



"Research and technology have the big job..."



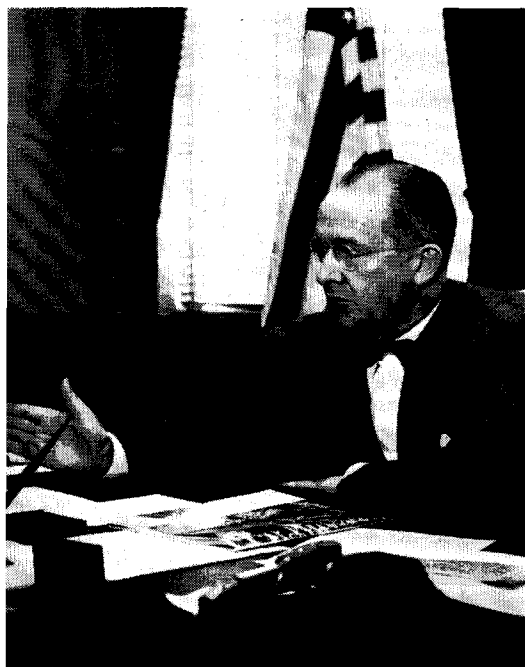
"...better cooperation can and should be developed between industry and government."



"...a balance between supply and demand...will always be a problem."

An exclusive interview with Secretary of Agriculture Ezra T. Benson

“ More agricultural research is being done today than ever before, but more dollars are being spent in the agricultural industry. The research expenditure is not nearly as much as we'd like to see. In the Department of Agriculture we look upon research as being the most basic of all fundamental investments in any sound farm program and we hope that we can do more if Congress will see fit to increase the funds for this most vital part.”



"We need to provide farmers with the best techniques we can devise . . ."

Q. *Mr. Secretary, during the past few decades, there has been considerable change in the nature of the Department of Agriculture, from a research and educational organization to much more a direct-action organization. Why is this true?*

A. When Abraham Lincoln set up this department, it had a rather simple objective: to assemble and disseminate information of interest and value to the farmer. Most of our people lived on farms; about two-thirds produced primarily for their own consumption. They didn't worry much about markets, exports, or accumulation of national surpluses. Now we have reached a point where agriculture is a complex part of a highly complex national economy. The farm is dependent on industry prices, markets, foreign exports, and national surplus or shortage situations. Some hazards have been introduced which didn't exist in Abraham Lincoln's time. So more and more, the Department of Agriculture has had to take an interest in marketing, the conservation

of resources, the handling of shortage or surplus situations, and other new activities, including research to find new uses for agricultural products. Now, the major part of our work, so far as many of us are concerned, is devoted to the carrying out of the action programs which have been provided by the Congress to meet some of these new conditions in agriculture.

We have been impressed with this change to the extent that recently we published an editorial suggesting that farming has changed from a way of life to a business. Do you agree with that idea?

While agriculture certainly has become much more of an industry, its real backbone is still the family-size farm. But, whereas 50 years ago the average farmer produced enough food for himself and about four others, he now produces enough for himself and 14 others. Farmers have become increasingly efficient. Research has played an important part in this, and we can see the results in seeding, weeding, livestock improvement, better crops through insect control, better

The Ag and Food staff in discussion with Secretary Benson. Left to Right. Managing Editor Richard L. Kenyon, Editor Walter J. Murphy, Executive Editor James M. Crowe, Consulting Editor Phil Groggins, Production Manager Joseph H. Kuney, and Secretary Benson



crop rotation, and better knowledge of soils, to say nothing of mechanization, which is also based on research.

It is estimated that at least five persons will be fed in the U. S. in 1975 for every four now being fed. At present, we have surpluses of several major food materials, such as butter and wheat. What kind of solution can you envision and what important parts can research and technological development play in such a solution?

Maintaining a balance between supply and demand for food products always will be a problem. For the long-run task of keeping up with population growth in view of limited land resources, research and technology have the big job of making possible the necessary increase in food production per acre of land and unit of livestock, reducing waste and spoilage in distributive channels and in the Nation's kitchens, and finding ways to make more exhaustive use of farm products for direct human consumption. Even so, we know that so long as there are fluctuations in weather, insect and disease epidemics, business conditions, and habits of consumers, there will be temporary imbalances for various products, including those you mention. Research and technology can help cushion the impact of surplus supply by finding ways to reduce the cost of these products to consumers, thereby expanding consumption, and by finding alternative uses, especially as industrial raw materials. We also must remember that provision of enough food every year in a dynamic and free economy cannot be assured without having in some years more than

can be immediately consumed. Research must help in such cases to find ways of preserving these supplies for later use or of finding other remunerative markets for them. I expect that ways will be found to utilize present stocks and in the meantime adjustments in farm programs will be made to help prevent their occurrence or continued accumulation.

At present, use of our resources is resulting in surplus food in the U. S., some of which has been wasted, for example, potatoes and butter. At the same time, the diet in our country is by no means perfect. What is being done about this maladjustment and what more can be done?

There is not now to my knowledge any waste of butter or potatoes attributable to surplus supply conditions. Nevertheless, the accumulation of these stocks is recognized as a problem and the Department, through the consumer education program of the Extension Service and the School Lunch and distribution aids of the Production and Marketing Administrations, is trying to reduce them. We are cooperating closely with industry to this end. While we cannot force the eating habits of people into patterns that would solve either surplus or nutritional problems, we can and will continue to assemble the facts which help farmers make intelligent decisions on what to produce with available resources, the consumers on what to eat with available income. The Bureau of Human Nutrition and Home Economics has contributed greatly to improving the nutritional status of the Nation, and the Bureau of Agricultural Economics has done much toward avoiding food shortages and surpluses by providing the pertinent facts. Their work will continue in cooperation with the state agricultural experiment stations and the extension services. As we remove more of the present encumbrances to intelligent decisions by the people, this work can become even more effective.

New Knowledge Can Cut Heavy Losses Due to Pests

Pests cost agriculture \$12 billion or more last year. Of the \$5 billion loss attributed to weeds, it is estimated that half could be prevented by application of current knowledge. What measures will be taken to make more effective use of our potential for reducing wastes such as this?

Use of pest control chemicals in agriculture requires precision techniques with considerable application skill for maximum safe results. Our knowledge of these chemicals and their potentials is still expanding through continuing research by both private industry and public research agencies. As rapidly as this know-how expands it is being translated into definite recommendations

which the Extension Service can take directly to farmers. As Secretary of Agriculture I expect to do everything possible to speed up the task of bringing new knowledge to farmers.

What thought is being given to avoiding future surplus and waste situations?

One of the Department's first responsibilities is the avoidance of future shortages by preparedness for contingencies and such certainties as the increasing requirements of a rapidly growing population. A related responsibility concerns surpluses and their attendant waste.

Prevention of surpluses is being given much thought. The answer may involve the correction of price incentives that induce the surpluses, as well as supplying the factual information to help farmers and processors engage in more orderly production and marketing. By providing them with better information on prospective production, stocks, carryovers, and demands, we feel that farmers and businessmen will be able to accept greater responsibility for avoiding the surpluses.

As I stated earlier, unavoidable surpluses do sometimes occur, and the resultant waste is of particular concern in the case of such highly perishable commodities as fruits and vegetables. Thought is being given to finding new, remunerative outlets for these commodities, and some quite promising advances have been made in concentrating and preserving them for later consumption. The development of frozen orange juice concentrate is one example. Two other promising examples are orange juice powder and dried eggs.

The Department is giving considerable attention to prevention or utilization of the wastes that occur even in normal, nonsurplus times, during production, handling, and processing of farm products. Examples of this are studies on the conversion of pear wastes at canneries into edible sirups or animal feeds, and on cheap, sanitary methods for disposing of dairy wastes.

What plans are made to take care of a crop failure, such as caused by severe drought or might be caused by strain 15B stem rust under certain conditions?

It is difficult to plan for crop failures because their incidence cannot be foreseen. We can, however, hedge against them. First need is to conduct research leading to practices that will help reduce the severity of such misfortunes. We plan to emphasize research on the development of crops resistant to new diseases and insects. Research and education on soil and water conservation are expected to go forward. Advances will likewise proceed in farm machinery and in cultural and business management practices designed to reduce vulnerabil-

"Really, I don't know where to put any more."



ity of farmers to unusual weather or new insects and diseases. These activities illustrate probably the least costly and most effective type of hedge.

Another type of hedge is to maintain stocks and carryovers of staple commodities sufficient to cushion the shocks of drastic reductions in production. I believe that these, too, should be maintained at levels that are economically justified, and we will rely upon research to improve our judgment as to what these levels should be.

Would you amplify, from the point of view of agriculture, the implications of President Eisenhower's call for a "new kind of war" against "brute forces of poverty and need"?

Development of the undeveloped areas of the world is in large part an agricultural problem. On a world-wide basis, such a program might do much to increase food supplies available to large populations whose real hope of more adequate food supplies is self-help. At present the world supply continues at pre-World War II levels despite substantial population increases. I have no doubt, however, that if all nations were to answer the President's call, the world food supply could be raised to such greater levels as to be highly significant in the struggle for world peace. For American farmers, such a development need not be necessarily adverse to prospects for their own future export markets. There is a very close relationship between development of an area and its volume of trade. In 1951 for example, people in developed areas bought from the United States, on the average, \$18.49 worth of goods per person and people in undeveloped areas only \$4.89 worth. Unless the productive facilities of undeveloped areas improve, there can be no general expansion of trade in which the United States can share. Technical assistance to agriculture also helps develop local industries, communications, health, education, and other income-producing factors. This builds a greater economic demand for food and other agricultural products. I believe that technical assistance to undeveloped areas abroad will not only nourish the environment for sounder relationships among countries but also will provide a broader basis for greater agricultural trade.

How much was spent last year on technical aid to foreign agriculture and what was the source of the funds?

The Department in the 1952 fiscal year spent \$6,604,348 on technical aid to foreign agriculture—the funds coming from the Technical Cooperation Administration and the Mutual Security Agency, which, in turn, received their funds through Congressional appropriations. The technical aid given through



New and improved foods developed by the Department of Agriculture are sampled during a tour of the Beltsville Research Center by Byron T. Shaw, administrator of the Agricultural Research Administration, Secretary Benson, President Eisenhower, and Hazel K. Steibeling, chief of the Bureau of Human Nutrition and Home Economics

the Department of Agriculture, however, was only a part of the total amount of aid to foreign agriculture extended by the U. S. Government.

Do you favor selling excess agricultural commodities for foreign currency which would be spent on foreign technical aid instead of tax dollars?

This involves matters beyond the scope of the U. S. Department of Agriculture, and I do not care to comment on it.

What is the approximate number of professional scientists working for the United States Department of Agriculture?

Approximately 4000 professional scientists are employed in the research program of the United States Department of Agriculture. The term "professional scientist" as used here includes only those scientists who have graduated from science courses in college and are now engaged in scientific research in the Department. It does not include professionally trained scientists engaged in nonresearch activities, such as meat inspection, plant and animal quarantines, insecticide act administration, and forest management. The number of scientists employed in such service and regulatory activities is greater than the number engaged in research. Scientific aides without professional training in colleges are not included.

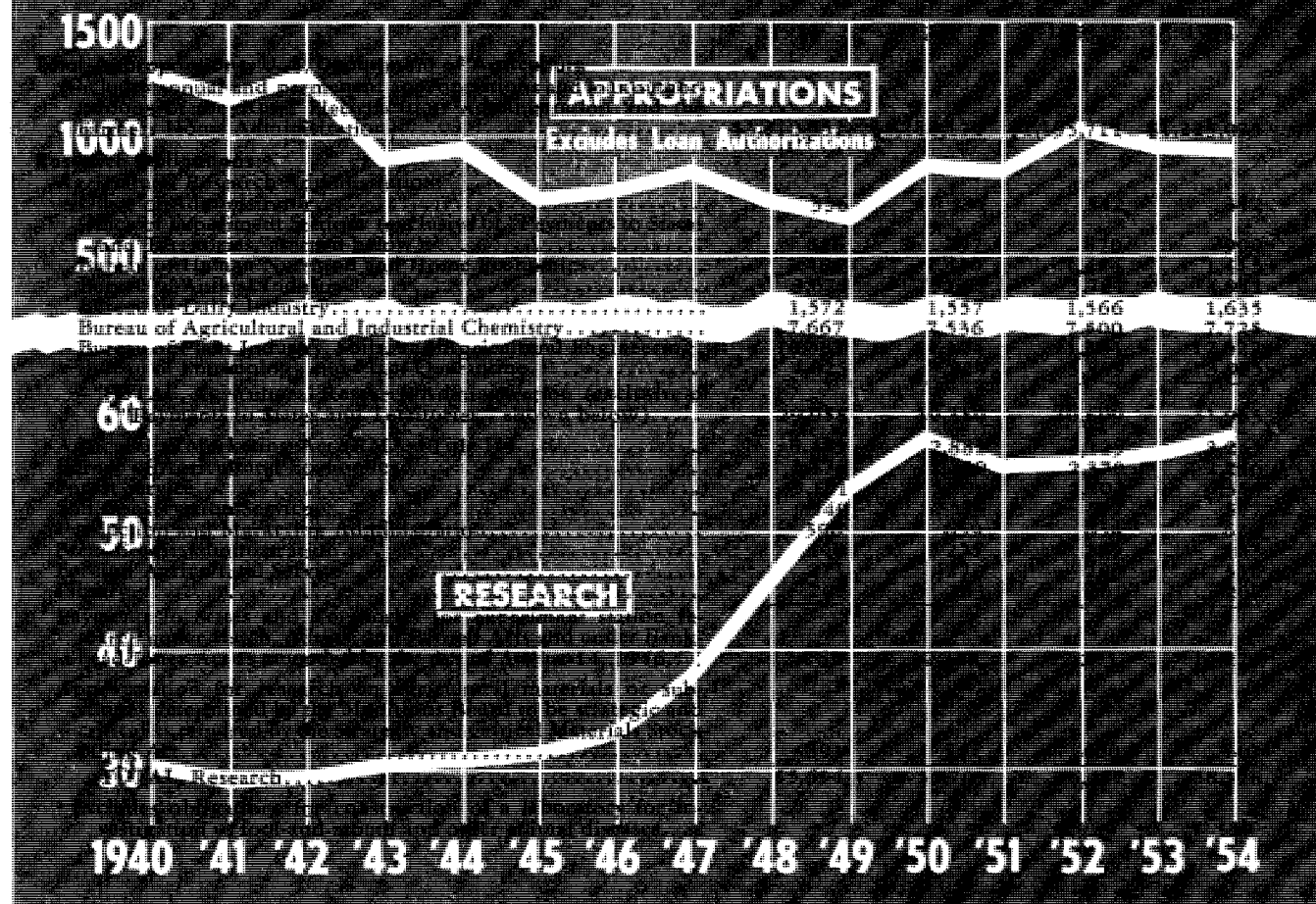
What are the opportunities for professional research people in the USDA?

The word "opportunities" can be interpreted in several ways. Money-wise, the Department can offer equal opportunities at the intermediate scientific levels, but at higher levels financial returns usually are greater in industry and perhaps also at other research institutions. However, there are other important considerations. First, the scientist must have an opportunity to do his job. This means that his work environment must be such as to stimulate and promote his research effort and creative ability to the fullest. He must have freedom, within the framework of authorized programs and funds, to carry on his work in the manner most likely to produce results. I believe the Department has been successful in creating a satisfactory work environment. These same examples support my feeling that the Department's research problems are of a caliber to offer a challenge to the best professional personnel.

Opportunity as related to grade and pay is a second aspect of this matter. It is our feeling that too much emphasis has been placed on organization and administrative relationships in arriving at the rate of pay for research jobs. As you may know, matters of this kind are under the jurisdiction of the Civil Service Commission. We have in the past and will

TOTAL APPROPRIATIONS AND RESEARCH EXPENDITURES OF DEPARTMENT OF AGRICULTURE

Thousands of Dollars



continue to work with the Commission to get a recognition of the fact that pay rates for scientists to a major extent must be based on ability and quality of research achievements. Using these criteria, it should be possible for our competent scientists to attain the highest grade and salary authorized by law.

Research Cooperation Between Industry and Government Is a Must

You have expressed yourself in favor of research cooperation between industry and government. Do you feel that it should be improved?

I do indeed feel that better cooperation can and should be developed between industry and government. This is not intended to minimize the vigorous cooperative programs that the Department has always maintained. Rather, I mean that such cooperation should be encouraged, expanded, and strengthened wherever and whenever possible. We have made much progress. For example, the Bureau of Agricultural and Industrial Chemistry has at least 60 written cooperative research agreements with associations and private firms on the

utilization of agricultural products. These projects are especially designed to seek new uses and improved products. Cooperative research can and does help in many other ways by developing new marketing methods or improving current ones. The same bureau last year had some 50 meetings with industry research committees for discussions of commodity problems. Comparable cooperation is maintained by other research bureaus with industry.

Companies in the chemical industry frequently express a conviction that 3% of sales should be spent on research. Do you have any such goal for agriculture? If so, how much of that should be supported by government funds?

There are no clear criteria for setting up a certain percentage of income as being appropriate allocation for research needs. No such goals have been set up for agriculture.

With respect to allocation of research funds as between private and public funds, the general principle applies. Government should engage in things which by common consent need doing,

and which can be done more efficiently by government than by individuals.

Do you consider farm income at the present high level necessary to the well-being of the country?

First let me explain that farm income is not high in comparison with incomes of other groups. Figures in the Department show that the per capita net income of persons on farms is substantially lower than the average income of the nonfarm person. Now with respect to the question, certainly the well-being of the Nation requires that incomes of farm persons provide the same opportunities that are available to other groups to participate in the national trend toward rising living standards. We should remember that one out of every six persons in the Nation lives on a farm and that their well-being touches directly or indirectly on all of us.

Do you consider it practicable to exercise acreage restrictions so as to reduce the greatest percentage in areas of least efficient production and to encourage, by

scientific improvement and choice of crops, more satisfactory use of the land thus freed?

Under existing conditions it is not possible to exercise acreage restrictions so as to reduce the greatest percentage in areas of less efficient production. Acreage allotments and marketing quotas are established for individual farms according to formulas prescribed by law and these are designed to prevent discrimination among producers.

Even if permitted by legislation, it would be extremely difficult to administer acreage restrictions in the way you mention. A better approach is to bring about income improvement and increased production efficiency in the poorer areas by developing profitable production alternatives to cotton and wheat for at least part of the land and better paying opportunities for use of labor. The diversion of cotton acreage to grass and livestock production is an example of what is being done.

Land capability information, which the Soil Conservation Service develops on the basis of soil surveys, provides a scientific means of determining the most efficient manner of making acreage adjustments. Soil type, slope, erosion, and other factors, including climatic, determine the best use to which any particular piece of land can be put. Often there are, of course, equally suitable alternative uses, and which are selected depends on current needs or opportunities.

Land capability information, therefore, not only gives a guide to the safe expansion of crop acreages when needed, but also gives a basis for determining which acres should be retired from cultivation first when there may be a need for downward adjustment.

With acreage being reduced and prices lower than a year ago, how can farm income be kept at an economically satisfactory level?

This, of course, is our most difficult problem but an answer must be found. Price support programs provide a stabilizing force at a base level. However, price supports do not in any way assure farmers of an income comparable to that of other economic groups. Therefore, if farm income is to be kept at an economically satisfactory level, which actually is above support price level, it must be provided in the market place. This means we must redouble our efforts along the lines of marketing efficiency, merchandising, and developing new uses. Basically, America is not producing more farm products than are needed at home and abroad. Actually our own people can consume what we produce if we can but develop and perfect an adequate marketing and distributive system.

It is important to bear in mind that the answer does not lie entirely within the field of agriculture since the bulk of farm products is consumed by urban people. Therefore, a healthy national economy is very important when it comes to keeping farm income at a satisfactory level.

Relative to acreage reductions in wheat, cotton, and other crops, what is your attitude toward the use of agricultural chemicals (insecticides, fungicides, weed killers, and similar types of products) which, through their use, can effect increased yields per acre at reduced unit cost?

We need to provide farmers with the best techniques we can devise to enable them to produce efficiently. We cannot hold back progress nor would we wish to do so.

Chemical weed control methods are relatively inexpensive and are the most effective means now available for controlling weeds in wheat, oats, barley, rice, and flax. The 2,4-D for use in such crops can be obtained at a cost of around 25 to 50 cents an acre, and airplanes can be used to apply it for \$1.00 to \$3.00 an acre. This is a paying proposition.

Although there is still much we need to know about the use of chemical weed controls, the use of chemicals for controlling weeds in cotton may save around 10 cents a pound as compared with hand hoeing and other cultural methods. Chemical weed control also makes possible more complete mechanization of this crop, accompanied by additional savings. On range lands, substantial sagebrush and mesquite control by chemicals also appears feasible at costs of about \$2.50 an acre.

The degree of production efficiency required of many crops today to win consumer acceptance would be impossible without insect and disease control; in fact, some crops couldn't be produced at all if insects were left unchecked. Agricultural chemicals promote efficiency in control of insects and diseases, and they should be used to the extent necessary to produce high quality crops as cheaply as possible consistent with good agricultural practices.

In one of your speeches, you referred to the contention by some people that supported prices of cotton and butter had encouraged synthetic fibers and oleomargarine development. Do you see important practical possibilities for reversing the process by making, from agricultural products, materials which are now made from other materials?

Yes. There are many examples of how research can develop products from agricultural materials which are competitive with those produced from other raw materials. Research within the

Department as well as by other groups can bring about many more. Some of the new products are now of definite commercial significance. One is the commercial production of adipic acid, an important plastic intermediate, from furfural instead of from petroleum; the furfural, in turn, is made from corncobs. Another is the commercial production of epoxidized oils from animal fats under a Department license for use as plastic softeners and stabilizers, particularly the vinyl-type plastics. Fine grits from corncobs, nut shells, and other agricultural residues have definite advantages over inorganic materials in many cleaning and polishing operations; about 35 industrial plants are now using such materials. As another example, acetylated cotton fabrics have better resistance to heat and rot than fabrics made from synthetic fibers when used as laundry press covers; the acetylated cotton covers are now being made commercially.

There Is Little Duplication of Research Effort

To what extent is there duplication between USDA research and the work of State research groups?

In my opinion, duplication of effort in the commonly expressed sense of unnecessary or wasteful duplication is a minor problem in Federal-State research. There are hundreds of different type farming areas in the United States. It is well known that research results at one location do not necessarily apply everywhere else. So, research on the same problem must be carried on under many different conditions.

We believe our procedures and methods provide sound safeguards against unnecessary duplication. We have on file in the Department project descriptions of all research conducted by the Department and the State experiment stations. This is a reference source in relating all new research proposals to research currently under way.

All Department research is headed by the Assistant Secretary. Economic research is under the Chief of the Bureau of Agricultural Economics. All other Department research comes under the Administrator of the Agricultural Research Administration. All budgets for research and all new fields of work in the Department must be approved by one of these officials.

Milk consumption per capita has fallen from 824 pounds (based on fat solids) in 1939 to 695 pounds in 1952. You have stated that if this drop were overcome, the milk surplus would become a scarcity and the country would benefit nutritionally. Can you see a solution to this problem which might bring to both consumer and producer the apparent possible benefits?

This, too, is not easy to answer. Some of the best brains in the dairy industry are now working on it, and I am hopeful that we are going to find ways to get people to drink more milk—and use more dairy products.

I covered this subject in a talk before the American Dairy Association in Chicago on March 23. In it I stressed the following points:

(1) Milk is an excellent and economical food. We need live-wire educational and advertising campaigns to “sell” its good points. We also need to emphasize the use of nonfat milk solids in cooking and the use of more of the nutritionally valuable by-products from dairy manufacturing plants. I might add here that recent reports show per capita consumption of nonfat milk solids has increased from 42 to 47 pounds per year in the last 13 years.

(2) Wide regional differences in price of fluid milk offer opportunities to surplus milk states.

(3) Dairy farmers can shift more rapidly to fluid milk sales, and away from butterfat. Let's produce what consumers will buy.

(4) Feed costs can be cut by feeding less expensive grain and more good roughage.

(5) Milk regulations need to be made practical.

(6) The agricultural colleges, experiment stations, and the extension service must move into more aggressive programs of research and education.

During 1952, about \$96 million was spent by the Government in the purchase of butter. About one half of that butter was given away. How much was spent in an effort to find new, economically practical uses for dairy products?

The Department is spending, in fiscal year 1953, approximately \$500,000 for research to find new, economically practical uses for dairy products. The revised 1954 budget includes a proposed increase of \$69,445, for additional research on the utilization of dairy products.

In some states, such as Minnesota, Wisconsin, and Iowa, where there is excess milk, the price is only slightly more than half that in Louisiana, Texas, and Georgia where there is a milk shortage. The aggressive citrus fruit industry has done a great deal with frozen juice concentrates. What is your view of the possibility of technical aid to the dairy industry's problem through the promising work on milk concentrates or whole canned milk?

This we feel is a major problem in our dairy products industry. Considerable work has been done to aid distribution of milk through the preparation of acceptable forms of sterilized, frozen, concentrated (frozen and sterilized), and dried milks. Research to improve the flavor

and physical characteristics of evaporated milk and to produce a whole milk powder, so that these products would be comparable to fresh whole milk when rediluted would materially contribute to equalizing area differences in milk prices and to getting more milk from areas of heavy production to consumer centers. Concentrated and canned (single strength) whole milk will be effective in the same way, but the whole milk requires greater costs in shipping.

State regulations in some cases now prevent shipping milk from one state to another. What can be done about this hindrance to milk distribution?

Some movement of milk between States is hindered by differences between health ordinances of States and municipalities. These differences arise partly from genuine disagreements as to the necessity of particular requirements in the production of a healthful supply of milk. The Department of Agriculture has carried on much research aimed at narrowing the area of disagreement. The latest project completed was carried out by the National Research Council, under contract with the Department, and the final report was published in March (“Sanitary Milk Control and Its Relation to the Sanitary, Nutritive, and Other Qualities of Milk”).

The Department of Agriculture is represented on the Milk and Food Sanitation Advisory Board of the U. S. Public Health Service, on the board of directors of the Conference on Interstate Milk Shipments, and on the Advisory Committee on Milk Ordinances and Regulations of the International Association of Milk and Food Sanitarians. All these agencies are acting to promote uniform enactment and enforcement of sanitary regulations affecting milk.

There is room for hope that through the means now available, states and cities can bring their regulations into such agreement that milk of satisfactory quality may move freely to wherever it is needed.

Regulations Are Designed To Protect the Public

While we are on the subject of regulations, we'd like to consider pesticide and food chemical regulations. DDT is an example of a product developed by research, which gave to society benefits far in excess of the financial return to the companies which did the research. The cost of developing such products for the market is increasing rapidly and each new government regulation adds to the cost. Continuing increase may discourage investment in research. Do you believe that regulations in addition to those existing are called for?

It is granted that the development of new chemicals for the market represents a big investment and no one would like to see government regulations discourage developmental research. In early work for the Department of Defense and later in cooperative studies with industry and the various State Agricultural Experiment Stations, this Department had a great part in the development of DDT for the control of insects of agricultural and medical importance. Before a new insecticide can be recommended it is necessary to obtain considerable data to establish that it can be used safely and will not leave any undesirable residues on food reaching the consumer. We believe the Federal Insecticide, Fungicide, and Rodenticide Act in its present form gives the public a very great degree of protection insofar as protection can be given by correct directions for use and adequate caution or warning statements. The law could be strengthened in some respects such as placing the burden of proof of effectiveness and safety of the product on the applicant for registration, and modifying or eliminating the provisions for registration under protest.

There is another problem, that of whether to require that poisonous seed-treating materials bear their own indicators, so grain and other seeds thus treated, which may later be used for food or feed, can be readily detected. Just how this might be approached needs study.

Of course you have followed the rain-making experiments during recent years. Do you believe that there have been or will be beneficial results from weather control in the Northwest and Southwest? Are there any cooperative projects between USDA and the Weather Bureau?

There is very little evidence and no present scientific basis for the belief that we now possess the ability to modify or control the weather and climate of a major portion of the country. Under certain conditions weather modification on a relatively small scale is known to be possible. This is the position taken at present by the American Meteorological Society. The Society also is on record as stating that in view of the potential value of any technique for the control or modification of weather, it is of the utmost importance that research in cloud physics and well-designed experiments be furthered.

The Department of Agriculture looks to the Weather Bureau for this type of research and has no plans for any major activity of its own. The Department has given informal cooperation to the Weather Bureau in the form of data and facilities such as forest-fire lookout stations.

Thank you, Mr. Secretary