members of cooperative organizations to nullify the efforts of the cooperators, or to develop protective services for producers such as check testing and check weighing. Too much should not be expected, however, of such agreements and licenses as have been developed to date as a means of dealing with low prices which are directly attributable to burdensome supplies. It may be possible, however, to develop programs which will include definite provisions for adjusting supplies in line with market demands.

As a purely emergency mechanism the marketing-agreement and license program has also demonstrated its usefulness in dealing with a considerable variety of farm products. In connection with the 1933–34 tobacco program, for example, marketing agreements were used primarily as a means of obtaining a higher price for the growers on the 1933 crop by capitalizing on the action of the growers in agreeing to reduce acreage in 1934 and 1935. Having served this emergency purpose, the agreements with one exception, were not continued. A marketing agreement for disposal of north-Pacific wheat surplus was utilized as a means of removing a burdensome surplus of wheat from the Pacific Northwest in the 1933–34 season. The marketing agreement of the peanut-milling industry whereby a minimum price was established for the 1933 crop was of a purely emergency type and has been superseded by the development of a production-adjustment program including the diversion of a part of the supply into feeds and peanut oil.

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MARKETING Studies Show Importance of Increased Efficiency

The net income of farmers can be increased either by raising prices to the consumer or by lowering the costs of production and marketing. For example, bread cost the consumer an average of a little over 8 cents a pound loaf in July 1934. The farm price of wheat was about 80 cents a bushel. A bushel of wheat will make about 64 loaves of bread, so the consumer was paying over $5 for the bread made from an 80-cent bushel of wheat. The remaining amount went to pay the miller, the baker, the transportation companies, and to pay for other materials such as milk and shortening. If bread prices were raised from 8 cents to 9 cents and costs of transportation, processing, and marketing remained the same the consumer would pay 64 cents more for the bread made from a bushel of wheat and the 64 cents would go to the farmer. However, the same result would be obtained if city bread prices stayed at 8 cents and the costs of transportation, processing, and marketing could be reduced 64 cents.

If the farmers' purchasing power is to be increased and sustained, adjustments are needed not only in the output of farm commodities but in the marketing of those commodities as well. Marketing costs rose rapidly during and immediately after the war and have stayed at high levels ever since. Any substantial improvement in the efficiency of our system of marketing will greatly benefit both the farmer and the consumer.

The need for adjustments in our marketing methods is brought forcefully to our attention by studies of spreads between farm prices and city retail prices of foods since 1929. In 1929 a month's supply

of 14 important foods cost an average American family $26.11. By 1932 this cost had fallen to $16.78. The farm value of the equivalent amounts of food products fell from $12.40 in 1929 to $5.54 in 1932. The spread between farm and city prices (or the total of all charges for transportation, processing, and marketing), fell from $13.71 to $11.24. In other words, while city prices were dropping 36 percent, the total cost of getting food from the farmer to the city consumer dropped only 19 percent. This failure of marketing costs to fall in proportion to prices of food was a result of the fact that many marketing costs are definitely fixed except over long periods. The relative inflexibility of such costs was to a considerable degree responsible for the fact that farm prices dropped 55 percent—or much more than the drop in city retail prices. In 1929 the farmer got 47.5 cents of each dollar spent by city consumers for these 14 foods. In 1932 the farmer got only 33 cents of the consumer's dollar.

Many Relatively Fixed Charges

Between the farmer and the consumer there are many charges—such as freight rates, for example—which are relatively fixed. It took several years of depression to bring about any reduction at all in many of these charges. As conditions in business and agriculture improve there will doubtless be an attempt to increase such charges; perhaps to predepression levels. Some increases in individual cases may be entirely reasonable and just. The payment of processing taxes and of increased wages makes higher charges in some industries necessary. It is obviously desirable to prevent if possible any unnecessary increases in marketing costs and wherever possible these costs should be decreased by more intelligent and more efficient marketing methods.

The spread between farm and city values of foods has widened somewhat since 1932, but the increase has been very moderate in view of the fact that it now includes the payment of processing taxes on wheat and hogs and that wages have increased. From 1932 to July 1934 the city retail value of a month's supply of 14 important foods increased from $16.78 to $18.13, or 8 percent. The farm value of the equivalent amounts of food products rose from $5.54 to $6.60, or 19 percent. The spread between farm values and city values increased from $11.24 to $11.53, or 3 percent. As a result of the fact that marketing costs increased proportionally less than did prices of food, the farmer's share of the consumer's dollar increased from 33 cents to 36.4 cents. It should be remembered, of course, that the part of the margin represented by the processing taxes goes back to the farmer who cooperates in farm adjustments; so that the real spread between what the farmer gets and what the consumer pays is not quite the total spread between farm prices and city prices.

These figures show that since 1932 the spread between farm product values and city retail values of food products has increased only slightly. The payment of processing taxes and higher wages accounts for at least a large part of the increase that has occurred. Nevertheless, it should be recognized that these spreads are high and probably could be reduced in many cases by more efficient methods of marketing and distribution. Marketing costs in this country increased greatly during and immediately following the war and although they have been somewhat reduced since 1929 they are in most cases still considerably higher than they were before the war. The result is

that in many cases the consumer is paying more for foods and other farm products than he did before the war while the farmer is getting less. In order to procure for the farmer as reasonable a return as possible we must have efficient marketing as well as orderly production.

Spreads between farm prices and city retail prices in the United States are in many cases higher than in other countries and such differences cannot be wholly explained by differences in wage rates. For example, in a number of European countries consumers can buy wheat bread at about one-half the average price in the United States although the price of wheat is higher than in this country. Only a part of this difference can be explained by lower wage rates in Europe. Perhaps the most important reason for the difference is in the different systems of distributing and marketing bread and in the extra services such as wrapping and slicing which American bakers commonly give.

Coordinated Research Needed

It has become apparent in the last few years that we need a broader and more coordinated program of marketing research in order to get at the facts on the basis of which we can improve the marketing of farm products. For that purpose the Department of Agriculture recently organized a Division of Marketing Research in the Bureau of Agricultural Economics. The new Division will be able to study many broad problems of marketing which do not come entirely within the scope of any of the commodity divisions. It will also work with the commodity divisions of the Bureau of Agricultural Economics and with other research agencies to bring together the available facts and to study them for the purpose of finding practical ways of improving our system of marketing.

In connection with a research program in marketing the Department is carefully studying the possibility of using the marketing agreements under the Agricultural Adjustment Act to bring about more orderly and more efficient marketing. It is conducting a series of studies, for example, to determine the extent to which the marketing agreements under the Special Crops Section have improved the prices paid to growers; how they have affected dealers' costs and charges and marketing methods and practices; and how they have affected consumers' interests, including the effects on retail prices, on availability of supplies and on the quality of food.

Many experiments have been made with the marketing agreements. These experiments include agreements to control supplies, to fix prices to growers, to fix resale prices, and to establish uniform trade practices. The results of these experiments are being carefully studied in order that policies may be worked out which will not only promote more orderly distribution but will lower the costs of marketing, increase consumption, and return to the farmer a better income.

Marketing agreements under the Agricultural Adjustment Act have also emphasized the need for further developments in standardization and in market news. The services which the Bureau of Agricultural Economics has built up in these fields have been indispensable in connection with many of the marketing agreements and in many cases these services have been expanded and modified to meet the special problems resulting from the agreements. The whole program of grading and standardization must be kept flexible in order that

changes in the grades and in their application can be made in the light of increased knowledge of the qualities demanded by consumers and dealers and of more complete facts concerning the relation of quality factors to the use value of commodities.

Standardization and grading are not only for the purpose of protecting the consumer but also should make it possible for farmers to get premiums for superior quality. Studies of cotton prices and prices of some other farm products have shown the need for changes in methods of marketing in order that premiums for quality may be more fully reflected in the prices paid to farmers. Such premiums are a necessary incentive to the improvement of quality.

There is an increasing interest in grades and standards to be used in the retail trade to identify the quality of foods bought by the consumer. The development of such grades and standards would be of great benefit to the consumer and indirectly to the farmer also.

The most important and most difficult problem in marketing is in bringing about changes in our present methods and practices and in our market institutions, organizations, and facilities in order to promote efficiency and to lower marketing costs. Such a reorganization of marketing methods and facilities requires careful studies of the existing structure of our marketing system and the joint analysis of the economist and the engineer in order to find practical ways by eliminating costly methods and unnecessary services.

Many Wholesale Markets Inefficiently Organized

The wholesale markets for food products in many of our large cities are very inefficiently organized. Facilities have in many cases been built by rival railroads and are not properly located. In many cases the markets for local farm products and for truck receipts are poorly organized and are not coordinated with other parts of the market system. Such a situation leads to unnecessarily high costs of marketing and distribution. Not only the city consumer but the farmer, as well, has a vital interest in reducing such unnecessary costs.

Marketing methods are changing rapidly both in the city and in the country. Such developments as the growth of direct buying by large retail organizations, the increased distribution by motor truck, the direct marketing of hogs, the development of auction markets at country points, the greater number of commodities sold on futures contracts by commodity exchanges, and new developments in methods of cooperative marketing all are experiments which may lead to improved methods. The results of such experiments must be carefully watched and studied scientifically.

Much can be done to build up a better marketing system by the regulation of methods and practices either by law or by marketing agreements. In addition to such regulation, research and educational work are necessary in order to point the way to practical improvements in marketing.

Improved marketing and better education can also go a long way toward increasing the consumption of certain foods. Surveys made by this Department during recent years have shown a wide-spread underconsumption of milk. Many city families are also getting inadequate supplies of vegetables and other foods. At least a part of

this underconsumption can be remedied by better marketing and distribution.

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MASTITIS of Cattle May be Controlled by Tests and Sanitary Procedures

The best present evidence indicates that the cattle disease, mastitis, also known as garget and mammitis, exists to some extent in a large number of dairy herds in this country, probably in the majority. In some of these herds, nearly one-half of the milking cows are affected.

One species of bacteria appears to be responsible for about 90 percent of the cases of mastitis. The disease produced by these bacteria is as a rule of chronic form. In many cases no indication of infection is observed other than the occasional appearance of flakes in the milk and a decrease in milk production. Other cows, however, may suffer recurrent attacks of acute mastitis in which the udder becomes hot, swollen, and painful, and the milk secretion drops abruptly or may stop entirely. Under proper management the acute condition subsides rather quickly and the udder returns to its former state, but the infection remains. Relatively few cows seem to recover completely from the disease, which persists in the udder from one lactation period to the other without any disturbance in the general health of the animal.

Methods of Detecting the Disease

Although attempts have been made to cure the disease by various measures, none has yet proved to be generally effective. Since the mastitis bacteria appear to spread from the diseased to healthy animals through milking, either by machine or hand, a promising means of controlling the disease is the detection of the infected animals and milking them after the healthy ones. Many tests have been devised to find these diseased animals and some of them have been investigated by the Bureau of Animal Industry.

All but one of the tests studied depend upon detection of changes produced in the milk by the bacteria which cause mastitis. The test which does not relate to the composition of the milk is made by palpating the udder for the presence of changes in its physical character. When the udder becomes infected, the normal glandular tissue is gradually replaced by fibrous tissue. As a result hard nodules or diffuse areas of hardened tissue are felt when the udder is manipulated with the fingers. Such changes are always diagnostic of mastitis.

The most practical test for dairymen is to use the strip cup daily. This is simply a tin cup covered with a fine wire screen or a piece of black cloth. Two or three streams of milk are drawn onto the strainer from each quarter immediately before the animal is milked. Any quarter in which clots are found is infected with mastitis. Inasmuch as clots are not always found in all the infected quarters, the test is not entirely effective. Another measure which can be applied in the stable determines the degree of acidity of the milk as soon as it is drawn from the cow. The test consists in adding a given quantity of a color indicator, bromothymol blue, to a definite quantity of milk.