Current Thinking on Nutrition

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WE have made a report to the readers of this *Journal* on the program of each of these four Annual Conferences on Conservation, Nutrition, Health, and Happiness. I have had a part in arranging each of these programs—three years in conjunction with the Ohio Conservation Laboratory for Teachers, two years at Tar Hollow, and last year at Camp Muskingum on the Leesville Reservoir of the Muskingum Conservancy. This year, Ollie Fink and I arranged the program of the Fourth Conference under the sponsorship of the Friends of the Land with the cooperation of the Ohio University at Athens, Ohio. This sponsorship will now be permanent.

It is also fitting that Ohio University finally has been chosen as the home of these Conferences for the school has a noble tradition dating back to the early pioneer days and Friends of the Land are also pioneering in this project of exploring the relationship between health and the soil. An appreciation of this spirit of pioneering was fittingly expressed by one of the Faculty at Ohio University as follows:

> "The oldest university building in the Northwest Territory is our own Cutler Hall, an ancient shrine of higher education built in 1817. It is a landmark to the pioneer and his attention to education. The old pioneer is gone and those who followed have left in their paths the reckless destruction of our God-given natural resources. Many areas of the nation have passed their peak and are on the downgrade. There is need for a new type of pioneer today. This new pioneer in agriculture and education is needed to restore our agriculture and husband our natural resources. It is, therefore, most fitting that this Conference which represents pioneering in this vital problem be held in the shadow of the monument to education built here by those pioneers who cleared Ohio's forest."

This concept was also expressed by Wellington Brink, Editor of *Soil Conservation*, when he wrote:

> "'These Annual Conferences in Ohio are pioneering in the field of soil-nutrition relationships, and indeed are pretty nearly the only source of popular current material on this subject in which there is a growing and vital interest. I hope the time will come when home economics people, medical men, and soil conservation leaders generally will recognize this sharp relationship and will make more of it in pushing for the improvement of the quality of productive lands."

At this Conference, we were restricted by ODT to a group of 50 persons besides those who live in Athens or drove in from nearby towns and countryside. The visitors came from Florida, New Jersey, New York, Long Island, Connecticut, Pennsylvania, West Virginia, Kentucky, Illinois, Missouri, Michigan, Wisconsin, and from many parts of Ohio. They were college presidents, ministers, industrialists, physicians, dentists, soil experts, fertilizer manufacturers, editors, feature writers, novelists, free lance writers, and teachers. They came to listen, to digest, and to learn.

They learned anew the old lessons of Nature that our health is primarily dependent upon our nutrition; that the quality of our food is likewise dependent upon the soil in which it is grown; that the fertility of the soil and its nutritive qualities depend upon the amount of organic matter and essential minerals which the soil contains. A very high percentage of all life is made of air, water, and sunshine. The sunshine and the air come to the plant. Water must be provided so that it, too, can flow to the plant. This is best done by trapping the raindrops where they fall. On the other hand, while sun, air, and water come to the plant, the plant must send its roots out after the minerals which act as activators for life's chemical reactions. And so, the water and the minerals in the soil determine the health and strength of those men and animals who live upon that soil.

THE UNIVERSITY'S PLANS

At this Conference, Dr. C. L. Dow told of the plans that Ohio University has to serve the people of the unglaciated Appalachian Plateau in Ohio. It is the purpose of the University to educate its sons and daughters and send them back to remake this region. Faculty committtees have been hard at work and are now ready to use to the fullest extent the pilot tract of 5,000 acres which the Legislature voted to secure for them on Route 50 within five minutes' drive of the campus. Here, in cooperation with the Ohio Division of Forestry by the side of one of the transcontinental highways, will be a demonstration of what can and shou'd be done with the

This is a report to the readers of *The Journal* of the thinking which this Conference inspired in me as I listened to the various speakers and in no sense is it a report of what they said. The responsibility for the thoughts here expressed rests squarely on my shoulders alone. —J.F.

eroded lands of Southeastern Ohio. It seemed to Friends of the Land that this is an added reason why they should hold these Conferences on the campus of Ohio University. Then, too, in addition to this educational park, as soon as the wartime restriction on travel is lifted a field trip through these 17 problem counties of the state will add much to the value of these meetings.

LAND USE

Under the title "Southeastern Ohio Adjusts Her Land Use" Dr. John Sitterly, associate professor for Rural Economics and Sociology in the Ohio State University, presented the details of the vital problem by first reviewing the conditions of the early settlements in this region. Up until the first World War the land was suitable for our level of living, but since then much of the land has been recognized as submarginal. Two-thirds of the land is now classified as suitable. The rest demands a change. Professor Sitterly gave several reasons for the fact that people are slow in bringing into effect the needed changes. The high subjective values of homes and friends makes up for the low income; subsidies have helped in improving the roads and schools, and the level of schools in southern Ohio is as good as any to be found in the country; ignorance or lack of other opportunities, the present day high standards of living, and our general economic situation make the change seem insecure. Here is a social problem and so soil conservation is not enough. He cites among the factors speeding the destruction of this area, the strain of the war, the feelings of the people, tenant operation, absentee ownership, and overvaluation of the land. Among other factors retarding the proper use of the area, Dr. Sitterly named improper education, the work of some agencies (especially the social security program), personal pride, home ties, the presence of oil, coal, and gas in the ground and direct subsidies of all types.

To one who comes from pioneer stock, which has been engaged in this Western country now for four generations in securing enough money from the land to keep themselves out of the poor house, come what may, it is no surprise that a similar spirit of thrift is being destroyed in the present generation by old age pensions and other so-called security programs, but it does please one's ear to hear a sociologist admit it.

THE CHURCH IN RURAL RECONSTRUCTION

To me the most significant contribution of this conference was the address of the Reverend Henry Retzek, pastor of St. Alexius Church in West Union, Minnesota. Here we got a testimonial of what a religious leader can do in a rural community. Here we heard a dynamic personality talking in the simple language of the farm complain about the "near-Greek" in the vocabulary of the professional agricultural leader. The priest, himself, with advanced degrees from Harvard University is a paleontologist of note who has contributed to our knowledge of prehistoric man in the Northwest but to hear him talk no one would suspect these accomplishments. In his address before this Conference he taught a lesson in the use of simple language. Certainly, this is the main reason why it takes so long for the discoveries of science to become a part of the practice of the community.

The Reverend Father Retzek has accomplished a great deal in this rural community—actually increasing crops and decreasing production costs. The cutting of the production costs appeals to me as a thing of the greatest importance. Certainly, we are never going to solve the problems of rural economics by raising the price of food. The whole scheme of farming, both big and little tracts of land, must be revised in such a manner to cut the costs of production. The effort of all who serve the farmer should be pointed in this direction. Many of his practices have not changed much in 5,000 years. So some of us suspect that the horse and the mule will some day have to be replaced by a power machine that will do a lot more than just take the place of the draft animal. The farmer's net income must be raised to that of the worker.

Chemical fertilizers, uneconomic farm implements, supplemental feedings, and all of the frills with which the modern farmer is inflicted were taking 74 per cent toll of the farmer's gross income in the good Father's parish when he first took stock of the situation. Today it is all different. His farmers make a good profit not because they have acquired more land, not because they get more for their produce, but because it costs them so much less to produce. Instead of depleting their soil by mining it and selling off its vital elements to the city, their farms under his guidance, have become better and better—more fertile every year.

There are many movements in both the Catholic and the Protestant Churches for the improvement of rural life and of getting the people back on the land but I know of none that has its roots planted so deeply in the earth that looks at the problem of rural happiness so realistically as does Father Retzek's. The dramatic story of his life's work and his accomplishments, valuable as it is, is not the significant contribution he made to the Conference.

His great contribution was something much more fundamental, so much more important to an understanding of what goes on at these Conferences. Father Retzek called attention to the eternal conflict between two types of minds. It is in my field. It is in every field. In medicine it dates back to Hippocrates. Throughout

the ages medical men have been in conflict—the empiric with the rationalist. The empiric is glad to accept the accumulated experience of mankind, willing to go along in blind faith with things he could not prove if, when he tried them, they worked. Opposed to him, and not at all able to understand him, has been the scientist, who has been busily engaged in measuring and making observations of small phenomena—measuring and studying them most carefully—slowly accumulating data and slowly and painfully he has put to proof his information, put them to proof with the experimental method. That which he knows he knows beyond the shadow of a doubt. But he knows so little. He naturally is offended by one who generalizes too much, even though the generalities are in keeping with the experience of the race and show a decent respect for Nature and her rules.

So the conflict goes on through the ages. In my profession, for nearly 100 years—since Virchow turned the high power microscope on the tissues of the dead—medicine has been dominated by the rationalist and practical men have been scorned. Yet men with blinkers go in strange directions.

For instance, women who have babies in their homes are in social disgrace, yet there are many reasons why the home is a good place to have a baby. Maybe the mother is better in the hospital with its bright white atmosphere, we trust free from germs. But the baby, God help it, has been scrubbed and scoured at once to get off the "dirty grease" with which Nature has intended to protect it. So these scrubbed kiddies develop impetigo because of the scouring in a chemical bath which Nature had never prepared them to get.

Then in their loneliness in the ward with other complaining newborns they are mighty apt to develop dysentery and other distressing diseases regardless of the cleanliness and nursing care of the institution.

What is worse, something is happening to motherhood in this country and I have a feeling that much of it is because it has been a long time since the mother has been allowed to fondle, caress and protect in her arms her newborn babe. This is a violation of a fundamental rule of nature. I am wondering how mothers can be expected to establish a good flow of milk for their babies when some white robed, heavily masked individual brings in with the precision of an alarm clock for exactly five minutes a little stranger. There is a great deal of the spiritual aspects of motherhood that can not develop under these circumstances.

But we medical men are well set in our ways, especially we men of science. People watching us have come to think that they must have expensive trays of gadgets, basal metabolism, electrocardiograph, X-rays, and elaborate chemical analyses the minute they feel a twinge of pain. We have failed to tell that we are using these instruments to teach and to do research and they are only needed in about one in ten persons as they come into a physician's office. So we measure and compare in the case of chronic disease while the disease progresses without doing anything to stop it. Too often there is nothing that we can do. The food we didn't eat and the food that we did eat that did not contain the nutritious elements, maybe because the soil in which they grew was not fertile—too often these things have been the real cause of the tissue degeneration which we measure and can not stop for now the machine is worn out through its misuse. Such is the conflict between the art and the science of medicine.

The good priest took time to point out the same conflict between religion and science. The forces at work are the same as I have just described for medicine. Thomas Edison invented the incandescent lamp and said the soul is not immortal; Henry Ford invented the Model-T and said history is bunk; Carlson measured hunger and announces that there is no God. There is always this conflict between the man who feels and the man who measures. So we were not surprised when the professional agriculturist was terribly put out at the man of religion who would dare lead his farmers in the week day work. What the priest had to say applies to these Conferences. We have brought men with imagination to these Conferences and there has always been some of the scientific trend in the audience who were offended because a trend was pointed out in dogmatic terms so that our people can use it. There must be men to interpret our knowledge in simple terms so that the people can use what is already known. Life is short. If we do not apply these things to the bigger problems of life, we shall all be dead and buried because we followed the current practices. We shall be dead because we waited for the rationalist to speak.

THE WATER PROBLEM

At all of these conferences emphasis has been placed upon conserving the rain. As Dean Orton has so aptly put it, "If we would but arrange to catch the rain drop where it falls, that would be nine-tenths of the whole job of conservation."

At our first Conference down at Tar Hallow, Dr. Wilbur Stout told us about the water table here in Ohio. He pointed out that the level of underground sweet water is a regional thing. He issued a warning to those industrial areas where this water table is sinking at a great rate and emphasized again that it is the failure to catch and hold the rain as it falls on forest and field that thus endangers our industry. For instance, in May, 1941, he stated that in that year

the steel mills of Youngstown were within 24 hours of closing down because they did not have enough water and how almost exactly one year later they were within two hours of closing because of a flood. Then, again, in the great Mill Creek industrial area of Cincinnati (where they have lots of soap and little water) the water table has gone down as much as 123 feet in some places.

Dr. Stout further said that just before the war there were at least 30 cities in Ohio whose Chambers of Commerce were trying to get industries to locate with them and in not one instance could the city have furnished water enough for any new industry to operate. Yet all of this could be prevented and an ample water supply be provided for farm and city dwellers alike, as well as for industry, if we could persuade the landowners to catch and hold two-elevenths of the rain that now rushes off to the sea carrying their topsoil with it. Nature has given us an abundance of water and it is our fault if we waste and allow our fair state to become a desert (which it well may do).

At our second Tar Hallow Conference, W. D. Ellison of the U. S. Appalachian Watershed Laboratory at Coshocton reported the results of his investigations. These place the emphasis in forming run-off water upon the force of the impact of the falling rain drop. He had proved that when a drop of rain falls directly on bare unprotected soil, it seals the surface of the soil by the force of its impact and no water can thenceforth get into the ground at that point whereas when the drop first hits the leaves of a cover crop and drips gently on to the ground, the porosity of the soil is retained and much of the rain soaks into the ground. Upon this fact depends our water supply.

Last year at Leesville, David C. Warner, water consultant to the Ohio Board of Public Works, described the advantages of impounding water in lakes and reservoirs. He emphasized the importance of impounding directly into the field through cover crops, of impounding the uplands through farm ponds and check-dams, and, finally, he pointed out the great advantages that would accrue to our state from the development of hydro-electric power from steam plants situated just below and utilizing large dams on our main rivers. The power, he maintained, that could be thus developed, would readily amortize the cost. Furthermore, it would offer decentralized employment and part-time work for the people of Southeastern Ohio, so that not only would the population of these counties be stabilized, but the people might be even induced to return to the hills. In addition to the improvement of living standards in our sub-marginal areas through a program which would pay for itself and its operation. Mr. Warner urged this plan for what it would offer in the way of flood control and out-of-doors recreation.

This year at Ohio University. Bryce Browning, one of the founders of Friends of the Land and secretary of the Muskingum Conservancy District, told the story of what actually happens when water is impounded in a flood control program such as the Muskingum Conservancy. He pointed out that this Conservancy represents the first time that in a major project of this kind we find complete and equal cooperation between the Federal, state, and local agencies in the development of such a program.

In addition to complete flood protection for the areas below the dams, the project provides a great recreational center. This included 16,000 acres of permanent lakes with their boating, bathing, and fishing, as well as 30,000 acres of land that is being reforested for public use and pleasure. Around the lakes 365 miles of shore line which have been dedicated to public use, affording a shore line that is 50 per cent longer than the Ohio shore line along Lake Erie.

This project is being operated entirely without the use of tax money. It is paying for its own operation and is putting aside a reserve fund for repairs and expansion. A recent appraisal of this development has been made by the National Park Service and a figure for its annual recreational value to the citizens has been set at $807,000.00. But this is real wealth and not money. It, therefore, can not be counted. In terms of human happiness and health, however, it can be readily appreciated.

So in these four Conferences, we have gained a pretty comprehensive idea of our water problem and what to do about it. It is also significant, I believe, that on the eve of this fourth Conference, the citizens of the Hocking Valley, headed by leaders from the faculty of Ohio University and Friends of the Land met and organized themselves preparatory to securing a conservancy district for the Hocking River. The Athens Forest Park with its Conservation Laboratory and Camp and this District with its lakes will add much to our future Conferences.

SOIL EROSION AND CIVILIZATION

On Saturday evening, Dr. Walter C. Lowdermilk, assistant chief, U. S. Soil Conservation Service, known for his writings upon this topic and the restoration of Palestine, gave a beautifully illustrated lecture showing how North Africa, Palestine, the rest of Asia Minor and Northwestern China became deserts leaving their cities buried in dust, not because of climatic changes, not because of the ravages of epidemics, but because the people depleted their soil, forgot to conserve their water, and allowed their land to wash and blow away. He left us to draw our

own conclusions: that, with our failing water supply, our erosion, our depletion, and our man-made dust storms, "it can happen here".

Dr. Lowdermilk said that the cultivated lands throughout the world are eroding faster than the new soil is being formed. This means the total destruction of the land unless measures of control are permanently worked out. Especially is this true because through modern science, the population of the world is growing at a much greater rate than before. There are no new continents to overrun and exploit. The lands of the earth have been taken in possession and so mankind must work out its salvation for the cause of abundance and peace within the limitations of the available land.

The question is, "Can the land of the earth support the rapidly increasing population?" Dr. Lowdermilk cast some doubt upon this unless proper action is taken to restore the lands. He then described the great work in which he has been engaged in Northeast China where now more than one-third of the lost land has been renewed for further use.

He said that there are in the cultivated lands of the earth 3.7 billion acres and the total amount might be stretched to four billions. This he said can not support the earth's two billion people adequately as now used. He further emphasized that in the United States wherever farmers have adopted soil conservation measures in their farming, they have had an increase of 35 per cent. Finally Dr. Lowdermilk pointed out that while the farmer is the custodian of the land, what he does with it is determined to a large degree by the social and economic pressure which the rest of the citizens put upon his shoulders.

MALABAR

Following Dr. Lowdermilk came Louis Bromfield to philosophize upon this land of ours in terms of his world-wide experience and the home which he has built, "Pleasant Valley". He emphasized again that money is not wealth but only a medium to facilitate the exchange of labor for services and goods. For instance, the cost of this war is not $300,000,000,000 but rather the depletion of our soil as we ship its vital minerals in foodstuffs to distant shores, the worked-out coal and iron mines, the exhausted gas and oil wells, the slaughtered forests, and the men and women killed and maimed. These are the cost of war. We, as a nation and as individuals, must set about catching our raindrops, restoring our soil and our forests, for only in this way can we recover from this war. In this way and only in this way shall we secure for our people health, wealth, and security.

"This talk is based on practical experience with farm products, livestock, and human beings. It has been derived from over more than 40 years, with farming in relation to soil content and effect of erosion of the soil and mineral deficiencies." His success is the result of putting back into cultivation eroded, farmed-out and abandoned farmland. This implies the restoration to the soil of large amounts of organic matter and of minerals as a balance.

"Poor land makes poor people, poor people make poor land, the people get poorer and the soil gets still poorer. What I want to talk about is the relation of nutrition to productive farming.

"In view of the fact that the mineral content of the soil throughout the United States has been steadily depleted since the white man began to use it, there is need for restoration of large quantities of calcium, phosphorus, and the other minerals to the soil. Without these human health, vigor, and intelligence is impossible."

In recent years, Mr. Bromfield continued, too many of our people have become obsessed with the idea that social and economic ills can be cured by money. Real social security and real public welfare can be bought only by producing enough nutrient-rich food, enough strong fiber and enough good lumber so that each of us can have optimal nutrition, robust health, decent clothes, and adequate shelter. Indiscriminate spending of money is not the answer to the economic and agricultural problems confronting approximately one-third of the United States. In order to solve the economic and sociologic problems of much of our depleted farm lands, we must get down to the fundamentals. You can not get out of the soil what is not in it. Short cuts by way of taking vitamin pills or mineral supplemental feedings are only partially effective remedies, the full results of which are not fully known. It may be possible that in some respects these substitutes may do evil rather than good.

On the other hand, he continued, there can be no doubt about the benefits to both animals and humans of vitamins and minerals absorbed through the natural processes of food grown upon soil which contains the elements necessary for health, vigor, and intelligence. The only real answer is to "work from the ground up". There is no use giving farm machinery or new ideas or subsidies to people who are without energy, initiative, or active intelligence. It is necessary to begin with the human stock and then provide the other things after the human stock has become able to use them.

That these things can be done is illustrated by Mr. Bromfield's farm, Malabar in Pleasant Valley. Here in five years, this worn-out land has

been made to produce beyond anything dreamed of. All of this has been done in a way that any man living on the land can imitate and with the same success. Contrary to what some fear, the success of Malabar has nothing to do with Mr. Bromfield's private fortune. It is the work of Louis Bromfield using the knowledge that he had gained during his years' living in many places on this earth—more especially what he learned from the French peasants who lived on adjoining farms during the 12 years that he spent in France.

As a consequence, Mr. Bromfield came back to America with reverence for the soil and respect for Nature and Nature's God, ready to apply the sound agricultural principles of Europe. Then he ran into the fact that European agriculture just could not be transplanted to America. So he epitomized the 200 and more years of our country; he discovered in less than one year what it has taken our people so long to discover. That is, that our dashing rains, our summer thundershowers, and our climate make it impossible to do farming as it is done by the European peasant.

Then came Hugh Bennett to Malabar with his technicians. They introduced conservation practices as an aid to good land care. And so in five short years on farm land that would hardly produce at all, we find Squire Bromfield faced with the problem of abundance, too much of everything, too little storage space, too little barn room.

I personally think that this is a great lesson that can be learned from what Mr. Bromfield told the Conference, for he has never done a single thing which is beyond the fellow on the next farm—no matter how poor the other fellow may be. More and more of Richland County is being farmed after the example that he has set. Stories like this and the story of Comos Blaubaugh of Danville, who told his experiences at our Third Conference, give hope for the future.

FOOD HABITS

Dr. Martha Koehne, nutritionist for the Ohio State Department of Health, presented in detail for the Conference the complex problem of changing the food habits of our people for the better. Dr. Koehne pointed out that in the past we have been spending too much time giving out information and have not done enough in arousing real interest in the relation of food and food habits to the development of our bodies, our health, and our efficiency. She pointed out the important task ahead of us; the application of existing knowledge in a discriminating and active program of nutrition education; seeking out and developing channels for reaching those in the greatest need for help; further research in what should be the best methods for presenting information on foods and nutrition most effectively. All of this boils down to what the good priest had told us the day before; that in this whole program the crying need is for clear simple statements of the truth so expressed as to motivate the citizens to do the right thing for themselves and for the rest of us.

BRITAIN AND FOOD

After the program of the Fourth Conference had been arranged, we were happy to get a cablegram from the Editor of *The Land*, the quarterly of Friends of the Land saying that he would be back in this country in time for the midyear meeting of the Directors of the Society to be held in Athens, Ohio, just before this Conference.

Russell Lord had been in England for over two months for OWI to see about Britain's food problem and what she had done about it and had been shown everything there by the Minister of Agriculture. We immediately wired him, asking him to come on the program and tell the Conference just how Britain had stood the war and what she was doing to feed herself. It was a dramatic story as "Russ" told it in his brilliant manner—how these had strained every sinew to produce their own food; how in prewar days they had never produced more than one-third of what they ate; how at the end of this war, although their land had been both a battle field and a flat-top for Europe, they were able by plowing up every corner, every field, hill and swamp to increase their food production to a little more than two-thirds of what they needed. In other words, had doubled their production of food in times of war; how their rationing and regimentation compelled them to eat whole wheat bread fortified with some of the essential minerals such as lime; how each child had been given some milk and so had each nursing mother and pregnant woman. The nutritionists had had their day! Calories reduced, vitamin rich foods and mineral contained foods had been increased, and Britain had finished the war with a mortality rate below anything she had ever experienced.

The question is, will she lapse back into her old eating habits in spite of the lesson that she should have learned, as Dr. Koehne's paper suggests she might. There is some evidence already beginning to appear that she may. Certainly it has been a great experiment in feeding and goes to prove the contention which has been running through these four Conferences like a thread; that the quality of our food does depend primarily upon the quality of the soil in which it is grown; that under stress by straining ourselves we can make our lands more productive.

The other question confronting Britain is how much of its soil has been depleted by this ex-

ploitation, by intensive farming and taking off so much more than could be put back, by plowing up land that should have remained in pasture. Just how badly wounded is the land of the British Isles? That is a question which only time can answer.

THE ADEQUACY OF OUR NATIONAL FOOD SUPPLY

For years now some of us have been insisting that most Americans did not get anywhere near enough of the right kind of food. Upon this fact we have been able to pin much of the lack of resistance to infectious diseases, many of the congenital defects, such as cleft palate, hair lip and possibly even hernia, and have accumulated an increasing amount of data to show that many, if not all, chronic degenerative diseases of late middle life—that all of these are the result of poor food and bad dietary habits. We have urged therefore that the cure for many of our social ills is not costly programs of rounding up and branding our chronic infections and certainly not any scheme for further socializing medicine. It is nutritious food and not pills that our people need. In the meantime, with the increasing acceptance by the farmer of the simple practices of soil conservation and the need of a war-time economy, the yield of the land has been greatly increased until we have in some foodstuffs enough to provide for all, provided the people of the United States got what we are producing. Many other items are still short.

Consequently now for over 15 years, I have been worrying about the capacity of our land to produce, whether our people can have a proper diet with a generous helping of fresh meat, milk and dairy products, animal fats, green and yellow fruit and vegetables, cereals in whole grain form—all of these fresh or unharmed by preserving, processing, or preparing. Or must we go to a cereal diet like the Oriental with all that such a diet implies, or might technicology really bring us the solution of an unlimited food supply? Might it be that some of the new non-fermenting yeasts that are being developed might make it possible to secure the bulk of the diet by growing such organisms on sawdust or other waste cellulose? Just what does the future hold in store for us? Will it be necessary to develop a whole new method of land use to support the increasing population of the earth?

I remember last year at this Conference, Paul Sears impressed deeply upon my mind that the 11,000 Indians who once owned and lived in Ohio were much more overcrowded with the system of land use than we are today with our 7,000,000 people. So, living room is a relative thing, dependent upon the culture of the people and the way they make use of their land.

Last year we were also told by Chester Davis that there are something over 2,000,000,000 people living on 4,000,000,000 acres of fertile land and that it takes with our present methods 2½ acres to support an individual. We left Camp Muskingum saddened because the world was already short one-half a billion acres of farm land to support its present population, but then we took heart for Dr. Bennett had told us at Tar Hallow the year before and Dr. Lowdermilk has told us again this year that the installation of the 12 simple conservation practices improved the yield of land so treated by more than 35 per cent. So combining what we have learned at the last three of these Conferences, it would seem that by stretching our resources about as far as we can with our present farming methods and then adding to this the widespread use of the soil conservation practices, the people of this earth would, if they tried, just about provide an adequate diet for themselves. I know of no figures on optimal diets—only adequate ones. But we already know from experience that for every unit the land is made to yield, the resulting vigor and vitality will increase the population two-fold.

We leave with the disturbing thought that the best we shall ever be able to do is to raise about half enough to feed our people unless we are able to turn to some technological plan, perhaps to yeasts instead of animals for our protein and so to raise the main portion of our living in vats. This is an intriguing idea that some day in our kitchens a tray of beans and cereals sprouting in mineral water and a vat of yeast growing on waste cellulose might furnish the food for us and farming would only be done for fiber to clothe ourselves and to furnish delicacies with which to garnish our food. Yet it does make more sense than the fanciful idea that some day we might get our food in pellets.

All this talk about a permanent peace is useless unless we can turn to some such technological advance. Here, again, we may just as readily stimulate our capacity to reproduce beyond our capacity to feed even with such a new culture.

Anyway, all of these things have been worrying me for a long time especially the pressing problem, "Can the United States in postwar days be expected to have the capacity left to produce and maintain production on an adequate amount of foodstuff?" I decided to ask the man who knew most about the capacity of our land to produce to come down and talk to the Fourth Conference—Dr. William Kraus of the Ohio Agricultural Experiment Station at Wooster, Ohio. a member of the Subcommittee on Food Supply and chairman of its Section on Milk of the Committee on Nutrition of the National Research Council. He gave a splendid summary of

the food situation—reserved, calculating, not pessimistic, but factual. It seems that it is possible for the United States to step up production of foodstuffs so that it will pretty well parallel our birth rate. As we come out of this war, we are told that shortly five per cent or less of the population will actually be engaged in producing the food for the rest of us. Even if this be too low a figure, the mass movement from farm to town and city will reduce our birth rate lower and lower. It is only on the farm and in the country village that the American can reproduce himself. Even the country birth rate goes down as rural people adopt the eating habits and modes of city folk. So with our industrialization and the resulting insecurity, down goes our birth rate. While ours goes down, other great powers go up. For example, if modern medicine and sanitation would be applied so as to cut down the death rate of Japan, China, Russia, or India to that of the United States, and anyone of these nations could just hold to the present birth rate it could produce a population five times the number of people on this earth today in 100 years.

The industrialization of our country, with its two great world wars has enormously increased the per capita demand on our resources of copper, lead, iron, petroleum, cotton, and lumber, and will continue to do so; so population figures do not tell the whole story of the earth's destruction.

It is safe to say, therefore, that the United States of America stands today at the peak of her career as a leader in international affairs. Never again will she have the natural resources or the manpower to dominate.

In the meantime, those of us who believe that the health of the nation depends upon food and not upon medicines are glad to know that the capacity of the American farm to produce is adequate for an optimal diet for all of our people.

In listening to Dr. Kraus' paper our lease-lend problems did not bother us as much as they do some. Only we wish that our leaders would stop shipping the vital elements from our soil to foreign lands to increase their health so that they can increase their population so that in the end they will be hungrier than when we began to give them our life's blood. For it would seem to me that such gifts, while helping now, only make future wars the more certain. I have always felt that the Hottentots should be taught to keep a cow and the people of the earth to feed themselves.

So it seems that we can borrow a lot of trouble and get very little satisfaction out of all these figures after all. To the realistic mind, it would not seem worth while to waste too much time on the problems of world peace, for as long as our birth rate keeps well ahead of the food production rate, there will always be hungry people on this earth and hungry people are not peaceful. The hungry stomach knows no conscience. If, however, we are wise, it seems to me that we must recognize that there can be no peace and take a realistic position in regard to the international situation. This would call for a great navy and air fleet, with a fine standing army, a physical fitness program in the high schools that means business and is not just keyed to sell athletic equipment for those who belong to the proper trade organizations. No, not that, but a real program so that boys will graduate from high school ready to step into military training the day they arrive in camp. We have no time for C.C. Camps or a year of setting-up exercises in uniform. We must mean business if we are going to effectively protect ourselves in a hungry world. It should be stated that Dr. Krauss did not say any of these things, but that is what I learned by listening to him.

SOIL AND HEALTH

We closed the Sunday morning session with an outstanding paper by Dean C. R. Orton of the College of Agriculture of the University of West Virginia. It was presented in a reserved, dignified style by a friendly man and should have appealed to those of a scientific trend who have not been too impressed by the evangelism of us of the empiric cast who have told it many times to all who have attended these Conferences. It is an old story to them, that there is a direct relationship between the health of a people and the quality of their soil, but we wanted to be told from this other viewpoint and we congratulate ourselves that we had a master do it.

NUTRITION AND HEALTH

N. Phillip Norman, M.D., the well-known writer on nutrition and its application to clinical medicine and everyday living, made a definite contribution when he pointed out the great harm that is being done and has been done by the manner of processing our foods as well as by our food habits which are partly responsible for this processing and in turn are partly formed by the persuasion of the processors. Dr. Norman took physicians and nutritionists severely to task for not practicing what they preach. Certainly, today physicians do not as a group look healthy nor do nutritionists look properly nourished.

Dr. Norman pointed out that physicians are devoting their time to helping as best they can the sick recover, but this has nothing to do with health. Organic pathology is characterized by its irreversibility. No one who has been very sick can be completely restored. We physicians

have dedicated our lives to cobbling the human body, to repairing broken and worn out bodies so that they can be used a little longer. We have never kidded ourselves about our humanitarian service and that it deals with sickness not with health. I hope that we have kidded the public. In dealing with injury and acute illness we physicians have made wonderful advances. We can relieve pain, inspire confidence, and stop many infections so promptly that they do but little damage.

When you begin to consider, however, the so-called chronic degenerative diseases modern medicine offers little. These degenerative changes which are the results of incomplete combustion and choking the oxidative processes of the body with over-refined foodstuffs such as sugar and white flour.

Our clinicians of a rationalistic or scientific bent can measure, record, and report, but the degenerative process progresses as our blood pressure goes up, arteries harden, our coronaries plug, our kidneys wear out, our hearts grow tired and quit, our brains degenerate and we can do nothing about it to stop the degeneration but alleviate the pain and in an artful manner encourage our patient until death comes. Dr. Norman, who tries to apply to the preservation of human health that which is already known for the experimental animals of the laboratory, insists that a well-balanced diet restricted in its total calories but very rich in all of the food essentials would have prevented this premature ageing and death of so many splendid citizens just as they were about to make their greatest contributions to our society. Such a diet, he rightfully insisted, must consist of natural, properly preserved and prepared food. We have just witnessed our nutrition campaign carry the vitamin industry from a million dollars a year pharmaceutical business to a 250,000,000 dollar big business as a tribute to what advertising agencies and public relation counselors can do with the truth—or part of it.

We move now to the minerals and the amino-acids. These are only accessory to the main crime of devitalizing and over-refining our foodstuffs. Once before Dr. Norman had said, "Since when has it become safe for a people to delegate the control of its food culture to traders who assume no responsibility for the survival of the tribe? If this were found in a primitive tribe, 'the anthropologists' would then have no difficutly whatever in perceiving that the modes of these unfortunate savages were in a bad way."

All of us will agree with Dr. Norman, I am sure, that if our people had eaten the whole grains of cereals unspoiled by poor and prolonged storage untouched by dry kiln drying, unexploded, and not devitalized by prolonged heating or over-refining; if our people had eaten green and yellow fruits and vegetables fresh from vine, tree, and garden; if they had eaten the meat of animals fed upon such nutrient forage and grain—especially the internal, or glandular organs, of such animals; and, finally, if our people had taken plenty of milk, butter, and if our people had drunk plentifully of milk which had not been too badly abused, with generous helping of cheese and genuine butter for their bread and cooking, they would have avoided most of these degenerative changes for in fact these changes represent the wearing out of the body from a lack of lubricants and the carbonization of the body through the oxidation of incomplete foodstuffs. These essential catalytic agents act as oxidative catalysts just as the lead compound does in your motor fuel. They insure that the fuel is completely burned up leaving no residue to corrode and destroy the body. These lubricants and catalytic agents are of course the vitamins which will appear naturally in our foodstuffs in optimal amount if our foods have been grown in soils which are rich in all of the minerals and organic materials that are necessary for strong healthy plants.

Yes, it is high time that the American people begin to think about health instead of disease and sickness; to prevent diseases by obtaining optimal health and maintaining it. Everyone seems intent upon fooling our people on this point by playing up sickness under the guise of health. We promote special causes of cancer, poliomyelitis, rheumatism, tuberculosis, by special weeks, stamp sales, march of dimes, presidential birthday parties and sale of seals. But who is telling the people about health and the happiness in just being fully and vitally alive, living a long, vigorous life, contributing one's own fair share to society up until the end? Who is telling our people about such things and how they can be obtained with what we already know? No, instead our leftist politicians fill the air about sickness and its toll and call it a health talk. Under the guise of health, they introduce into the Congress every year a program to foist upon our people a very inefficient and expensive scheme of indemnification in kind for sickness to be financed by the money which compulsion has extracted from the pockets of the worker.

Such measures which deal with sickness do not solve the fundamental problem of obtaining and keeping optimal health. No form of insurance, no spending of public or private money, no scheme of social planning will do the job, but the application of the principles which we of the Friends of the Land have been trying to put forth in these Annual Conferences on Conservation, Nutrition, Human Health, and Happiness will mean a long, joyful life, vigorous and productive to the end and with expectancy decades beyond that which we know today.

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