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The Role of Food Distribution

in Serving the Needs of All of the People

Tackling Malnutrition - Challenge to the Food Industry

Food 70's

Suggests the nutritionally complete, "total meal concept" as a means of dealing with this Nation's impending health crisis as well as problems of overpopulation.

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● I would like to go through a rather complicated argument highlighting a discontinuity which reflects the history of what used to be called "the grocery products" business. This discontinuity is seen between the earlier tradition of the grocer, whose greatest concern was buying and moving what were largely perishable commodities, and the goal of the modern supermarket and food chain to bring the best food available to the most people possible. The same discontinuity is seen between those individuals who study nutrition with laboratory animals, and those concerned with applying nutritional facts so as to make the "right" foods the most attractive and desirable.

The history of feeding developing nations or even poor people in the United States reflects this discontinuity in that we have given people with the greatest need and the greatest nutritional deficit surplus grains and flours. Yet these are the people the least likely to be able to mill, bake, or form and eat such items, particularly when they are bombarded through the media with the most appealing pictures of foods and dishes into which such surplus commodities just cannot be transformed.

In fact, in a society where rich and poor are given freedom of choice, very few people have stopped to think through what people prefer to eat and then consider how to upgrade such preferences for greatest nutritional impact per food dollar. Let me say

more generally, that for over one hundred years the U. S., particularly its middle classes, has been accustomed to sending missionaries overseas to help those less fortunate than themselves. The gift money - in fact, the preoccupation with raising money - allowed Americans to ignore what was going on in their own country. Therefore, in the last few years, it has come as a great shock to the average citizen that there are people in this country ill-housed, ill-fed, with various debilitating diseases, and with life expectancy little changed from a century ago. On a broader scale, it is only within the last five years that it has come to the public's attention that despite the billions America has spent on medicine and medical research in the last twenty years, life expectancy in this country has not changed one bit, and from a position of leadership in the upper five nations of the world in terms of life expectancy, we have fallen so the life expectancy of our males now ranks 25th and of our females 23rd.

Yet Nobel Prizes alone testify to the fact that health oriented research in this country has reached a peak never before seen in human history. Certainly, within the spectrum of health activities, never have foods been more wholesome, more uniform and safe for the consumer. But, with people starving, where have we failed? Let me suggest one answer. Despite our awesome investment in science, we have failed to define the delivery system which should bring the benefits

of research, of all the new knowledge, to the people who have the greatest need. As revolutionary as the new biology has seemed to the world, it is clear the means of delivering the fruits thereof must also be revolutionary, or at least require radical alteration. A number of different authorities and agencies have calculated that if the entire U. S. population were to receive so-called "quality medical care," now available to only a few -- either because they are very poor in a research hospital, or because they are very wealthy -- this care would quickly consume the entire Gross National Product. Five years ago people laughed at such calculations. We can no longer do so. Public health survey after survey demonstrates that in each calendar year every American will receive medical care at least equal to ten days in the hospital. Many will use private physicians, but much of our population will either not receive the care or will turn increasingly to overcrowded city facilities, already unable to handle the load and, what with increased costs and over-strained facilities and underpaid staff, are increasingly providing less than what is needed. No wonder then that the next major priority for this country must be the development of new health care delivery systems. Therefore, for your proceedings today, let me suggest a topic thought that bridges the discontinuity between green grocer and modern supermarket, between rat feeder and marketer: food and nutrition for population, public health and maintenance of quality of life, - rather than drugs and hospital care.

We did some research in our own laboratory a few years ago which demonstrated how easy it was to change body and brain composition in laboratory animals, particularly when they were fed special diets immediately after birth or hatching. Now the behavioral psychologists have shown us how much we are shaped by our early environment. I cite this work to remind you that we really are what we eat, and it is the role of the food industry to translate major advances in health and nutritional science into food available to all at the lowest possible cost. But this is no simple task.

By way of background, a few statistics can serve as an indication of the magnitude of the problem facing the food industry, as well as those other forces concerned with world health. It took mankind all of recorded time,

until the middle of the last century, to achieve a population of one billion; yet it took less than one hundred years to add a second billion and only thirty years to add a third. The Panel on World Food Supply estimates that at the present rate of growth, the world population will increase from 3.3 billion in 1965 to 5 billion in 1985 and 7.15 billion by the year 2000. These figures are staggering enough in their own right, but the nutritional level of the world population compounds the tragedy. The Third World Food Survey of the Food and Agriculture Organization of the United Nations estimated that in the less developed countries at least 20% of the population was undernourished and about 60% received diets inadequate in nutritional quality. Even in our own country, protein/calorie malnutrition, affecting young children and caused by diets habitually poor in protein but providing calories in quantities that vary from gross inadequacy to excess, is the most widespread nutritional deficiency of today. Such malnutrition causes not only retardation of physical growth and development, but recent evidence strongly suggests that mental development is impaired also. Inefficient body chemistry caused by a bad diet in turn causes reduced resistance to infection, irritability and lack of energy. The malnourished child is the victim of a combination of faulty body chemistry and poor psychological motivation, and the result is apathy, laziness, inability to concentrate and impatience. So, for these children, one inadequacy -- food -- leads to another: poor daily performance in school or at work. Thus, malnutrition is not only killing and malforming many children of today, but through physical, mental and emotional damage may handicap our society of the future.

Malnutrition is not the exclusive property of the poor, even though it is most prevalent among that group. Malnutrition among the affluent segments of our society may, in fact, be an unwitting byproduct of our advanced technology. Consider for a moment the increasing emphasis on convenience foods and snack foods in most households today. The development of these snack and convenience foods is an example of the food industry's response to a perceived request of our population. As we found during our deliberations at the White House Conference on Food, Health and Nutrition, many youngsters -- particularly in the disadvantaged or

so-called inner city areas -- consume over 40% of their calories from foods which contain virtually no other components. Yet this percentage is not too different from what prevails in many suburban homes in our country. The fact is that snack foods, which once played only a small part in the American diet, have begun to assume a major role. When such foods completely substitute for traditional foods, then unless such snacks are balanced per calorie, the consumers' nutritional status is placed in jeopardy. We stated this another way. Unless the food industry, from food manufacturer to retailer, considers enriching all foods consumed in significant quantities so they contain a balance of all essential ingredients, foods that are sold on the pleasure principle only increasingly represent a potential health hazard.

There is every reason to believe that the trend toward processed foods will accelerate, and that such processed food will be consumed as an ever increasing percentage of the diet. At the same time, there is evidence that an increasing percentage of meals will be eaten away from the home, also reflecting fast food, i.e. pre-prepared and pre-processed meals delivered to a neighborhood distribution center. Further, we know that food manufacturers are increasingly concerned about the reliability of what they produce and are moving as quickly as possible away from what used to be the old-time grocer's major concern: the variability of unprocessed, raw agricultural produce to be sold as a staple part of the diet. The year-to-year variability is bad enough, but the fact that very few regions of the country can any longer maintain enough local fresh grown produce to support an increasingly urbanizing population compounds the problem. From the retailing as well as the nutritional points of view, when there was a range of natural foodstuffs available, one could be assured that as long as the housewife had a "balanced" diet in mind she could, by appropriate mixing of dairy, fruit, vegetable and meat products, ensure a more or less satisfactory group of meals which would contain all essential food ingredients. Now that natural products are required year round in such volumes that preservation and shipping over great distances are difficult, the public has come to accept both component substitutions and, increasingly, structured meal substitution. The food industry problem, from producing

through retailing, is how to put together not only that which reaches the consumer at the lowest cost, but that which over-all furnishes per calorie of diet a complete meal, labeled in some understandable way so that the consumer knows what he or she is eating.

Let us re-state the preceding in the form of three propositions:

There are three trends:

1. More and more processed food is being eaten.
2. Meals eaten away from home will increase.
3. Manufacturers will increasingly use food components which are the most reliable and the least variable as they construct the foods of the future.

Three questions are raised:

1. Is there a way to regard food delivery systems as a new discipline all its own?
2. Is there a way to balance the calories now obtained via snack foods with other necessary nutrients?
3. Won't foods become structured from a smaller range of ingredients in place of the old variable, but broader, range?

A proper food delivery system requires all sectors to work together in a new way, and this is evidently difficult. As Professor Jean Mayer, who was chairman of the White House Conference and special consultant to the President, pointed out: if our society can deliver a meal to a businessman flying 20,000 to 30,000 feet above this country, there is no excuse why this same society cannot provide equally acceptable meals to school children everywhere.

We know that in our society there has been a great lack of communication and cooperation. Issues have not been faced, and at the same time responsibilities have been overlooked. If industry is to have the freedom to experiment and innovate, it must be recalled that industry has often resisted legitimate government regulation, has not paid attention to consumer inquiry and, particularly, has not informed consumers. On the other hand, consumers have not inquired in a systematic, non-confrontational way enough to become knowledgeable and effective, able to understand the complexities of many issues. Rather, they have relied too often on leaders who have used "jingoistic" slogans to

get attention.

The government, too, often refuses to use the flexibility built into many of our existing laws to cope with situations which have not appeared before. The government has not adequately accepted the joint responsibility of both protecting consumers, yet allowing innovations to reduce costs to consumers. So, if the three sectors -- industry, consumer and government -- are to move quickly into developing meaningful delivery systems, the price of freedom is acceptance by each sector of new responsibilities.

It seems to me that this next decade will see a great increase in institutional delivery of complete pre-packaged, pre-processed meals to all sectors of our society, meals in which the consumer will be able to tell from the label what is being furnished, and at the same time the system will deliver particularly extra-fortified meals to special target populations -- school children and pregnant mothers in disadvantaged areas, etc. -- to meet the stress requirements of rapid growth, pregnancy, etc.

Direction of this delivery system will place new requirements on society. The public sector will have to work at the local level to maintain an alarm system to detect special need. Industry will be required to formulate the complete meals at the lowest cost to meet that need. Consumers will have to work in articulating need and in understanding the various choices they have. The government will have to encourage innovation on one hand while placing clear limits on safety with the other.

The next two questions involve the present trend toward snack foods and, long-range, the future raw materials of the food industry as it moves toward more reliable ingredients chemically altered to provide varying functionality. I would like to discuss these two questions together since they are interdependent. The balancing of present caloric consumption with other nutrients is a matter of food compounding and formulation, as is the trend toward a narrower range of raw materials -- soy creamers, soyburgers, soy nuts for snacks, etc.

The food industry has two choices: it can enrich what people already buy or it can develop new foods. From the marketing point of view, it is clearly

easier to enrich what people already buy rather than go through the extraordinary expense of introducing foods not seen before. This raises a very fundamental issue. If something is structured to look like orange juice or spinach soufflé, what does it really furnish?

If one is to make new or old foods from common or new ingredients, for example, as recommended by the White House Conference Panel on New Foods, then many items such as staples (i.e. flour) should be supplemented per calorie so that diets will be complete in terms of protein, vitamins, essential minerals and fatty acids. Whether it be a complete meal, a single dish, or the fortifying of just one ingredient, all approaches -- and all must be tried -- require a partnership between the regulatory authorities and industry as well as heightened understanding by consumers if our country is to provide the new materials required by least cost formulations and reformulations of traditional foods.

I was asked to list the range of substances available in the research and development phase which are being developed in order to find simple replacements of more expensive and variable natural products.

Proteins derived from yeast grown on petroleum lead me to conclude that no matter what the population is long-term we will always be able to have food available from some source. Short-term, such proteins will require a lot of work before they are fit for human food. In fact, I am sure their first use will be in animal feed. But the general developments in microbiology lead one to predict that unicellular organisms will become an increasing source of food by the end of this century. For example, it is worth noting that only 2% of the annual output of crude petroleum per year is needed to make 25 to 30 million tons of protein derived from organisms grown on that petroleum, an amount which could meet the one-year protein requirements of almost two billion people.

Also in the early research and development stage is work aimed at making leafy plants available as a source of food. While the ruminant has done this for centuries, the technology is very close to being realized which will do by chemical processing what the cow does naturally. In particular,

leaf protein could become a high potential food source because leaf crops grow well in many tropical areas where rain is frequent and where the soil makes it difficult to grow traditional seed crops.

This audience is well aware of the fish protein concentrate arguments that have raged in the last five years. Suffice it to say that as we go up the evolutionary scale, the ability to convert biological organisms into human food becomes progressively easier. Short-term, only economics and acceptability prevent wide-scale use of such ingredients as fish protein.

In the case of soy protein, you are all aware that this is the age of the soybean, from its use in creamers to special nutrient formulations such as protein beverages used in developing nations. The interesting thing is that the oil seed meals can be fractionated in so many ways that Aaron Altschul, special advisor to the Secretary of Agriculture, has been led to predict that by 1980 one will be able to eat complete meals containing a broad range of variously structured foods that have all been derived from the soybean.

However, the immediate pressure is to add protein to flour, vitamins and minerals to staples and to other ingredients that are incorporated in further mixing and blending processes so that the consumer need not change buying habits. In fact, based on the experience of the feed industry, one can prophesy that least cost formulation of food, as long as taste, wholesomeness and attractive parameters are included, cannot be far away.

Retailers and nutritionists, among others, have argued for years over whether or not one can sell nutrition. I think the public is essentially extraordinarily sensitive to nutritional value and to wholesomeness. If we can devise means of labeling what our food delivers in terms of protein, fat, calories, minerals, etc., and relate this list to some standard in terms of total required, I believe in the next two or three decades we will see much more sophisticated buying patterns by all segments of our society. But, we must never forget that with the influence of the mass media we can never develop a "poor people's food" except for those undergoing frank starvation. All food must be palatable and readily usable, and not, as has

happened all too often with the distribution of surplus food, barely edible in the forms of hard-to-eat gruels or paste or gravy thickenings. I think we should also be sensitive to the fact that the malnourished includes those of us who are overweight and under-exercised as well as a large proportion of our teenagers who live almost on snack food alone.

So what is said here really applies across the board, not just to those with low incomes. We now have the technology to make each ingredient or staple a complete food per calorie, and the increasing acceptance of pre-packaged meals gives us a great opportunity to make sure that the meal, as consumed, contains all that is required in nutritional value for the total calories provided. In this way, the food industry can combine various foods, ingredients, components, process and/or cook them as such, and provide optimal nutrition, maximum wholesomeness, attractiveness, and all at minimum cost.

Let me summarize. I have reviewed the fact that this country faces a great health crisis. There is simply not enough money to treat people in the new ways after they become ill. One of the keys to preventing disease is to up-grade the nutritional status of the American people. The prime means of doing this is seen as making people conscious of nutrient requirement per calorie consumed, so that whatever one eats, a label will clearly state which other ingredients are present for every calorie. In short, foods will become much better balanced with respect to total nutrient requirements.

Secondly, regulatory agencies will have to work with industry to utilize the great leaps that have been made in chemistry and biology in the last few years, to allow use of the lowest cost source of the various nutrients. Those of you in the industry particularly concerned with delivery and distribution of food will find that you are formulating many more complete foods, entire meals in fact, which will need to be labeled not only in terms of dish (meat, fish or vegetables) but also in terms of total nutrient contribution against some standard nutrient level.

And, given all this, we are finally going to be able to make much better institutional meal deliveries, particularly in the public sector where institutions will concentrate

more on delivery than on meal preparation itself. Not only will this present new business opportunities, but the trend will enable industry and government together to meet special needs of the institutions at the lowest possible cost to both the private and the public sector.

Over-all, to go back to the initial thought of the discontinuity, the only way to bridge the gap between the older image of green grocer buying perishable produce and the modern form of balanced diet is a process of education. And this is the function of the retailer. His suppliers take on the responsibility of protecting, preserving and processing produce and making it more attractive and less expensive. He, in turn, has to create within his store devices so that people can understand what they are buying for their money, what are the best buys, what are -- in a sense -- their options and what are their necessities. More and more the retailer will present meals so that the housewife can visualize what she is going to prepare and/or serve, just the way the progressive furniture retailer now creates entire rooms of furniture display rather than showing pieces individually.

In the case of food, value is so critical to life that the retailer faces an extra burden of responsibility in that he will have to display this essential element of nutritional worth, while at the same time he never loses sight of the sensuous or fun part of food. ● ,

EDITORS NOTE:

The discussion following the papers raised these issues:

1. Are minimum daily nutrient requirements available?
2. Should the retailer price per unit of nutrition rather than traditional ways?
3. Can we get good nutrition in a free market?
4. Should the food distribution system provide items for sale with no food value in them?
5. Concept of retailers' presenting "meals."