

Agriculture and the People

of Our State, Our Nation and the World

A YOUTH PUBLICATION

by M. F. Miller



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M. F. MILLER¹

What is agriculture? That is the question the rural school teacher asked Billy Johnson. Billy was a young Missouri farm boy in the eighth grade of a one-room rural school and a member of an active 4-H club. He had started as a small boy to help his father on the farm and knew much about the various farm operations. He could handle a tractor almost as well as a man and he was proud when his father said that during the summer months he was "about as good as another hand."

Billy took much interest in the study of agriculture as taught by his rural teacher. His experience on his father's farm had given him a pretty good idea of the agriculture in that neighborhood. But, in spite of this, he found it hard to give a good definition of the word *agriculture*. So he asked his teacher if he might talk it over with the boys and girls in his 4-H club and their leader, who was a good young farmer in the neighborhood. Working together,

during the week, they finally agreed on this statement.

What Is Agriculture?

"Agriculture differs so widely from place to place and from country to country that no single sentence will describe it accurately. However, a very simple definition might be that agriculture includes the various things farmers do in producing useful products from the soils of their fields. Actually, good systems of agriculture include a great variety of operations, such as tilling, and fertilizing the soil, selecting and growing crops, production and care of livestock and poultry, as well as harvesting and marketing their farm products. On good Missouri farms, agriculture means more than all these. It means a balanced farm plan which will provide for farm profits, for a good living, for a comfortable home, and for a satisfactory way of life for the family."

Billy's teacher was much pleased with this statement. It was a great deal more than she had expected.

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Note: This publication has been prepared for youth in the schools of Missouri. The material for its preparation has been secured from many sources but primarily from the publications of the United Nations, the United States Department of Agriculture and the Colleges of Agriculture.

Billy was also pleased with the praise he received for taking the question to his club mates and their leader. It gave him a satisfying answer to the question, "What is agriculture?"

In order for us to get a better understanding of this matter let us go far beyond Billy's neighborhood and try to see what agriculture means to the people of this and other countries. World peace may someday depend on a better agriculture among the nations. It is important that we know something about world agriculture as well as our own and that we work with the other nations to improve it.

Agriculture Affects Everyone

Agriculture is an industry which reaches around the world. We are all dependent upon it. The butcher, the baker, the candlestick-maker; each has a stake in agriculture. Simply because a man or woman, in a great city, runs a machine hour after hour, day after day, and year after year, to turn out bolts, or hammer handles, or pie pans is no reason why agriculture does not affect each one of them. Without agriculture they would not have their three meals a day. Without the meals their machines would soon be idle for want of operators.

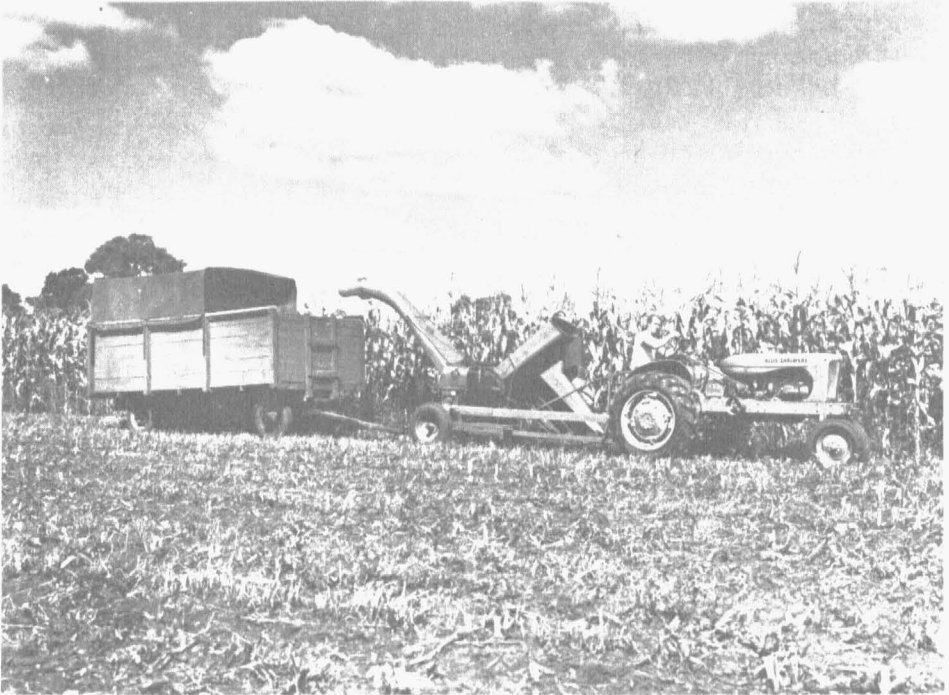
Agriculture is the greatest activity of mankind. The majority of the people in the world are engaged in it. It's upon agriculture that the prosperity of most countries depends. That is true of Missouri and it's true of the United States.

Agriculture Supplies Things Which Everyone Needs

It is from agriculture that we secure most of the foods we eat — our bread, meats, vegetables, fruits, and our dairy and poultry products. Of course, in this country, we use some sea foods, such as fish and oysters, with some tropical fruits and sugar, but these make only a small part of our total food supply. Agriculture supplies much of the fiber, such as cotton, wool, and some flax, from which most of our clothing is made. While artificially manufactured fibers, such as rayon and nylon, are coming into wide use for making clothing, most of these come partly from agricultural products. We are, therefore, dependent upon agriculture for most of our clothing, our shoes, our gloves, and our hats. We even make fountain pens from milk and all sorts of automobile gadgets from soybeans.

One type of agriculture, the production and harvesting of trees, commonly known as forestry, supplies great quantities of building materials for our homes, our farm buildings, and our business houses. It provides material for interior finishing, for furniture and many of the utensils found inside our houses.

You would find it very interesting to take a sheet of paper and go from the kitchen through each room in your house, listing foods, furnishings, and gadgets which come directly or indirectly from agriculture. In some cases you may need to go to the volumes of an encyclopedia, or other books to learn the sources of some



A late model of a field corn-chopping machine harvesting corn for silage on a Cornbelt farm. The silage is fed to dairy cows or beef cattle to supply us dairy products and meat which are foods of such high quality. (Courtesy Allis-Chalmers Mfg. Co.)

of the things you will find, but it would be a most interesting experience. You would be impressed, as never before, by our great dependence on agriculture, and on the farmers of the country, for our comforts, our ways of life, and even for our very existence.

People Demand an Abundance of Agricultural Supplies

People in our towns, our cities, and on the farms must have large supplies of agricultural products. They cannot be short of food, clothing, or other agricultural materials and remain contented. In regions where there is a real shortage of

these things people are hungry, ill-clothed, and poorly housed. They may become miserable. Moreover, if town and city people are to have such things in abundance, there must be good supplies of them at prices they can afford to pay. Sometimes, as a result of unfavorable seasons, the amounts produced on farms are cut short. In such cases the demand for these products may be greater than the supply, so that prices rise. At other times, the amount of agricultural products may be so large that there is more than can be sold readily and prices fall, often to the disadvantage of the farmers. The

great variation in the total production from farms, often due to favorable or unfavorable seasons, is one of the principal causes of the changes in agricultural prices which affect both town and country people.

Farm Product Prices Should Be Favorable for All the People

An ideal situation is one in which we have at all times plenty of agricultural products at prices which are satisfactory to all the people — farm people and town people alike. Certainly farmers deserve a reasonable income for the hard work they do on their farms, while the income of city people should be such that they can pay the required prices, whatever these may be. Unfortunately, these conditions do not always exist. As a result, farm people often receive much less than they deserve, and at other times town people may have to pay more than they can really afford.

Most town people do not realize that a considerable share of the retail price of foods comes from the charges for shipping, processing, and packaging after the products have left the farm. Farmers generally think these charges are too high, and in many cases they may be. However, food handlers are giving more attention to processing, packaging, and even to freezing certain products, all of which fits well into modern-day living. Sometimes the costs of processing and packaging in the preparation of foods for the table may seem much too high. Take the case of some breakfast foods as an example. The money which the farm-

er receives for the wheat going into an eight-ounce box of wheat flakes is only about one-tenth the cost on the retail grocery shelf. But people like cereals prepared this way, particularly the young folks, and many people are willing to pay this high retail price. This is, of course, an extreme case but there are many others in which these costs seem higher than necessary.

Farm Incomes Are Not Too High

While farmers have received favorable prices for their products during recent years, the prices they have to pay for everything needed on the farms have gone up greatly. Many farmers have found that their incomes do not pay their costs. On the other hand, the wages and incomes of most town people, excepting the so-called white collar workers, have increased greatly; and as a result they are as well off, or better off, financially, than the farmer. Many town people do not realize this.

As a rule, most town people have had money to pay for foods, in recent years, while prices received by farmers have been reasonably satisfactory. One must remember, however, that people living on farms produce a good deal of the food they eat while those living in towns must buy all of it, which is a large item in their living costs.

Government Has Attempted To Help

Since we all need a good supply of farm products, the government has been trying to increase farm production. Attempts have been made to keep the prices of most of the impor-

tant products at levels which are profitable to the farmer and thus encourage him to increase production. On the other hand, top or ceiling prices have been placed on certain products in order to protect the town people from prices that might be too high. In other words, the aim has been to keep prices of the important farm products at levels which will be fair to both country people and town people. While there is a great difference of opinion among farmers, as well as town people, regarding these matters, it is probable that a certain amount of price regulation of farm products will continue for some time to come. However, the more conservative people feel

that such government regulations should not go far.

Agriculture and Industry — Each Dependent on the Other

About four-fifths of the people in this country now live in towns; a little less than one-fifth live on the land. The four-fifths are dependent on the food and many other things, produced by the one-fifth on farms. Much of the material used by the large industries or manufacturing plants comes from the farms. Without the farmer, many of these plants would "shut up shop." Likewise, these concerns sell about one-fifth of their products to country people. Loss of this farm business, even if they could get their supplies from



A combine at work in a wheat field on a good family-size farm in one of the west central states. Such a machine makes it possible for one man to harvest and thresh the grain which formerly required quite a number of men. (Courtesy Allis-Chalmers Mfg. Co.)

other sources, would put most of these concerns in the red. There are some large manufacturers producing farm machinery, feeds, fertilizers, and other farm supplies which are 100 per cent dependent on the farmers for their sales. Farmers secure most of the things they buy from the towns. They would have to go back to the ways of the early pioneers if they produced on the farm everything they used. That would be quite impractical today.

On the whole, the business of industrial concerns and that of farmers go up and down together. Greater prosperity for farmers usually means greater prosperity for industry; greater prosperity for industry usually means greater prosperity for farmers. These are important things to remember.

Farm People and Town People Are Not Really Different

Farm people, living as they do in the open country, have an independence of thought and action which is one of their principal characteristics. Town people, on the other hand, live closer together and work together somewhat more closely than do country people. They come more quickly in touch with modern ideas and new gadgets as they develop. However, with the coming of the telephone, the picture show, the radio and television, there are few real differences in this respect between the main bodies of the people in the two groups. Actually, these new developments have allowed most country boys and girls to learn more

about the town than the town children have been able to learn about the country. Today a town boy is often "greener" about things in the country than the country boy is about things in town. However, when one studies the characteristics of town and country people he finds they all have much the same ideas as to the important things in life.

Farm People and Town People Are Learning to Work Together

There was a time when town and country people were far apart in their ideas. Each group failed to understand the other. They failed to work together. This condition still exists in some parts of Missouri and other states. However, owing to more information by each group, primarily through schools, the newspapers, and the radio, each has come to understand better the problems and ways of the other. Improved highways have brought the town and country people nearer together. Enlargement of school districts, with centralized schools in the smaller towns, has developed these towns as centers for both town and country people. Here they meet together, work together, and play together. They have common problems which they work out. They also come closer together socially. There is, therefore, a better understanding between the two groups. They are learning that they have much the same problems and the same opportunities. As a result, the old dividing lines between town and country people are breaking down. This is a real step forward. It promises much for the future.

I. The Agriculture and the People of Missouri

Missouri is one of the great agricultural states. It supplies large amounts of farm products to its own people, to people in other states, and to some foreign countries. The total annual value of these agricultural products is over one billion dollars, which is greater than that of the products of any of the large manufacturing industries in the state. Since agriculture affects the lives and the economic conditions of all Missouri people, in both the towns and the country, all youth should know something about it. Without this knowledge their education is incomplete.

Few states have as great a variety of agricultural products as has Missouri. Because of its central location in the country it grows some crops that are common to the northern states, all of those of the central states, and many which are common to the southern states. It grows and markets corn, oats, wheat, barley, and rye among the standard grain crops; it produces great acreages of soybeans and lespedeza; it grows potatoes, cotton, tobacco, alfalfa, clovers, grasses, apples, peaches, cherries, plums, berries, watermelons, and many vegetable crops. Moreover, Missouri is a very impor-



A beef cattle herd on the grazing lands of the western plains. Notice the modern cowboys rounding up the cattle. Such herds supply enormous numbers of animals for slaughter, or for shipping to the feed lots of the Cornbelt, where they are fattened for market. (Courtesy American Hereford Association.)



Cattle like these supply the very valuable dairy products so important in the diet of the American people. The people in countries without dairy cattle almost always have low standards of living. (Courtesy of Arthur Edwards.)

tant livestock state, producing large numbers of cattle, hogs, sheep, dairy cows, and poultry. The sale of livestock and livestock products brings in over three-quarters of the total income of Missouri farms.

Among the twenty important agricultural states of the Middle West, Missouri ranks well. As an average of a number of years the state is about seventh in the production of corn, seventh in winter wheat, tenth in oats, fifth in soybeans and fifth in hay. With only a half dozen counties producing cotton, Missouri ranks tenth among the sixteen cotton-growing states of the country. Since one-third of the state is in forest these rankings are very good indeed.

Some Important Missouri Crops

Missouri has long been known as a corn state. Its wide expanses of

prairie and alluvial or bottom lands are well adapted to this crop. Practically all of the corn produced is used within the state, mostly as feed for animals, while some feeding corn is shipped in from other states. However, Missouri farmers are learning how to grow good livestock by using more pasture and less corn than they formerly fed. They are also learning how to grow more corn per acre. The result has been that during the last ten years the corn acreage has decreased, while total corn production has increased. This means less corn is needed from Iowa and Illinois.

The state is well adapted to the production of soft winter wheat. This crop fits ideally into many systems of cropping on Missouri farms. Our soft wheat flour is particularly well suited to making the fine hot

biscuits which Missouri farm women know how to make. It is also well suited for making cakes, cookies, and other pastries that appeal to the young people. The hard wheats of the main wheat belt of the states to the west and north provide the flour for most bakers' bread. Little of this is grown in Missouri.

Missouri is one of the leading soybean states. This crop has increased greatly in acreage and yield during

recent years. The money return from soybeans during the last two years has been greater than that from any other single crop. Missouri now has many soybean processing plants which extract the valuable oil from the grain and also produce soybean meal for livestock feed.

Most people do not realize how important the cotton crop is to Missouri agriculture. It is grown in the six southeastern lowland or bottom-



A cotton picking scene in the rich bottom lands of southeastern Missouri. Some of the large mechanical cotton-picking machines are coming into this area and more will probably follow. (College of Agriculture Photo.)

land counties of the state and the average acre yields are greater than those of any of the states of the South. Cotton is next to soybeans in the annual money value to Missouri farmers.

Lespedeza is a famous Missouri crop. It is a rather small, but very thick-growing clover-like plant which the Missouri College of Agriculture introduced and distributed throughout the state. It has become very widely used as a pasture and hay crop, and its acreage is now greater than that of corn. The money value of lespedeza to the farmers of the state is now about 20 million dollars annually. This is very many times greater than the yearly cost of the College of Agriculture, which was mainly responsible for introducing the crop and teaching farmers how to use it.

Missouri Is a Livestock State

The important farm animals grown in Missouri are beef and dairy cattle, hogs, and poultry. There are large numbers of sheep, but many states grow more. Some goats are grown and while the number is not large, a good many milk goats are now coming in.

Formerly, the state was very famous for the number and quality of its mules, but the great development of tractors and trucks has reduced the number of mules to below a fifth that of 30 years ago. The number of work horses has also declined to half of what it was earlier. But saddle horses have increased and our state ranks near the top in the numbers of

these beautiful animals. Fancy saddle and harness horse shows are as common as they were 30 years ago.

Missouri Is Seventh in Dairying

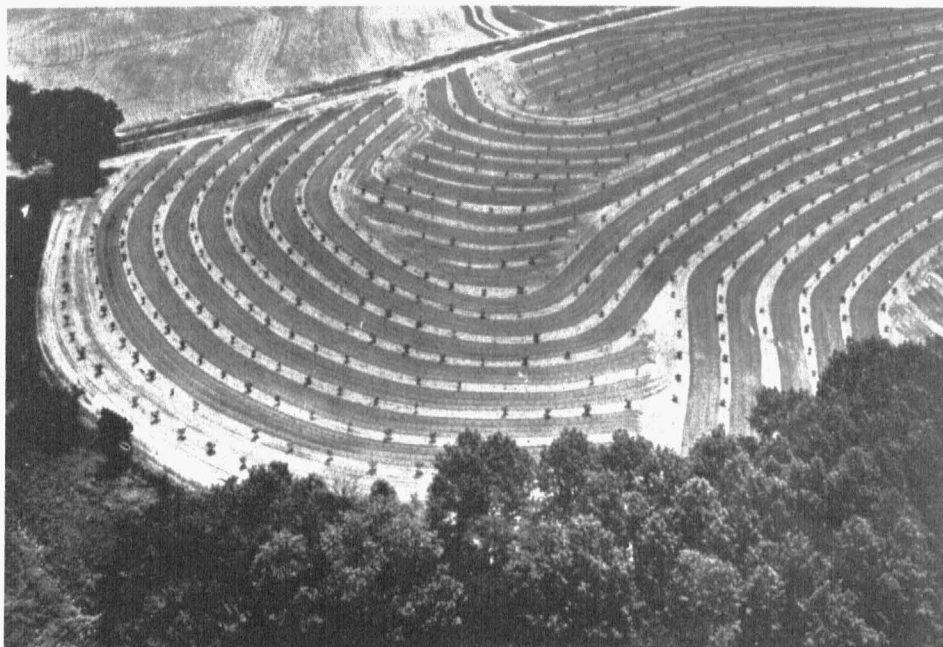
Missouri is well suited to the dairy business. It has abundant pastures, a long grazing season, good water, good markets and all kinds of dairy feed. The state produces over 4,000,000,000 pounds of milk a year. It usually ranks about seventh among the states in the amount of dairy products put on the market annually. One of the largest milk processing plants in the world is located at Springfield, a farmers' co-operative plant, which handles nearly a million pounds of milk a day. Missouri is now developing very rapidly in the dairy business. The principal breeds of dairy cattle in the state are the Holsteins, Jerseys, and Guernseys.

Ranks High Also in Poultry

Missouri ranks high as a poultry state. Most of our farmers grow some poultry, but for some it is a special industry. The average annual production of eggs is over 3,000,000-000. That would certainly make a big omelet.

There are produced for sale yearly, about 30,000,000 chickens and turkeys. Over 400 hatcheries produce about 100,000,000 baby chicks each year which places Missouri near the top in the hatchery business. A large supply of chicken meat through much of the year is one of the advantages country youngsters have over their city cousins.

II. Agriculture in the Life of the People of the United States



A young peach orchard in Georgia. It is planted on the contour to lessen soil erosion. Some of our best peaches are from that state. (Courtesy John F. Bregger, Soil Conservation Service.)

Agriculture is as important to the people of the nation as the agriculture of Missouri is to our people. Naturally, its extent varies from state to state but everywhere it is important.

More people are engaged in agriculture in this country than in any other one industry. Lumped together the products of the farms of the United States represent an enormous total. In 1951 the value of these products was over \$31,000,000,000. It is, of course, true that in some of the manufacturing states, where very

large numbers are employed in industry, the agricultural products do not nearly meet the food needs of the people. On the other hand, in states, like those of our great Cornbelt, much more food is produced than the people can use. Taking the country as a whole, the annual value of agricultural products shipped to other countries, during the last war and most of the years following, has averaged about \$2,500,000,000.

Farmers Grow Food for All

The farmers of the country have the job of producing an abundance

of food so that every man, woman, and child may have enough to eat. This is a large order, but it is being filled. During the last World War they produced much more food than ever before. Enough was grown to feed our own people better than they had ever been fed before, while at the same time very large amounts were sent to our armies and to our allies overseas. This increased production was brought about through the great efforts of the farmers and their families to meet war demands. They followed many of the best agricultural methods recommended by the Colleges of Agriculture, the United States Department of Agriculture and other educational agencies. They worked long hours and employed the best agricultural machinery they could get. They used the best varieties of crops they could secure. They greatly increased the amounts of fertilizer used. Moreover, following the war they have continued this high production up to the present time.

In connection with everyday living, more people are concerned about a supply of food than any other one thing. We eat three times a day and most young folks more often than that. This is one of the most enjoyable things we do. A regular supply of proper food is necessary for good health, good work, and good humor. This brings agriculture very close to all of us.

Health Depends on Proper Foods

There are different substances which the body needs for good health. One group of these is what

the chemists call *carbohydrates*, that is the starches and sugars which provide most of our energy. These are most easily supplied through the various foods coming from grains, potatoes and sugar producing crops.

A second group of these substances is the *proteins* which supply us with the element *nitrogen*, so essential for growth and the development of body energy. It is supplied in small amounts through many farm products, but especially through the so-called *legume* crops, such as beans, and peas. Large amounts of especially valuable proteins are provided in such animal products as meats, eggs, milk, and cheese. Proteins are among the more expensive food materials and many people are not well supplied with them.

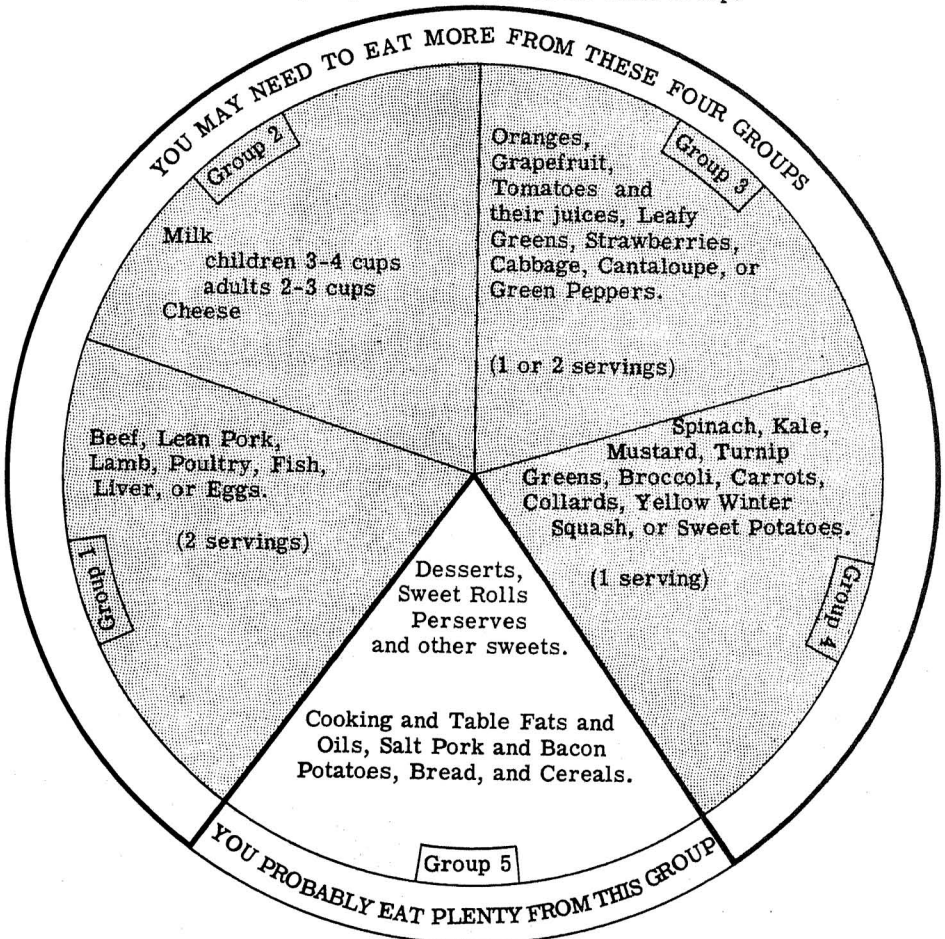
A third important group of substances needed in our diets is the *fats*. They serve mainly as a source of body energy and are found largely in meats, dairy products, and vegetable oils. They are usually in abundant supply and people often eat more of them than they really need.

The fourth group of substances required for good health is that of the mineral elements, such as calcium, phosphorus, and iron. These are usually referred to as *minerals*. Most of them are supplied in proper amounts through the common foods, but some, particularly calcium and phosphorus, may sometimes be in too small quantities. In such cases, the calcium may be applied to the soil in lime and the phosphorus in phosphate fertilizer, thus supplying the needs of our food crops. There

are also certain mineral elements needed in our body which are very scarce in nature. These are called *rare* or *trace* elements and include manganese, copper, fluorine, iodine, and a few others. The soils, or rocks, in some parts of the country do not contain enough of one or more of

these to supply the amounts we need in the food crops, or the drinking water. As an example, iodine is so lacking in the soils and water in parts of the North Central States that many people in these regions suffer from goiter. Again, in some parts of the country fluorine is so

Every Day . . . Eat Some From Each Group.



Typical of the foods education carried on throughout the United States by the Land-Grant Colleges is this foods chart recently published by the Missouri Agricultural Extension Service. Besides the foods shown here, the chart also lists several appetizing fruits and vegetables.

much lacking in the drinking water that young people, in particular, develop rather large numbers of caries in their teeth.

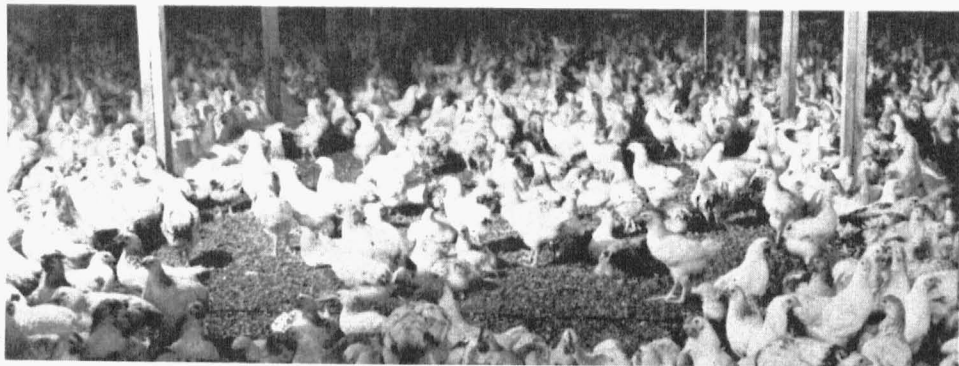
A fifth group of substances is known as the *vitamins*, each of which has a particular influence on our bodily activities. We have heard much about them in recent years. They are supplied, particularly, in such types of food as meat, milk, eggs, and in certain fruits and vegetables. Unless we have a proper variety of foods supplying these we are almost certain to lack one or more of them.

Well-Balanced Diet Is Necessary

It can be easily understood that considering the number of things which must be supplied in food, the right kind of eating is not as simple as many people think. We have often heard that we must have a "well-balanced diet." Such a diet is one which supplies the needed carbohydrates, proteins, fats, minerals, and vitamins in the proper amounts for the health of our bodies.

In some poorly developed parts of the world the native people live mainly on two or three kinds of food eaten at every meal. However, these are nutritious and the people thrive on them. In this country we eat large amounts of processed and refined foods, containing sugars and starches, so that it is necessary for us to have a greater variety for good health.

It seems to be true that the majority of our people eat what tastes good to them, or what they can get easily or cheaply with little thought of the needs of the body for a balanced diet. As a result, even in this country where food supplies are abundant, many people suffer ill health because of a lack of proper balance among the things they eat. However, unless we are very poor there is really little excuse for us if we fail to have a proper diet. We need only to inform ourselves as to what we should have and then eat the kinds of food which are best for us.



View in a large broiler plant where many thousands of chickens are grown and fattened for market — producing, on the average, 1 pound of live weight for each 3 and two-tenths pounds of feed. The number of broilers produced in Missouri has increased from 2,677,000 in 1948 to 23,544,000 in 1952.

OUR PRINCIPAL SOURCES OF FOOD

Our own agriculture produces 90 per cent of the food products we eat. Imports, such as sea foods, sugar, and certain tropical fruits make up most of the other ten per cent. The great cereal crops provide the bulk of our food supply. The most important of these is wheat, our principal bread grain. The annual production of wheat for the last few years has averaged almost 1,000,000,000 bushels, or about 400 pounds for each person in the United States. Corn is second in importance as it is used for both animal and human food. The average annual production in recent years has been almost 3,000,000,000 bushels. Rye, oats, rice, and barley are the other cereals used for human food. It is from these great cereal crops, along with the production of around 400,000,000 bushels of potatoes annually, that the bulk of our carbohydrates is supplied. Cereals also furnish some protein and fats, as well as minerals and vitamins.

Meat Production

The people of those nations where much meat is consumed are among the strongest and most active people in the world. The United States is one of those nations. This is one of the reasons for the successes of the people of this country where we produce each year around 8,000,000,000 pounds of beef, 10,000,000,000 pounds of pork and 700,000,000 pounds of mutton and lamb. The total meat consumed per person each year is around 140 pounds. Since it

is from meat that we secure much of our protein, along with fats, certain minerals and vitamins, it is a most important food. This is a food that not only tastes good, when well prepared, but a proper amount of it is very good for us.

Dairy and Poultry Products

Milk and eggs are next to meat in supplying high-grade protein. The annual production of milk in the United States totals about 120,000,000,000 pounds, or about 90 gallons per person, which is a quart a day. However, a good deal of this goes into the production of about 1,000,000,000 pounds of cheese, 1,300,000,000 pounds of butter and 500,000,000 gallons of ice cream, while large amounts are used in making evaporated milk, dried milk and other milk products.

The production and use of dairy products in this country has increased greatly during the last 25 years. Usually a region or a country which produces and uses large amounts of dairy products has energetic people. Supplying, as they do, great quantities of protein, fats, minerals, and vitamins, these products are most important to health.

Along with the increase in the production of dairy products in the country during recent times, has gone an increase in poultry products. The annual production of eggs is close to 60,000,000,000 or 33 dozen eggs per person. It is hard to believe that we average so many eggs apiece, but they are eaten boiled,

fried, poached, scrambled, and in omelets, and they also go into scores of prepared dishes for the table. Then there are the large amounts of chicken meat we eat each year — fried, baked, stewed, and fricasseed. This totals about 35 pounds per person. Finally, there are the turkeys that grace so many American tables at Thanksgiving time. These, along with ducks and geese, provide the special poultry products which most people enjoy so much.

Vegetable and Fruit Production

It is difficult to obtain accurate figures as to the total amounts of vegetables and fruits we eat each year, but we know these are very large. Think of the quantities of

beans, lettuce, carrots, spinach, and other vegetables that come to our tables! In spite of this great use, however, food and health specialists say we are not eating enough of these to supply the minerals and vitamins we need. This is not very good news for the boy, who doesn't like spinach, or mustard greens, or some of the many other green vegetables, but it is an important thing for him to know.

When we think of the vast quantities of apples, oranges, grapefruit, pears, plums, cherries, and the other fruits grown and consumed in this country we may wonder why we eat so many. While mother may repeat the old saying that "an apple



The home garden makes a very important contribution to the health and economic security of the average farm family of the United States. From it the family harvests not only its summer supply of fresh vegetables, but also its winter reserves in canned or frozen storage.

a day keeps the doctor away" the boys, when asked why they eat so much fruit, even green apples in early summer, will say, "because they are good". This may be the proper answer from the boy, but the real reason the appetite craves them is because of the vitamins and minerals they contain. Most of them supply considerable sugar, too, while a few contain starches. The fact that the people of the United States eat so much fruit is another reason for their health and strength as a people.

Home Grown and Imported Foods

Mention has been made of the fact that this country exports large quantities of food materials to other countries. But as has been indicated, we also import some foods. Modern means of shipping and refrigeration make it possible for us to bring in fruits, such as bananas and pineapples, from tropical regions and vari-

ous kinds of fish and other sea foods from the seven seas. We also ship in a good deal of sugar from the tropics, along with spices, coffee, and tea, which, while not foods, add a great deal to the pleasures of eating. We could of course get along without these various imports but since we have products to ship out it is certainly good business to ship in, for our tables, certain foods that are produced in other countries.

In connection with imported fish, it should be said that we of course use much fish from our own lakes and streams. It is interesting to know too, that the stocking of many farm ponds with fish is making it possible for farmers to grow fish for their own use. Under favorable conditions, an acre of pond water may each year produce fish worth as much as the yearly production of an average acre of good land in regular crops. And it's a lot more fun to harvest fish.

RECENT DEVELOPMENTS THAT HAVE CHANGED OUR AGRICULTURE

The improvements in agriculture in the United States during the last 75 years have been amazing. In very early days farmers produced on their own farms almost everything they ate and wore. Today the average farmer produces much more than he uses and so has some to sell.

One hundred years ago, when 80 per cent of our people lived on farms, it took eight farm people to feed themselves and two people in towns. Today the situation is reversed. With somewhat more than

80 per cent in towns, two people on farms can feed themselves and eight town people, with some left over for shipping to other countries. This means that the average farmer produces much more food than he needs, so that he can sell some. With the money received he buys clothing, farm tools and machinery of all kinds, along with some processed foods and many other things put out by manufacturing concerns. He now enjoys a great variety of things he never dreamed of in earlier days.

Farm Machinery Has Trebled The Farmer's Efficiency

Much of the change in agriculture has come through the wide use of efficient agricultural machinery. Land is now plowed, prepared for crops, and planted by means of tractor-drawn plows and other implements. The grain of wheat, oats, rye, barley, and soybeans, along with clover seed, is usually harvested by field threshers or combines. Most of the corn is harvested by tractor-operated corn pickers or silage cutters, while practically all farm products are hauled to market by trucks. This great development of farm machinery of all kinds has revolutionized our agriculture. A farm boy on a tractor can now do more than two or three men with teams could do 25 years ago.

Increased Production Helps All

The total agricultural production in this country has increased greatly during recent years. This has come about largely through increases in yields per acre. While farmers formerly thought that a 60 bushel yield of corn was very good, a good many farmers are now producing around 100 bushels per acre. The yields of some other crops have increased in somewhat the same proportions. As a rule, these increased yields are secured at costs low enough to make them quite profitable. This profit is a great aid in getting farmers to produce more, which is good for the nation as well as for them. However, the population of the United States is constantly increasing so that more and more food will be

needed by the people. It will, therefore, be necessary for the agricultural experiment stations to continue to find new methods of increasing production and for the farmers to put these into use.

Colleges Teach Soil Improvement

In earlier days many farmers grew grain crops year after year on the same fields, and as a result the soils became poorer and poorer. Where the surface of the land was rolling, rather than level, this system of farming allowed much of the surface soil to be washed off the fields through erosion. Under such conditions the soil steadily decreased in fertility, and many fields were abandoned for agricultural uses. Unfortunately, there are a good many farmers who still use these poor methods of managing their soils. However, by following the recommendations of the Colleges of Agriculture of their states the better farmers are now controlling erosion, improving their soils, and increasing production. But this is not enough. With the increase in population and the greater needs for food, both here and in other countries, we must make every effort to bring practically all farmers into this class.

Marketing Methods Are Improved

In the horse and buggy days when there were no automobiles, no trucks for hauling, few hard surfaced roads, no telephones, and no radios, the marketing of farm products was a very difficult matter to handle. But times have changed. Today, the farmer receives the daily

market reports over his telephone or radio. He will send his cattle or other products to market on the day when the prices seem most favorable. This is a great advance over the earlier days. In rather recent times too, farmers have been organizing their own cooperative buying and selling associations in order to buy and sell at more favorable prices. These farmer-owned cooperatives, or co-ops, are having a very favorable effect on the prices which farmers get for their products and what they pay for the things they buy. These developments in the methods of marketing and buying are among the most important in present-day agriculture.

Farming Costs Are High

In our grandfather's day the costs of farming were very low. Farmers did not buy as much as they do now and the things they bought were at what we would now call ridiculously low prices. But things are no longer that way. Even the family farm, where no outside labor is employed, now has high costs in connection with the farming business. The cost of machinery on the average farm is several times what it used to be. The original cost and the repair of farm buildings, the cost of fencing, seeds, feeds, and household supplies have increased greatly.

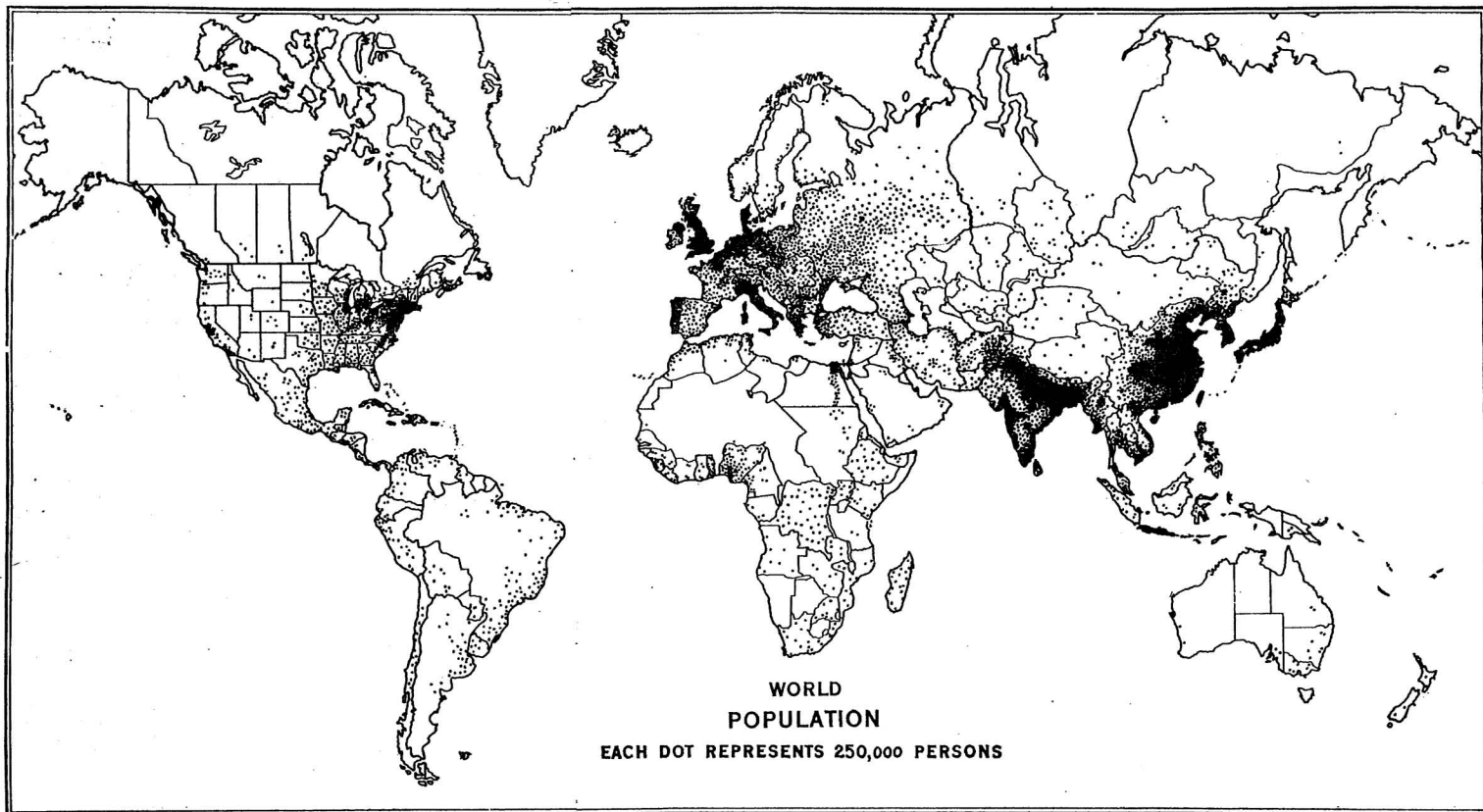
On large farms, good labor is now difficult to get at almost any price. When a farmer buys livestock he pays twice or three times what he did in the thirties. Moreover, if a

man buys land the price may be two-thirds more or even double what it was then. All of these increased costs have changed the business of farming very greatly. However, it must be remembered that the money which the farmer receives for what he sells has increased in much the same proportion as his costs. Yet, in spite of the higher sales prices for his products, the farmer must be a better business manager than formerly in order to make good profits. Fortunately, many farmers are learning how to manage their soils so as to secure much larger yields. They are learning how to produce livestock and livestock products much more efficiently.

American Agriculture Is Now On Much Sounder Basis

In spite of the high costs of everything the farmer buys, in recent years, the agriculture of the country has been maintained on a rather sound basis. This has been due to increased agricultural production and to the increased prices of agricultural products. The increase in production has been due to the "know-how" of all the better farmers in using improved farming practices. The increase in prices of farm products is a result of the lower value of the dollar, the great demand for farm products for supplying our own people and those in other countries, and of the action of the national government in supporting farm prices. So long as these conditions exist there is every reason to believe that a sound condition of agriculture will continue.

POPULATION



World map showing the general distribution of population. Each dot represents approximately 250,000 people. Notice the great numbers in the Far East, the rather large numbers in Europe, and the much smaller numbers in the rest of the world. (Compiled from different sources.)

III. World Agriculture, Farm Prosperity and Food

Every young person should have some idea of the people in the different nations of the world and how they live. Since every nation depends on agriculture for its supply of food, each of us should know something about world agriculture and how well the people eat. Henri Fabre, the famous French scientist, once wrote that history tells us of the battlefields where we meet death, but scorns to speak of the plowed fields from which we live. Possibly the historians of the future will have more to say about how people lived and less about wars.

The Prosperity of Any Nation Depends on Agriculture, Food

Three out of four people in the world are engaged in agriculture. A productive type of agriculture, which supplies the people with plenty of food, is an advantage to any nation. An agriculture of low production and a scarcity of food may mean hunger and want among all the people. Through the centuries that have passed the supply of food has had much influence on the course of history. Wars have been fought over it or over the lands on which to produce it. It has often influenced the rise and fall of governments and even of civilizations. Moreover, as the earth's people have multiplied, more food has been needed. Today, the average food supply per person is a measure of the prosperity of the people in the different countries.

This gives agriculture a most important place in world betterment.

Some Food Crops Have World-Wide Importance

Four crops have been of outstanding importance in determining the development of civilizations. These are rice, wheat, corn, and potatoes.

Rice is the principal food of half the people of the globe. These are the people of the Oriental countries of the Far East including much of China, all of Japan, much of India, and most of the islands in the west Pacific. It is in these densely populated parts of the world that the young people as well as the grown-ups depend largely on rice for practically every meal. Few Missouri boys or girls would relish so much rice, but those in the Far Eastern countries have no other choice.

Wheat is next to rice as the world's most important food crop. From it we make our bread which has been called the staff of life for the western world. The yearly world production of wheat is about 4,000,000,000 bushels. Europe, the great wheat consuming continent produces more than half of this, yet it imports additional supplies from other countries. As rice has determined the course of history in the eastern hemisphere, wheat has had a somewhat similar effect in the western hemisphere.

Corn (maize) is a native of America. According to discoveries in an-



Beautiful and well-farmed land in Ayrshire, Scotland. This is the home of the Ayrshire breed of dairy cows, some of which add interest to this scene. (Photo by author.)

cient tombs it was grown in South America 3,000 years ago. Its double purpose as a food for domestic animals and for man makes it the most important crop in our country. In Mexico, Central America and most South American countries it is the main food of the people.

The crop we know as the Irish potato is a native of America. It has been called the Irish potato because it was taken to Ireland in the very early days where it did exceptionally well, and where it was widely grown. The potato is very well suited to the cool climate of all of the countries in northern Europe. Before the last world war Germany, Poland, and Russia were producing about 60 per cent of the world's potatoes. All the countries of Europe together were producing about 85 per cent, while we were producing only a little over 2 per cent of the world's supply. Potatoes have had a very great influence on the develop-

ment of some of the European nations and their agriculture.

Quality as Well as Abundance Is Important in Food

About 90 per cent of the food consumed in the world comes from plants and plant products, such as cereals, potatoes, vegetables, and fruits. Only about 10 per cent is from animals and animal products, such as meats, milk, eggs, and fish. As we have seen, these foods of animal origin contain much valuable protein, but they are more costly to produce than foods coming from plants. It takes about seven pounds of plant materials, as feed for animals, to produce one pound of animal products. As a result, in countries where people are crowded on the land and food is scarce, they cannot afford to feed much of their crops to animals. They can supply more people with food directly from plants, even if its quality is not what it should be for good health. The bulk of their diet is made up of

the cheaper, more starchy foods, such as cereals, potatoes, and the fleshy root crops.

It is in the countries where there is plenty of food per person that animal foods are produced and eaten in quantity. For instance, in Australia about 35 per cent of the peoples' food is from animal sources, in the United States and Canada about 25 per cent, in Europe about 17 per cent and in Asia only about 3 per cent. The very low supply of good protein foods, and in many cases, the low supply of certain minerals, in the diets of Asiatic peoples, are among the most important causes of poor health and misery among them.

Good and Poor Farming Systems

Good or productive systems of agriculture are those in which the farmers produce more food, or other products, than is needed to supply their families, so they can provide some for other people. Such systems usually mean prosperity and high standards of living for the farmers and plenty of food for both town and country people. Poor or unproductive agriculture is that in which the farmers are barely able to produce enough to support their families. Such farmers commonly use poor agricultural methods and often very crude farming tools or machines. They are usually poor, have low standards of living, and often they are hungry. Unfortunately there are more farmers in the world following poor agricultural systems than good ones.

In the western countries of the world, which include Europe and North America, we have somewhat different ideas about agriculture than do the people of eastern countries, particularly those of Asia. We think of agriculture as good, when the production per man or per acre is high. In most of the eastern countries they consider agriculture as good when the farmers supply enough food to keep away hunger. Farmers in the western countries think more about the money return per acre or per farm, than do eastern farmers who have little or nothing to sell.

American Farming Systems May Not Fit Other Countries

The American people, and those of some other countries of the western world, enjoy the benefits of very good agricultural systems. These systems are largely due to the use of good farming methods, favorable climate, and in our own case, to abundant natural resources. There is no doubt that we have reached our important agricultural position partly because of the vast area of new and fertile soils which has been ours to use. For over a hundred years our crops have been removing the stored fertility from cornbelt lands. It has been only in rather recent years that we have begun to restore some of this. Likewise, we have used most of the timber of the original forests of the country and far too much of our mineral resources. The money returns from the use of all these things has assisted very greatly in developing our

huge industrial plants and in making our farmers prosperous.

Too often we boast of our agriculture in comparing it with that of the older countries. However, we must always remember that we have been a favored people in a new country. The agriculture we have developed is not well adapted to the conditions in the older countries, particularly those of the Far East. It is certainly not wise, nor is it in good taste, for us to criticise their systems. They have been developed as the ones best adapted to their conditions. As our agriculture becomes older and as our numbers increase, we shall doubtless face some of the problems common to these older countries. We must, therefore, learn to solve the problems these countries have had to meet so that our agriculture may be kept on a high plane. If we do not maintain the fertility of our soils and learn how to increase our yields still further, our standards of living will go down.

Colonial Systems of Agriculture

Every young person who has studied European history knows that several of the European countries have large territories, or colonies, in other parts of the world. England is the best example, with vast foreign holdings, but France, Holland, Belgium, and some other countries have smaller possessions of this type. In some of these colonies, mostly in the more tropical parts of the world, where little agriculture existed previously, the mother countries have introduced a good many large-scale

farming systems. These large farms, or plantations, are organized for the production of one or more special crops, such as coffee, rice, cotton, sugar, bananas, or rubber, to supply the needs of the mother country. They are managed by trained overseers, who are sent out to develop them, using native laborers to do the work. In some parts of Africa and South America and the West Pacific islands certain foreign investors, living mainly in Europe and the United States, have developed similar systems.

In all these large-scale systems of agriculture which have been organized for producing special export crops, the workers are usually poorly paid and live under unsatisfactory conditions. Such systems are said to be *exploitive* in nature. That is, they tend to exhaust the soil and exploit or take advantage of the poor, native people in order to make money for the mother countries or the investors. These certainly cannot be classed as good systems of agriculture from the standpoint of the masses of farm people. However, they have proved quite productive under existing tropical conditions and they supply to the markets of the world, to you and to me, a great deal of the sugar, coffee, and tropical fruits we use.

Systems of Tropical Agriculture

The tropical regions lie largely between the tropics of Cancer and of Capricorn. Most people in the temperate climates of the world think that these regions are too hot for the development of profit-



Harvesting a field of 80 bushel oats on a good English farm. It must be a great joy to the farmer to harvest a crop like this one. (Photo by author.)

able systems of agriculture, excepting under the present plantation plans. It is certainly true that the systems of western agriculture, as we know them, in which individual farmers handle their own land, are not well adapted to these countries. However, it is possible that entirely new systems for the production of valuable products may be worked out for these regions. The tremendous growth of vegetation in the forests of the hot, moist regions of the earth is almost beyond belief. We may discover means of making these great productive powers of nature work for the people who live in these areas, and in ways we cannot now foresee. Scientists should be able to do this in time. Possibly some of the boys who read this paragraph will become agricultural scientists

and will help in making these discoveries.

Agriculture and Industry In the Countries of the World

Attention has been called to the fact that in the United States agriculture and industry go hand in hand. The same is true in most other prosperous countries. In fact, in those countries where there is little industry to provide work for the people, the farms may become overcrowded and the people poor. However, where industry develops, many people, including some from the farms, are needed to supply the necessary labor. Since these workers must have food, and since they have the wages with which to buy it, the demand for food goes up. The more farmers can grow the more they can sell. But in order to produce

more they must find better systems of farming. Therefore, as industry develops, the agriculture of the country improves. This is most important in bringing prosperity to the farmers in many countries of the world.

Trade Between Countries

Affects the Agriculture

Countries which produce much in the way of manufactured products have something to trade to other countries for food when they need it. In some countries, too, special agricultural products may sometimes be produced and traded for needed food stuffs. For instance, some countries produce more cotton, coffee, or tropical fruits than they need and they trade this for cereals, fats, and other foods. Even in our own country with very large food supplies, we import tropical fruits, sugar, coffee, tea, spices, and some other products we cannot grow well. Likewise, we ship to other countries wheat, corn, and animal products which we produce in large amounts. While the people in most countries depend largely on their own agriculture, almost every country of the world has some food imports. It is only in countries where industry and agriculture are poorly developed and where the farmers have little money to spend, that little or no food is brought in. Such conditions exist in some of the countries of the Far East.

The Ownership of Land

Affects the Agriculture

Good agriculture is usually found in those countries where most farmers own the land they farm. Unfor-

tunately, there are many countries in which these conditions do not exist and the systems are largely those of landlords and renters. The old Feudal systems of Europe, which are described in textbooks on history, set the pattern for such plans of handling lands. Under these plans the landlords controlled large estates, farmed by poor renters, or by laborers, who were purposely kept poor. While these Feudal systems have largely disappeared, similar systems exist in some countries. Since the two world wars there have been actual uprisings among the poor farmers in a number of countries because of these conditions. As a result, a few of the governments have broken up some large estates in order to supply the poor farmers with land of their own. The matter of bringing about satisfactory systems of land ownership, or of land rental, among farm people is one of the great problems of the nations of the world.

Size of Farms Is Important

The size of farms, or the tracts of land handled by farmers, affects the type of agriculture. In countries where large amounts of farm machinery are used, as in the United States, the farms are much larger than in countries where little is used. The very small farms are found in Asia and in some countries of Europe. They are usually the result of a division of the land among the sons at the death of the father. Where this has gone on for generations the tracts of land belonging to an individual farmer may have become so

small that they can no longer be called farms. Under such conditions the amount of land handled by a single land holder may not supply enough food for the family. This is the case in parts of China where the ancient custom of land division has come down through the years.

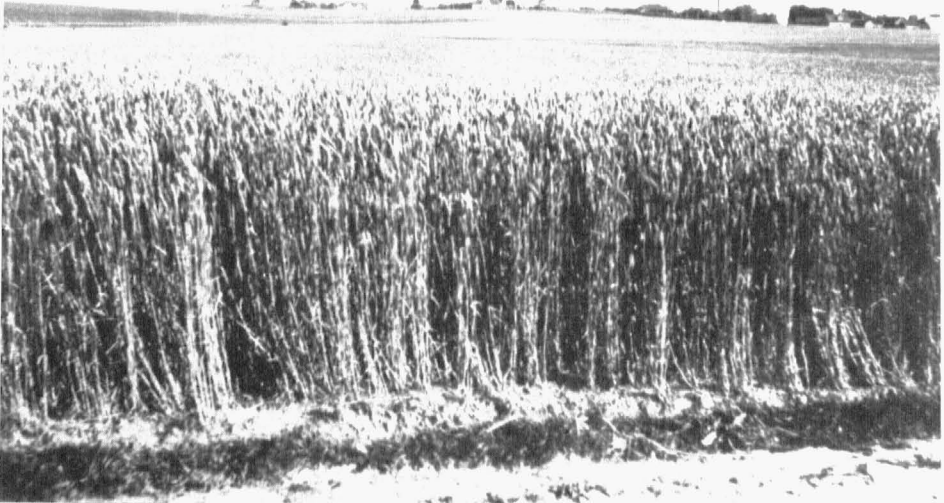
In those countries where the tracts of farm land have become very small it is not practical to build houses on them so the farmers live in villages. They must they go out each day to work on their land, sometimes over rather long distances. In parts of Germany one may see the farmers, or the farm women, driving wagons, often drawn by one or two

cows, as they go back and forth to their little farm plots.

In a few cases the governments are attempting to change these systems of small land holdings, but when the plan has come down as an ancient custom it is difficult to do much about it. Of course the ideal for most countries is one of farms of medium size. In some of the western European countries where many farms are from 40 to 100 acres in size one may see some of the finest farming in the world.

Agriculture Is Influenced by Numbers of People on the Land

The agriculture of a country is greatly influenced by the numbers



A sixty bushel wheat crop in Sweden. You can throw your hat on this wheat and it will lie on top. Such yields are not uncommon in Sweden, Denmark, and Holland. (Photo by author.)



This Swedish picture shows an interesting method of pasturing grass in some western European countries. The cows are tied, or tethered, to stakes which are moved into ungrazed grass from day to day. (Photo by author.)

of people living on the land. Where the numbers are small and the agriculture good, as in the United States, the farm people are usually well-fed and prosperous. On the other hand, where the numbers on the farms are very large, as in many parts of Asia, the farmers have too little money to buy farm implements or fertilizing materials, so that the agriculture is poor and the farmers are lacking in food. This is the case

in much of India and some other parts of the Far Eastern countries. In some of these areas the farmers are so weakened by the lack of food that they have neither the will nor the strength to farm well. Sometimes too, they are so poorly educated that they could not use good farming methods if they had the opportunity. Under these conditions of over-population the lives of farm people become almost hopeless.

A GROUPING OF COUNTRIES ACCORDING TO AGRICULTURE AND FARM PROSPERITY

The preceding discussion has shown some of the conditions which affect agriculture, farm prosperity and the production of food. School geographies tell something about the agriculture of different countries, but we are here interested in the influence of different types of agriculture on the food supply and the prosperity of the farm people. For this purpose we shall divide the

countries into three groups; first, those with good agriculture, prosperous farmers, and plenty of food; second, those with poor agriculture, poor farmers, and a scarcity of food; and third, those which come between these two groups.

About one-third of the people of the world live under systems of agriculture which are good enough to supply each person with plenty of



Small tracts of farmland which are found in parts of Germany and some other countries. A farmer usually owns two or more of these and comes out daily, from his home in a nearby village, to farm them. They require a lot of hand labor. Notice how carefully and neatly they are kept. (Photo by author.)

food. These include the United States, Canada, parts of certain countries in South America, most of the countries in western Europe, along with Australia, and New Zealand. These are the well-fed parts of the world.

But let us look at the other side of the world picture. If we do, it may be almost unbelievable when we are told that half of the people of the world go to bed hungry every night. Yet this is the case and it means that the supply of food among these people is much less than they need. The principal areas of the world which fall into this group include much of Asia, some of the

island countries of the west Pacific, and parts of the countries of Mexico, Central America, and South America in the western hemisphere.

One-sixth of the people of the world live in the lands which fall between those where the people have plenty of food and those where they are always in want. These in-between countries are widely scattered throughout the world. Those of eastern and southern Europe, including Russia, are in this group, along with the countries of the Middle East, many in Africa, and a large number of small island countries where the natural conditions for food production are favorable.

The Regions of Good Agriculture and Abundant Food

The total area of the land surface of the earth having a good and highly productive agriculture is not large. Something less than 10 per cent has all of the characteristics of climate, soils, and people to make

such good systems possible. It is on this small percentage of the earth's land surface that most of the world's food supply is produced. It is from this area, too, that the bulk of food exports go to more needy parts of

the world. However, some of the grain and meats produced in the drier areas, not ideally suited to agriculture, also go into the export trade.

North American Agriculture And Food Supplies

We who live in the United States should be very thankful for the privileges we enjoy. We are a free people in a country where there is an abundance of practically everything we need. Few countries enjoy the prosperity that is ours. These same statements apply, in large measure, to our Canadian neighbors on the north. In both of these countries the agricultural success is based on medium to large scale farming with the use of much farm machinery. Such systems produce large amounts of

farm products for the use of all the people and for shipping to other countries. In both of these countries, too, there is a large development of industry.

The manufacturing plants of our own country, with the high production per worker, are famous the world over. Agriculture and industry working together under our system of free enterprise have made the United States great. Our hope for the nation's future is that we shall continue to improve our systems of agriculture and of industry. To do this we must keep the high ideals and the faith of the founders of our country so that our prosperity and our democratic form of government may be preserved.



Harvesting potatoes in an important potato section in northern Germany. Scenes like this were used as subjects by some of the older European painters. (Photo by author.)

Good Agricultural Regions Of South America

The areas of productive agriculture in South America include parts of Argentina, Uruguay, Paraguay, southeastern Brazil, and of Chile. This agriculture is largely one of livestock farming, although considerable wheat and other crops are grown.

Argentina is famous the world over for its large herds of fine cattle and many sheep. Its packing plants, modeled after those in the United States, send great quantities of dressed beef to many other countries. These cattle and sheep are grown mainly on large estates owned by men in Buenos Aires and other cities. They are managed by overseers and the work is done by the native people. While this is not a very good system of agriculture, from the standpoint of the workers, very good animals are produced, and Buenos Aires is one of the livestock centers of the world.

The cattle and sheep growing areas in Uruguay and Paraguay are not so extensive as those in Argentina, but the systems of management are somewhat the same. However, there is a higher percentage of small cattle farms in these two countries.

Brazil is larger than the United States, but only about 20 per cent of the land is in cultivation. The farms average large in size and most of them are farmed by their owners. Brazil leads the world in coffee. Other important crops are corn, wheat, millet, beans, cotton, and rice. Large areas of grasslands produce many cattle and sheep.

Chile produces considerable numbers of cattle and sheep as well as the cereals and other foodstuffs. Some of these are exported.

Unfortunately, not all the farm people in the regions of productive agriculture in South America are well off. Many who are largely of native Indian blood are poor and sometimes hungry.

Agriculture of Western Europe

The systems of agriculture of several countries in western Europe are among the best in the world. The climate, the soils, the location and the people are especially well suited to high types of agriculture. Through long periods of time these farmers have worked to adapt their agriculture to the soils of their farms. They have learned to follow very good farming systems, including the use of excellent varieties of crops, and much fertilizer. As a result, the agriculture has become almost an art with them and the acre yields of crops are very high.

The countries of England, Holland, Denmark, Belgium, and Sweden have some of the most interesting farm lands in the world. For the most part they have well kept farms, comfortable farm homes and well-bred livestock. It was in these countries that most of our breeds of beef and dairy cattle originated. Important quantities of meat and dairy products are exported and except where the recent wars have interfered, the diets of the people are on a high level.

The agriculture of France is generally good, although not of such

high order as that of the countries just mentioned. Most of the farmers own the lands they farm, and many of these farms have been in the same families for a thousand years.

German agriculture has long been intensive and the acre yields high. The farmers have taken special pride in keeping up the fertility of their soils. In those parts of the country where a good many dairy cattle are kept the manure from these animals and the work oxen or horses, is very carefully saved for use on the soil. In fact a farmer's standing in the community is often judged by the size and the care given to his manure heap. In more recent times commer-

cial fertilizer has also come into wide use, which has greatly improved the agriculture. The division of the country into East and West Germany, following the last war, which placed East Germany behind the Iron Curtain, was unfortunate for German agriculture.

The agriculture of Switzerland is good, although the cultivated lands are limited to small areas in the valleys and plateaus among the mountains. The high Alpine pastures used mainly during the summer months are quite productive.

The European Peasant Farmer. A great deal has been written about what has been termed the poor *European peasant farmer*. It is true



Piles of manure in the barnyard, or hof, of one of the larger German farms. The manure is placed in large, open concrete-lined pits until these are filled, after which it is often heaped high above them. (Photo by author.)

that there are many small farmers throughout some of these countries who are poor, most of whom are found in southern and eastern Europe. However, in the main, the small European farmers, west of Russia, whether they own or rent their farms, are not in such a bad condition as many people think. Most of them have plenty to eat, reasonably good clothes to wear, often including interesting costumes. They have many fete days when they enjoy life together. On the whole, these people seem just about as contented as the people on most of our farms. They have never known any other life and they have seen little of the world, so they have learned to enjoy what they have. It

is only those who have difficulty in producing enough to eat and whose lives are hard in other ways who experience severe hardship. Looking across the Atlantic, it is difficult for us to understand the conditions under which European farmers live. While many of them are not nearly so well off as the majority of our farmers, most of them are better off than the poorest farmers in our own country. It is never wise for us to judge the people of other countries purely from our own experiences. We should remember that these European countries are far older than ours. The way the people farm, and the way they do other things, are the results of long experience under their conditions. If we



A French farmer and his wife beating, or flailing out clover seed for their small farm. They said they might get 20 pounds of seed for two days of flailing. This method of threshing clover seed is not as common as it was formerly. (Photo by author.)



Good Simmental cows in the high mountain pastures of Switzerland where they are kept during the summer months. Notice the row of heavy brass cow bells. These have beautiful tones and their chimes, as the cows come down the mountains, can never be forgotten. (Photo by author.)

had developed under these same circumstances we should doubtless have done just about as they have done.

The Agriculture of Australia And New Zealand

Australia has extreme variations in rainfall, which affect the nature of the agriculture. The great interior of the country is virtually a desert, with the well-watered regions along the coasts, mainly on the east and south. Wheat is a most important crop, much of which is exported to England. Sheep are grown in large numbers, with much wool shipped out. Many beef and dairy cattle are also produced. Australian farmers are well informed regarding their farming business and their agricul-

ture is of a high order. They are particularly well supplied with good food.

New Zealand agriculture is somewhat like that of Australia. There are no dry regions in the country but rough mountainous areas occupy about half of it. It has good grazing lands and produces many sheep, beef cattle and dairy cows. The dairy business is well developed with many cooperative milk plants. New Zealand claims the largest milk processing plant in the world. Our southwest Missouri people might challenge this claim because of the very large plant at Springfield. New Zealand exports large amounts of dairy products and wool. The farmers

are intelligent, the agriculture is of good food and they are generally a high order, the people have much prosperous.



Italy and southern France have very extensive vineyards for the production of fresh grapes and wines. This farm scene, with the closely pruned grapes, the old Roman-type farm home, and the picturesque pines is strikingly different from any with which we are familiar in Missouri. (Photo by author.)



An olive orchard in southern Europe. Large quantities of olives are grown in these countries and those of the Middle East. It is from these orchards that we get most of our table olives and olive oil. (Photo by author.)

The Regions of Poor Agriculture and Low Food

Let us shift our attention from the regions of good agriculture and abundant food to those of poor agriculture and scarcity of food. The differences between the two are of special interest. The conditions under which the people in these poorer countries live will make us more appreciative of our own country.

Several Latin American Countries Have Poor Types of Agriculture

It may be somewhat surprising to our young people to know that several of our Latin American neighbors to the south have systems of agriculture which do not supply enough food for the farm people. Excepting Brazil, with many Portuguese, the population of these countries is made up of native Indians and Spanish people, with very great numbers of mixed blood. This type of population has rarely developed a high type of agriculture. Moreover, much of South America is in the tropical zone to which western agriculture is not well-suited. There are some of the large estates under foreign control, producing special crops for export, but the masses of the farmers are poor. There are actually very few of the type of middle-class farmers which make up most of our own general farming population.

Among the countries having many small farmers, using poor types of agriculture, are Mexico and most of Central America. In South America similar conditions exist in practically

all the countries with the exception of those already mentioned as having good agriculture. Most of these with the poor agriculture produce corn, vegetables and fruits as food crops. In areas where there are native pastures a good deal of livestock is grown, much of which is of rather poor quality. The governments of most of these poorer Latin American countries are making efforts to improve the agriculture, some with considerable success.

The Continent of Asia

Asia, the largest of the continents, has widely differing conditions of climate, soils, and people. The agriculture is, therefore, extremely varied. In the far northern parts of Siberia, there are great waste areas with reindeer in abundance. Farther south are grain and grazing lands in Eastern Russia, Mongolia, Manchuria, and northern China. In central and eastern China and in Japan the land is farmed very intensively and much rice is grown. In India and some of the tropical islands of the west Pacific the agriculture is poor.

With more than half the people of the world within its borders, Asia is the great hunger belt. The poverty of many people, the continuation of ancient customs, the large numbers of languages spoken, and the many people who can neither read nor write, hold back improvements in agriculture.

The Agriculture of China

We have little information regarding the agriculture of China since the government has become communistic. The statements which follow deal with conditions before this change.

China is a country in which soil erosion has done much damage. It is most severe in the region of wind-formed soils in the northwest. Much of the eroded soil has collected in the valleys of the great rivers. It is in these regions where the great masses of Chinese people now live.

In such areas the land has been farmed for 4,000 years. The farms have been divided and subdivided, as they have been passed down from fathers to sons, until most of them are now between two and four acres in size. Think what it would mean to attempt to raise a family of three or four children on two or three acres of land! However, these Chinese farmers are intelligent and painstaking people who have developed great skill in handling these lands.

The very careful systems of agriculture which are now in use in these



Typical rice paddies in China. It takes much skill to lay out and build these dividing ridges on the proper levels. It also requires great care to supply the proper amount of water to the paddies and to keep the ridges in place. (Courtesy Mutual Security Administration.)

crowded areas are remarkable. Canals have been put in which bring the water from the rivers to the land. This water is used not only to provide an extra supply for the general crops but to flood the great areas given over to rice. These rice fields, commonly called *rice paddies*, must be kept flooded while the rice is growing, which, of course, takes much water. The skill of the farmers in the construction and watering of the rice paddies is amazing. Moreover, much of the water for rice and other crops must be pumped from the canals onto the land, very largely by human labor. It is doubtful if our American boys would want to take the place of the young Chinese as they raise the water by lifts run by foot power. These boys and men lift water to grow rice to give them food to lift more water to grow more rice. This hour after hour tramping of the lifts would certainly be a monotonous farm job.

One of the most remarkable things about agriculture in the carefully farmed areas of China is that the fertility of the soil has been well maintained through thousands of years. The farmers have done this by carrying mud from the canal bottoms and spreading it on the fields. They have used every bit of human and animal waste as fertilizer. This custom was made necessary in earlier times by the lack of artificial fertilizers which had not yet come into use. But the practice is still common, since the methods of transportation are so poor in China that little of these fertilizers can be

brought to the farms. The farmers also bring in vegetable matter in the form of weeds, leaves, and the twigs of trees from any rough and uncultivated lands nearby, often tramping this into the soil with their feet.

All these things which Chinese farmers do may seem like an agriculture of hopelessness, but it is really one which has been developed and improved during the ages as a means of fighting off starvation. It stands today as one of the most remarkable agricultural achievements of all times. It is an agriculture that has paid off. It has become an art. Here is a region where the agriculture has been developed about as far as conditions will allow, but in spite of this there are so many people on the land that they are almost always hungry.

Ancestor worship is one of the characteristics of the Chinese. Among the farmers, this results in the building of large mounds of their precious earth over the ancestors' graves. Even in the very carefully farmed areas where the land is so much needed for food production these mounds may be seen. However, they are usually covered with grass which is often harvested for supplying vegetable matter to the fields.

Northern China and the regions of Manchuria and Mongolia, formerly under Chinese control, have a very different agriculture from the systems just described. Here the climate is cool, so that no rice is grown excepting a little in southern Manchuria and northern China. In Man-



Plowing land from which rice has been harvested in order to plant another crop. Notice the water buffalo, the simple plow, and the water standing on the field. These are common in many countries of the Far East. Only under systems of rice farming can the soil be plowed when it is as wet as this. (Courtesy Mutual Security Administration.)

churia the soybean is the principal crop with wheat, millet, and potatoes widely grown.

In Mongolia the production of livestock is all important. Many of the people are *nomads* who produce sheep, small horses or ponies, camels and some cattle, on the broad plains of this country. The people eat the products of their herds, trading meats, hides and wool for such other foodstuffs as they need. Naturally,

these people are great meat eaters and they are not crowded on the land. This is very different from the conditions among the crowded rice-eating people of central and eastern China where they cannot afford meat, excepting that of poultry.

The Agriculture of India and Pakistan. The very important country of India, recently divided into two parts, India proper and Pakistan, has

a population of around 300,000,000. The people of India are mostly Hindus and those of Pakistan mostly Moslems. There are dozens of different languages spoken and 70 per cent of the people are on the land, usually living in small agricultural villages. Most of these farmers can neither read nor write so that there are great agricultural problems. As a

result of these handicaps, Indian agriculture has long been one of the most backward in the civilized world.

As in China, the greatest density of population is in the valleys of the main rivers where half of the people live. The summers are generally hot and over large areas the rainfall is low, or uncertain. In the thickly settled valleys most of the farm land



Terraced rice lands, common in some of the hilly lands of China, Japan, and the Philippines. Think of the skill it must take to build these terraces on the steep slopes and to keep them there during heavy rains! (Courtesy Mutual Security Administration.)

is irrigated. In areas without irrigation severe droughts may bring on famine and starvation.

A very large area of the cultivated land of India is in rice, the most important food of the people. Millet is an important crop on the unirrigated lands. Peas, beans, lentils, and a variety of other vegetables make up much of the food supply. For generations India has been a large grower of wheat and the total production about equals that of Canada. This is grown mostly in the northern regions under a landlord and renter system. As a result, much of the wheat is exported, while many poor farmers are suffering for want of food. Other crops, grown under the same system and also shipped out of the country, are the important fiber crops, cotton and jute.

India has very large numbers of cattle, many more than the United States and about one third of the total in the world. This is almost unbelievable, but it is true. The reason is that the Hindus, who make up the great majority of Indian people, consider cattle sacred and do not kill them. As a result these cattle, mostly of the humped kinds, and generally of poor quality, multiply in large numbers. They run freely over wide areas of the country, eating whatever they can find. This is one of the reasons for the poor agriculture of Hindu India.

It can be seen that Indian agriculture is carried on under great difficulties. While there are some areas, particularly in the north, where it is pretty good and the people well fed,

these make up only a small percent of the agricultural lands. It is easy to understand, therefore, why most of the farmers, and the poor in the cities, are always hungry. Even under conditions which the government is trying to bring about for agricultural betterment, it will probably take a long time for such plans to affect the masses of the people.

The agriculture of Pakistan is considerably better than that of India proper. While there are some areas where the people need food, most of them have enough to eat. About the same kinds of crops are grown as in India, but the Moslems do not consider cattle as sacred so that this handicap to agriculture does not exist and more meat is eaten. Moreover, the new Pakistan government is making great efforts toward agricultural improvement. Those in charge are attempting to use some of the teaching methods of our agricultural extension services among the farm people. It is of interest to our farm boys and girls to know that they are trying to learn how we handle our 4-H clubs. Their idea is to introduce groups like these probably under a different name, among the young people of Pakistan.

The Agriculture of Japan. The Japanese islands are largely mountainous and only about 16 percent of the land is used for agriculture. As a result the development of their fisheries has been very important in supplying additional food for the people. Before the last world war great industrial plants had been developed using large numbers of workers who



A large group of Pakistan farmers listening to their Minister of Agriculture who is talking to them about better methods of farming. These are intelligent men, but they have little education. One can tell from a study of their faces that they are pretty shrewd. This type of interest offers hope for the improvement of Pakistan agriculture. (Courtesy of Karl Knaus, United States Department of Agriculture.)

required much food. This increase in industry made necessary and possible an increase in food imports. It was a good thing for the farmers, because they took up more modern ideas and greatly improved their farming methods. They have developed many western ideas, they have good systems of transportation and they are making much use of commercial fertilizers. As a matter of fact, under the existing conditions, the present agriculture of Japan is about as efficient as it can be made.

The steady rise in the numbers of

people in Japan is a real threat to the food supply. At the close of the last world war in 1945, the population was 78,000,000. By 1949, only four years later, it was reported as 88,000,000 and it is still increasing. It is true that industry is improving rapidly from the effects of the war which should make possible still larger food imports. It may be that as the effect of the war lessens, the increase in the number of people will decline, thus bringing about a better relation between the people and their food supply.

The In-Between Countries With Agriculture of Medium Quality

There are many countries in which the agriculture is between that which is very good and that which is very poor. In such countries, most of which are thinly populated, there is a fair supply of food. In general, the agriculture does not interest us as much as that of the countries where it is very good or very poor.

Eastern and Southern Europe

We have seen that most of the countries in western Europe have very good systems of agriculture. However, in southern and eastern Europe, the agriculture is not nearly so good. While in most of these countries the farmers are moderately prosperous, there are areas where the food supply is barely enough to keep the wolf from the door.

In southern Europe the countries of Spain, Portugal, Italy, and Greece have some difficulties in supplying their people with food. It is necessary for them to bring in from other countries a good deal of their cereals and other food stuffs. For these they trade some manufactured goods and certain special agricultural products which they can grow well, such as olives and olive oil, grapes and wines, tobacco, and fruits. However, the last war had serious effects in parts of this region, particularly in Greece, where, in recent years, many people have been near starvation. The Greeks have, therefore, been compelled to depend to a large extent on loans and gifts from this and other countries.

Most of the countries of eastern Europe, now behind the Iron Curtain, have long followed pretty good systems of agriculture. Rumania, for instance, has been a large grower of corn and has been next to the United States in the amounts exported. Several of these countries have produced considerable grain and other food-stuffs, along with a good deal of livestock. Most of them have important industrial developments which have helped the agriculture. Since they are now all under Russian control the future of their agriculture is difficult to predict.

Russia has always been known as an agricultural country, but many of the farmers have been poor. It covers all of eastern Europe and much of western and northern Asia. In the far north the country is largely waste land with the production of reindeer as the nearest approach to farming. Further south there is a broad belt which, in European Russia, is given over largely to the production of general crops including wheat, oats, flax, and rye. South of this area are the famous Russian black lands, where much wheat is grown, a good deal of which has long been exported. This is the best agricultural area in Russia and many other crops are produced. In the extreme south the climate is much drier, with extensive pastures, on which much livestock is raised. Asiatic Russia is rather dry and cold. While some wheat and other crops

are grown, the country is mainly one of livestock production.

After the establishment of the U.S.S.R. the agriculture of the whole country was taken over by the government and an attempt was made to set up a new system of agriculture. The general plan was to combine the smaller farms into large ones, called *collectives*, handled by general managers. Large amounts of agricultural machinery were introduced and the former peasant farmers handled this and did all the other work. Reports indicate that most of the peasants are now working on these large farms. However, since the Iron Curtain has gone down it has been hard to determine the success or failure of these collective farm systems. Unless very much advancement has been made, the agriculture of Russia cannot be compared with that of western Europe. However, this is a vast country with over 200,000,000 people and the total agricultural production is large.

A Glimpse at the Agriculture Of the Middle East

The countries of the Middle East are not very well-known to the American people. They lie just east of the Mediterranean and Red Seas and include Turkey, Arabia, Syria, Iraq, Iran, and a few of lesser agricultural importance. This region has a warm, dry climate with rather small areas of land under cultivation, mainly through irrigation. However, many of the earlier systems of irrigation are no longer in use.

Much of the land in these countries is in dry-land pastures on which

sheep, goats, cattle, camels, and some ponies and horses are raised. On these large pasture areas there are the wandering bands of nomads, who care for different kinds of livestock and produce little in the way of cultivated crops. What a life these nomads lead, living in crude, movable shelters as they follow their flocks from one pasture area to another! On the whole, the agriculture of the Middle East is quite different from any with which we are familiar.

Turkey is the most progressive in its agricultural methods, and under the present government much improvement is taking place. Arabia and Syria are also making progress, but Iraq and Iran have such backward systems that they might be classed with the countries of poor agriculture and food scarcity. All of these countries import a good deal of cereals and other foodstuffs. For these they exchange such things as the famous Turkish tobacco, and Persian rugs, wool, hides, figs, dates and other subtropical fruits.

It is interesting to know that the milk of sheep is an important food in some of these countries along with that of goats and water buffalo. There are very few dairy cattle. Another very interesting thing is that in some areas the fat-tailed sheep are grown and this tail fat is commonly used as butter. This is certainly different from the type of oleo which we know.

The Agriculture of Africa

Through no stretch of the imagination can Africa be classed as an

agricultural continent. With the exception of the Valley of the Nile River, in Egypt, the countries of Africa are thinly populated and for this reason most of them have no serious food problems. Of course, in much of the jungle and bushland country, of which we have heard so much, there is little agriculture worthy of the name. Some of the wandering tribes of people in these areas are often hungry. In other parts the agricultural production is sufficient to provide food for the people or they trade some of the valuable min-

erals and other natural resources for food. In the countries near the Mediterranean Sea there are some nomads, but where many people from Europe have come in, agriculture is reasonably well developed. In the south there is some pretty good agriculture in the Union of South Africa and the Orange Free State.

The agriculture of the Valley of the Nile is of real interest since it is very old, going back 4,000 years. This was the granary of that part of the world in Biblical times, and much wheat is still produced. Through the



Boys and young women in the rice-growing region of Pakistan, harvesting rice, handful by handful. Human labor is cheap while farm machinery is scarce and too expensive for them to buy. (Courtesy of Karl Knaus, United States Department of Agriculture.)

thousands of years that this Valley has been farmed the agriculture has depended on the rich sediments brought down by the river and spread out along its lower valley next to the Mediterranean Sea. This has provided for yearly additions of fertility to the soil and a rather regular supply of water. It is a dry country and some of it has been irrigated for a long time. More recently the English have built the great Aswan dam which supplies water almost the year around.

About 70 per cent of the people of Egypt are on farms, largely in the Nile Valley, where 20,000,000 of them live. The farmers, called *fellaheen*, are crowded on the land, sometimes as many as 1500 to the

square mile. Three-fourths of them rent the land they farm from landlords. Actually, the agriculture has changed very little in hundreds of years. The farmers today are little better off than were their forefathers. Cotton is the most important crop and much of this is shipped out of the country. Wheat is second, with much of the landlords' share leaving the country, when it is so much needed by the farm people. Many other crops are grown for food, but great masses of these people have about as little to eat as those in India or China. Of course, Egyptian civilization is old and the country has had a wonderful history, particularly in the arts, but this has helped the agriculture very little.



Threshing rice in parts of India is done by tramping it out by cattle. These draft animals, owned by several farmers, are driven around and around, over one pile of unhulled rice after another, until that from each farmer has been hulled. Notice the basket of hulled rice in the foreground. It's a long way from this to our modern combine. (Courtesy Laurence Springfield, United States Technical Cooperation Administration.)

IV. A Look Ahead



Plowing with a small camel hitched to a crude wooden plow, this Egyptian farmer stirs the topsoil of his unirrigated field. He sows a little barley and hopes for rain. (Courtesy Wendell Holman.)

We have seen that there are very great differences in the systems of agriculture and in the ways these affect the welfare of the peoples of the world. We have seen that there are many conditions which influence the prosperity of the farmers in the different countries. We have also seen that the amount of food per person is very important. Let us now consider, very briefly, some of the things that may affect the agriculture and the food supplies in the future.

Food for the Future

It now seems certain that an increase in the future food supplies of the world will be necessary. If such is the case, there are two practical ways of bringing this about.

First, additional lands may be brought into agricultural use. In do-

ing this, some wet, swampy lands may be drained, some dry or arid lands may be irrigated, and some additional lands in the tropics may be put into cultivation. Possibly some poor, unused lands may, through improved methods of fertilization, be brought into profitable use. However, all of these plans will be costly, so that the total increase in acreage of farmed land may not be very great.

Second, the yield per acre of lands in agricultural use may be increased. Scientists in our own and other countries have shown how this may be done through improved systems of handling soils and crops. Still newer methods will doubtless be worked out to bring further increases in yields. It is also possible that these, or other methods, may gradually be

extended to many of the countries with poor agricultural systems. Of course this will require greater knowledge among the farmers. But with the modern means of spreading information throughout the world, many farmers in the regions of poor agriculture may be taught to use some of these better methods.

It is, of course, impossible to make accurate predictions as to food supplies for the future. However, so far as our own country is concerned, developments during the coming years may change the whole agricultural situation. Who could have imagined 75 years ago, in our grandfathers' time, that we should have many of the things which are common-place today? The automobile, the airplane, the radio and television are among the most remarkable of these. In connection with agriculture, the modern types of farm machines have almost made over our farming operations. The use of new *synthetic* nitrogen fertilizers, coming largely from the air, along with improved uses of other fertilizers, has made it possible for farmers to produce 100 bushel corn crops. Rural electrification has put electric lights and power into two-thirds of the farm homes of the country. Not a single one of these could have been predicted by our grandfathers, 75 years ago.

In the next 75 years we may see developments, in this and other countries, that will be just as astounding as those mentioned. Some of these will doubtless be in methods of producing foods. The chemists may discover ways of producing certain

kinds of food through chemical processes. The plant scientists may find methods of using the plants growing in the waters of the seas, or of developing foods through the use of microscopic forms of life. The specialists in physics and engineering may provide means of using atomic power for the cheaper manufacture and processing of foods. As science moves forward many new methods of increasing our future food supplies may be discovered and made practical. But whatever the future developments may be, agriculture will remain the principal source of food for the people and its further improvement is of great importance to the world.

In spite of the developments that may take place during the coming years, there are immediate and pressing needs for food among half the people of the world. The discontent that is arising among them is really a threat to other countries. It is highly important for those of us in the more favored nations to do everything we can to help the people in the less favored regions.

Aid to Countries Having Poor Systems of Agriculture

Two far-reaching plans are now in operation for assisting farmers in the countries having systems of agriculture that do not supply enough food for the people. One of these, under the United Nations, is known as the Food and Agriculture Organization (FAO). The other one is under the Mutual Security Administration of the United States of which the Point Four Program is best known.

Those who are directing these programs know that in some countries, additional food should be supplied at once, in order to lessen the rising unrest among the people. However, they think it is just as important to find ways of helping the farmers of these countries to help themselves. What these farmers need most are simple farm tools or machines, sometimes merely hoes or shovels, fertilizers for the soil and good seeds for planting. Some also need larger farm acreages, or better arrangements between landlords and renters, while others may need improved systems of irrigation. All of them need to be taught the use of better farming methods. Since great numbers, especially in the Far East, can neither read nor write they need

an elementary education. It is very unlikely that the agriculture in these regions can be much improved until more education is brought to the farmers.

The importance of supplying aid to the countries with poor systems of agriculture was probably never greater than at this time. A lack of food, too few acres for each farmer, or too many people on the land may lead to wars. If the agricultural and industrial conditions in these countries could be improved, so that the standards of living could be raised, the increase in the numbers of people would probably become less. This would tend to lessen the dangers of war and the spread of undemocratic forms of government. However, there are some densely



The "man with the hoe" in Egypt. This "fellah," as the Egyptian peasant is called in the Valley of the Nile, uses this heavy, short-handled hoe or digger in almost all of his soil operations. (Courtesy Wendell Holman.)

populated countries in the Far East where large families are considered an advantage and an honor to the farmer. Where such a condition exists overcrowding and food shortages may continue. In others, a balance between the numbers of people and the food supply may finally be brought about. These are all important things for the young people of this and the other favored countries to know. It will be their duty and privilege to help solve some of these problems in the years ahead.