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UNITED STATES DEPARTMENT OF AGRICULTURE
Economic Research Service

MARKETS AND NEW PRODUCTS

Talk by Philip B. Dvoskin
Marketing Economics Division
at the 41st Annual Agricultural Outlook Conference
Washington, D. C., 10:15 A. M., Wednesday, November 20, 1963

This has been another good year for the American consumer. Except for a frigid blast at the citrus belt mother nature collaborated with the farmer again to produce an abundance of food and fiber. Add to this abundance food prices that have been fairly well in line with last year, another increase in disposable incomes and you have good news. This is illustrated by the fact that the percent of income spent for food continues to decline, down from 23 percent in 1953 to an estimated 19 percent in 1963. (fig. 1) ^{1/} When you compare what we spend for food with the proportion of income devoted to food even by the highly developed Western European economies, roughly a third, the well being of the U. S. consumer is even more notable.

Other evidence that this has been a good year for consumers are the several congressional activities relating to investigations of drugs and drug prices, pesticides and the so-called truth-in-packaging and truth-in-lending hearings. All of these activities focus on the well being of the consumer. In addition, a recent action by the Department reflects its awareness of the growing power of the consumer. This is evidenced by the appointment of an Assistant Secretary, whose area of responsibility has the newly coined name of, Marketing and Consumer Services.

There is however, some doubt in my mind as to how good a year this has been for the farmer, but I shall leave the specifics of such an appraisal to my colleagues speaking at the General and Commodity Sessions of this Conference.

Basic trends in food consumption.--Before turning to my assigned topic new food products, let's first orient ourselves about the outlook for the food industry by taking a look at some of the basic trends affecting food consumption. Probably the most important factor influencing food consumption in our highly developed technological economy is population and its growth. As you know we recently have passed the 190 million mark in the U. S. and the Census Bureau's latest projection calls for our population to reach 245 million by 1980, about 30 percent above the present number. This means that there will be about 55 million more people consuming an average of about 1400 pounds of food a year. In this regard, an item of some importance is that, beginning in the late 60's, the projected population will have a sizeable increase in the 15 to 19-year-old age group. This group is expected to increase 50 percent which means about

^{1/} "Consumer Expenditures for Food," Marketing and Transportation Situation, p. 13, August 1963, ERS, USDA.

9 million more teenagers than we have today. If I may inject a personal observation, based on an admittedly small sample of teenagers in my family, there is no doubt those 9 million extra teenagers will have a strong positive effect on total food consumption. Offsetting this "guesstimated" consumption increase somewhat will be a larger proportion of senior citizens in the projected population composition. In any event these anticipated changes in the size and age composition of our population will contribute to an increasing total demand for food in the years ahead. (fig. 2)

We also can expect that the kinds of foods consumed and the form in which foods are bought will continue to change and change markedly as they have in the past. Looking at the long term trend it is obvious that people are eating more meats and poultry products, processed fruits and vegetables and some dairy products per person than in 1909-13. The shift has been away from fresh fruits, fresh vegetables, cereals, sweetpotatoes, and potatoes. You will note though that potatoes on the chart shows a slight movement upward since 1959. We take some pride in this since our work on potato flakes, a form of dehydrated mashed potatoes, has been important to this upward movement. (fig. 3)

In addition there are many other important factors creating a favorable outlook for food, particularly for those food products falling into the convenience category. More women working, increases in discretionary income, more knowledge about nutrition, higher educational levels, plus the continued flow of new products, should help keep food sales rising in the decade ahead. An item of interest to consumers is contained in our recently released convenience food study which indicated that while most convenience foods were more expensive than home-prepared items the comparatively small number of less expensive convenience foods, that housewives buy in volume, actually reduce total expenditures for food. Now as some of you know, our convenience food study was based on 1960 retail prices obtained in chain and independent supermarkets. We have taken a check of these same items and found that the same relationships (i. e., cost-saving of convenience vs. home-prepared items per \$100 expenditures for all foods) still held true this fall. These findings are tentative at best since prices were obtained in supermarkets in only one market, Washington, D. C. (table 1)

Research and development and the food industry.--The food industry also has had a good year. Although net profits are down a bit, this has been another record sales year for the food industry. There is general agreement that new food products have played an important part in generating this record sales level as well as in bolstering a slightly sagging level of profits. In addition, we can credit, in part, innovations in food processing with providing the impetus for our modern system of production and marketing of agricultural products. However, in the past year or so, despite the impressive contributions of innovation, there have been some doubts raised about the value of the increasing amounts being spent on research and development. These doubts have been reinforced by the fact that despite a tripling of research and development expenditures since 1952, our rate of economic growth has crept along at a comparative snail's pace. 2/

2/ "Why So Few Really New Products," Joyce, Walter, Printers Ink, February 1, 1963.

The recently released preliminary report of the National Science Foundation provides some interesting insights as to where the R and D dollar is being spent. ^{3/} In 1962, industrial firms accounted for nearly three fourths of the nation's total research and development performance of about \$16 billion. Although more than half of the total industrial research and development funds were federally financed, the interesting statistic, as it concerns the consumer, is that the food industry, the largest industry in the United States from a sales point of view accounted for less than 1 percent (\$108 million) of the total R and D performance. Of course, as expected, space and defense industries used 60 percent of the R and D funds. Most of the possible applications developing from such research activities will be in the industrial area.

Perhaps the present level of expenditures for research and development represents all that can be efficiently used in this research area by the food industry. On the other hand, it may be that if the disparity in R and D outlays by the food industry compared to other groups continue we can look for further encroachments by nonagricultural source materials not only in the industrial and fiber area but in the food area as well.

New packaging developments.--Some of the expenditures for research and development in other industries probably will have some useful applications in the food area. We are all acquainted with the squeeze food tubes used by our astronauts in their space flights. One company already has made application of these squeeze food tubes to the baby feeding area. An aluminum squeeze tube has been fitted with a hollow handled plastic spoon which can be attached to the neck of the tube. Presto! You have what appears to be a convenient and highly imaginative package for feeding infants or bedridden patients. According to a recent issue of Food Technology, an aluminum food tube filled with applesauce is moving into a market test. ^{4/} The same article reports some other interesting packaging developments in the food product and beverage field. The development of the easy to open can for beverages, an improved thin tin can and the development and improvement of aluminum containers appear to be giving the metal can a new lease on life in the food field. However competition remains keen with improved glass containers as well as plastic and paper packaging materials also being developed rapidly.

The Department's own Southern Laboratory has been doing some interesting work in developing edible coatings for food products. While this has been talked about for many a year, some of the newly modified fat products developed at the laboratory show promise in the edible packaging field.

^{3/} Research and Development in American Industry 1962, National Science Foundation, No. 40, Washington, D. C., September 1963.

^{4/} "Technical Problems Presented by New Containers and Materials," Brighton, K. W., Riester, D. W., and Braun, O. G., Food Technology, September 1963, Vol. 17, No. 9.

New food product developments.--The emphasis in product development will continue to be in terms of concentration of products. A large share of the concentrate output will continue to be produced by the already established methods of freezing, dehydration and canning but an increasing share of the output will include new methods of dehydration or combinations of dehydration and freezing. Dehydro-freezing, foam-mat and vacuum puff drying and freeze drying are examples. These increases will come about as production costs are reduced and product quality is improved. Part of the impetus for this growth of new dehydrated products will come from the prepared food manufacturers themselves who are continually looking for satisfactory new forms of ingredients that will enable them to produce new combinations of food at a lower cost. This aspect is related to the trend in the food industry toward products with built-in chef as well as maid service using exotic recipes prepared in the factory. High incomes also have resulted in more restaurant eating, but mass feeding operations have been affected by higher wage rates and higher costs which in turn have resulted in a growing demand for portion controlled foods which can be produced in centralized kitchens. In other words, processed foods are apt to be the forerunner of automation in the food manufacturing and service industries. But the greatest incentive for new product development relates directly to consumer demand. It is being bolstered continually by increasing amounts of disposable income available to buy convenient, ready-to-eat, high quality food products. In addition, we must remember that changing consumer tastes and preferences, changes in the age and ethnic composition of the population and changes in attitudes regarding the status of certain foods such as potatoes also contribute to the upward trend in new food product developments.

The Western Laboratory has made considerable progress in developing some new food concepts as well as moving closer to commercial conditions for some of the products mentioned in my earlier talks at the Family Living Sessions. On the new side the Western Lab has developed a gelled applesauce similar in appearance and consistency to cranberry sauce. It may be served in the same way as cranberry sauce, and is particularly good with pork. Also the can can be warmed and when this applesauce turns to liquid it can be poured into a food mold over pieces of fruit, berries, vegetables, nuts, raisins or meat. This product could provide an additional outlet needed for the increasing quantities of processing grade apples available in the Pacific northwest.

A nonsetting raisin paste may soon join fig paste as a filling in newtons and other bakery products. Also of interest to the raisin industry and the entire dried fruit industry is DBD a new method of artificially drying fruit. The DBD refers to the sequence of operations used dry-blanch-dry. These fruits have excellent flavor and color. Some resemble their sun dried counterparts, but most important the method produces excellent quality products and also reduces product loss by relieving sanitation problems encountered in sun-drying. The process also extends drying to fruits which have not been too successfully dried by sun-drying. This is particularly true of peaches. Although the DBD process costs are higher than sun-drying, the advantages may in time offset the cost factor in selected uses. And thus, it could provide the various dried fruit industries with new outlets for their products.

Our colleagues in the West still are working on our old friend wheat bulgur and have recently developed a new process for making instant bulgur by puffing. The method, similar to the one used by the Eastern Laboratory for

fruit and vegetable pieces, will make it possible to produce a line of dry bulgur products as convenience foods or to use it as an ingredient in easy to prepare dishes.

A frozen avocado salad similar to a fresh avocado recipe known as guacamole in Mexico, has been developed by the Southern Laboratory. This product was developed in an effort to find a processing outlet for avocados that are unsuited for fresh markets because of blemishes or other defects but whose interior is otherwise sound. The product does show considerable promise, mainly because it fits into the growing trend toward convenience foods in the institutional and household markets. The Southern Lab also has been working strenuously on its foam-mat orange juice powder in trying to improve its flavor and stability. Work also is underway on a foam-mat dried grapefruit juice powder. These powders have possibilities both in the domestic and in foreign markets.

Use of dehydrated egg products will increase in importance as their functional properties are improved, they are particularly helpful in reducing plant costs and waste in food manufacturing plants. Fool-proof methods of destroying salmonella could lead to greater use of these egg products in such convenience foods as prepared omelet mixes. As a matter of fact, last month at the Food Editors Conference in Chicago, an announcement was made about the introduction of instant omelet mixes. This product will use a blend of freeze dried ingredients and dehydrated whole egg solids that will require no refrigeration. 5/

Our work on the market possibilities for frozen bakery products indicates that the freezing preservation of bakery products will grow in importance, as a means of achieving reductions both in bakery production and in distribution costs. The frozen products permit, less frequent production and local distribution and large centralized plants that ship to distant markets.

We have work underway to determine acceptance and market potential for varying levels of fat and solids in beverage milk. We are doing this work to throw some light on the possibility of expanding consumption of fluid milk by manipulating the solids content.

Instant sweetpotato flakes, which we discussed in some detail last year are now a commercial reality. There are now two plants producing sweetpotato flakes, at least one more in the final stage of construction. Up to now distribution of the product has been limited almost entirely to the food service industry, particularly restaurants. Introduction into the retail market appears to be fairly near at hand. We are conducting several small scale research operations to give us some insights into the relative acceptability of different package types in supermarkets.

The outlook.--The emphasis on food processing innovations is going to have a marked effect on various sectors of the food industry. For example, more refrigerated and freezer space will be required in the supermarket of the future to accommodate the new frozen foods as well as to provide the space for less

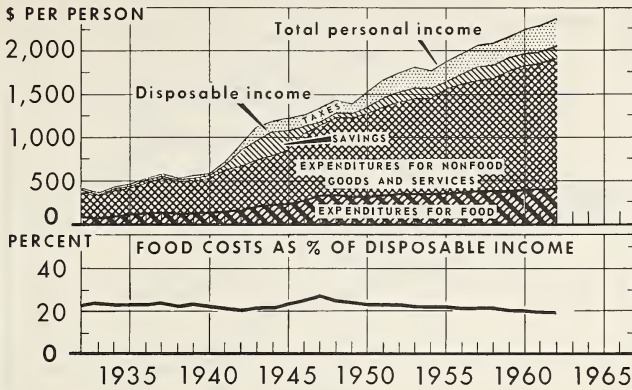
5/ "New Products on the Way," The Evening Star, October 3, 1963, Washington, D. C.

frequent but larger deliveries of frozen bakery products. More shelf space also will be required for displaying the many new dehydrated foods, since many of these concentrated products do not necessarily come in concentrated packages. Look at what has happened to the potato! This slide shows that the institutional and household consumer can find today 51 different kinds of processed potato products for sale. This does not include different brands but only different product categories. In 1957 when we made the market test for white potato flakes we found only 7 processed potato product categories on retail shelves.

Another outgrowth of increased emphasis on food processing innovations will be the impact on the size and location of processing facilities. The trend will be toward larger more fully integrated facilities which will tend to lower processing costs and allow for better quality control. We can almost predict with certainty that the new dehydration processing techniques will result in greater reductions in transportation and other marketing costs for foods which are produced relatively far from markets. Longer growing seasons which permit more specialized production and longer operation in processing plants with high fixed costs also will become more important in determining the location of new processing facilities. The West, particularly the Pacific coast area more fully meets the above criteria. As a result the West will likely gain more in the production of new processed foods relative to other regions.

One last thought about outlook. Many of us have talked about the "Golden 60's," but the sluggishness of our economy has tarnished the gold somewhat. However, population growth, the changing composition of the population, the greater amounts of disposable income available to consumers, plus the continued flow of new product and process developments in the food field, all may help restore some luster to the remaining years of the decade. These trends almost insure an optimistic outlook for the food industry, the consumer and maybe even the farmer.

FOOD COSTS & CONSUMER INCOMES



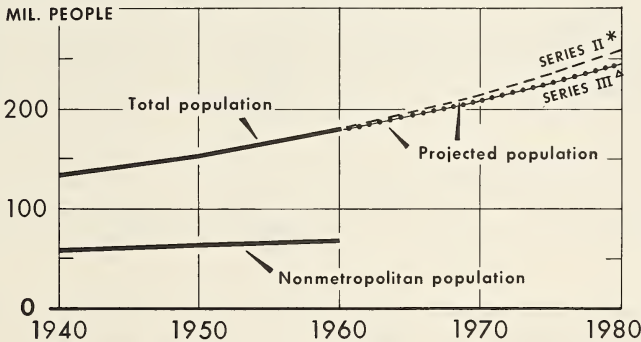
1962 PRELIMINARY.

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Figure 1

TOTAL AND NONMETROPOLITAN POPULATION, UNITED STATES



* ASSUMES FERTILITY REMAINS CONSTANT AT 1955-57 LEVEL TO 1980.

^Δ ASSUMES FERTILITY DECLINES FROM 1955-57 LEVEL TO 1949-51 LEVEL BY 1965-70 AND REMAINS TO 1980.

DATA FROM BUREAU OF THE CENSUS.

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Figure 2

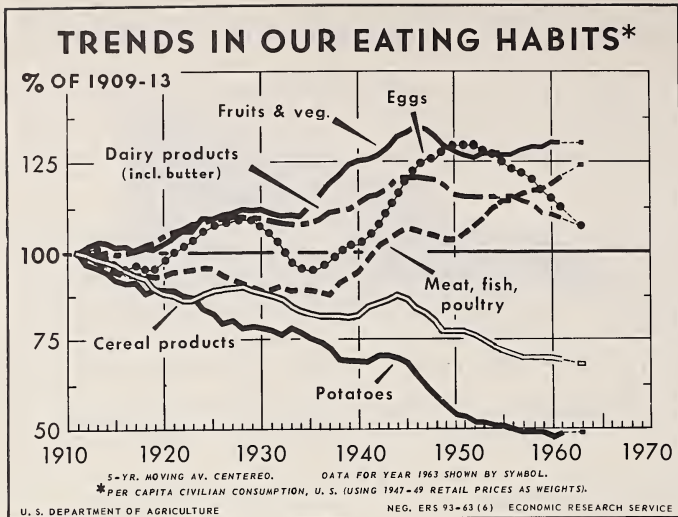


Figure 3

Table 1.--Effect of convenience foods on food costs per \$100 expenditure for all food in grocery stores 1/

Period	: U. S. Farm :	: Other <u>2/</u> :	: Total
	: Dollars	: Dollars	: Dollars
12-months 1959-60			
Amount spent for convenience foods:	12.55	1.48	14.03
Cost of equal number of servings of: home-prepared.....	<u>12.82</u>	<u>2.28</u>	<u>15.10</u>
Difference.....	-.27	-.80	-1.07
September 1959			
Amount spent for convenience foods:	12.66	1.50	14.16
Cost of equal number of servings of: home-prepared.....	<u>12.94</u>	<u>2.30</u>	<u>15.24</u>
Difference.....	-.28	-.80	-1.08
September 1963			
Amount spent for convenience foods:	12.86	1.45	14.31
Cost of equal number of servings of: home-prepared.....	<u>13.47</u>	<u>2.19</u>	<u>15.66</u>
Difference.....	-.61	-.74	-1.35

1/ Adjustments were made for foods which were not available during all three periods to make the data comparable.

2/ Includes coffee, tea, fish and shellfish.