually all the other organizations (whose purpose it was to promote the sale of animal products) joined the campaign, and none of them seemed overly concerned with minor details, such as the fact that the data was known only for rats.

Through their well-funded efforts, the idea that animal protein was superior to vegetable protein became virtually the Official Nutrition Doctrine of the United States. Anyone who thought otherwise came to be seen as some kind of crank, zealot, or nut.

DIET FOR A SMALL PLANET

Then, in the late 1960's, a woman

named Frances Moore Lappe wrote an influential book entitled *Diet for a Small Planet.* She accepted the hypothesis that the pattern of amino acids found in animal protein was superior for human nutrition than that found in vegetable protein. And she accepted the pattern of amino acids found in eggs as the ultimate standard against which to measure all other proteins. But then she showed that when plant foods are mixed in certain ways, the result is that the amino acids in the "inferior" vegetable protein combine to produce proteins, which more closely approximate the ideal egg standard. In fact, she showed that in many cases, thanks to the synergistic effect of protein complementarity, mixed vegetable proteins actually outrank meat in their value to the body.

Lappe was delighted to discover that almost all the traditional societies had independently evolved diets that combined vegetable proteins in a way that brought their combined amino acid patterns closer to that of the egg. And since she accepted the egg as the ideal pattern, she saw the workings of a deep inherent wisdom in these traditional diet-styles.

In Latin America, it was corn tortillas with beans, or rice with beans. In the Middle East, it was bulgar wheat with garbanzo beans (chickpeas), or pita bread with hummus (made from garbanzo beans and sesame seeds). In India, it was rice or wheat chapatis with dahl (lentils). In southern China, Japan, and much of Indonesia, it was soy products with rice. In northern China, it was soy products with wheat

or millet. In Korea it was soy foods with barley.

Lappe's enthusiasm for protein combining was contagious. Her book was beautifully written, and contained charts and tables that gave the details of how complementary vegetable proteins increased each other's nutritional value, by bringing each other up towards the egg standard. Furthermore, Lappe tapped a deep and powerful spring in the psyche of the times when she showed the terrible waste of a meat centered diet and how it is part of a pattern of consumption that deprives millions of people the essentials of life. Her book sold over three millions copies.

Many people, whose "nutritional education" had hitherto been

overseen by the National Dairy Council and the Meat Board, now saw, for the first time, scientific evidence that they did not have to eat meat in order to get the "best quality" protein. Numerous individuals were freed from thinking only animal proteins could meet their dietary needs.

Lappe did not, however, really question the position of the egg at the top of the protein ladder. She was evidently not aware that its placement there derived only from experiments with rats, not human beings. However, Nathan Pritikin, whose Longevity Centers featured diet-style counseling as the basis for dramatic success in treating and preventing heart disease, was one of the many nutritionists who spotted this flaw in

Lappe's work. He could not agree that eggs were the ideal, having seen far too much clinical evidence to the contrary.

Although applauding the spirit in which Lappe had written *Diet for a Small Planet*, many experts felt, with Pritikin, that because she had proceeded from a wrong premise her conclusions were misleading. In her enthusiasm for protein complementarity, they felt she had unintentionally cast regular old "uncomplemented" vegetable protein in a less favorable light than the truth warranted. Pritikin said:

"Unfortunately, the book is one of the most misleading documents in the last few years because everybody now thinks food

balancing is essential. (The book) gives the impression that vegetable proteins don't have sufficient percentages of amino acid."

Actually, Lappe never really said it was necessary to combine vegetable proteins to get enough. She only said that if you did they came much closer to the level of eggs, and usually surpassed meats. It is clear she never meant to cast a shadow over uncombined vegetable proteins. She wrote *Diet for a Small Planet* specifically to show how wasteful meat habits are, and to show that animal protein isn't necessary.

But ironically, the very popularity of her work served to reinforce the idea that animal protein was superior, though it was now understood by

many that with careful combining, vegetable proteins could be made quite competitive.

Many of her readers inferred that if you don't eat animal protein, than you need a doctorate in chemistry, and had better keep a slide rule in your kitchen. Many felt obligated to check amino-acid tables and food-combining charts before preparing a meal.

Meanwhile, Lappe herself was learning more, and revising her judgments about the value of uncomplemented vegetable protein. She became convinced that her emphasis in *Diet for a Small Planet* on protein complementarity had been misplaced. So she re-wrote *Diet For a Small Planet,* and in 1981, reissued an almost completely new tenth

anniversary edition. Now she said:

"In 1971 I stressed protein complementarity because I assumed that the only way to get enough protein…. was to create a protein as usable by the body as animal protein. In combating the myth that meat is the only way to get high-quality protein, I reinforced another myth. I gave the impression that in order to get enough protein without meat, considerable care was needed in choosing foods. Actually, it is much easier than I thought...(I) helped create a new myth-that to get the protein you need without meat you have to conscientiously combine non-meat sources...With a healthy, varied diet, concern about protein complementarity is not necessary for most of us."

It is very rare when well-known figures are willing to reverse themselves publicly, especially when the issue is the very one which made them famous. I can't help but admire this kind of integrity. And obviously, Frances Moore Lappe is convinced that her earlier emphasis on protein combining was unwarranted. In the original 1971 edition of Diet for a Small Planet, over 200 of the 280 pages dealt specifically with the ins and outs of protein combining. In the 1981 edition, only about 60 of the 455 pages deal with the matter, and much of this is an explanation of how her thinking has changed. The details of protein complementarity, which comprised the bulk of the original book, are relegated in her revised edition to a short appendix, at the back of the book.

In the new *Diet for a Small Planet,* the woman who brought the concept of complementing vegetable proteins to the world goes out of her way to show it isn't necessary. She writes:

"If people are getting enough calories, they are virtually certain of getting enough protein... The simplest way to prove the overall point is to propose a diet which most people would consider protein-deprived, and ask, does its protein content add up to the allowance recommended by the National Academy of Sciences?"

She then puts together a day's menu, with no meat, no dairy products, no eggs, and no protein supplements, and comments:

"Even without accounting for

improved protein usability due to combining complementary proteins, this diet has adequate protein without exceeding calorie limits."

Lappe's hypothetical menu is for a 128-pound woman. It contains 57.7 grams of protein, far more than the 44 grams recommended by the National Academy of Sciences for a woman that size. She points out that even if we were to assume the superiority of animal protein, and completely ignore any conceivable benefits that might be gained from vegetable protein combining, her hypothetical menu would still exceed the allowance with ease.

Men might wonder whether they would get enough protein in this fashion. They would indeed, since caloric needs and protein needs rise

hand in hand. What matters is the percentage of the total caloric intake derived from protein. Men, eating proportionately more calories than Lappe's 128-pound woman, would get proportionately more protein, and be covered. We saw earlier that a spectrum of two-and-a-half percent to ten percent would be adequate for just about everybody. Without meats, eggs or dairy products, Lappe's hypothetical menu still derives over eleven-and-a-half percent of its calories from protein.

THE INCREDIBLE OVERSOLD EGG

It is not only Frances Moore Lappe whose mind is changing as new evidence comes in from protein research; the most rigorous scientific journals are likewise convinced. An editorial in the medical journal *Lancet*

reports:

"Formerly, vegetable proteins were classified as second-class, and regarded as inferior to first-class proteins of animal origin, but this distinction has now been generally discarded."

What are we to make of this turnaround? Is it possible that even if we accept the dubious hypothesis that the egg is the ultimate protein standard for humans, we still do not need meat, eggs or dairy products in order to get adequate protein? Could it be that the whole issue of "getting enough protein" is actually just a figment of our collective imaginations, with nothing behind it except for the propaganda of the meat, dairy and egg industries?

That, remarkably, seems to be the case. The Food and Nutrition Board of the National Academy of Sciences, hardly a bastion of nutritional radicalism, spoke of people who consume no dairy products, meat, or eggs:

"Pure vegetarians from many populations of the world have maintained...excellent health."

A team of Harvard researchers, investigating the effects of a strictly plant food diet, found:

"It is difficult to obtain a mixed vegetable diet which will produce an appreciable loss of body protein without resorting to high levels of sugar, jams and jellies, and other essentially protein-free foods."

A clinical study reported in the *Journal of the American Dietetic Association* compared the intake of the essential amino acid for meat-eaters, lacto-ovo vegetarians (those consuming dairy products and eggs), and pure vegetarians (no eggs or dairy products). This study raised the protein requirements for each amino acid to a height that would cover even the needs of pregnant women and growing adolescents. They found that not only were all three diet-styles sufficient, they were all well above sufficient:

"Each group exceeded twice its requirement for every essential amino acid and surpassed this amount by large amounts for most of them."

At an annual meeting of the American Association for the Advancement of Science, the eminent nutritionist Dr. John Scharffenberg gave a major presentation, which was later made into a book. He did not seem to feel that "getting enough protein" was a major worry:

"Let me emphasize, it is difficult to design a reasonable experimental diet that provides an active adult with adequate calories that is deficient in protein."

Many consider Nathan Pritikin the foremost expert on nutrition in modern times. Thousands of people came to his Longevity Centers. Some came in wheelchairs, or preparing for coronary bypass operations. Many went jogging home a month later.

Most improved tremendously. The heart of Pritikin's program was his diet. He said:

"Vegetarians always ask about getting enough protein. But I don't know any nutrition expert that can plan a diet of natural foods resulting in a protein deficiency, so long as you're no deficient in calories. You need only six percent of total calories in protein... and it's practically impossible to get below nine percent in ordinary diets."

It seems Nature must have wanted us to have enough protein. For simply following the instinct of hunger and eating enough natural food of whatever kind, it is almost impossible to be deficient in this vital nutrient.

And it doesn't matter very much whether or not we hold one form of protein to be superior. Either way, and whatever the demands of our biological individuality, the evidence forces us to conclude that we will get enough protein, even without dairy products, eggs, or protein complementarity.

I admit that I have sometimes had a hard time accepting these truths. I have been powerfully programmed, and have become emotionally attached to the old ideas about protein. But dispassionate appraisal of the evidence virtually forces me to conclude that the "problem" of where vegetarians will get their protein, even those who forego dairy products and eggs, is in actuality a "non-problem."

In fact, researchers who purposefully want to design diets deficient in protein often have a devil of a time. It is possible, but it's far from easy. By the same token, it is possible for a vegetarian to be deficient in protein, but it takes some doing. Here's how it can be done:

THE NONPROTEIN DIET

1) By eating excessive junk food. Such "food" -which includes fatty, highly refined and processed foods, most sweets, and excess alcohol- give us only "empty" calories. These are calories, which provide momentary fuel, but do not nourish our cells or organs. They provide little in the way of vitamins, minerals, protein or fiber. A diet with a lot of fat, candy, soda pop, white bread, pastries and or fried

foods will probably lead to protein deficiency, as well as a deficiency in every other nutrient we need.

2) By trying to live on fruit alone. Of course, most of us wouldn't consider fruit as a staple for any length of time, and so needn't worry about this. But there are some who try to be "fruitarians". Usually, their reasons are more spiritual than nutritional, and it is a good thing, because from a nutritional point of view, a fruitarian diet may lack adequate protein.

3) By eating only those few crops whose protein content is unusually low. This would be nearly impossible in the United States. But there are parts of West Africa

where the staple food is the cassava root, which provides only about two percent of its calories as protein. Sadly, people there sometimes have little else to eat. Some of them, as a result, encounter protein deficiency.

4) If an infant were to be fed just grains and vegetables, it might have difficulty absorbing enough protein due to the immaturity of its digestive system. Studies have shown potatoes can supply 100% of an infant's protein needs, but grains may fall short. Of course, if an infant is breast fed, then there is nothing to worry about.

5) The only other way vegetarians could fail to fulfill their protein needs, would be by starving. If you

don't get enough food, then you aren't going to get enough protein. Of course, you aren't going to get enough carbohydrates or vitamins or fiber or minerals or anything else either. This condition, which tragically occurs among the very poorest of the world, is known as kwashiorkor. But we hardly need a fancy name for someone who is starving to death.

GROWING UP BIG AND STRONG

I'm back in the classroom again. My teacher is telling us kids that if we want to be big and strong we had better eat lots of protein. And when we work hard and play hard then we need even more protein. I'm thinking of my Superman comic books, and remembering the pictures of Charles Atlas on the back, with his huge

muscles and rippling vitality. Squinting my eyes a little, I resolve to bite the bullet and ignore my intense dislike for meatloaf. Some things are more important than whether they taste good or not.

Most of us, naturally, still believe what our teachers taught us. But one man who doesn't quite go along with all this, and who would appear to know what he's talking about, is a man who might be capable of kicking sand in even Charles Atlas's face. I'm speaking of Arnold Schwarzenegger, the virtual symbol of male muscular development. In his book, *Arnold's Body Building for Men*, Schwarzenegger writes:

"Kids nowadays...tend to go overboard when they discover body

building and eat diets consisting of 50 to 70% protein-something I believe to be totally unnecessary... (In) my formula for basic good eating: eat about one gram of protein for every two pounds of body weight."

This formula is in keeping with the range we have already discovered. To meet Arnold Schwarzenegger's suggested protein quota, you'd do fine without meat, eggs, or dairy products. If you ate only broccoli, I'd probably wonder whether you had lost your marbles, but you'd get more than four times Schwarzenegger's suggested requirement.

When it comes to the relationship between protein and physical work, it turns out that once again my teacher, bless her heart, didn't quite hit the nail

on the head. True, we need protein to replace enzymes, rebuild blood cells, grow hair, produce antibodies, and to fulfill certain other specific tasks. But there is virtually no greater demand for any of these functions from hard physical work. If we are working or playing hard, it is not more protein we need, but rather we require more carbohydrates to burn, because it is carbohydrates that provide our fuel.

Study after study has found that protein combustion is no higher during heavy exercise than under resting conditions. This is why Dave Scott can set world records for the triathlon without consuming lots of protein. And why Sixto Lenares can swim 4.8 miles, cycle 185 miles, and run 52.4 miles in a single day without meat, dairy products, eggs, or any

kind of protein supplement in his diet.

The popular idea that we need extra protein if we are working hard turns out to be simply another part of the whole mythology of protein, the "beef gives strength" conditioning foisted upon us by those who profit from our meat habit. Such thoughts have been planted in our minds since we were little children, and have, for many of us, become so much a part of our psychic landscape that we simply "know" they are true. We have come to take them for granted as given facts, much as people once took for granted that the world was flat.
But today, even the conservative National Academy of Science, an organization hardly renowned for going out on a limb and taking controversial positions, say:

"There is little evidence that muscular activity increases the need for protein."

Modern nutritional science tells us clearly that our protein needs are easily met without any fuss. And yet many of us are haunted, somewhere in the back of our minds, by the fear that if we do not eat enough protein we may end up looking like one of the people on a CARE poster. Because we absorbed this fear when we were very young, it has become part of the very foundations of our psyche. We have become living examples of the old German proverb,

"An old error is always more popular than a new truth."

We have become protein obsessed,

and we pay an incalculable price for it. We feed an enormous amount of grain to livestock which could otherwise be fed to the world's hungry. We cause a great deal of needless suffering to animals. And finally, we seriously compromise our health.

Though we know that most anything in excess can be harmful, be it aspirin or alcohol, sex, food or sunshine, we rarely apply this understanding to our protein consumption. We have for the most part been so afraid of not getting enough protein that we have ignored the growing body of scientific research that points to the serious health consequences of ingesting too much.

OSTEOPOROSIS AND THE PROTEIN CONNECTION

By now, if my grade school teacher is still alive, she is probably gray-haired and in her sixties. If she is like most other women of that age in the United States, her "old bones" are probably not quite what they used to be. She may be a little stooped over with age; and she may well have lost significant height from the days when she towered over a classroom of youngsters who looked up to her every word.

Actually, if she is like most women that age in the United States, her "old bones" are far indeed from what they once were. They have lost significant amounts of minerals, especially calcium, and as a result are springy, fragile, and weak. It is not at all

uncommon for the bone mineral losses in post-menopausal women to cause them chronic back pain, while at the same time making them susceptible to frequent fractures. Often they lose height, and find themselves increasingly stooped over, for the weakened vertebrae just cannot support the body load. Unfortunately, this crumpling of the body posture is not just an aesthetic misfortune. Increased pressure is put on the inner organs, and they are unable to function as they should.

I remember my teacher fondly, and wouldn't wish this on her for all the world. But in fully twenty-five percent of sixty-five year old women in the United States, bone mineral losses (called "bone re-sorption") are so severe the condition is given the

clinical name "osteoporosis." For a person technically to qualify for this label, it means she has lost fifty to seventy-five percent of the original bone material from her skeleton. Fully one out of every four women sixty-five years old in our culture has lost over half her bone density. Today, more deaths are caused by osteoporosis than cancer of the breast and cervix combined.

Unfortunately, the loss of calcium and other minerals from the bones is a gradual process, which goes on steadily for a long time before it becomes evident. There is no flashing red light to warn us that our bodies are losing calcium. And it is usually not apparent until loose teeth, receding gums, or a fractured hip show how brittle and chalky the bones

have become. The end result of the skeletal structure's gradual erosion is calcium-deficient bones that may break with the slightest provocation. Even a mere sneeze may crack a rib.

One of the reasons the decreasing bone density is hard to detect until it reaches such an unfortunate stage is that even in extreme cases of osteoporosis, the calcium level of the blood is usually normal. In the body's ranking of needs, the blood level of calcium takes definite priority over the bone level of calcium. The body needs calcium in the blood for vital operations, such as controlling muscular contractions, including the heart, blood clotting, transmission of nerve impulses, and other utterly essential tasks. When the body needs to supply calcium to the blood for any

reason, it acts as if the bones were a "bank" of stored calcium, and through a series of biochemical reactions a "check" is drawn on the calcium bank. Your body draws calcium from your bones to supply calcium to your blood.

I used to believe that bones lost calcium only if there were not enough calcium in our diets. The National Dairy Council is the foremost spokesman for this point of view, and the solution they propose, not all that surprisingly, is for us all to drink more milk and eat more dairy products. In fact, the dairy industry has of late spent a great deal of money promoting this point of view; and it does seem logical. But modern nutritional research clearly indicates a major flaw in this perspective. Osteoporosis is, in

fact, a disease caused by a number of things, the most important of which is excess dietary protein!

The correspondence between excess protein intake and bone re-sorption is direct and consistent. Even with very high calcium intakes, the more excess protein in the diet the greater the incidence of negative calcium balance, and the greater the loss of calcium from the bones.

The figure on page 192 shows the results of the independent work of five different research teams studying the effect of low and high protein diets on calcium balance. On the chart, a positive calcium balance means the bones are not losing calcium, while a negative calcium balance means they are, and osteoporosis is developing.

One long-term study found that with as little as 75 grams of daily protein (less than three-quarters of what the average meat-eating American consumes) more calcium is lost in the urine than is absorbed by the body from the diet--a negative calcium balance. In every study the same correspondence was found: the more protein that is taken in, the more calcium that is lost. This is true even if the dietary calcium intake is as high as 1400 milligrams per day, far higher than the standard American diet.

In other words, the more protein in our diet, the more calcium we lose, regardless of how much calcium we take in. The result is that high-protein diet in general, and meat-based diets in particular, lead to a gradual but inexorable decrease in bone density,

and produce the ongoing development of osteoporosis.

Summarizing the medical research on osteoporosis, one of the nation's leading medical authorities on dietary associations with disease, Dr. John McDougall, says:

"I would like to emphasize that the calcium-losing effect of protein on the human body is not an area of controversy in scientific circles. The many studies performed during the past 55 years consistently show that the most important dietary change that we can make if we want to create a positive calcium balance that will keep our bones solid is to decrease the amount of proteins we eat each day. The important change is not to increase the amount of

calcium we take in."

The National Dairy Council has spent tens of millions of dollars to make us think that osteoporosis can be prevented by drinking more milk and eating more dairy products. But the only research that even begins to suggest that the consumption of dairy products might be helpful has been paid for by the National Dairy Council itself.

OSTEOPOROSIS AROUND THE WORLD

Throughout the world, the incidence of osteoporosis correlates directly with protein intake. In any given population, the greater the intake of protein, the more common and more severe will be the osteoporosis. In fact, world health statistics show that

osteoporosis is most common in exactly those countries where dairy products are consumed in the largest quantities-the United States, Finland, Sweden, and the United Kingdom.

Nathan Pritikin studied the medical research on osteoporosis, and found no basis at all for the Dairy Council viewpoint:

"African Bantu women take in only 350 mg. of calcium per day. They bear nine children during their lifetime and breast feed them for two years. They never have calcium deficiency, seldom break a bone, rarely lose a tooth. Their children grow up nice and strong. How can they do that on 350 mg. of calcium a day when the (National Dairy Council) recommendation is 1200

mg.? It's very simple. They're on a low-protein diet that doesn't kick the calcium out of the body... In our country, those who can afford it are eating 20% of their total calories in protein, which guarantees negative mineral balance, not only of calcium, but of magnesium, zinc, and iron. It's all directly related to the amount of protein you eat."

The Bantus consume much less calcium than do Americans. Yet, even their oldest women are essentially free of osteoporosis, while the disease is epidemic in older American women. The dairy industry has said that the Bantus' far higher bone densities on much lower calcium intakes may be due to genetic factors. But genetic relatives of the Bantus living in the United States, and eating the standard

American diet-style, have levels of osteoporosis that equal those of their white neighbors. Therefore the only sensible conclusion, in light of all the research, is that the Bantus' far lower protein consumption has kept their bones healthier.

At the other end of the scale from the Bantus are the native Eskimos. If osteoporosis were a calcium deficiency disease it would be unheard of among these people. They have the highest dietary calcium intake of any people in the world-more than 2,000 mg. a day from fish bones. On the other hand, if osteoporosis is caused by excess protein in the diet, they would suffer greatly from the disease, because their diet is also the very highest in the world in protein-250 to 400 grams a day from fish, walrus, and whale. As it

happens, unfortunately, the native Eskimo people have one of the very highest rate of osteoporosis in the world.

Studies comparing the bone densities of people with different diet-styles show a pattern completely opposed to the dairy industry's declarations. The research invariably reveals greater bone re-sorption and development of osteoporosis with a greater intake of meat and dairy products, not the other way around.

On August 22, 1984 the *Medical Tribune* reported a major study of bone densities in the United States. The conclusion was typical of the many such studies: vegetarians were found to have "significantly stronger bone."

In March, 1983, the *Journal of Clinical Nutrition* reported the results of the largest study of this kind ever undertaken. Researchers at Michigan State and other major universities found that, by the age of 65 in the United States:

---Male vegetarians had an average measurable bone loss of 3%.

---Male meat-eaters had an average measurable bone loss of 7%.

---Female vegetarians had an average measurable bone loss of 18%.

---Female meat-eaters had an average measurable bone loss of 35%.

By the time she reaches the age of sixty-five, the average meat-eating woman in the United States has lost over a third of her skeletal structure. In contrast, older vegetarian women tend to remain active, maintain erect postures, and are less likely to fracture or break bones even with their increased physical activity. If their bones do break or fracture, they heal faster and more completely.

WHY ARE VEGETARIANS PROTECTED?

You may wonder, since osteoporosis seems to be caused by excessive dietary protein, why vegetarians seem so protected from its ravages. Isn't it possible to overdose on vegetarian proteins? A United States Department of Agriculture survey found that American vegetarians consume, on the

average, 150% of their actual protein requirements. The biggest overdose is found among children aged three to eight. These youngsters, many of whom are told to "drink three glasses of milk a day," consume, on the average, 209% of their actual protein needs.

I suspect that many of the parents of these vegetarian children, who are no doubt vegetarians themselves, are afraid their children won't get enough protein. Attempting to appease the protein tyrant in their own minds, they make doubly sure their kids eat lots of milk and cheese and yogurt and eggs, thinking they are doing them a good turn. The kids end up eating far more protein than they actually need, even with all their growing requirements taken into account.

Even haunted by the protein myth, however, vegetarians tend not to over-consume protein to the extent that meat-eaters do, and this is one reason they do not suffer nearly as much osteoporosis. But even if a vegetarian were to consume as much excess protein as a meat-eater, he or she would still have stronger bones because meat, eggs, dairy products and fish contribute to osteoporosis in yet other ways.

KEEPING PHIT

Keeping our blood at an essentially neutral pH is a top priority for the body. If our blood were to become too acidic we would die. Accordingly, if the diet contains a lot of acid forming foods, then the body, in its wisdom, withdraws calcium from the bones and uses this alkaline mineral to

balance the pH of the blood. As we can see from the figure on page 197, meat, eggs and fish are the most acid-forming of foods, and hence the ones that cause calcium to be drawn from the bones to restore the pH balance. Most fruits and vegetables, on the other hand, generally yield an alkaline ash, and so require no depletion of calcium stores from the bones to maintain the neutrality of the blood.

There is yet another reason why vegetarians are relatively immune to osteoporosis, even though the Dairy Council keeps telling us that calcium intake is the answer to this disease. What they neglect to mention is that the body's ability to absorb and utilize calcium depends directly on the amount of phosphorous in the diet.

In one study, young women maintained a positive calcium balance when their diets provided 1500 mg of calcium and 800 mg of phosphorous, per day. But when phosphorous intake was raised to 1400 mg a day, the women went into negative calcium balance, even though their calcium intake had not been reduced. More important, apparently, than the amount of calcium taken in is the calcium/phosphorous ratio. The lower this ratio, the greater the loss of bone density, and the greater the development of osteoporosis. The higher the calcium/phosphorous ratio, the less bone loss takes place, and the stronger the skeleton, assuming the intake of protein is not excessive.

The foods whose calcium is least

available, because their calcium /phosphorous ratio is low, are liver, chicken, beef, pork and fish, in that order. The calcium in vegetables and fruits, in sharp contrast, is much more available, due to their higher calcium/phosphorous ratios. Lettuce, for example, is not particularly high in calcium, but its calcium is readily utilized by the body because its ratios of calcium to phosphorous is comparatively high-70 times higher than that of liver, and 23 times higher than beef or pork. The foods whose calcium is best utilized are those with the highest calcium/phosphorous ratios, such as the green leafy vegetables. The calcium in these foods is dramatically more available than that found in animal products. If the calcium/phosphorous ratio for mustard greens, for example, were to

be represented by a towering skyscraper, the equivalent ratio for chicken would barely amount to a small doghouse.

FUDGING THE TRUTH

The claims of the dairy industry are based on the idea that bone loss is due solely to a diminished intake of dietary calcium. So drink your milk. But the only studies in the medical literature to support this contention were sponsored by the National Dairy Council itself.

Remarkably, even those studies funded by the National Dairy Council for the express purpose of showing the benefits of milk for women susceptible to osteoporosis have, in fact, ended up showing something quite different. In one Dairy Council sponsored study,

women who drank an extra three eight-ounce glasses of low fat milk every day for a year showed no significant increase in calcium balance. Even with all the extra milk-derived calcium, they were still in negative calcium balance after a full year of the regime. The scientists who conducted the test knew why. They said the women continued to have a negative calcium balance, and continued to develop osteoporosis, due to :

"...the average thirty percent increase in protein intake during milk supplementation."

The additional protein load from the milk tended to wash calcium and other minerals out of the subjects' bodies, and thus throw them into

negative calcium balance.

Not surprisingly, the Dairy Council is not keen to have the public know the results of this and the many similar studies.

In 1984, the *British Medical Journal* published a report indicating that calcium intake is, in fact, completely irrelevant to bone loss. The researchers enlisted post-menopausal women, who agreed to take 500 mg of supplemental calcium every day for two years. They were divided into three groups: 1) those whose diets contained less than 550 mg of calcium, 2) those who consumed between 550 mg and 1100 mg of calcium daily, and 3)those whose diet provided more than 1100 mg. At the end of two years, there was no

difference in bone demineralization among the three groups. In fact, their bone losses were virtually the same as those found in women taking no calcium supplements at all, and whose diets contained less than the recommended daily allowance of calcium. This was true even though some of the women in the test were taking huge amounts of calcium from food and supplemental sources-in some cases, over 2,000 mg a day.

Even the most conservative medical investigators no longer deny the connection between excess protein and osteoporosis. In a report published in *Lancet*, Drs. Aaron Watchman and Daniel Bernstein commented on work sponsored by the United States Department of Health and Harvard University. They called the association

of meat-based diets with the increasing incidence of osteoporosis "inescapable."

There are, of course, other factors besides "getting lots of protein" that contribute to osteoporosis. Small, light-skinned Caucasian women are more susceptible, as are women who bear no children and those who've had their ovaries removed. Lack of exercise is a factor, as is the consumption of soft drinks (they are very high in phosphorous), junk food, excess salt, and acid-forming foods. Smoking increases risk, as do certain anti-culvulsant medications. Yet though there are a number of factors that can contribute to osteoporosis, excess protein consumption clearly towers above them all as the chief causative influence.

Quite frankly, the more I've studied the conclusions of the hundreds of studies in the medical literature, the harder it has gotten for me to abide the National Dairy Council's promotion of milk "for strong bones." In spite of its high calcium content, milk, due to its high protein content, appears actually to contribute to the accelerating development of osteoporosis. The occurrence of this disease in the United States has reached truly epidemic proportions, and the promotion of dairy products as an "answer" to the suffering of millions seems, not only self-serving, but absolutely immoral and downright dishonest.

ENOUGH IS ENOUGH

As if osteoporosis weren't enough, it

turns out there are other problems derived from too much protein, particularly too much animal protein. One such problem is kidney stones.

The calcium lost from our bones due to excess protein has to go somewhere after it has served its purpose in our bloodstream. And so does the calcium we have ingested but have not been able to absorb due to high phosphorous/calcium ratios. It all ends up in our urine, producing very high levels of calcium in the kidney system, and all-too-often crystallizing into kidney stones. This is why kidney stones, the most painful of all medical emergencies, occur far more frequently in meat-eaters than in vegetarians.

Additionally, there is a great deal of

evidence implicating excessive protein consumption in the destruction of kidney tissue and the progressive deterioration of kidney function. Extra protein doesn't just trickle out of the body. It takes hard work on the part of the kidneys to get rid of the excess. Many animal studies have shown that the higher the protein in the diet, the greater the incidence and the more severe the cases of kidney hypertrophy and inflammation.

The same things happen to human kidneys if we over-consume protein. People who have suffered kidney damage or loss are usually able to preserve their remaining kidney function only if they are put on a protein-restricted diet. Those kidney patients whose protein intake is not restricted, and particularly those who

continue to eat meat, show rapid deterioration of their kidneys to the point where many become dependent on kidney dialysis machines.

It is important to stress that the link between kidney disease and excess protein consumption, like the link between osteoporosis and excess protein consumption, is no longer considered merely probable within the informed medical community. Too many tests by too many researchers under too wide a variety of conditions have been too consistent in their implications. It is now considered certain.

As the evidence against too much protein mounts, you may shake your head and wonder just how our protein obsession ever got started in the first

place.

Almost all the early nutritional research was done on livestock, at the behest of people raising animals for meat and milk. Their objective was to produce the biggest animals in the shortest length of time. The idea that rapid growth and large size are inherently desirable was implicit in the undertaking. Nutritional research was therefore geared to finding what diets would accomplish this aim.

Early experiments, which found that rats grew faster, when fed animal protein led to the hypothesis that animal protein was superior. Further research has validated that rats so fed do indeed grow faster. But the "bigger is better" mentality has been dealt quite a blow by other

discoveries. It has been found that rats fed animal protein also die sooner, plus suffer from a multitude of diseases vegetarian rats do not.

A report aptly titled "Rapid Growth-Shorter Life" appeared in the *Journal of the American Medical Association.* It showed that high animal-protein diets measurably shortened the life spans of a number of different animals. These findings corroborate the world health statistics that show human meat-eating populations do not, as a rule, live as long as vegetarian populations.

It has also been discovered that meat-eaters have higher rates of cancer than do vegetarians. Just how excess protein may be linked to cancer is not yet understood, but there is growing

evidence they are indeed linked. The meat and dairy industries like to question the credentials of anyone who suggests their products might not promote optimum health. But it would be hard to doubt the credentials of T. Colin Campbell, a professor in the division of Nutritional Sciences at Cornell University, and the senior science advisor to the American Institute for Cancer Research. He said recently that there is:

"...a strong correlation between dietary protein intake and cancer of the breast, prostate, pancreas and colon."

Other authorities with equally impeccable credentials agree. Myron Winick, director of Columbia University's Institute of Human

Nutrition, says the data indicates:

"...a relationship between high-protein diets and cancer of the colon."

It just goes on and on.....

NOW WHAT?

I'm back in my grade school classroom. The teacher is telling all us little kids about the importance of eating lots of meat, and drinking lots of milk. She is pointing to a colorfully decorated chart, which makes it all seem so simple. She is telling us about the importance of getting enough protein, and making it clear that animal protein is the only "complete" protein. Her voice rings with authority, because she believes every word she is saying.

I'm listening, but not completely. I'm thinking about my pet kitten, about how furry and playful he is, and about a neighbor's dog who recently had puppies.

My teacher's voice drifts over me and slides away. I look outside the window and see a bird who seems to feel my attention, because as I look she begins to sing.

That day at lunch I feel like doing something good for myself and the world. I decide to save my milk money, and give it to people who do not have enough to eat.

"As far as we can determine, all of us would do just as well if we had no cholesterol in our diet. Cholesterol can be made by all of the cell in the body so we don't need to take in any."
--- (Dr. Robert Levy, Director of the National Heart, Lung and Blood Institute)

COMPARISON OF THE MILKS OF DIFFERENT SPECIES

	Percent of Calories as Protein	Time Required to Double Birth-weight (days)
Human	5 %	180 days
Mare	11 %	60 days
Cow	15 %	47 days
Goat	17 %	19 days
Dog	30 %	8 days
Cat	40 %	7 days
Rat	49 %	4 days

Data derived from: Bell, G., Text book of Physiology and Biochemistry, 4th ed., Williams and Wilkins, Balentine, 1954, pgs. 167-170. Adapted in McDougall, J., The McDouggall Plan, New Century Publishers, 1983, pg. 101

Chart on page 175

PERCENTAGE OF CALORIES FROM PROTEIN

VEGETABLES

Spinach	49%	Zucchini	28%
New Zealand Spinach	47%	Green beans	26%
Watercress	46%	Cucumbers	24%
Kale	45%	Dandelion greens	24%
Broccoli	45%	Green pepper	22%
		Artichokes	22%
		Cabbage	22%
Brussels sprouts	44%	Celery	21%
Turnip greens	43%	Eggplant	21%
Collards	43%	Tomatoes	18%
Cauliflower	40%	Onions	16%
Mustard greens	39%	Beets	15%
Mushrooms	38%	Pumpkin	12%
Chinese cabbage	34%	Potatoes	11%
Parsley	34%	Yams	8%
Lettuce	34%	Sweet potatoes	6%
Green peas	30%		

Data obtained from "Nutritive Value of American Foods in Common Units," U.S.D.A. Agriculture Handbook No. 456

PERCENTAGE OF CALORIES FROM PROTEIN

FRUITS		LEGUMES	
Lemons	16%	Soybean sprouts	54%
Honeydew melon	10%	Mungbean sprouts	43%
Cantaloupe	9%	Soybean curd(tofu)	43%
Strawberry	8%	Soy flour	35%
Orange	8%	Soybeans	35%
Blackberry	8%	Soy sauce	33%
Cherry	8%	Broad beans	32%
Apricot	8%	Lentils	29%
Grape	8%	Split peas	28%
Watermelon	8%	Kidney beans	26%
Tangerine	7%	Navy beans	26%
Papaya	6%	Lima beans	26%
Peach	6%	Garbanzo beans	23%
Pear	5%		
Banana	5%		
Grapefruit	5%		
Pineapple	3%		
Apple	1%		

PERCENTAGE OF CALORIES FROM PROTEIN

NUTS AND SEEDS		GRAINS	
Pumpkin seeds	21%	Wheat germ	31%
Peanuts	18%	Rye	20%
Sunflower seeds	17%	Wheat, hard red	17%
Walnuts, back	13%	Wild rice	16%
Sesame seeds	13%	Buckwheat	15%
Almonds	12%	Oatmeal	15%
Cashews	12%	Rye	14%
Filberts	8%	Millet	12%
		Barley	11%
		Brown rice	8%

Data obtained from "Nutritive Value of American Foods in Common Units," U.S.D.A. Agriculture Handbook No. 456

CAN YOU EASILY GET ENOUGH PROTEIN
WITHOUT EGGS OR DAIRY PRODUCTS?

YES! WITHOUT EVEN TRYING

HYPOTHETICAL ALL-PLANT FOOD DIET

From Revised Edition of
DIET FOR A SMALL PLANET

		Calories	Total Protein (grams)
	Breakfast		
1 cup	orange juice	111	1.7
1 cup	cooked oatmeal	148	5.4
½ oz.	Sunflower seeds	80	3.5
1T.	brown sugar	52	0
3T.	raisins	87	0.9
	Lunch		
2T.	peanut beans	172	7.8
2slices	whole wheat bread	112	4.8
1T.	honey	64	0.1
1	apple	87	0.3
2	carrots, small	42	1.1
	Dinner		
1 cup	cooked beans	236	15.6
1 cup	cooked brown rice	178	3.8
3 stalks	broccoli(1 ½ c.)	52	6.2
4	mushrooms	28	2.7
2T.	oil	248	0
1 cup	apple juice	09	0.3
½	banana	64	0.8
	Snack		
1 ½ cup	popcorn, with oil	123	2.7
Total		1,993	57.7
National Academy of Sciences Recommended allowance for a 128-pound woman		2,000	44.0

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