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REPORT OF THE CHIEF OF THE BUREAU OF
AGRICULTURAL ECONOMICS, 1937

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF AGRICULTURAL ECONOMICS,
Washington, D. C., October 28, 1937.

HON. HENRY A. WALLACE,
Secretary of Agriculture.

DEAR MR. SECRETARY: I transmit herewith report of the work of the Bureau of Agricultural Economics for the fiscal year ended June 30, 1937.

Sincerely yours,

A. G. BLACK, *Chief.*

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Nineteen thirty-seven is the fifth successive year of agricultural economic recovery. Farm income has been increased, farmers' debts have been reduced, farm real estate values are the highest in 6 years. The economic improvement has been widely distributed as prices of farm products during the first 9 months advanced to highest figures for the recovery period.

In contrast with the reduced crop production in 1936 is the near-record output of 1937. Production of principal crops is estimated at only 1.5 percent below the all-time high volume of production in 1920. And as usual when production greatly exceeds the effective demand and there is threat of burdensome surpluses, prices of many crops have broken sharply. The domestic demand outlook, also, has become less satisfactory than at this time last year.

FARM INCOME RAISED

The Bureau's preliminary estimate of farmers' cash income from marketings of farm products and from Government payments during the 1937 calendar year is \$9,000,000,000. This estimate was made in August. The cash income figure was \$7,865,000,000 in 1936, it was \$7,090,000,000 in 1935, and \$4,328,000,000 from marketings in the depth-depression year of 1932.

About \$1,000,000,000 of the estimated gain this year over last is from marketings of products, and the remainder from Government payments to farmers, chiefly for soil conservation. The increase from marketings will go chiefly to the producers of grains, fruits, tobacco, and dairy products. More than one-third of it goes to the wheat growers. In the case of the livestock producers the higher prices for their products have been offset by reduced marketings. Increases in income of truck-crop growers are offset by a decrease in income from potatoes.

As farm income has increased farm property has become more desirable and valuable. A 16-percent rise in farm real estate values during the past 5 years is revealed in the Bureau's annual surveys and supplementary data. As of March 1 the value per acre, as a national average, was within 15 percent of pre-war figures. There doubtless has been a further gain this year. The farm real-estate market has shown greater activity. Voluntary sales and trades have increased; forced transfers on account of mortgage debt or tax delinquencies have decreased. And as values have gone up and mortgage debts been reduced farmers' equities have increased.

MORTGAGE DEBT REDUCED

A study made in cooperation with the Bureau of the Census revealed a decline in the estimated total farm-mortgage debt of farmers, from \$9,214,278,000 in 1930 to \$7,645,091,000 in 1935—a reduction due largely to debt liquidation through foreclosures and related distress transfers on mortgaged farms. This study has revealed, also, a marked shift in the farm-mortgage holdings of various lending agencies. Whereas on January 1, 1928, the Federal land banks held about 12 percent of the estimated farm-mortgage debt, on January 1, 1935, the amount held by these institutions and the Land Bank Commissioner was nearly 33 percent of the total.

In 1928 the life insurance companies were the most important group of farm-mortgage lending agencies, holding nearly 23 percent of the total estimated debt, but by 1935 the holdings by this group amounted to only 16 percent of the total. Banks held in 1935 a slightly smaller percentage of the total than in 1928. And the relative importance of individuals as a source of farm-mortgage credit also declined. The Bureau's studies reveal that about 35 percent of all farms as of January 1, 1935, were mortgaged. About 42 percent of the farms operated by owners and about 25 percent of the tenant farms were so encumbered.

Surveys have shown also a progressive decline in personal and collateral loans to farmers by commercial banks, the total held by insured commercial banks at the end of 1936 amounting to \$593,614,000, or 26 percent less than at the end of 1934. The loans at the end of 1936 were less than one-sixth the amount held at the end of 1920 when the total was estimated at \$3,869,891,000. The reduction since 1934 represented mainly the repayment and refinancing of carry-over loans. Loans made for current purposes do not appear to have decreased in volume.

Studies of short-term credit by country banks were made in Wisconsin and Utah. They lead to the conclusion that the future serviceability of country banks as sources of agricultural credit depends largely on finding a means of protecting banks against excessive shrinkages of deposits. Were this accomplished, the slowness of payment of loans for the purchase of land and for land improvements, and loans for the purchase or maintenance of work animals and dairy herds would involve much less risk to banks than formerly.

A study dealing with demand deposits of country banks was completed and published as a technical bulletin. It showed that deposits in recent years have risen more rapidly than either farm prices or farm income, reflecting in part receipts by farmers in connection with Federal rehabilitation, drought relief, and other emergency measures. In addition the refinancing of debts of farmers and home owners, when the loan proceeds have been used in payment of locally held debt obligations, has increased the flow of funds.

PRODUCTION COSTS RISING

During 5 years of agricultural recovery since 1932 the costs of farm production increased less than the gains in farm income. But costs are rising more rapidly now, as is indicated by various indices. Farm taxes are rising; farmers will have paid about \$100,000,000 more for feed, seed, and fertilizer this year than last; farm machinery and repair costs are higher; farm building costs are

up; practically all harvesting costs are up; farmers' pay rolls for hired farm labor are up about \$100,000,000. This year's production will cost farmers about \$500,000,000 more than in 1936.

Cost-of-production studies have revealed a steady increase in the cost of producing corn, wheat, oats, and cotton during the past 5 years, but the increase in cotton costs has been less marked (due in part to relatively good cotton yields) than in the case of corn, wheat, and oats. Cost studies and the measurement of net returns to farmers are continuing Bureau projects. During the past year reports were issued on costs of production of potatoes, citrus, and 14 truck crops.

Farm real estate taxes per acre also are showing a distinct tendency to rise, following decreases each year from 1930 to 1934. The upswing appeared in many of the 1935 levies the country over, and became more general in 1936. The increase so far has been slight, but it is expected to carry further. On the other hand, farm land values have risen more rapidly than farm real estate taxes since 1934, with the result that taxes per \$100 of true value have declined.

LONG-TIME PROGRAM NEEDED

But while the economic gains of the past 5 years are distinct marks of progress, there are still many economic and social problems in agriculture which press for solution. The menace of recurring surpluses and of consequent economic losses has not been removed.

A situation in point was the need this fall for Government action to stem the tide of shrinking cotton prices resulting from the production of an 18,000,000 bale crop of cotton. And this year's gain in the income of wheat growers was largely the fortuitous result of relatively small harvests outside the United States. The whole situation as to cotton, wheat, and other farm commodities has emphasized anew the need for a long-time agricultural program that will free farmers and the Nation from widely fluctuating supplies and prices of farm products.

The control programs inaugurated by the Agricultural Adjustment Administration and later invalidated by the Supreme Court sought to achieve this by preventing the burdensome accumulation of surpluses. The surpluses accumulated in preceding years were moved into consumption and their depressing effect upon prices of current crops lessened. But now burdensome surpluses again loom as a check upon economic recovery.

CROP INSURANCE STUDIED

It must be obvious that the economic unbalance of agriculture cannot be righted by spasmodic emergency action alone. A permanent program must be worked out in the national interest to offset by means of crop insurance, granary, or other systems the vagaries of nature in alternately making and destroying crops. A few seasons of excessive production or a few seasons of heavy crop losses might well mean the loss of much of the economic gain which has been won by farmers in the past 5 years.

The possibilities of crop insurance as a means of protecting farmers against excessive crop losses were extensively explored by the Bureau during the past year. The experience with crop insurance in foreign countries and the history of crop insurance by commercial agencies in this country were studied. Conferences were held with insurance agencies, warehousemen, and others as to the practicability of various proposed systems of crop insurance. It was concluded that the most effective plan would be that of writing insurance on the basis of a percentage of the average yields on individual farms.

Statistical research in crop insurance was applied principally to wheat. It involved primarily the computation of county-average figures for the amount of insurance in bushels per acre and the amount of the premium that would be required in bushels per acre. These figures have been computed from samples selected from individual farm yields reported by farmers who participated in the wheat-adjustment program in about 1,650 counties the country over, and from county-average yields as revealed by the records of the Crop Reporting Board. A beginning has been made in similar research on cotton, covering more than 200 counties, and on corn, covering more than 100 corn-producing counties or districts.

AGRICULTURAL ADJUSTMENT

As in 1936, the keynote of the Bureau's work in farm management was agricultural adjustment, with especial emphasis upon soil conservation. New projects in cooperation with State and other Federal agencies dealt with farm organization and soil management in 44 States; farm tenancy in relation to agricultural adjustment in 8 States, and range management in relation to range distribution policy in 5 States. Special reports of results were made available to cooperating agencies.

A series of cooperative studies was made in selected soil-conservation problem areas, with regard to soil and water conservation practices and their relation to farm organization, farm management, and farm earnings. In five Corn Belt States cooperative studies were continued to determine the effects of the agricultural conservation program upon farm practices, especially with reference to livestock production and farmers' incomes.

Cooperative studies in four New England States dealt with feed production and feed-buying adjustments that make for permanent and profitable livestock farming in the Northeast. In New Hampshire a cooperative study was started late in the fiscal year to determine the influence of the agricultural-conservation program on farm operation.

A cooperative study was started in Minnesota, dealing with the earnings and financial progress of rehabilitation clients of the Resettlement Administration. A series of publications was issued jointly with the Resettlement Administration dealing with rehabilitation problems in the drought area of the Great Plains region. Studies of agricultural adjustments in Texas and South Carolina were continued in cooperation with the respective State agricultural experiment stations.

Other cooperative research included a reconnaissance survey of problems involved in a better utilization of national resources for wildlife production; and a study of the efficiency of dairy farming in various parts of the country. About 1,400 dairy-farm record books were distributed to dairy farmers in 13 States.

Studies of yields, prices, and returns of apple varieties in the Shenandoah-Cumberland and neighboring apple-producing areas were continued in cooperation with the Farm Credit Administration. Type-of-farming studies were continued in eight States. Other research and service work included plans for the development of farms on two Resettlement Administration projects in Texas, and the completion of reports dealing with the organization and operation of farms operated in connection with schools and sanatoriums of the Indian Service.

Studies of interregional competition were directed toward finding the highest income opportunities for the use of the resources of a given area. Since the adjustments necessary for an area to avail itself of its highest income possibilities must be largely brought about through decisions of individual farmers, the emphasis is on the competitive position of different types of operating units. Sample areas in New England and the Midwest which represent different conditions in dairy farming have been selected for special study.

An analysis of records from individual farms together with supporting information in nine Midwest dairy sections indicated that participation in the agricultural-conservation program is not likely to reduce the total feed supply available for dairy cows in these sections. In fact, an actual increase in total feed nutrients seems more probable. This, together with improvement in the quality of the roughage, may more than offset the effect of the reduction in grain feeds. Consequently, there may be a slight increase in dairy production. Conservation payments are a significant item in the total income of participating farmers.

FARM-LIFE PROBLEMS

Each year the Bureau makes an estimate of the farm population. As of January 1 it was estimated that there were 31,729,000 persons on farms, or slightly fewer than on January 1, 1936. For the first time since 1929 the farm population had declined. The Bureau reported that 1,166,000 persons had left the farms in 1936, and that 719,000 had moved to farms from villages, towns, and cities. But the net migration off the farms was nearly offset by an excess of farm births over deaths; births were estimated at 716,000, deaths at 349,000.

It is likely there has been a further decrease this year in farm population, as suggested by the statistics on farm labor and industrial employment, but the total farm population is probably still above 31,500,000. The Bureau con-

siders the conditions under which many of these people live a major economic and social problem which must be studied and analyzed to afford a better foundation for rural improvement.

Through financial aid of the Resettlement Administration and the Works Progress Administration, it has been possible for the Bureau to expand much-needed research in rural life. Twenty projects, ranging from studies of the social status of farm tenants to studies of rural population mobility, were organized this year. The results of this work, besides aiding both the Resettlement Administration and the W. P. A. in putting agricultural rehabilitation and relief programs into effect, are being organized for publication in a series of 18 bulletins.

Rural-life projects completed during the year included studies of drought distress and of rural trends in depression years, the preparation of graphic summaries of American agriculture, revision of farm-population estimates for the years 1930 to 1934, revision of farmers' bulletins on rural hospitals and rural community buildings, comparative studies of American and foreign resettlement programs and policies, a survey of standards of living in Appalachian Mountain counties, and social planning in Coffee County, Ala.

At the close of the year there were in progress 10 research studies dealing with farm-population mobility, farm standards of living, disadvantaged classes in American agriculture, an analysis of rural-rehabilitation families, social aspects of farm-land tenure, an analysis of farm-labor conditions, a social analysis of the drought area, cooperative studies of foreign resettlement programs and policies, and the preparation of State estimates of farm population.

FARMERS WITHOUT LAND

The increasing army of landless farmers is another problem which presses for solution. The situation as to farm tenancy, particularly in the South, has become acute. More than 2,865,000 farms the country over are now operated by tenants as compared with 1,025,000 farms 50 years ago—an increase of 180 percent.

The problem of the landless farmer ties in closely with the need for a program of land utilization and the retirement of submarginal land. Responsibility for developing such a program was assigned to this Bureau on September 1 by the Secretary of Agriculture under authority of the Bankhead-Jones Farm Tenant Act, "to correct maladjustments in land use."

The Bureau's research in land economics during the year included the classification of various types and grades of land according to their best long-time economic use. Studies in this field were made for the Resettlement Administration, the Agricultural Adjustment Administration, and other governmental agencies. One project completed was the economic classification of land in 120 counties for the Resettlement Administration. Area analyses and classification are being continued in additional counties.

The Bureau has assisted the various agencies in local planning studies for the resettlement of land, and in the development of a long-time program of submarginal land acquisition by identifying the areas where such activity seems to be justified, and by assigning an order of priority for such acquisition. Other research has included studies of the origin, character, extent, applicability, and effectiveness of measures intended to bring about readjustments in the use of land, and to prevent its misuse.

Bureau economists believe that the zoning of districts or counties for specific agricultural uses may be an effective way to prevent the repetition of past abuses in the use of land. An example of the application of zoning is found in northern Michigan where an enabling act originally passed in 1929 was amended in 1935 to provide for the establishment of districts or zones within which the use of land, natural resources, and structures, and the height, the area, the size, and the location of buildings may be regulated by ordinance. A majority of the people in four out of six counties have voted in favor of these regulations.

Cooperative projects included technical aid to the Tennessee Valley Authority in connection with land-acquisition problems, the appraisal of land required by the War Department in connection with flood control in the Mississippi Valley, and the collection of data relating to farm-land transfers, farm-mortgage debt, and taxes on farm real estate from the official records in about 900 counties. The last-named project was sponsored by the Bureau and financed by an allotment from the Works Progress Administration.

THE HIRED MAN

Closely related to the farm-tenancy situation is that of farm labor. As farm mechanization has increased there are fewer farm-labor employment opportunities; in many instances hired hands have been replaced by tenants. Since much hired labor is largely seasonal, the wage hand does not have an annual income which will provide an adequate standard of living. Obviously, any program of agricultural rehabilitation and security must include the farm laborer, as well as the farm tenant and the farm owner.

But just where and how the farm laborer should participate in the agricultural program cannot be determined in the absence of fundamental research as to his economic and social status and opportunities. The Bureau issues monthly reports on farm wages and employment, and has published in the past the results of occasional scattered surveys dealing with farm labor. Other than this, little is known in detail of the conditions affecting an army of nearly 2,500,000 farm wage workers. Research should include studies of the labor supply and demand; of wages, hours of work, and costs of living; of seasonal farm-labor migration; of living conditions; and of the relations between employer and the employed.

FOREIGN MARKETS

Events of the past year have demonstrated the opportunities for recapturing foreign markets for our surplus agricultural products. Although agricultural production has continued to increase in the principal agricultural importing countries, none of these countries has attained complete self-sufficiency. Whatever degree of it has been attained has been due mainly to reduced consumption and, until this year, to better-than-ordinary crop yields. But the competition for foreign markets has become more severe as production has expanded in the surplus-producing countries—notably cotton in Brazil, China, and the Union of Soviet Socialist Republics, and flue-cured tobacco in China and India.

The Bureau's studies of cotton consumption in various foreign countries reveal a reduction during the past quarter century of more than 1,500,000 bales in the consumption of American cotton by British mills. A part of this reduction has been due to changes in the relative supply of American and foreign growths, but more importantly to the fact that mill consumption of all cotton in the United Kingdom has declined about 1,000,000 bales, or about 30 percent, during this period. The decline in total British mill consumption has been due mainly to expansion of the cotton textile industry in the Orient.

Increasing foreign competition in combination with the recent droughts in the United States and with remaining foreign-trade barriers have operated to reduce the volume of American agricultural exports. But production shortages in the United States cannot long continue, as was amply shown by this season's large production of food, feed, and fibers. And the foreign-trade barriers are being gradually broken down through reciprocal trade agreements.

The Bureau is actively assisting the Department of State in the foreign trade policy which seeks by means of reciprocal agreements to increase foreign purchasing power for our export products by admitting larger imports of foreign goods, and to break down the barriers which have played so important a part in the loss of our foreign markets. Trade agreements were concluded during the year with Finland, Costa Rica, and El Salvador, raising to 16 the number of countries with which trade agreements are now in effect. These countries are markets for about 25 percent of our total agricultural exports.

A development of vital importance to American agriculture was an extensive exploratory study intended to lay the groundwork for a reciprocal trade agreement with the United Kingdom. Such an agreement would provide vast additional outlets, since the United Kingdom in the past has represented a market for about 35 percent of our agricultural exports.

FOREIGN RESEARCH STRENGTHENED

In all fields of foreign agricultural research the Bureau's work was appreciably strengthened during the year. New projects included appraisals of the recent French wheat policy, the agricultural producing capacity of Germany, the expansion of cotton production in Argentina, recent developments in Soviet agriculture, the present and potential agricultural resources of Manchuria, and agricultural production in the Philippine Islands.

There were many special commodity investigations, including the production and consumption of tobacco in Europe and in the Far East, the European hog situation from the point of view of the outlook for exports of American pork and lard, trends of cotton production in India and east Africa, European requirements for unmanufactured cotton, the physical condition of American cotton arriving in European markets, and the British market for citrus fruits which compete with American fruits.

Through its foreign staff of agricultural commissioners and attachés located in key markets and important producing regions abroad, the Bureau keeps in daily touch with the foreign agricultural supply-and-demand situation. Besides providing basic information for use in economic research, the dispatches from these foreign correspondents are broadcast to farmers and the trade in the United States through the Bureau's Nation-wide system of news dissemination by press and radio.

Imports of agricultural products over a period of years were studied to determine their tariff status and competitive relationship to domestic agriculture. It was learned that about 54 percent of the total value of agricultural imports consisted of products that are noncompetitive with domestic farm products. Of the noncompetitive imports 99 percent of the value was in products free of duty. Of the competitive agricultural imports about 75 percent were dutiable. Further studies indicated that higher tariffs on many of these competitive commodities would have had a negligible effect on the prices of domestic farm products. But as to cotton, an analysis indicated that the 7 cents per pound import duty on long staples has effectively reduced imports and increased the price and consumption of American long-staple growths.

THREE HUNDRED RESEARCH PROJECTS

Besides its many activities dealing with the issuance of crop and livestock estimates, the collection and distribution of farm market news, the preparation of grades and standards for farm commodities, the inspection of products for grade and condition in trade channels, the analysis of agricultural price movements, and the administration of many laws, the Bureau had at the close of the fiscal year more than 300 economic research projects under way and in various stages of completion, many of them in cooperation with other governmental agencies or with State agricultural experiment stations.

These research projects deal with practically every commodity. They include investigations in agricultural finance, the marketing of cotton, the making of crop and livestock estimates, the marketing of dairy and poultry products, changes in agricultural commodity prices, farm management and costs, and farm population and rural life. They include surveys in foreign countries whose agricultural products compete with American products in world markets, research in land economics, and research dealing with the marketing of fruits, vegetables, grain, hay, feed, seed, livestock, meats, and wool.

Other Government agencies draw heavily upon the Bureau for basic data and economic research and analyses covering many subjects. It is called upon to supply members of Congress with the information needed in the consideration of agricultural legislation, and by many Government administrative agencies, from the Agricultural Adjustment Administration and the Farm Credit Administration to the W. P. A. It is called upon for information by many State administrative and legislative agencies, and does much research also in cooperation with State agricultural experiment stations and State departments of agriculture.

Requests from the Agricultural Adjustment Administration for statistical data and analyses during the year were in connection with marketing agreements, soil-conservation programs, and general policy planning. Many requests are received also from public and private agencies for information relating to the supply, demand, and prices for farm products, requests which involve the maintenance of several thousand different statistical series. (During the year the Bureau appointed a committee of its own statistical experts to analyze critically and to improve wherever possible its statistical research methods.)

In Government and private litigation the Bureau is called upon to furnish expert testimony, ranging from the certification of the quality and prices of products, to the preparation of economic briefs in connection with freight rate hearings before the Interstate Commerce Commission. Its testimony is sought

also at hearings of the Packer and Stockyards Administration in connection with applications for increases in yardage rates.

At the request of the Agricultural Adjustment Administration, exhaustive studies were made of the incidence of the taxes levied under the Agricultural Adjustment Act on the processing of cotton, tobacco, wheat, corn, rye, rice, hogs, sugar, and peanuts. Approximately \$1,250,000,000 are potentially involved in processing-tax cases arising from invalidation of the act by the Supreme Court. Results of the Bureau's study are to be published by the Bureau of Internal Revenue.

CROP AND LIVESTOCK ESTIMATING

"Covering the drought" was the dramatic phase of crop and livestock reporting this year as the Bureau's full force of volunteer reporters and its field statisticians in the affected areas were organized to make possible the issuance of a series of special drought reports. In addition, more than 200 acreage, condition, yield, price, and other regularly scheduled crop and livestock reports were issued from Washington, and the usual quinquennial revisions made in the estimates of acreage, yield, and production of crops in each State. This process of revising estimates of preceding years in the light of new quinquennial census data is called by the statisticians "a major operation." It is complicated by many factors, it is statistical drudgery, but it must be done in the interests of statistical accuracy.

Work was begun on the collecting of statistics covering the production of chickens and eggs by large commercial farms so as to make possible the issuance of more complete poultry- and egg-production estimates; arrangements were made for getting additional records of carlot shipments of livestock and wool from the Western States, and of boat shipments of wool from Pacific coast ports; a new series of estimates of livestock numbers on farms by States, as of January 1, was prepared for all years back to 1867, and revised estimates of milk cows used as a basis for estimating milk production in earlier years.

For several years the Bureau has endeavored to meet the requests of vegetable producers and their organizations for estimates covering a wide variety of crops grown under greatly diverse conditions and sold either for fresh consumption or for canning. Funds for this work have been limited, and there is always the danger of spreading the work too thin.

With the aid of W. P. A. funds the Bureau was enabled to complete extensive surveys of fruit and nut trees by varieties and ages in California, Washington, Oregon, New York, and Virginia, so as to provide a more adequate basis for determining the probable trend of production by varieties in future years—a service which should give greater stability to fruit raising.

State estimates of tobacco production by types were compiled, back to 1919, and estimates for all types combined were revised, back to 1909. The cane-sugar estimates were made more useful by determining the actual sugar content of the raw sugar made and converting the current estimates from an "as made" to a uniform test basis. The estimates were extended to cover the expanding sugar industry of Florida. Preparations were made also to start estimates of the commercial production of peanuts.

A new series of estimates was compiled of prices which farmers of each State received each month from wholesale sales of milk, covering all years from 1910 to 1937. A series of estimates of the number of persons employed on farms was completed, and studies continued of weather data as related to crop production. The Bureau's regular crop reports were expanded to include a nontechnical discussion of prospective food and feed supplies.

A new development was the preparation of maps with which to supplement the crop reports. The maps are simply drawn to show crop or pasture conditions by counties, and frequently are flashed out by wire by the press associations for publication along with the crop reports.

As a result of the drought and consequent public concern as to the adequacy of the food supply, the Bureau issued two reports on this subject, one related to total supplies, and the other to per-capita supplies of a large number of foods.

In a food-consumption survey in New York it was learned that expenditures for meats and for dairy products are more affected by changes in income than are expenditures for cereals and vegetables.

INCOME PARITY AND PRICE ANALYSES

During the year the Bureau issued its annual estimate of income from farm production in 1935, preliminary estimates of cash income from farm marketings in 1936, monthly estimates of income from farm marketings, monthly estimates by States and regions of receipts from principal farm products, and indexes of income from farm marketings by groups of commodities.

A special research project entitled "Income Parity for Agriculture," was undertaken at the request of the Agricultural Adjustment Administration for use in analyzing the purchasing power of the net income per person on farms as compared with that of persons not on farms, during the 5-year period August 1909 to July 1914, and the period 1924 to date. This project has involved the collection of much original material relating to farmers' expenditures, the utilization of farm products, sources and amounts of nonfarm income accruing to farmers, the distribution of national income as between persons on farms and persons not on farms, and the cost of living of persons in farming and in nonfarming areas.

Besides reporting the prices of farm commodities, the Bureau seeks to evaluate the many factors of supply and demand which influence prices. Studies in this field during the year dealt with the factors affecting prices and production of livestock, the consumption and prices of cotton, and the prices of grain, poultry, eggs, fruits, vegetables, tobacco, and dairy products, and the development of new statistical techniques in price analysis and general economic research.

The price studies indicated that farm income from meat animals is affected chiefly by changes in income of consumers and changes in processing and distribution charges. (Charges for processing and distribution were relatively stable from 1933 to 1936, but increased materially in the first half of 1937.) As to variations in the cattle supply and slaughter, preliminary conclusions based upon a study of 35 years of records are that variations in cattle slaughter are associated with changes in feed and cattle prices; that variations in steer slaughter are associated with changes in the movement of cattle on feed and changes in range conditions in the Western States; and that variations in the slaughter of calves are related to changes in prices of dairy products and prices of veal calves.

Correlation analyses involved in the study of grain prices were brought up to date and revised, and weather and wheat-yield studies for Argentina and Australia were summarized and evaluated. New price analyses for corn were made, including an evaluation of the influence of wholesale prices and of the effect of market receipts on corn prices. It was found that the seasonal volume of receipts is not an important factor influencing the seasonal trend in corn prices. New price analyses for oats showed that annual variations in the price of this commodity are associated with changes in the supply of oats and the general price level.

Outstanding facts developed in studies of prices of fruits and vegetables are that the crop-year average price of each major fruit and vegetable is dependent largely upon the supply of the given commodity and the level of income of consumers, as measured by the index of incomes of industrial workers. No statistical evidence was uncovered that important price changes were due to competition between fruits or vegetables, except in the case of sweetpotatoes.

OUTLOOK REPORTS

In the fall of 1936 the Bureau issued its thirteenth annual Outlook Report, summarizing the principal facts and conclusions dealing with the domestic and foreign demand for farm products. It summarized the situation and outlook as to cash crops, feed crops, livestock, and livestock products. It discussed the probable course of farm prices and farm costs under given combinations of economic conditions.

The outlook work during the last 13 years has been developed into a broad agricultural extension program designed to aid farmers, the agricultural extension services and administrators of adjustment, security, and conservation acts in planning production and marketing programs. It consists essentially of assembling, analyzing, and interpreting basic information dealing with the many economic factors which may affect the prospective demand for farm products.

The reports, each fall, are completed in cooperation with representatives of the State agricultural colleges and of other Government agencies concerned with agricultural economic adjustment and advancement. They are made available for the use of extension and other workers in developing local, regional, and national agricultural programs. A summarized outlook report in condensed and popular form for practical use by farmers direct is also issued.

A valuable part of the outlook work is the preparation of charts which depict as in no other way the relation of economic forces in their current and future effects upon the various agricultural industries. They are distributed among county agents and other extension workers for use in connection with State and local agricultural planning programs and outlook meetings.

DISTRIBUTION METHODS STUDIED

Changes of far-reaching effect have been made in recent years in the distribution of products from farms to markets. An outstanding change is the increasing use of the motortruck. It is estimated that 40 to 50 percent of all shipments of fruits and vegetables and an increasing proportion of the marketings of livestock, grain, hay, feed, poultry, eggs, milk, and many other products now move in motortrucks. Ways are being sought to report these motortruck movements as is done in the case of rail transportation.

In early days all farm crops were hauled to market in wagons and the livestock driven in on foot. But with the coming of the railroads and the building of railroad terminals many of the old city farmers' markets fell into disuse. Each railroad built its own terminal in the cities in competition for the increasing business. Now the scene once more has changed with the coming of motor transport with the result that terminal facilities for handling fruits, vegetables, and other farm products in many large markets have become obsolete. Improperly regulated, uncoordinated with one another, and inefficiently operated, they are an economic waste.

Marketing facilities and market conditions in 40 cities are being studied with a view to recommending ways to remedy this situation. During the year, for instance, a study and report were made in cooperation with the State agricultural colleges of New Jersey and Pennsylvania of the Philadelphia wholesale and jobbing markets for fruits and vegetables, in which the establishment of a consolidated terminal was one of the principal recommendations. The Bureau hopes to release soon a report discussing several problems which seem to be common to a large number of terminal markets. Some information has been gathered also on farmers' markets and so-called regional markets for the handling of motortruck receipts for use in studying the whole problem of farm-to-market distribution.

Two studies are under way dealing with economic problems in connection with the large-scale processing and distributing of farm products. One, in cooperation with the New Jersey State College of Agriculture, deals with the growth of the chain-store systems and its effect upon the marketing of fruits and vegetables in the northeastern cities; the other, in cooperation with the University of Wisconsin, deals with corporate developments in the manufacture and distribution of dairy products and the effect of these developments upon dairymen in Wisconsin and surrounding States.

MASS MERCHANDISING

One of the chief purposes of the chain-store study is to help farmers in the Northeast formulate a marketing program in a situation where more than 25 percent (and the proportion is increasing) of their market fruits and vegetables is being bought and distributed by the chains. As this proportion increases, a steadily decreasing volume will go through the regular wholesale markets, a situation which may seriously affect the bargaining power of the producers.

In Wisconsin and surrounding States, during the past 15 years, large corporations—meat packers, chain-store systems, and dairy corporations—have entered extensively into the manufacturing of dairy products. Small creameries and cheese factories are being replaced by large plants owned and operated by corporations which are factors also in the terminal handling of manufactured dairy products and in the distribution of fluid milk.

In New England, in cooperation with the New England agricultural experiment stations, the New England State departments of agriculture, and Harvard and Clark Universities, a series of studies also is being made of the marketing

of dairy products, such as the trucking of milk and the operation of local milksheds. Sanitary milk regulations have been analyzed, and a report will be issued soon summarizing these regulations in all cities and towns in New England. A collateral project is an effort to coordinate research in milk marketing by the several experiment stations and other research agencies in this region.

RESTRICTIVE STATE LEGISLATION

A factor of increasing importance in the distribution and sale of farm products the country over is the growing volume of State legislation which restricts the interstate movement of these commodities. In many cases inspection laws have been enacted as public health measures, but in others the objective seems to be to expand home industries by means of thinly disguised trade restrictions on farm products from other States. These laws are being studied by Bureau economists with a view to working out a program of Federal, State, and municipal legislation and regulation that will facilitate rather than hamper free trade among the States and adequately protect consumers' interests.

Progress can be reported in the Bureau's studies of farm-to-market costs of distribution. A report has been issued summarizing price spreads for 58 of the more important foods, the data are being kept monthly up to date, and annual statistical supplements will be issued. This research reveals a marked increase in the farmer's share of the consumer's food dollar since 1932, but the amount is still much less than that obtained during the decade from 1920 to 1929.

MARKET NEWS IMPROVEMENTS

The Bureau during the year began a critical analysis and appraisal of its farm-products market news service. This service—a vast news network covering farm-market conditions in nearly 100 producing regions and consuming centers the country over—has been in existence for more than 20 years. Daily, weekly, and monthly reports on practically every farm commodity are issued from 48 cities. They are published by the daily and farm press, broadcast from more than 100 radio stations which donate the radio time as part of their educational programs, and are received by several hundred thousand farmers and farmers' organizations by mail direct.

The objective is constantly to improve this market news service so that farmers may be kept informed up to the minute on market conditions and prices. The Bureau is studying the needs of farmers and dealers for market news and endeavoring to satisfy these needs. Reports are being tested for maximum accuracy and new ways being sought to get these reports economically into the hands of more farmers.

The market news service during the year covered 27 public livestock markets which handle the bulk of the cattle, hogs, sheep, and lambs sold through central markets. It covered the wholesale meat markets at Boston, Chicago, New York, Philadelphia, and San Francisco, and the Boston wool market. It reported from Des Moines the direct marketing of hogs covering trade at 10 packing plants and 22 concentration yards in interior Iowa and southern Minnesota, and covered direct and contract sales of sheep and lambs in Western States through offices at Casper, Wyo., Ogden, Utah, and San Francisco, Calif.

The service on fruits and vegetables covered more than 50 products at 22 markets from Atlanta, Ga., to Seattle, Wash. It issued reports in addition from more than 44 temporary field stations in important producing districts. Financial assistance from 24 States made it possible this year to mail fruit and vegetable news reports to more than 100,000 persons. More daily and weekly bulletins were issued than ever before.

In addition to its regular reports on dairy and poultry products, the Bureau issued a new weekly report on the receipts of eggs at egg auctions and producers' assembling plants in the Northeastern States, and incorporated more detailed data in its monthly hatchery report. The hatchery report now carries information as to the sexing of baby chicks by commercial hatcheries, a recent practice which makes it possible for hatchery men to guarantee the sex of chicks sold as "sexed chicks."

Spot cotton markets were reported each day, and weekly cotton market reviews issued at Atlanta, Dallas, Memphis, and Washington. A weekly report was released covering prices of cotton linters at mill points. Weekly reports of the grade and staple of cotton ginned were issued at key points in the Cotton Belt, and various other monthly and seasonal cotton reports released.

There was a marked increase in the news service covering grain, hay, and feed in response to requests for information on supplies and prices of grain and feeds as affected by the 1936 drought. Special drought news bulletins were prepared for issuance at Kansas City, and many reports issued also in response to requests for information as to supplies and prices of seeds.

A number of other innovations were made in the news service covering all commodities in response to the drought emergency demands for daily and weekly market reports. Besides the commodities already cited reports in regular service were issued on peanuts, honey, and tobacco, and on the quantities of products in cold storage.

Only the high lights of the market news service can be here described; its scope in detail, showing kinds of reports issued, and where and when they are obtainable, is covered in a 60-page mimeographed booklet which is available for persons interested in the markets.

COTTON-PRICE STUDIES

Bureau studies covering a number of years reveal that the prices received by cotton producers in many local cotton markets reflect only a small proportion of central-market premiums and discounts for grade and staple length. This situation doubtless results in the production of larger proportions of the lower grades and staples than if prices to growers reflected a larger proportion of the grade and staple premiums and discounts quoted in the central markets; it tends also to lower the competitive position of American cotton growers.

One of the principal factors responsible for the relatively small premiums and discounts for quality reflected in prices to growers is a lack of adequate information on the classification and commercial value of the cotton at the time it is sold by growers. With a view to improving the price-quality relationships in farmers' local markets, the Bureau is developing plans for establishing and maintaining a practical and dependable cotton-classification service to growers in one-variety communities, and for supplying farmers with adequate information on cotton prices for use in selling cotton. It is believed that a service of this sort would increase the bargaining power of farmers who produce the higher quality cotton, encourage quality improvement, and tend to strengthen the competitive position of American cotton growers.

Studies of the relation of spot cotton prices to prices of futures contracts have indicated that futures trading generally tends to lessen the seasonal changes in prices of cotton as well as changes from one season to another, but that futures trading no doubt increases the frequency of changes in cotton prices and may at times augment these changes. As to the protection afforded by futures trading it is believed that this facility sometimes makes possible a reduction in the cost of merchandising cotton by supplying a means for obtaining protection from changes in prices of spot cotton, and for making savings in interest charges in capital requirements.

COTTON-MARKETING RESEARCH

A South-wide study of cotton marketing is under way, designed to obtain comprehensive quantitative data regarding the channels through which growers market cotton, their knowledge of the quality and market value of their product, the buying and selling practices of first buyers, the market outlets for first buyers, and the attitude of growers and marketing agencies toward possible changes which would improve the functioning of the marketing system.

Preliminary results of this study, covering 101 widely distributed markets, indicate that cotton growers and first buyers generally are not "quality conscious"; that there is an apathy on the part of many growers and a disinclination by many marketing agencies to cooperate in making needed adjustments in marketing; that improvements in marketing procedures are likely to evolve slowly, depending largely upon technological improvements in auxiliary services which may be provided by governmental agencies.

A special study dealing with cotton ginning and wrapping costs shows that rates to growers have increased gradually since 1931 when they averaged \$4.12 per 500-pound gross-weight bale to \$5.04 per bale during 1934 and 1935. Details showing a wide range in rates charged by individual gins have been published under the title "Rates for Ginning and Wrapping American Cotton, and Related Data, Seasons 1928-29 to 1935-36."

MANY COTTON PROJECTS

Bureau work on cotton includes administration of the Cotton Futures and Cotton Standards Acts, the issuance of cotton-quality reports, the preparation of cotton grades and standards, studies of the physical properties of cotton fibers, cotton-spinning tests, projects designed to improve cotton-ginning technique, economic studies of cotton prices, studies of methods and costs in marketing cotton, and the development of new industrial uses for cotton.

A list of the cotton projects fills more than 25 closely typewritten pages. Only some of the high lights can be covered here. They include studies of the universal standards for the grade of American upland cotton, the publication of detailed information concerning the volume of cotton futures trading in the United States, and the classification and certification of more than 160,000 bales of cotton, under the Cotton Futures Act, as compared with less than 60,000 bales during the preceding fiscal year. More than 648,000 bales were classified under the Cotton Standards Act, compared with less than 98,000 in 1936, much of the increase being at the request of the Commodity Credit Corporation for use in settling loan accounts with growers.

The standard grades for American cotton linters now are extensively used by the cottonseed-crushing mills, especially in meeting the grade requirements of the rayon industry. During the year more than 300 cotton classifiers were licensed under the Cotton Standards Act. They classified more than 4,000,000 bales of cotton.

On April 13 the Grade and Staple Estimates Act was amended by Congress to make possible the classifying of cotton for cooperating producer groups. The amendment provided also for the issuance of timely cotton-market information. But the legislation carried no appropriation for the work, and the service could not be put into effect this year.

Studies which are highly technical but which are of basic importance to all growers and users of cotton deal with the physical properties of the fibers, their spinning quality, and the development of instruments and methods for making such precision determinations. Much of this work deals also with the discovery of physical ways to grade and class cotton and thereby to minimize the possibility of human error. To conduct this exacting research on a properly scientific basis a new cotton laboratory was made available to the Bureau.

Tests have revealed that cotton deteriorates in color—an important grade factor—when it is exposed in the field to weather damage. Reports of the results of these tests have been made available to agricultural extension agencies. Now the Bureau's technologists are trying to learn whether baled cotton in storage undergoes color changes. For this purpose, measured samples are in test storage in offices and warehouses in 14 places, from New Bedford, Mass., to San Pedro, Calif.

Cotton-ginning investigations, in cooperation with the Bureau of Agricultural Engineering, have resulted in the adoption of improved designs of gin-saw teeth by ginning machinery manufacturers, the installation of cotton-drying systems by ginners, and the issuance of recommendations as to cotton harvesting, conditioning, and handling methods best conducive to efficient and economical ginning and the production of high-quality ginned lint.

COTTON-QUALITY PROPERTIES

Investigations of the relation of certain seed-cotton properties to ginning have revealed that cotton with large seeds requires more time and energy to gin than cotton having small seeds; that cotton with heavily fuzzed seeds also requires more time and energy to gin than cotton with less fuzzy seeds; that the greater the amount of lint per given weight of seed cotton, the more time is consumed in ginning, but that the percentage of lint appears to have no effect upon the amount of energy consumed.

Spinning tests of cotton harvested with a new mechanical cotton picker which was extensively publicized last year have revealed that even with the use of full batteries of gin cleaners and extractors the machine-picked cotton was of appreciably lower grade and yielded much more manufacturing waste than hand-picked cotton from the same field and similarly treated. Cotton harvested early in the season by machine was more wasteful, because of the green leaf picked with it, than cotton gathered later when the leaves had dried.

COTTON-BALE IDENTIFICATION

Bureau technologists have developed a method for preserving the identity of a bale of cotton from the gin through the various marketing channels to the spinner. It consists of a simple metal tag which cannot be removed until the bale is opened since it is held in place by a wire imbedded in the cotton. Each tag would be inscribed with the name and address of the ginner. The Bureau believes that in addition to other obvious advantages, the use of this tag would tend to facilitate the sale of cotton on description and reduce the waste in marketing incident to the duplication of sampling, classing, and weighing services.

NEW USES FOR COTTON

The principal new cotton product developed by the Bureau during the year is a bag in which Cuban raw sugar may be shipped. Similar cotton bags for Hawaiian raw sugar are being used in experimental shipments. Specifications were developed for a number of cotton fabrics, such as a cotton bagging which will withstand high-density compression without the necessity for "patching" the baled cotton, a shade cloth for nursery stock, a fabric for soil fixation, a gas-tight fabric for use in the fumigation of tobacco beds, and a fabric for shading seedbeds.

Studies were made and reports written on the use of cotton and other materials in bags for cement, of cotton in combed marquisettes, in automobile tires, in bags for flour, and in bags for sugar.

GRAIN STANDARDS AMENDED

The official grain standards were amended during the year in order principally to provide grades for mixtures of flint and dent corn, maximum limitations for shrunken and/or broken kernels in the important commercial grades for wheat, and a new classification for mixtures of durum and other wheats entitled "amber mixed durum."

At the close of the year there were 388 licensed grain inspectors, inspection was available at 176 points in 32 States, and there were 45 Federal grain supervision offices at the important grain markets. Administrative field headquarters offices were maintained at Chicago, Ill., and Portland, Oreg.

Inspection of 1,002,797 carloads of grain in railway cars, cargo vessels, elevator bins, trucks, and sacked lots was made by licensed grain inspectors as compared with 1,079,811 carloads for the year 1936 and 1,079,433 carloads for the 5-year average 1932 to 1936, inclusive. A total of 30,939 "sample inspections" was made during the year by all licensed inspectors at all inspection points in the United States, 24,475 of which were made by the licensed inspectors in the Pacific Coast States principally at country points and primarily for the use of grain producers.

Federal grain supervisors handled 33,354 appeals from original inspections during the year as compared with 49,416 for the year 1936 and as compared with a 5-year average of 46,067. The appeals handled during the year represented 3.3 percent of the original inspections as compared with a 5-year average of 4.4 percent.

The Chicago and Portland Boards of Grain Supervisors handled 1,084 appeals from the grades assigned by district supervisors as compared with 983 such appeals for the year 1936. Board appeals represented 3.2 percent of the appeal inspections made by district supervisors as compared with 2 percent for the year 1936. The two boards received and reviewed 43,790 official supervision and appeal samples from the 45 field supervision offices during the year for the purpose of standardizing the interpretation and application of the standards by district supervisors and licensed inspectors.

COOPERATIVE RICE INSPECTION

Federal-State permissive rice-inspection service supervised by the Bureau was conducted during the year under agreements with the States of Arkansas, California, Louisiana, and Texas. Federal rice inspection was conducted at New Orleans. Four rice-inspection laboratories were operated in the Southern States and three laboratories in California. In addition officially authorized sampling service was available in the Southern States of all important rice-milling and marketing centers.

The total number of inspections of milled, brown, and rough rice during the year was 4,678, and the total quantity of the rice inspected was 1,743,980 hundredweights. Of this total quantity of rice inspected, 1,711,178 hundredweights were milled rice, 17,232 hundredweights were brown rice, and 15,570 hundredweights were rough rice.

In the Southern States the year marked a noticeable increase in the applications for inspection of milled rice moving in domestic commerce. In the California rice area an unusual and important special service was rendered in the inspection of 276,000 hundredweights of milled rice, the supervision of its granulation, and the final inspection of commercial lots of such rice as brewers' rice.

GRAIN RESEARCH

Grain standards research pertained principally to (1) the formulation of grade specifications for mixtures of flint and dent corn and for mixtures of durum wheat and other wheats, and of grade limitations on shrunken and/or broken kernels in the wheat standards; (2) flaxseed dockage and its determination; and (3) methods and sieves for determining the factor "cracked corn and foreign material" in the grading of corn. Studies were continued of the malting properties of barley and of grade factors and specifications to indicate such properties.

Studies were made of newly designed electric moisture meters to determine their usefulness and efficiency for grain-inspection purposes, and recommendations were made for needed changes and improvements in the devices. Studies were concluded successfully of a battery eliminator to attach to electric moisture meters in order to utilize commercial electric current for operating the resistance indicator of the meters in lieu of battery-generated current, thus to eliminate occasional inaccurate tests resulting from weak batteries. Attachments were perfected, and methods of operation and conversion charts were formulated for use in operating electric moisture meters with samples of extremely cold grain for the purpose of improving the accuracy and uniformity of the tests. A revised and complete handbook of instructions for the operation of the electric moisture meter now in use by the Bureau was prepared and released to all operators of the meter.

A research project was inaugurated to study methods and apparatus for promptly testing grain to indicate its soundness or unsoundness for commercial utilization. Definite progress was made in attaining the ultimate and long-desired objective of a definite and practical test to measure the soundness of grain.

Improvements in the Federal dockage tester were made in the form of an automatic feed hopper, standardized resilience in the rubber bumpers, and in the suspension of the lower sieve carriage, all for the purpose of standardizing the action of the device to effect further improvements in the accuracy and uniformity of mechanical determinations of dockage, cracked corn, and foreign material, and other sieving tests.

Bureau employees gave assistance to the Federal Surplus Commodities Corporation and to the Farm Credit Administration in the selection, purchasing, cleaning, and storing of approximately 3½ million bushels of wheat, oats, barley, and flaxseed for emergency seed purposes in Middle Western States stricken by drought and rust during recent years.

Bureau employees were given emergency responsibilities in the administration of the Federal Seed Act in cooperation with the Bureau of Plant Industry. These responsibilities included the checking of import records and the weighing and staining of 200 large commercial lots comprising approximately 17,000,000 pounds of red clover and alfalfa seed imported to meet the emergency demand for such seed caused by restricted domestic seed production during recent years.

HAY, FEED, AND SEED

A number of projects were initiated looking toward the improvement of existing hay, bean, and soybean standards, the promulgation of standards for additional products in this group, and toward improvement of the Bureau's inspection services covering these commodities. Inspections covered more than 104,640 tons of hay, more than 2,350,000 bags of dry beans, more than 40,000,000 pounds of split peas under tentative standards in use for the first time.

A total of 21,425,000 bushels of soybeans were inspected, which represents 72 percent of the total production in 1936 as compared with 66 percent of the total production inspected in 1935. Inspections were made of 1,476,000 bushels of peas, which were 48 percent of the 1936 crop. This percentage was slightly larger than for 1935. Approximately 52,100,000 pounds of alfalfa seed and 8,700,000 pounds of red clover seed were verified during the year. The verification of a smaller quantity of red clover seed than in the fiscal year 1936 was due to the very short crop produced.

Bean dockage inspection as a part of the regular bean-inspection service was inaugurated in Wyoming, Idaho, and Washington, and more than 26,000 bags (principally seed garden beans) were certified. Eighty-six dealers were enrolled in the seed-verification service, and new regulations drafted to strengthen the service this year.

Standardization research included studies to determine the relationship of oil and protein content to the quality of soybeans; an amendment to the standards for beans was proposed to permit greater flexibility in the type of sieve used and to allow inspectors to consider the principal use of the various types of beans when inspecting for dockage and defects, and several refinements were incorporated in the standards for dry peas. Minor changes in the tentative standards for split peas were accepted by dealers and manufacturers, and it is proposed to promulgate the standards officially this year.

Research designed to improve the standards for hay included studies of the chemical composition of the leaf blades, leaf sheaths, heads, and stems of the timothy plant and the leafiness of clover. Over 100 sets of type samples to illustrate the Federal hay standards were prepared and furnished to State colleges and other institutions for educational work, and many samples were graded for various Government departments and State institutions which are carrying on experimental work for the purpose of determining the feeding value of various kinds of hay. Training schools for veterinary officers of the United States Army and for veterinary technicians were held in Washington. Two manuscripts were prepared for farmers' bulletins—one on high-grade alfalfa and the other on high-grade timothy and clover hay.

Samples of thresher-run timothy and Sudan grass seed were analyzed in connection with the development of uniform methods of determining dockage. Ways to use hand screens or small cleaning machines in removing impurities from thresher-run seed were studied. A study was made of the relative feed value of different feeds based on digestible protein and carbohydrates equivalent at given values for the principal protein and carbohydrate feeds, and a new and more comprehensive price index was constructed covering seasonal variations in feedstuff prices.

There was a marked increase in the news service covering grain, hay, and feed in response to requests for information on supplies and prices of grain and feeds as affected by the 1936 drought. Special drought news bulletins were prepared for issuance at Kansas City, and many reports issued also in response to requests for information as to supplies and prices of seeds.

LIVESTOCK-MARKETING RESEARCH

Economic research dealing with livestock and meats included studies of livestock auction markets, of relationships between livestock and meat prices, of shifts and trends in livestock production and slaughter, and of direct marketing. A survey revealed there are more than 1,200 livestock auction markets the country over. About 900 are in the Corn Belt States. Iowa has about 200.

A study was made in cooperation with the Iowa Agricultural Experiment Station and the Farm Credit Administration of the development of growth of the livestock auctions in Iowa, the status of these auctions as to physical facilities and financial set-up, and the service being rendered to livestock producers. Results of this study are being summarized for publication.

A reconnaissance survey was made of the livestock market situation and market facilities in the South in view of the recent expansion in livestock production there, an increase which has caused some of the larger slaughtering concerns to expand their southern facilities. There also has been an increase in the number of livestock auction markets, and a greater interest by producers in the sale of livestock on a grade basis.

Studies of regional shifts in livestock slaughter revealed significant changes in the last 15 years as a result of shifts in production and an increasing tendency among slaughterers to expand operations in producing areas. There

have been marked increases in slaughter in the northwestern Corn Belt and in the Southern and Mountain States. Slaughter has decreased in the North-eastern States and in the eastern and southwestern Corn Belt.

Surveys revealed that in 1936 about 20 percent of the cattle, 30 percent of the calves, 48 percent of the hogs, and 28 percent of the sheep and lambs slaughtered by wholesale operators were bought direct by packers. This method of buying has increased enormously since the World War, but its greatest expansion has been in the northwestern Corn Belt. It consists essentially of the buying of livestock at country points instead of at public stockyards.

Studies of the relationships between retail and wholesale prices of meats and between meat prices and livestock prices are important research projects. Wholesale and retail beef prices are analyzed in their relationship to cattle prices, and determinations made of byproduct values. These studies reveal marked fluctuations in the spread between live-steer values and product values.

In studying the relationships of hog prices to prices of hog products, ways to estimate approximate yields of different products from hogs of different weights, grades, and dressing yields have been developed and are being checked with data obtained from actual slaughter tests.

The Bureau issued a preliminary report presenting part of the results of studies on the relationship of hog prices to wholesale prices of hog products over a period of 32 years. A more complete report showing seasonal and long-time changes in the relationship of product prices to hog prices is to be published.

MEAT OUTPUT DECLINES

Bureau studies revealed that the per capita production of all meats from slaughter was at its highest level during the period from 1899 to 1903, the latter year marking the peak. Output then dropped sharply until 1914, it increased somewhat during the World War period, but fell off in 1920 and 1921. Increases after 1921 were followed by further reductions until 1930.

The output of meats held near the 1930 level until 1935 when there was a sharp decline as a result of the 1934 drought. Per capita production in 1935 was 36 percent less than in 1908, and 34 percent less than the 10-year average 1900-1909. Decreases in exports and increases in imports during the 36-year period caused less extreme changes in per capita consumption than in production, but over this long period per capita consumption has declined because domestic production has not kept pace with the increase in population.

GRADES FOR LIVESTOCK

Research in the standardization and grading of livestock was intensified and expanded to facilitate more accurate comparisons between livestock prices, wholesale dressed-meat prices, and retail meat prices. Plans were drawn for a study of the extent to which livestock prices as quoted by class and grade correlate with dressed-meat prices as quoted by corresponding class and grade.

Standards for stocker and feeder cattle and calves and for slaughter, stocker, and feeder sheep and lambs were prepared; standards for "specialty" meats and meat products are in process of preparation. More than 547,000,000 pounds of meat and meat products were graded at the request of packers, wholesalers, buyers, and others, compared with less than 424,000,000 pounds the preceding year.

Many lamb-grading demonstrations were given in Virginia, West Virginia, and North Carolina to familiarize public and private agencies with the tentative standards for market classes and grades of lambs. Cattle-grading demonstrations were given in the eastern Central States for the same purpose in connection with the Government grades for cattle. In cooperation with the Extension Service in 8 Western States, 40 livestock-grading demonstrations and marketing meetings were held.

A cooperative agreement was signed with the Virginia Agricultural Experiment Station, the Virginia State Division of Markets, and the United States Bureau of Animal Industry to study the differences between cattle and beef finished on Virginia pastures and those finished on standard grain rations. This research is expected to yield information for use in planning soil conservation and land utilization policies for the southern Appalachian region.

WOOL RESEARCH

Research on wool included the preparation, in cooperation with research organizations in the wool industry, of specifications for grades of wool tops, based upon diameters of fibers and extent of dispersion. The practicability of commercial use of these specifications is being studied. In fiber research much data dealing with the fiber measurements with respect to the different grades of wool top were obtained.

An extensive program of research dealing with wool shrinkage and wool values, the program being actively supported by leading wool-growers' organizations, was initiated in cooperation with experiment stations in two States. The objective is to develop ways to determine the value of wool clips through the testing of representative samples. Wool-marketing research dealt with auction sales methods newly introduced into the United States.

NEW DAIRY AND POULTRY RESEARCH

Many research projects were conducted in connection with dairy and poultry products, in addition to the improvements noted elsewhere in this report in the market news service on these commodities. They dealt with subjects such as the ratio of butter prices to wholesale prices of basic commodities, the relationship between per capita production and consumption of butter, costs of manufacture and distribution of butter and cheese, the production of skim-milk and buttermilk products, foreign trade of the United States in manufactured dairy products, changes in seasonal variations of butter prices and market receipts of butter, numbers of milk cows on farms, the production and consumption of condensed and evaporated milk, trends in prices of butter-fat in relation to feed grains and meat animals and other agricultural products, and the production and consumption per capita of fluid milk and manufactured dairy products.

Other projects included an economic survey of the live-poultry industry in New York, N. Y., revision of the handbook of poultry and egg statistics, and of a handbook of dairy statistics, preparation of a report of a survey covering the consumption of eggs in New York, and much research and service work in connection with the standards and grades for dairy and poultry products and their increasingly widespread commercial use.

Grading and inspection work was expanded through increased commercial grading in terminal markets and the extension of grading services at country points, particularly on butter concentrated at large shipping points where it is purchased from cooperative and independent creameries on a grade basis, and the Government-graded butter is packaged with certificates of quality for retail distribution.

The egg-grading service was extended to several places in Michigan and North Carolina, and at additional places in other States where this work was already under way. There was a further expansion in the use of certificates of quality and seals in the merchandising of Government-graded butter and eggs. Another development was the installation of keeping-quality tests of Government-graded butter at certain concentration points. A series of nine public conferences was held in various cities in connection with proposed revisions of the standards of quality for creamery butter.

FRUITS AND VEGETABLES

The buying and selling of fresh fruits and vegetables on the basis of standard grades worked out by this Bureau has become established trade practice. The grades are used also by the Agricultural Adjustment Administration in its marketing agreements with producers and shippers, and by the Federal Surplus Commodities Corporation in its purchases of food products for relief distribution. Continuing research seeks to improve the standards, which now cover 53 different fresh fruits and vegetables. During the year a number of the standards were revised, and investigations started on standards for additional products.

The Bureau maintains an inspection service at produce-shipping points the country over, where persons using the standard grades may have the quality of their products certified by the Government. Similar service is available in consuming markets. More than 400,000 cars of fruits and vegetables were

so inspected during the year. Many shippers who do not have certified inspection also use the standard grades—a much desired practice, provided the grading is properly done. For the purpose of handling situations where the quality of products is other than that indicated by the markings on packages, the Secretary of Agriculture last January designated the Bureau's inspectors as inspectors under the Food and Drugs Act.

In most misbranding cases which have come to the Bureau's attention a simple warning has been enough to induce the removal of the incorrect grade markings; but in 15 cases seizures were made by the Food and Drug Administration upon the Bureau's recommendation, and correction of the mislabeling required as a condition of release of the products from Federal custody. More than 160 cases of misbranding as to grade or weight were handled between January and the end of the fiscal year.

The Bureau's grades for canned fruits and vegetables also are being increasingly used by the trade, not only as a basis for trading but in recognition of the growing consumer demand for grade labeling of canned foods. Many public institutions are using the grade specifications in the purchase of canned fruits and vegetables, as they do also in the buying of meats and the many other foods for which the Bureau has developed standard quality grades.

Since methods of food distribution are rapidly changing, especially in the marketing of fresh fruits and vegetables, the Bureau is receiving many requests for official information dealing with methods of grading, packing, and selling farm produce. Ways to eliminate needless and inefficient marketing practices are being sought. Data on prices paid for various varieties, grades, and sizes of fruits and vegetables in the markets are wanted by growers and shippers organizing marketing programs. Information is wanted on transportation and marketing charges, and as to the relation of supplies and prices of products.

More than 2,400 complaints of violations of the Perishable Agricultural Commodities Act were received during the year. This was a 10-percent increase over 1936, but through the Bureau's efforts amicable settlements were obtained in about 90 percent of the cases. Formal action under the act, which prohibits unfair and fraudulent practices in the marketing of fresh fruits and vegetables, were taken relative to the remainder of the cases. Upon recommendation by the Bureau, the Secretary of Agriculture issued 209 reparation orders. The licenses of 12 commission merchants were automatically suspended for failure to pay reparation awards, 6 licenses were ordered revoked for other violations of the act, and 9 ordered suspended.

At the close of the year, 18,077 produce dealers, commission merchants, and brokers held licenses under the act, an increase of 1,424 as compared with 1936. During the 7 years the law has been in effect, more than \$1,000,000 in license fees, or considerably more than the amount of the Federal appropriations for the administration of the Perishable Agricultural Commodities Act, has been deposited in the United States Treasury.

In connection with the administration of the Standard Containers Act the Bureau investigated the growing use of second-hand baskets in the produce industry. It was found that with certain exceptions the sizes of these baskets complied with the provisions of the law, but that in some instances their use may violate State and Federal sanitary regulations or, unless properly relabeled, the misbranding provisions of the Food and Drugs Act.

TOBACCO INSPECTION

The Tobacco Inspection Act provides, in brief, that upon favorable referenda by tobacco growers the Secretary of Agriculture may designate auction markets for free and mandatory inspection service, coupled with market news service. Under its terms 23 auction markets have been designated, and the service was in operation on all but 3 of these during the year (an injunction halted the service on 3 markets). On the remaining 20 markets, a total of 146,113,980 pounds of tobacco was officially inspected by the Bureau during the marketing season. Other tobacco inspections raised the total for the year to 152,607,344 pounds; present indications are that much more will be inspected during the fiscal year 1938.

An important service being furnished to growers in connection with inspection and market news is the demonstration of proper methods of sorting tobacco and preparing it for market. The objective is to reduce the large

volume of tobacco that goes to market each year so poorly handled as to be a source of loss of revenue to growers. In carrying out the demonstrations Bureau representatives furnished instruction directly or indirectly through agricultural teachers and others to 36,732 tobacco growers. To make the work more effective 22,000 pieces of literature were distributed bearing upon elements of grade in tobacco, instructions in tobacco sorting methods, and illustrative reports.

WAREHOUSE ACT ADMINISTRATION

At the end of the year, about 836 warehousemen who store cotton, grain, wool, tobacco, canned foods, and other agricultural commodities held licenses issued by the Bureau under the provisions of the United States Warehouse Act. Administration of this act involves investigations to determine whether licensees are complying with the rules and regulations under the act, and whether new applicants can meet the standards prescribed for licensing.

Collateral research deals with ways to improve the administration of the Warehouse Act and to make it of maximum value to farmers, warehousemen, and public and private lending agencies. A major achievement in the interest of warehousemen and depositors during the year was the securing of a reduction in premium rates charged for the bonding of Government-licensed warehousemen. The rate was lowered from \$10 per \$1,000 of principal to \$10 per \$1,000 for the first \$10,000 of principal, \$5 per \$1,000 for the next \$15,000, and \$3 per \$1,000 above \$25,000.

Another achievement was the securing from the Arkansas Insurance Rating Bureau of a credit of 10 percent in insurance rates on all products stored in Government-licensed warehouses operating in Arkansas and an equal credit in insurance rates on the warehouses and their equipment. These credits were granted because of the stringent regulations which must be observed by Government-licensed warehousemen, and the supervision exercised by the Bureau. Heretofore the credit applied only to cotton warehouses.

Following extensive investigations, a ruling was made last year permitting the mixing of different grades of grain in licensed elevators, provided the varying grades belong to the same depositor. Regulations applicable to licensed warehousemen operating in terminal and futures contract markets were issued.

INFORMATION

In the last 15 years there has been a great outpouring of agricultural statistics, reports, bulletins, and other economic publications by Federal and State agencies. There has been mass production of facts and figures upon a great variety of subjects relating to agricultural economy. This raw material, unquestionably useful to economists studying and analyzing agricultural adjustments, unless interpreted, frequently tends to confuse, not enlighten, farmers.

There is obvious need for an increase in quality production of agricultural economic information. There is need to refine the raw material assembled by research workers, select the most essential facts and conclusions, and concentrate on their dissemination. This objective is now being sought by the Bureau.

Farmers at all times want the essential facts regarding current and prospective farm products, supply, demand, and price situations. In an effort to meet this requirement the Bureau has discontinued its monthly "prospect" reports which carried much unrelated data, and is issuing instead a series of monthly agricultural situation and outlook summaries covering 15 principal farm commodities or groups of commodities.

These situation reports present the salient facts gathered by the Bureau's research workers and analysts. They summarize the current and prospective situation as to supply, demand, and price, and seek to guide farmers intelligently in their production and marketing operations. These reports have been favorably received by farmers, their contents are widely published by the press, and the State extension services use much of the material in State and local informational work.

Other Bureau publications have been recast for more effective presentation and use by farmers of the results of the Bureau's economic and statistical research. Instead of a publication containing uninterpreted tables of statistics, crop and price reporters now receive a special edition of the Bureau's monthly publication *The Agricultural Situation*—eight pages of condensed commodity reviews.

The publication *Crops and Markets*, a statistical repository, has been reduced in size and circulation in the interest of economy. The full edition of *The Agricultural Situation* has been remodeled so that instead of containing largely market reviews and statistics it summarizes all the available facts on supply and demand in brief commodity reviews, and publishes in addition short, timely articles by Department economists presenting the main facts and conclusions of economic research and discussing new developments and policies in agriculture.

Studies have been made and plans formulated for more effective presentation of the salient facts in agriculture by radio, press, graphics, exhibits, and motion pictures. These media have long been used by the Bureau but methods of using them have lagged behind the constantly changing techniques in oral and visual education.

The Bureau is a living encyclopedia of economic information—information for the research worker, the student, and the administrator, as well as for farmers who desire to be informed on the interplay of the economic forces which affect their business. Besides making this information available in formalized mediums, the Bureau is tending increasingly to encourage in the field of the Department's work an increase in informal contact relationships.

This has substantially increased the usefulness of the Bureau's work among policy-making organizations and officials, particularly in cooperation with the Agricultural Adjustment Administration, the Farm Security Administration, and other agencies developing new programs.

