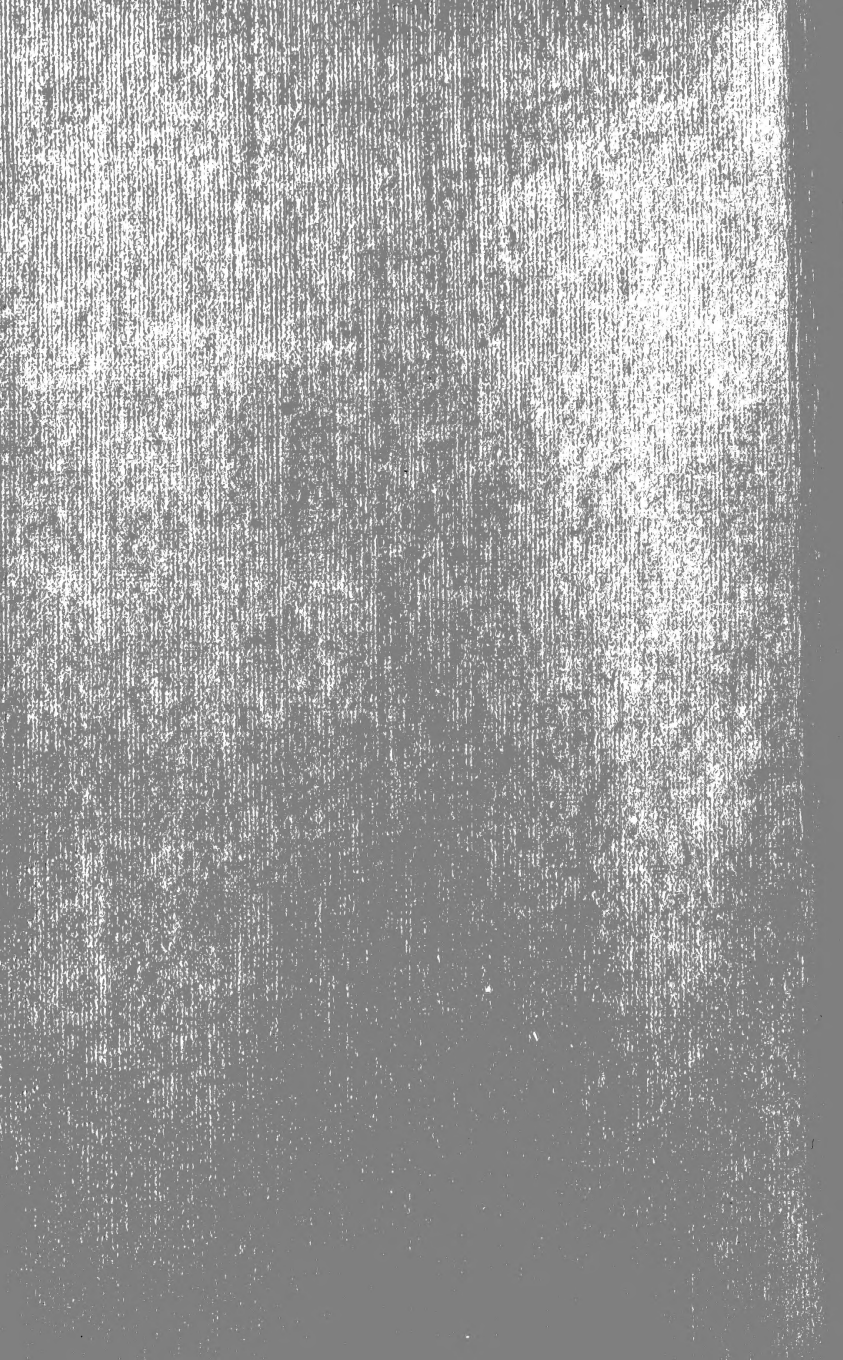


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NEW JERSEY
Hand-Book
OF
AGRICULTURE



NEW JERSEY HAND-BOOK

OF

AGRICULTURE

PUBLISHED BY THE

N. J. State Agricultural Experiment Station

AND THE

State Board of Agriculture

COMPILED BY

A. L. CLARK



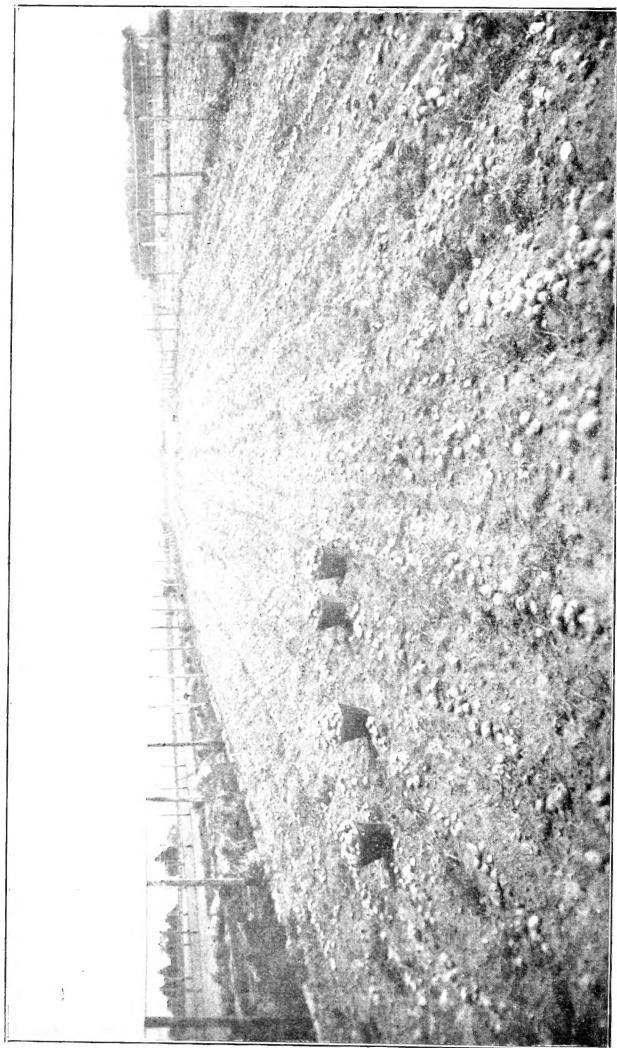
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A Yield of More than 560 Bushels of Potatoes Per Acre Under Irrigation upon the Farm of Mr. C. B. Seabrook, Bridgeton, N. J.

2000, Jan 19, 1904

INTRODUCTION.

In the preparation of this Handbook the contributors were guided by the wish to present to the reader a comprehensive view of the Agricultural resources of New Jersey. It was also the wish of the contributors to point out the opportunities that are offered to the homeseeker by the farm lands of the State.

There are many important industries in New Jersey. There are others less important. Since the scope of the present Handbook is limited, only the more important questions relating to rural life in New Jersey could be considered at some length.

It is recognized that within the past twenty years New Jersey has been changing rapidly the character of its Agriculture and its agricultural methods. General Farming and Dairy farming are no longer as prominent as heretofore, while fruit growing, market gardening and poultry raising are assuming rapidly increasing proportions. The systems of farming pursued are becoming more extensive with a corresponding increase in the returns per acre.

A perusal of this Handbook will permit the reader to gain a more or less definite knowledge concerning the best locations in the State for any particular type of farming. It will also permit the reader to understand something of the social and economic conditions prevailing in the State and of the many advantages as to educational facilities and social intercourse.

It is hoped that in future revisions, through which this Handbook will pass, such changes will be made as will render it more serviceable to persons seeking information on Agricultural conditions in New Jersey.

Separate portions of the Handbook were prepared by Dr. J. G. Lipman, Prof. M. A. Blake, Dr. K. C. Davis, Prof. H. R. Lewis, Prof. F. C. Minkler, Prof. A. S. Cook, Prof. A. L. Clark, Prof. Julius Nelson, Mr. Chas. S. Cathcart, Mr. Harry B. Weiss, Mr. Alfred Gaskill, Mr. W. B. Kille, Mr. Levi A. Judkins, Mr. Walter H. Fell and Mr. John C. Smock.

Some of the material and statistics were also taken from the annual report of the Secretary of the State Board of Agriculture and from Farm Lands of New Jersey.

PART ONE.

AGRICULTURAL RESOURCES.

GEOGRAPHY AND PHYSICAL FEATURES.

New Jersey is on the Atlantic slope of the continent and is divided into four topographic zones: I. The Appalachian zone, including the Kittatinny mountains and the Kittatinny valley; II. The Highlands; III. The Red Sandstone or Triassic area; and IV. The Coastal Plain.

Beginning at the Northwest the Kittatinny or Blue mountain is a remarkably level-topped and narrow range, which extends across the State from the New York State line, where it is known as the Shawangunk mountain, to the Delaware river at the Delaware Water Gap. At High Point, near the northernmost point of the State it is 1,804 feet high, which is the greatest elevation in the State. This mountain range is rough, rocky and nearly all wooded.

The Kittatinny valley, ten to fifteen miles wide, is shut in by the Kittatinny mountain on the northwest and by the Highlands on the southeast. It is characterized by its high, rolling hills and minor valleys and its pleasing landscapes and beautiful farming country, which is continuous on the northeast with the valley of Orange county in New York, and to the southwest stretching away into the great Cumberland valley of the Atlantic slope of the continent.

The Highlands occupy that part of the zone of crystalline rocks which crosses New Jersey in a general northeast and southwest direction. Its surface is hilly and is made up of several parallel ridges, separated by deep and narrow valleys. The valleys are like the Kittatinny valley, smooth, cleared and in farms. The mountain ranges are remarkably uniform in height, and this division may be considered as a seaward-sloping tableland, whose northwest side has an elevation of 1,000 to 1,500 feet and its southeastern side 600 to 900 feet above the sea. In the northern part there are several well known lakes high up in the mountains, Hopatcong, Greenwood, Macopin, Splitrock, Green, Wawayanda and Budd's lakes are the more important of these natural upland sheets of water.

The Piedmont plain, or the Red Stone plain is made by the shales and sandstones of the Triassic age. The Highlands stand on its northernmost border; on the southeast it merges into the clays and marls of the Coastal plain. It is sixty-seven miles long and thirty miles wide at the Delaware river. The trap-rock ridges, known as the Palisades, Watchung, Sourland, Cushetunk and other mountain ranges abruptly rise above the general level of the Sandstone plain. They are generally forested, whereas the Sandstone country is nearly cleared and in farms. These mountains rise 400 to 900 feet above sea level. The drainage is largely by the Hackensack, Passaic and Raritan rivers and their tributaries.

The Coastal plain zone includes all the country southeast of the Triassic Sandstone area and borders the ocean. It is 100 miles long from Sandy Hook to Salem and is ten to twenty miles wide. The surface is hilly in part, but with gentle slopes, except where some of the streams have cut their way through its earthy beds and formed steep-sided stream valleys. The Navesink Highlands and the Mount Pleasant hills are the highest lands in it. The drainage is by many tributaries westward into the Delaware, and by the Atlantic coast streams into the ocean. In the northwestern part of this zone are clay beds and green-sand marls, which make their outcrop on the surface in places; on the southeast there are sands, clay and gravels and fringing the ocean a narrow range of sand hills or coastal dunes.

CLIMATIC CONDITIONS IN NEW JERSEY.

THE HIGHLANDS AND KITTATINNY VALLEY.

These sections of New Jersey lie within the main storm tracts of the country, and under normal conditions receive generous supplies of moisture. The principal crop-growing months, May to August inclusive, are favored with a large percentage of the annual precipitation, the wettest months of the year being July and August. November is usually the driest month. The greatest annual amounts of rain-fall, 51 to 53 inches, occur over Morris county, and the northern part of Passaic county. Elsewhere in this district the average precipitation ranges from 42 inches in the northwestern part of Sussex county to 48 inches in the western portion of Warren county. The summer rainfall occurs mostly in the form of lo-

cal showers and thunderstorms, which are as a rule of brief duration. The local character of these storms cause a wide variation in the amounts of rainfall in adjoining areas. On the other hand the precipitation of Winter, Spring and Autumn is more general and fairly uniform amounts occur throughout the section. The heaviest snowfalls usually occur in January and February. The annual snowfall averages about 45 inches for the district as a whole.

Extremes in temperature are noticed in this section and the march of the seasons is very pronounced. Day temperatures ranging from 90° to 95° occur in the Summer but the nights as a rule are refreshingly cool. In exposed localities the temperature is likely to fall as low as 20° below zero during the prevalence of cold spells in the Winter. The first killing frosts usually occur during the latter part of September or the first of October. The average date of the last destructive frost in Spring is variable, the range being from May 2 to May 14 in the different localities. The latest dates for killing frosts on record are May 29 and 30.

THE RED SANDSTONE PLAINS.

The average annual precipitation over many parts of Bergen, Passaic and Union counties is from 50 to 53 inches. A very fair average for the district as a whole is 48 inches. The Summer rainfall while likely to be local in its character is generally more evenly distributed geographically than is the case in the more mountainous sections of north and west. Although a large part of the winter precipitation occurs in the form of snow, the average snowfall is considerably less than in the extreme northern counties, the range being from 35 inches in the southern end of the district, to 55 inches over the northern part of Bergen county. High day temperatures are frequent in Summer and in fact in late Spring and early Autumn, the highest on record ranging from 102° to 109°. The coldest weather usually occurs in January. Over the greater portion of the district the lowest temperatures on record range from 15° to 20° below zero. The season of killing frosts in Spring usually ends about April 25 and the first killing frost of Autumn seldom forms before October 10. The prevailing wind in Summer is southwest and in Winter northwest.

SOUTHERN INTERIOR AND SEACOAST.

The Atlantic ocean on the east and Delaware Bay on the southwest exert a marked influence on the climate of southern New Jersey, the modifying effects being most pronounced for a distance of from 5 to 10 miles inland from the coast line. High maximum temperatures are of frequent occurrence in Summer, the highest usually being recorded in July. The highest record on hand for the southern interior is 107°. Zero or lower temperatures are infrequent especially in the southern counties. Except at rare intervals May and September are free from killing frosts and the season is several weeks longer than that of the northern portions of the State. The whole southern part of New Jersey has a remarkably uniform annual mean temperature the range from Asbury Park to Cape May being only one and one-half degree. In the extreme southern part, periods of excess heat are almost unknown although there is nearly always a high percentage of humidity during the warm months of the year. The average annual precipitation for this district ranges from 50 inches in Mercer county to 41 inches in Cape May county. As is the case elsewhere in the State, July and August are the months of greatest rainfall, the Summer precipitation being due to local thunderstorms with excessive falls during brief periods at times. November is the driest month of the year although January and April receive comparatively light precipitation over numerous localities. Snow does not form any considerable percentage of the annual precipitation. Winter storms that begin as snow frequently end in rain. A winter without sufficient snow for sleighing is not infrequent on the southern coast. The snowfall ranges from 31 inches in the north to 20 inches in the extreme southern portions.

THE SOILS OF NEW JERSEY.

The soils of New Jersey throughout the entire State are exceptionally varied in their texture, composition, water-holding power and productiveness. There is a vast area of sandy and gravelly loams in Southern New Jersey. This area, even now prominent for its production of market garden crops, fruit, small fruits, cranberries and poultry is destined to become one of the most prosperous farming sections of the Atlantic seaboard. Farther north the greensand marl soils, widely known for their productiveness, form a wedge-

shaped area stretching from the Delaware River to Raritan Bay. Still farther north are located the Triassic red shale soils, for the most part heavy silt loams, rich in plantfood and capable, when at their best, of producing enormous yields of hay, corn, grain and miscellaneous forage crops. North of the red shale soils the so-called "Highlands" of New Jersey present a very picturesque territory of hills and valleys, of rich pastures, of extremely fertile muck land underlaid by shell marls, and of gently sloping hillsides constituting ideal sites for peach and apple orchards.

Because of its salubrious climate, the ready adaptability of its soils to a wide range of cropping systems, and its nearness to the best markets in America, New Jersey offers a peculiarly attractive field for the home seeker. Land values are rising rapidly as is also, the average production per acre. According to the reports of the Secretary of the State Board of Agriculture, the value of field crops and dairy products increased from \$24,249,179 in 1900, to \$67,715,872 in 1911. This remarkable increase in the value of the products is due not merely to the increased cost of agricultural commodities, but to the more intensive methods of farming and the resulting increased production per acre. It is certain that the present decade will witness a still further increase in production, a striking enhancement of land values, and the development of many acres now lying idle in Southern and Northern New Jersey.

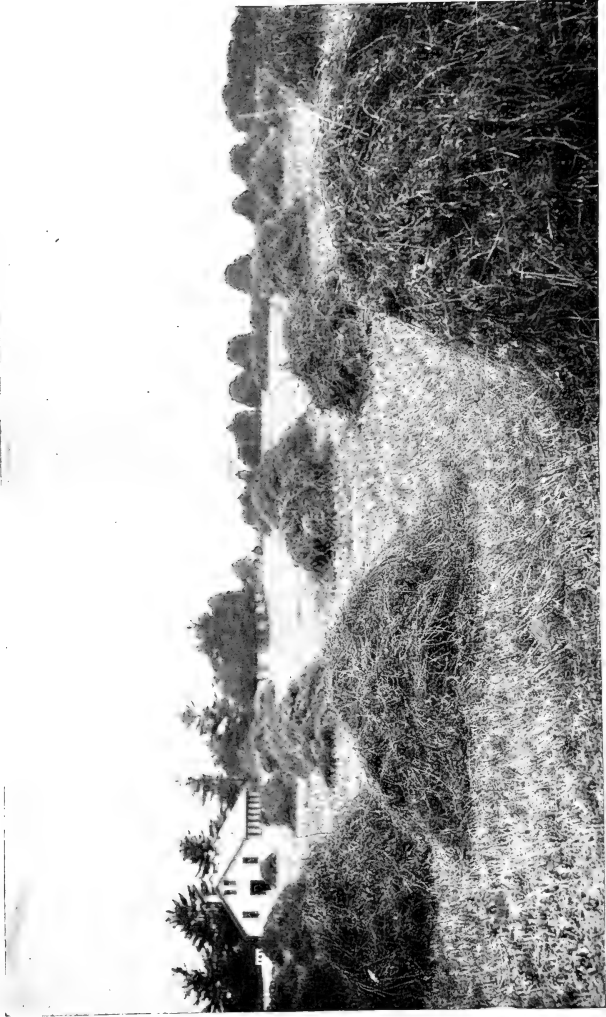
DISTRIBUTION OF POPULATION AND MARKETING FACILITIES.

New Jersey is growing fast in population. The 1910 census shows an enumeration of 2,537,167. This is a gain of 34 per cent. over the population of 1900. New York City with its four million inhabitants is adjacent on the east. Philadelphia with nearly a million and a half population is close to the western boundary of the State. These two cities, especially New York, not only are consumers of immense quantities of food products, but are the centers of distribution to surrounding territories. Thus, New York sends thousands of carloads of southern produce through New England and boatloads of northern grown products to the southern ports. New Jersey is located between these two markets and yet supplies them with but a very small percentage of their supplies. The manufacturing cities, the country home villages and the rapidly growing seashore resorts, furnish markets for the greater part of the products grown in the State.

The transportation facilities in New Jersey are probably unequalled in any State of the Union. There are over two thousand five hundred miles of railroad lines. This is the third largest mileage of any State. There are three thousand miles of improved highways and this State has for years been noted for its excellent roads. Canals and rivers offer cheap shipping facilities in many parts.

The northern and southern parts are sparsely populated. In the northwestern counties large farms with much rocky and wooded land are the rule. In the southern counties the pine-barrens cedar swamps and oak-scrub covered territories occupy much of the district. It is now proposed to open up some of this country by building a State highway for a distance through the heart of the Pine belt. Other forces are at work to get this non-productive land under cultivation.

The 1910 census shows that the total land area in New Jersey is 4,808,960 acres. Of this area, 2,573,857 acres are in farms. Only 1,803,336 acres are, however, classed as improved lands. There are all told 33,487 farms with an average size of 77 acres. This farm land including unimproved land, has an average value of \$48.23 per acre, being a gain of 46% over the value in 1900. In many of the more progressive agricultural districts improved farm lands are valued at \$200 per acre.



Two Acre Field of Alfalfa on the State College Farm. In Two Seasons this Field Yielded 26 Tons. The Average has Been 5 Tons Per Acre, at a Cost of Less than \$5.00 Per Ton Stored in the Barn.

PART TWO.

AGRICULTURAL INDUSTRIES.

GRAIN AND FORAGE CROPS.

Wheat, rye and oats are grown chiefly in the heavy soils of the middle and northern sections of the state.

It has been found much more profitable to raise oats and Canada field peas as a mixture, and the areas devoted to this mixture are being greatly increased in all sections. Oats and Canada field peas are sown at the rate of one and one-half bushels of each per acre in very early spring, and the crop is used in anyone of three different ways: (1) As green forage for dairy cows. (2) It is cut when the peas are in blossom and cured for hay. (3) It is cut when the grain is ripe and threshed, and the grain is ground while still mixed and used as a feed for hogs, poultry, dairy cows, sheep and horses.

Wheat and rye are uniformly sown in the Fall, and to avoid danger from the Hessian Fly the sowing is usually done in early October. It is customary in the usual rotation of crops to sow timothy seed with the grain in the Fall, and then sow clover in the same field the following Spring. After the grain is cut the clover and timothy occupy the ground for a year or two, giving good yields of hay. The wheat and rye are both used as money crops, and in many cases are sold in the straw to threshing and baling companies. Under this plan, both the straw and grain are sold from the farm and the fertility thus taken must be returned by the purchase of manures or fertilizers.

A better plan, followed by many farmers, is to use the straw for feed and litter on the farm, and thus return its fertilizer ingredients to the fields in the manure.

Over 200,000 acres are planted annually to wheat, oats and rye for grain and straw while another 16,000 acres are planted for cutting green.

As dairying is a prominent farm industry in New Jersey the production of forage crops is of great importance. The grasses, both native and introduced, are grown in great abundance and with extreme ease in those sections where heavy soils are found.

Kentucky blue grass stands out as the most important and common pasture grass in all parts of the state. The abundant annual rainfall causes blue grass to grow as well as in any sections of the Eastern states. It is the earliest grass in Spring and remains green throughout most of the summer, and until fall of snow in December. The long and almost continuous pasture season, due to the growth of both the tame and wild grasses, has helped much in maintaining the profits from dairy herds. Farmers in the state have learned to expect a brief period of poor pasturage for a few warm days in July or August. The thoughtful farmer plans some green forage crop, such as early flint corn, or sweet corn, to feed to his dairy herd during this brief period.

Timothy is the standard hay crop of the State. Over one hundred thousand acres are raised annually of this grass. It is grown on the heavy soils with much profit. On light soils, however, the yield is too low. It is often seeded with clover and so produces a heavy crop of mixed hay the first year and clear timothy the succeeding years. When raised alone this hay brings the highest price in local markets and is often baled and shipped to the larger cities.

Clover is being raised more and more as the farmers realize the benefit to the soil from this leguminous plant. Nearly all of the grain, forage and vegetable crops thrive well on land where a clover sod has been plowed under. Red clover is frequently sown with grass seed in the northern portions of the State. Alsike clover is favored by farmers throughout the central part, while Crimson clover is often sown in the southern counties. White clover does best when sown with Kentucky blue grass for permanent pastures on the limestone soils of Northern Jersey.

Alfalfa is now grown in every county of New Jersey excepting Hudson county. It can be grown successfully on all farm soils where the land is well drained. It is considered one of the most valuable forage crops in the State for three reasons:

First, it produces one of the best dairy and stock feeds because of its high protein content and its heavy yields.

Second, it is grown as a money crop, as the eastern markets are paying a price equal to that of good timothy hay per ton.

Third, it is not a robber crop as many of the grains and grasses prove to be, but returns nitrogen, the most valuable of all fertilizing elements, to the soil, wherever it is grown.

The yield usually doubles that of ordinary hay and makes a valuable addition to the farm rotation. As compared with other feeds alfalfa is three or four times as rich as timothy and is equal to wheat bran. In the production of pork it has been found nearly equal to digester tannage. These facts have been strong arguments and have caused many dairy farmers to endeavor to grow alfalfa. It is a crop which needs special conditions to secure a stand but when once a field has been permanently established on the farm then succeeding sowings should be quite successful.

Corn is king of all food products in New Jersey as well as throughout the Nation. There are nearly three hundred thousand acres planted with this crop every year in New Jersey. It is raised during recent years very largely for ensilage, but the yield in harvested ears is about ten million bushels a year. Large white and yellow dent varieties are used entirely where the season is long enough to mature the grain. In some of the northern counties dent varieties are used for silage purposes because of their heavy stalk and leaf growth. The smaller flint kinds are used in these localities considerably on account of their ripening earlier. The best yields of corn in the State are secured where seed selection has been practiced for a number of years. In this manner a strain of corn is secured which is best suited to the soil, the climate and all local conditions.

HORTICULTURE.

New Jersey is preeminently a horticultural state where all of the common vegetables, fruits and flowers of the temperate zone are grown upon an intensive basis. Although forty-fifth in size among the states of the Union, New Jersey holds a position close to the top in the amount and quality of the various horticultural crops produced, and where yield and money returns are figured upon the acre basis per state, New Jersey demonstrates how extensively and intensively her lands are being made to produce.

With extensive trucking areas, cranberry bogs, peach, pear and apple orchards, plantations of raspberries, blackberries, dewberries, currants, gooseberries, grapes and strawberries and with numerous greenhouse ranges and nursery and seed farm establishments New Jersey well fulfills the name of "THE GARDEN STATE."

Of the four general groups of horticultural products vegetables, fruits, flowers and nursery stock the first three are the more extensively grown.

VEGETABLES.

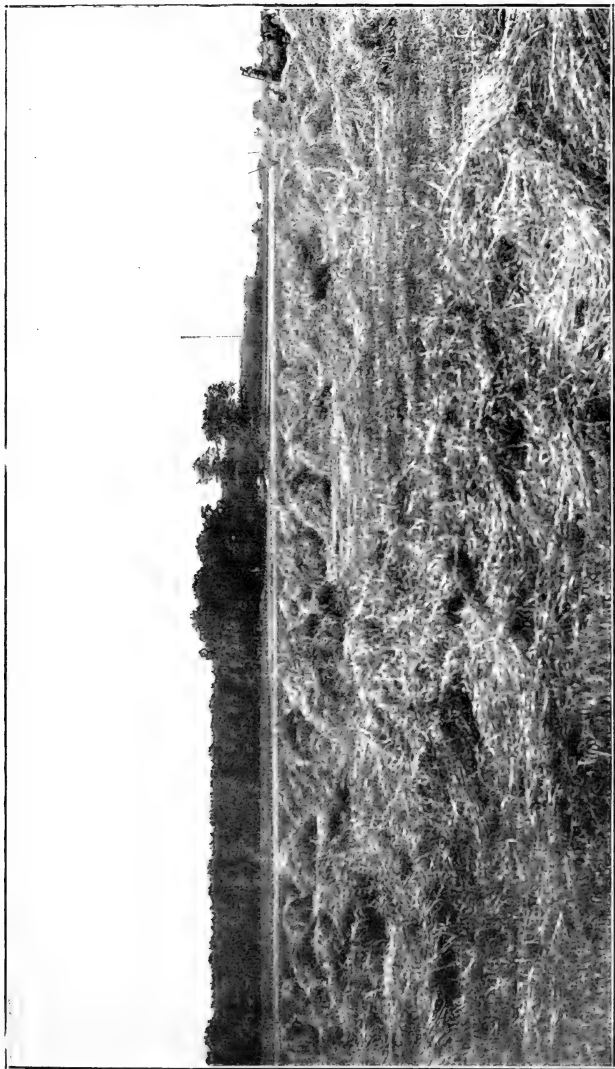
The amount and quality of the vegetables of this State are well known in the great Eastern markets. The United States Census for 1900 shows New Jersey to be second among the states of the Union in the value of vegetable crops other than potatoes, sweet potatoes, onions, cassava and chicory.

Few people, outside the state, realize the immense quantities of tomatoes, asparagus, beans, melons, peppers, egg plant and other vegetables which are annually being produced in New Jersey. But one only needs stand at the ferries between Camden and Philadelphia for an evening in Summer, and see the continuous stream of great wagons and trucks, loaded with produce, to realize what a great industry it is.

According to the United States Census for 1900, New Jersey ranked third in the number of acres of green beans; second in the number of acres of tomatoes; first in the total acreage devoted to egg plants and first in the number of acres devoted to asparagus.

The term "JERSEY" upon any package of vegetables, means "high quality" to many consumers in the Cities of Philadelphia and New York and the producers are assured of the top market prices.

Intensive trucking areas are found near Jersey City and Newark in the vicinity of New York, and general trucking areas upon an



Hay Crop on the State College Farm, New Brunswick. Yield $3\frac{1}{2}$ Tons Timothy Per Acre.

extensive scale occur over a great part of the southern half of the state with more intensive centers of the industry in Gloucester, Salem, Cumberland, Camden, Burlington and Monmouth counties.

The soils of the southern half of the state are admirably adapted to the culture of vegetable crops. Large areas consist of light, sandy loams which warm up quickly in Spring, are easily worked and quick to respond to good management. Earliness is often an important essential in securing vegetables for market, and the trucking soils of New Jersey are of the best type for success in this direction.

Swedesboro is the center of the great tomato and sweet potato section of Gloucester county, and for its size is probably the heaviest shipping station for vegetables in the United States. Fifty to sixty carloads of tomatoes is a common daily shipment at the height of the season, and during July, 1912, more than 400,000 crates were shipped by rail to distant points, while large quantities were sold in Philadelphia and other nearby markets. One day's shipment of tomatoes, in 1910, consisted of 36,000 crates and 25,000 baskets.

Mullica Hill, Woodstown, Mt. Holly, Freehold, Matawan and Keyport are other prominent shipping points, while quantities of vegetables are grown about Moorestown and Burlington and hauled directly to market.

Asparagus is also a crop for which the state is famous, and Monmouth county is the center of the industry, although the vegetable is produced upon all the trucking areas. The State ranked above all others in the Union in the number of acres devoted to the crop, according to the Census of 1900, and Monmouth county was the leading county in the United States in the acreage of asparagus.

Large quantities of this vegetable are now canned within the state in addition to the great bulk of the crop which is marketed in a fresh state.

Peppers are now grown in large quantities by Italian farmers in Cumberland county about Newfield and Vineland, and Gloucester county is equally prominent in the production of this vegetable. Several truck growers have installed irrigation plants, one of the most successful being that of Mr. Seabrook, Bridgeton, New Jersey.

Many other similar plants will probably be installed in the near future and with them will come still more intensive trucking.

WHITE POTATOES.

The potato crop is rapidly becoming the most important field crop of the state, and has made a marked advance in recent years.

In 1879 there were 41,609 acres devoted to potatoes; in 1889, the acreage had increased slightly to 46,711 acres; in 1899, it had increased to 52,896 acres, while in 1910 it reached a total of 72,991 acres. From 1879 to 1899, a period of twenty years, the acreage of potatoes increased a little more than 11,000 but from 1899 to 1909, a period of ten years, the potato acreage increased 20,000 acres. This demonstrates the wonderful development of the industry in recent years.

Monmouth county has been the banner potato county of the state and produced 1,893,523 bushels in 1909. Salem county was second, with 1,303,088 bushels, with Gloucester and Burlington counties following in order.

Freehold is the center of the industry in Monmouth county, and is now the headquarters of the Monmouth County Farmers' Exchange. In Southern New Jersey, the potato center is about Salem, Woodstown and Elmer. These three stations have each shipped more than 600 carloads during the season of 1912.

The quality of the potatoes grown in New Jersey is recognized upon the market and New Jersey stock upon the Chicago, Cleveland and Baltimore markets often outsold that from other points the past season.

Irish Cobbler and Green Mountain are the two varieties principally grown, with some American Giant produced in Monmouth county.

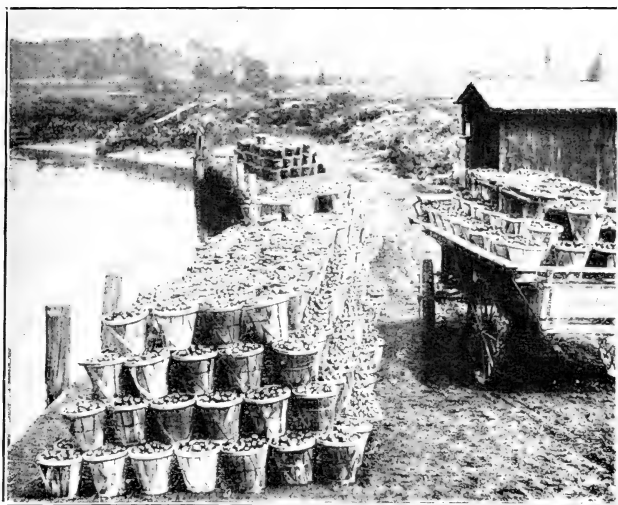
The crop is planted as early as weather conditions permit in early Spring, and the crop dug and marketed about as soon as it is mature. Late potatoes are very little grown, except for seed purposes, and then the early varieties are planted for a second crop.

The potato crop is receiving intelligent management in the potato districts of the state, and although the industry has developed amazingly in recent years, it seems to be a stable and steady advance.

SWEET POTATOES.

Sweet and white potatoes are commonly considered as general farm crops and are separately considered in Census reports.

In total production of sweet potatoes and yams New Jersey falls



Shipping Tomatoes Along the Delaware River.
(Courtesy of American Agriculturist.)

below such states as North Carolina, Georgia and Virginia which are very much greater in extent, and where these vegetables are grown very generally. Only the southern half of New Jersey is adapted to sweet potato production, and yet in 1909, the yield was 3,186,499 bushels.

When the production, by counties, of the United States, is considered Gloucester county, New Jersey, is second in the list, with Salem county fourth and Burlington county fifth among the counties of the United States.

New Jersey produces practically no yams but the so called "dry sweets" which are much preferred in the northern markets.

"Jersey Sweets" are known the country over for high quality, and some sections of the State, notably, Vineland, have established a reputation for sweet potatoes grown in a certain district. High quality and strict grading have resulted in such a standing.

FRUITS.

New Jersey has held a prominent position in the production of fruit since early colonial days, and, although, the introduction of the San Jose scale previous to 1900 was a severe check to the industry, it now promises to develop rapidly.

All of the standard temperate fruits, such as the peach, pear, apple, cherry, quince, grape and the small fruits, can be successfully grown in most parts of New Jersey, and the facilities for marketing them excell those of any other state.

From the rolling and hilly areas of Sussex, Warren and Hunterdon counties to the flat sandy areas of Gloucester and Cumberland counties there is a great variation in soil and climatic conditions. There is commonly from ten days to two weeks difference in the ripening period, of various fruits, between these points, which works to the advantage of the fruit growers, for competition between the various districts is practically eliminated.

PEACHES.

New Jersey is better known as a peach state than as an apple state and because soil and climatic conditions are unusually favorable to the peach.

This fruit flourished in the state from its earliest introduction, and southern New Jersey became a prominent peach section before the industry spread south to Delaware and Maryland. The

industry probably reached its height in the state in 1900, or just before the San Jose scale caused great destruction.

The value of the crop in Hunterdon county alone in that year being estimated at \$1,000,000. The United States Census of 1900 for the year 1899 shows that New Jersey produced more peaches that season than any other state except California and Texas.

Winter temperatures are seldom severe enough to destroy the fruit buds in the dormant season, and Spring frosts seldom cause much damage to the blooms so that the state never has an entire failure of the crop.

Hunterdon county was the most prominent peach section of the state in 1900, but at the present time, Burlington, Gloucester, Monmouth, Atlantic and Camden counties are showing a more rapid development of the industry.

Centers of peach production are found about Moorestown, Marlton, Hammonton, Glassboro, Lebanon and Burlington with many smaller centers scattered about the state.

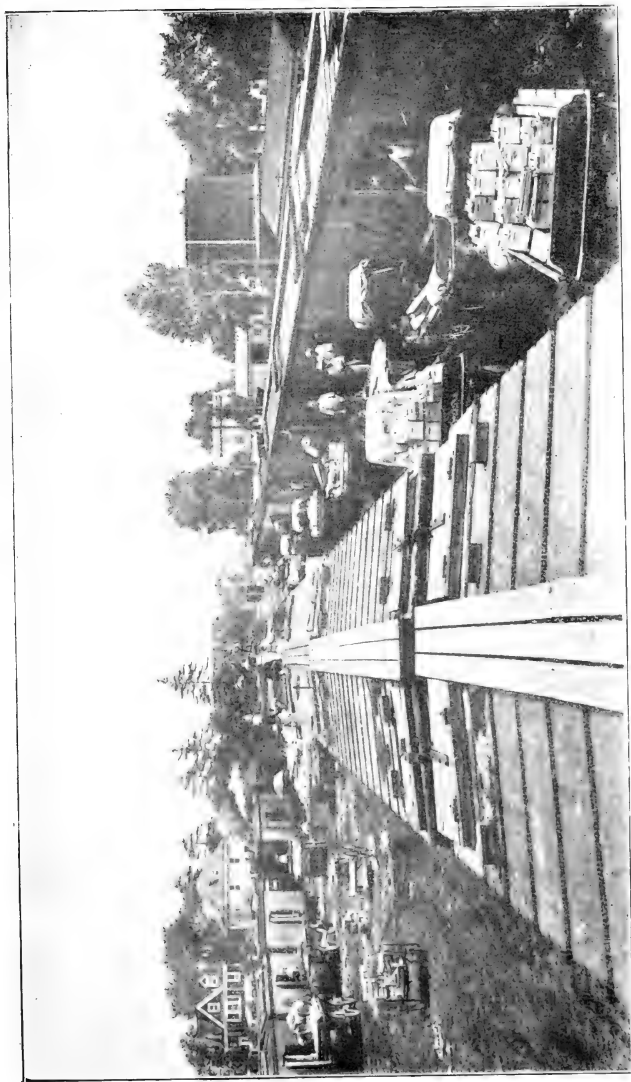
The winter of 1911-1912 was a most severe one but orchards above 600 feet elevation in Northern New Jersey produced good crops, while in Southern New Jersey little damage was done even at 150 feet elevation.

Peaches can be grown successfully upon all of the sandy soils of central and Southern New Jersey, with the exception of the very light poor sands. In central and Northern New Jersey all of the well drained soils are adapted to peaches, but elevated sites should be chosen to avoid winter injury.

Large quantities of peaches are grown within hauling distances of Philadelphia and are delivered upon the market a few hours after being picked. Good transportation facilities to both Philadelphia and New York can be found at many points in the state, and the freight rate per Georgia carrier does not exceed fifteen (15) cents per crate in most instances. New Jersey peach growers are favored by soil and climatic conditions and have a great advantage over growers in such districts as Georgia in transportation rates.

The sixteen quart Jersey or Delaware basket is still the common commercial package where the fruit is hauled to the market. The Georgia carrier has become the standard shipping package, however, in the Southern part of the state and its use is rapidly becoming general.

The following varieties are considered to be the best commercial sorts: Carman, Hiley, Champion, Belle of Georgia, Elberta, Fox



Tomato Shipping Scene in the Yard at Swedesboro.

Seedling and Iron Mountain. Greensboro, Waddell, Miss Lola, Frances and Edgemont make up a secondary list that is profitable under some conditions, and in certain seasons.

PEARS.

Pear growing was formerly a very important part of the fruit industry of the state, but the appearance of the scale and the blights resulted in the destruction of many orchards of Bartletts, and the industry has never reached its former prominence. In 1900, New Jersey ranked fifth among the states of the Union in the number of pear trees of bearing age, and she ranked seventh in 1910 with 732,000 trees. Large orchards of Kieffer pears are still found in the state and, at least, one grower has 265 acres of pears.

The blight is especially severe upon the very light soils which suffer from drouth, and strong loam soils should be selected for the culture of this fruit. In some localities the pear is doing well and is quite free from blight, and it is in such places that the higher quality varieties should be planted. Seckel is most resistant, of the higher quality varieties, to the blight and produces well. Bartlett, Kieffer and Seckel are the most prominent commercial varieties grown at the present time, with some Duchess, LeConte, Lawrence, Clairgeau and others.

APPLES.

This state does not hold as high rank among the other states in the amount of apples produced as it does in the production of peaches and pears. Nevertheless, a large quantity of this fruit is grown and the quality is high. Several fruit growers in the state have more than 200 acres of apples under cultivation, and most of these are increasing their orchards.

Elevated, rolling lands are often recommended for apples and excellent sites of this type occur in Northern New Jersey. Very successful orchards, however, are to be found upon the rather flat sandy loams of the state, and with the exception of Cape May county and the eastern portions of Atlantic, Burlington and Ocean counties the greater part of the state is adapted to apple culture. The medium to strong loam soils are to be preferred to the light sandy loam soils for the production of apples.

Central and Northern New Jersey was formerly very prominent in apple production, but the bulk of the crop is now produced in

Burlington, Monmouth and Gloucester counties, with centers of production about Moorestown, Glassboro and Red Bank.

Many early Summer and Fall varieties of apples are grown commercially in New Jersey. The demand for such varieties has been very good in recent years, and growers are still planting a large proportion of such sorts.

Such a variety as the Baldwin can be grown successfully in Northern New Jersey, but becomes a Fall apple in the Southern counties of the state. While Winesap, Grimes and Rome find more ideal conditions for development in the central and southern counties.

The following varieties are considered to be of special commercial value, depending somewhat upon the locality. Red Astrachan, Yellow Transparent, Williams, Starr, Gravenstein, Maiden Blush, Wealthy, McIntosh, Stayman-Winesap, Rome and Paragon.

The Jonathan, Grimes-Golden, Fall Pippin, Winesap, English Codlin and Baldwin are varieties of high quality that succeed well in general.

Varieties such as Northern Spy, Rhode Island Greening and Roxbury Russet can be grown in New Jersey, but are too far South of their best limit especially in Southern New Jersey.

CHERRIES, PLUMS AND QUINCES.

Sour cherries are one of the profitable fruits of the state and considerable quantities are produced. Early Richmond and Montmorency are the two varieties most commonly planted.

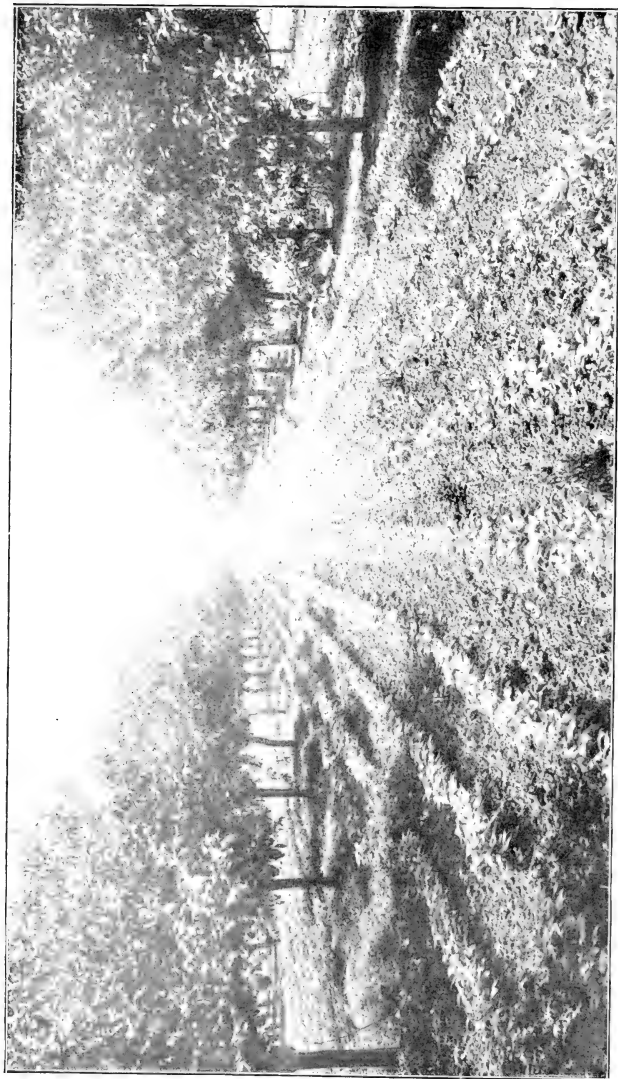
Sweet cherries are not being planted to any extent commercially as other fruits are regarded as more profitable. The large size of the old sweet cherry trees, in various parts of the state, indicate, however, that one can grow this fruit successfully if he so desires.

Plums were formally grown quite generally throughout the state, but in recent years peaches, apples, pears and small fruits have largely taken their place, and are considered to be more profitable.

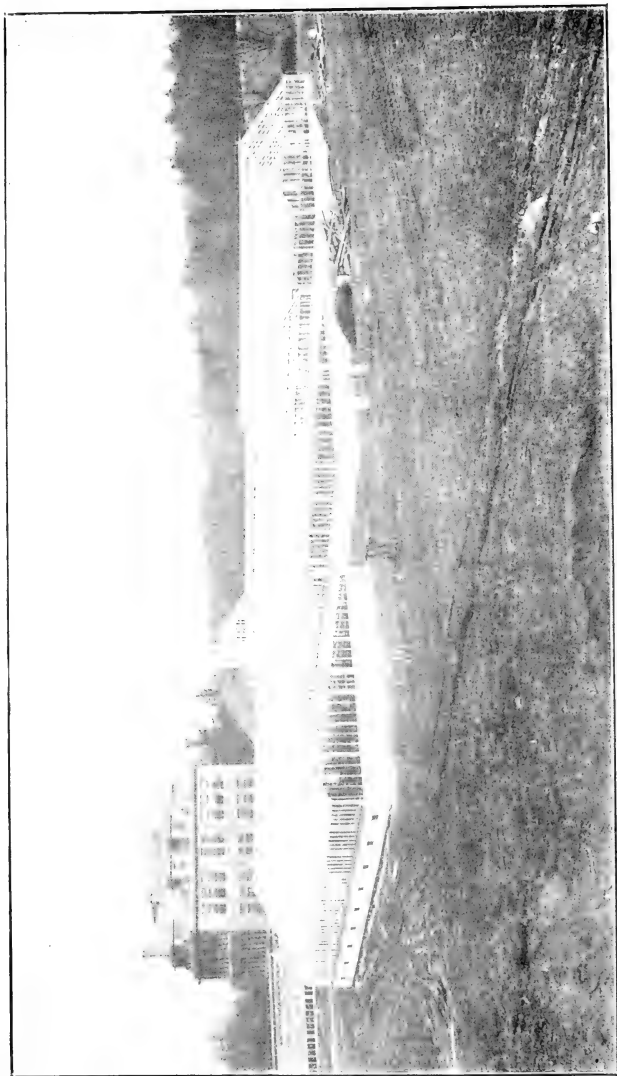
Quinces are successful wherever the apple does its best. Like the pear it is more subject to blight upon the dry, light soils and should only be planted upon the medium to strong loams.

GRAPES.

Favorable conditions for grape growing occur in nearly all parts of the state, but the industry at present is centered largely in Bur-



An Apple Orchard Intercropped with Snap Beans. Orchard of Mr. Horace Roberts, Moorestown, N. J.



View of New Greenhouse Range at College Farm. Erected in 1911. Designed for Investigations with Cut Flowers.

lington, Cumberland and Atlantic counties. The Vineland Grape Juice Company has a vineyard of 100 acres at Vineland, and the industry about there is developing. Other extensive vineyards are to be found about Moorestown, Gibbsboro and Egg Harbor City.

The Italian farmers throughout Southern New Jersey are planting small vineyards and the industry is developing.

The Concord is more generally grown than any other single variety, but Ives Seedling is frequently planted for the manufacture of grape juice. Niagara, Moore's Diamond, Campbell's Early Delaware and others are also grown to a greater or less degree.

The industry about Egg Harbor City is practically confined to the culture of wine grapes.

SMALL FRUITS.

The production of small fruits is an important part of the fruit business of the state and blackberries, dewberries, raspberries, currants, gooseberries and strawberries are extensively grown.

According to the United States Census for 1900, New Jersey cultivates more blackberries and dewberries than any other state.

Atlantic county is the leading county of the state in the production of raspberries, dewberries and blackberries with Hammonton as a center, but Camden, Monmouth, Cumberland and Burlington counties produce these fruits in abundance. Gooseberries have been quite profitable in recent years and larger plantings are being made. Strawberries are produced in quantities from Essex to

May counties, with Cumberland county leading in total production at the 1900 Census. Moorestown is now a prominent center, however, and the crop about this one point has been as large as 500 carloads in a single season.

The strawberry is the first fruit to ripen and large numbers of Italian pickers go from Philadelphia the latter part of May to all parts of Southern New Jersey to assist in gathering the strawberry crop. Cherries, raspberries, blackberries and dewberries follow the strawberries and keep these people engaged until the peach, grape and cranberry crops close the season.

CRANBERRY PRODUCTION.

Over one-third of the entire cranberry crop harvested in the United States comes from New Jersey. There are over ten thousand acres of cranberries yielding from 100,000 barrels to 250,000

barrels annually. Most of this acreage has been cleared and drained and set out to selected varieties, there are however many more acres of swamp land which only wait for capital and energy to transform them into profitable plantations. Such land can be bought for from five dollars upward per acre. It costs from three hundred to six hundred dollars per acre to fit this land and set it out according to Mr. A. J. Rider, a veteran grower of Hammon-ton. The plantation should bear some the third year and yield a paying crop the fifth year. After a cranberry bog is once estab-lished about the only expense is in keeping it clear from brush and weeds. They are long lived plants and some of the most profitable plantations in the state are thirty years old or more. The average yield is thirty barrels per acre, but some growers secure over forty. There are nearly five hundred cranberry plantations at the present time in the state. The planting of cranberries has been extensive during the past few years and the fruit is of such a perishable na-ture that some years at the height of the harvest a glut of the mar-ket occurs. This is discouraging to the growers and a very strong distributing organization has been formed which includes most of the cranberry growers in the state. It is probable that with the extension of the work by this organization and by the planting of later, better keeping varieties of berries this phase of the industry will be overcome. Most of the present cranberry plantings are lo-cated in Burlington and Ocean counties. There are acres of un-developed land suitable for cranberry production in Cumberland and Cape May counties. In the earlier period of cranberry cul-ture the wild native berry was cultivated entirely. By selection and improvement better varieties have been secured which are now almost entirely planted. The Early Black is an early medium sized dark red berry. It is prolific but is not a good keeper. The Bell is a large light red berry for mid-season and the Howe is a popular bright red berry of good size and of excellent keeping qualities. The native Jersey is still planted by some because of its late ripening. The average annual value of the cranberry crop of New Jersey is around a million dollars.



Poultry Plant. State Agricultural Experiment Station, New Brunswick, N. J.

FLORICULTURE.

New Jersey has long held a prominent place in the commercial production of cut flowers and potted plants. The United States Census for the year 1909 shows that the state ranks fourth in the value of florists' products, and is only exceeded by the great states of New York, Pennsylvania and Illinois.

The greater number of the greenhouse establishments are located in Morris, Essex and Hudson counties within a short distance of the New York markets. New Jersey does not receive the prominence deserved along floricultural lines. The immense greenhouse plant of Henry A. Dreer is located at Riverton, New Jersey, where thousands of palms, ferns and other greenhouse plants are produced annually, but the fact that the plants are grown in New Jersey, although sold from the Philadelphia office, is not generally known. Peter Henderson & Company also conduct large greenhouses in Jersey City although the main office is in New York City.

Large quantities of carnations, roses and chrysanthemums are annually produced in the state, but New Jersey is especially noted for the production of orchids. At the last two National Flower Shows more than 75 per cent. of all the orchids exhibited were displayed by New Jersey exhibitors.

The quality and amount of potted stock produced in the state is also especially notable.

The winning of many prizes for various collections of greenhouse plants at the recent International Flower Show, held in London by William A. Manda of South Orange speaks volumes for the skill of a New Jersey florist.

New Jersey also occupies a prominent place in the distribution of new varieties of greenhouse plants and cut flowers, and numbers among her growers men who are prominent throughout America and abroad.

SEED FARMS.

Large quantities of vegetable and flower seeds are annually produced in New Jersey for the general trade, and there are a number of prominent seed houses which have special farms devoted to such work.

New Jersey holds a prominent position in the production of the country's supply of egg plant seed. Tomato, asparagus and other

vegetable and flower seeds are also produced very successfully, and the industry is just beginning to develop.

NURSERY PRODUCTS.

The nursery business in New Jersey can be divided as follows:

Nurseries growing peach trees only; those growing miscellaneous fruit and other stock; those growing shade and ornamental stock; strawberry growers and dealers. The entire number is slightly in excess of one hundred, ninety of which actually grow stock. These nurseries have a total acreage of over 2,500 acres, the largest containing 400 acres and the smallest being one-fourth of an acre.

Last season, these nurseries handled over 15,000,000 pieces of stock, having a valuation of over \$2,000,000. The fruit stock averages about 2,200,000 trees, while the shade and ornamental stock runs into 5,000,000. This does not include privet which is grown on 38 nurseries, carrying altogether over 5,000,000 plants.

The herbaceous stock is almost beyond reasonable estimate. In the inspected nurseries, it is listed as 3,000,000; most of it, however, is grown on places not ranked as nurseries from our point of view.

The regular nurseries have over 1,500,000 feet under glass, but this does not include the large rose houses in Essex, Morris and Hudson counties, nor the immense florists' establishments, whose valuations far exceed the nursery business.

In addition, the nurseries import each year an average of 11,000 cases of stock, containing such plants as evergreens, box wood, fruit trees, ornamental stock, roses, rhododendrons, bay trees, orchids, palms and other greenhouse stock, which is of course, inspected as necessary. All the nurseries are in first class condition with respect to freedom from insect pests and diseases. Most of the peach stock grown in New Jersey is sold locally, while a large percentage of the shade and ornamental stock goes into interstate commerce.

FORESTRY.

In New Jersey few farms are without shade trees and a woodlot. Forest is native throughout and trees need to be planted only where it is desirable to change the man-made conditions. Whether planted or of natural origin any forest in the State thrives better and grows more rapidly than one in the North or West where the growing season is shorter or the climate otherwise less favorable.



Poultry Plant on South Jersey Truck Farm. Chas. L. Fidler, South Dennis.

Lumber, poles, railroad ties, posts and cordwood are always in demand at the highest prices received in the country. Fitted always for the poorer soils, easy to grow, easy to harvest, easy to sell, timber is one of the surest farm crops. The chief drawback to the practice of forestry, fire, is in New Jersey reduced to a minimum through the activities of a strong forest fire service. There are lands on many of the farms in the northern section of the State where because of the rough and stony character the planting of quick growing trees for poles and ties offers a sure, if delayed, profit. The difference in cash returns during a period of fifty years between a well managed wood lot and one where no method is employed, is surprising to those not familiar to the habits of trees and their response to favorable growing conditions.

The Forest Commission will help the owner of any woodland in the State to manage it to the best advantage. This aid includes the direction of improvement fellings, the utilization of timber, fire protection, and, where necessary, tree planting. Inquiries by mail are invited. In important cases a competent forester will be detailed to study the problem on the ground and advise the owner. Such service is entirely free to communities and public institutions, individuals are asked to pay the forester's expenses only; his salary is paid by the State.

THE POULTRY INDUSTRY.

The past decade has witnessed an immense increase in the poultry industry in all its phases in New Jersey. With the development and dissemination of scientific methods of management, it has come to be more of a specialized industry as exemplified by the thousands of large flocks scattered over the State which bring to the owners satisfactory returns on the money invested. In 1900 there were in the State nearly two million fowl, over thirty-two thousand turkeys, and about fifty thousand ducks and geese, the combined value of these birds being \$1,300,000. In 1910 the number of fowl had increased to over two million five hundred thousand, ducks during that same time increasing slightly in number, while turkey raising had become nearly abandoned. The value of all poultry during the intervening decade has increased to approximately \$2,275,000 which is an increase of 75 per cent. This is a gain in value far exceeding the gain in numbers which means that the quality of the individual has shown a marked improvement. In 1900 the value of poultry

raised in the State was \$2,265,816, while in 1910 it had risen to \$3,847,029, which is an increase of over 65 per cent. During the same period the number of eggs produced had risen from 11,942,550 dozen to 15,000,000 dozen. The average price realized for the same in 1900 being seventeen cents while ten years later it had risen to twenty-three cents which is the highest average yearly price received by any state in the Union.

The Single Comb White Leghorn is the predominating breed due largely to the white-shelled egg which is preferred by the New York market. They are kept for the production of market eggs, the idea being to practice a method of management which will produce a maximum quantity in the winter during the season of high prices. New Jersey has the honor of possessing the largest White Leghorn farm in the world, it being located at Brown's Mills, Burlington county, in the pine belt. On this farm approximately 18,000 birds are kept in units of five hundred under almost ideal conditions. There are two important intensive egg producing sections in the State, namely, Hunterdon county, the district centering around Flemington, and again in Cumberland county in the vicinity of Vineland. The Flemington district is an old center of production; the 1900 census giving that district over 230,000 head of fowl. The Vineland section on the other hand has developed to its present extent in the past ten years. The 1900 census gave the whole of Cumberland county only 119,000 birds, while the 1910 census shows 183,950.

New Jersey is famous for her broilers, the term "Philadelphia Milk Fed" being a trade name. Many have experienced the pleasure of tasting them. Hammonton is the home of the specialized broiler industry of the United States where it started with a boom over twenty-seven years ago, due largely to the unprecedented successes which had attended the efforts of a few poultry specialists in that vicinity. As with all such phenomenal developments the boom was over done and at present the great mass of Jersey broilers are produced as a side line to egg production or general farming throughout the southern part of the State. The soft roaster and capon industry is firmly established in the central and southern portion where they are produced in connection with general farming.

The poultry raisers of New Jersey are favored in having the best markets in the land directly at their doors, New York being the largest and one of the best egg markets in America, while Philadel-

phia on the other side of the state is one of the best markets for live and dressed poultry. During the summer season the resorts along the coast consume an immense amount of the best quality of poultry products for which an attractive price is paid.

The poultrymen of the State are well organized, probably more so than in any other state in the Union. There being twenty-one associations organized primarily for educational and exhibition purposes with a total active membership of about five thousand poultrymen. Most of these associations hold monthly meetings for educational purposes at which time a regular program is carried through. Many of them hold annual poultry shows of high quality, while many are buying and selling co-operatively. The State Branch of the American Poultry Association is a live organization constantly attempting to protect and promote the immense interests involved.

The State College and Experiment Station are well equipped and organized for educational and experimental work along poultry lines. A four-year course with the option of poultry husbandry as a specialized study is offered, leading to the degree of B. S. Short winter courses covering a period of three months are also very popular. The Experiment Station is conducting educational work through monthly reading course circulars and in addition to the experiments carried on at the Station Plant are conducting co-operative experiments on many poultry farms in the State.

All things considered, there is a bright and prosperous future for the poultry industry in New Jersey, both to the poultryman already located within her borders as well as to the prospective egg farmer searching for a suitable situation.

NEW JERSEY DAIRY ANIMALS.

The homes of some of the greatest producing families of Holstein and Guernsey cows are located in New Jersey. This undoubtedly accounts for the high average value of the New Jersey cow.

According to the report of the United States Department of Agriculture of 1911, the average value of dairy cows in this State exceeds that of any other State in the Union. The New Jersey average is given as \$53.50 per cow, while the average in the United States is \$45.42; thus it will be seen that the value is \$7.90 more per cow, or 17.3 per cent. greater than the average value.

The number of pure bred herds in the State has rapidly increased during the past few years, and at the present time it is estimated that there are 5,500 pure bred dairy cows in the State. There is no state in the Union where a greater percentage of the dairy cows in the state are pure bred. In proportion to the number of cows, New Jersey stands first in the amount of advanced registry work done. This plainly demonstrates that the pure bred breeders of the State realize the importance of superior animals.

During the past winter as many as seventeen men have been working at one time supervising advanced registry records.

WORLD'S CHAMPION COW.

Recently three world's records have been broken by Holstein cows owned in the State. The world's record butterfat production for seven and thirty days was broken by Valdessa Scott 2nd, No. 72311 with the following production:

Official record: 7 days, 695 lbs. milk, 41.87 lbs. butter fat.

Thirty days, 2,934 lbs. milk, 165½ lbs. butterfat.

Junior three-year-old, Finderne Pietertje Johanna, No. 121082:

Seven days, 637.9 lbs. milk, 28.16 lbs. butterfat.

Thirty days, 2701.7 lbs. milk, 113.26 lbs. butterfat.

Junior two-year-old, Finderne Pontiac Netherland, No. 133504:

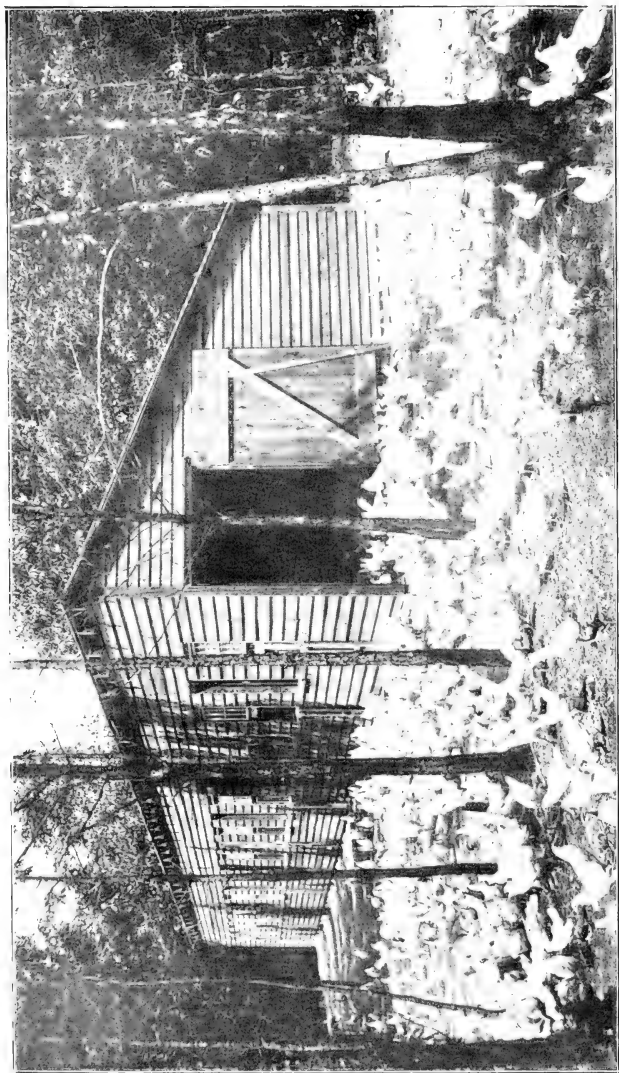
Seven days, 576.5 lbs. milk, 22.61 lbs. butterfat.

Thirty days, 2329.4 lbs. milk, 88.58 lbs. butterfat.

The world's record Guernsey cow, Dairymaid of Pinehurst, with the production of 14652.4 lbs. milk and 860.26 lbs. butterfat in one year, was bred in New Jersey. Of 133 bulls that have been admitted to the Guernsey advanced registry, 33 or .248 per cent. of the total number are owned or have been bred in New Jersey. Undoubtedly there are other advanced registry bulls that are owned or have been bred in New Jersey that we have no record of. These facts are of no little importance to the dairyman considering a good place to locate a dairy farm. A herd of some of the best pure bred animals in the world can be purchased without going out of the State.

CERTIFIED AND MODIFIED MILK PRODUCTION.

Several of the largest dairies in the country, producing certified and modified milk, are located within the State, and the prices received for the milk produced by these plants, ranges from fifteen



A Rancocas Unit. Scene on One of the Largest Poultry Plants in the Country, Brown's Mills, N. J.



Clydesdale 4 year old. Bred, Raised and Owned in New Jersey.



Valdessa Scott and World's Champion Milk and Butter Cow.
(Owner, B. Meyer, Flanders, N. J.)

to twenty cents per quart. Certified milk is an ideal milk, and a certain class of consumers in the cities are willing to pay a good price for milk they know to be pure and clean. The production of certified milk is a profitable business, and many dairies are arranging their plants preparing for its production.

GENERAL.

To the average dairyman the opportunities are also attractive. New Jersey has 168 people for every cow in the State. When we consider that one cow is required to produce the amount of dairy products consumed by 18 people, it is clearly understood that there is a great opportunity for the industry to grow. This does not include the great markets offered by the cities of New York and Philadelphia and the markets of the State's summer resorts.

In conclusion, it is safe to say that no state can offer a greater number of advantages to the dairyman who desires to locate in a region where conditions are favorable to conducting a profitable dairy business.

HORSE BREEDING.

Of the many agricultural industries in New Jersey inviting unrivaled opportunities to the farmer for success, profit and contentment, few indeed offer a greater welcome than that greeting the breeder of pure bred live stock, or the farmer interested in the growing and marketing of live stock products.

Land areas well adapted for the production of live stock are available at reasonable figures throughout the State. The level pasture lands of South Jersey grow luxuriantly all grass, forage and grain crops necessary for economical feeding of farm animals, while the cheaper and rougher areas available in North and Middle Jersey are unexcelled when one considers the adaptability of the valley low lands for crop production, and the special features of the rougher areas as regards shade, water and hardy natural grasses for pasture purposes.

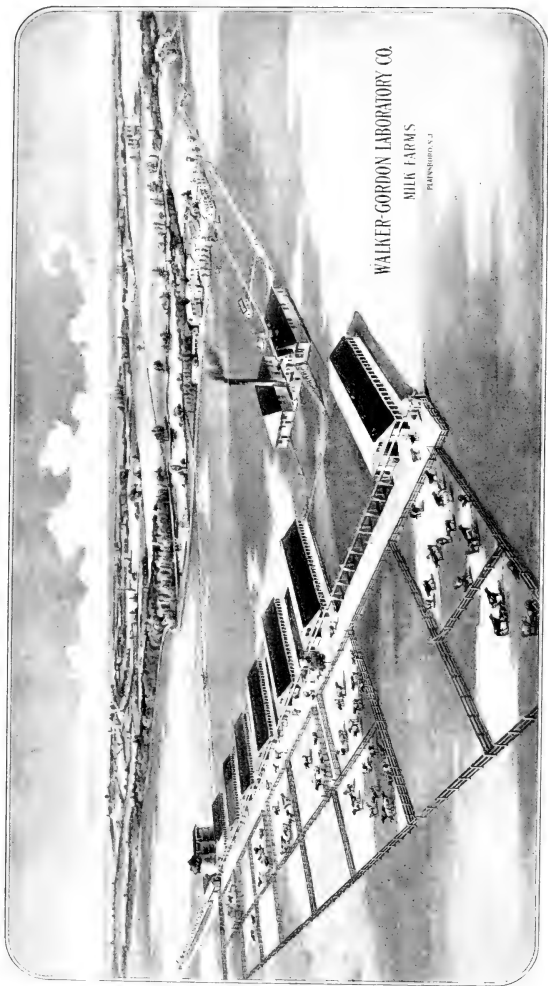
New Jersey is the only state in the Union that has made provision to offer pure bred stallions of the coach and draft breeds to the farmers for breeding purposes. Community Breeders' Associations are organized in every county or district where there is a demand for one of the imported breeding sires, made known by a petition supported by the progressive breeders of a community,

asking that state aid be offered to the patrons in their earnest endeavors to produce more useful and marketable horses. In twelve counties of the State such associations have been recognized, and the commonwealth now offers for public service an English Hackney, a Yorkshire Coach, four Clydesdales and six Percheron stallions at a uniform service fee of \$10 to insure the mares in foal. Their services are being liberally patronized by progressive breeders owning brood mares suitable for raising foals, and the move is both popular and far reaching in its accomplishments.

There is an unusual demand at local sale stables as well as public market centers such as Philadelphia and New York for New Jersey grown draft and work horses of useful types, and one has but to attend such public sales to appreciate the preference that prevails for Eastern acclimated and New Jersey bred draft horses possessing weight with quality and presenting an attractive and pleasing conformation. Well grown and sound native drafters will bring from \$50 to \$125 more under the hammer than unacclimated Western horses of equal individual merit and soundness that are shipped in green and sold at the public squares. From experience the farmers and truckers know the difference in utility value between a native horse and an unacclimated Western chunk, and is eager and willing to pay the difference quoted, providing he is assured that the animal is the product of the New Jersey breeder.

Despite the clamor that was made several years ago that the draft horse, the truck horse as well as the road horse would soon be eliminated from public service, due to the extensive use of farm and motor tractors, there is still an unsupplied and growing demand throughout the Eastern districts for the short-legged, deep-bodied quality chunk whose usefulness and special adaptability for all work puts a premium on his services. It is conceded that the West produces the greatest number of animals, but it must be admitted that the greatest demand at the highest prices, and the final disposal of the good ones is made at the Eastern market centers. There is profit in such an enterprise from every view point, and the New Jersey farmer has the ground floor to work on in taking advantage of such opportunities.

Not only does such a welcome greet the breeder of draft and coach horses in this State, but one has only to refer to the American Trotting Registry Association Records or note the comments in the press devoted to light and heavy harness horses to see the interest and prominent part that is being displayed by New Jersey breeders



A Business Dairy Farm Producing High Class Milk. Over 500 Cows are Kept on this Farm and the Product is Sold in Philadelphia and New York.

and trainers in the production of light horse types. South Jersey in particular is noted for its light horse industry, and many of the noteworthy, hot-blooded individuals that are now battling against beauty, speed and endurance records on the turf, and in the parkways, trace directly to such noted sires as Bingen, Todd, Chimes or Bellman, who claim New Jersey as their breeding ground. Noted descendants of these famous sires are now in service in the State, and are playing an important part in the making of light horse history and achievement.

In addition to the advanced step taken by the commonwealth of New Jersey in offering breeding sires for service, another move has been made that is exerting a great influence for good in horse breeding operations. It is the enactment of a law that disqualifies from service mongrel or unsound stallions that possess neither breeding nor individuality sufficiently potent to perpetuate desirable qualities in their offspring. Its workings have succeeded in reducing the number of unsound stallions presented for examination before a designated Board from 22 per cent. in 1909 to 8.4 per cent. in 1911, while the agitation for pure bred and sound sires has resulted in much greater care on the part of stallion owners in the selection, breeding and management of regularly licensed sires whose usefulness has been demonstrated by their past performances in the stud. The percentage of increase, based upon the total number of pure bred stallions in service, has been greater in New Jersey during the past three years than reported from any other state where stallion registration laws have been enacted, and are in force. The truckers and market gardeners in South Jersey do practically all of their marketing in Philadelphia by wagon, and demand horses of the highest order, and are willing to pay prices that will yield profit to the producer. The breeders of this State are determined that New Jersey shall be a producer of such utility horses rather than a mere purchaser of such animals that are raised in the West under less favorable conditions than exist in our own little state. The opportunities, therefore, for horse breeding that exist in New Jersey are unexcelled. The credit rightly belongs to this State for the production and perpetuation of the greatest speed horses in the world is second only to the determination on the part of the breeders of draft horses to place this industry on an even greater utility basis. The Champion Clydesdales of three countries are now owned in New Jersey, and every indication points to even greater opportunities and accomplishments in the near future.

SHEEP AND SWINE.

The growing of pork and mutton products is not a side line, but one of the real profitable occupations of a great many farmers in this State. The potato growers and truck farmers in South Jersey have demonstrated that of all animals the pig is the most economical medium for converting seemingly waste products into marketable commodities, and are marketing their small potatoes and fruit culls through the porker. The increased acreage devoted to the growing of alfalfa is still another boom to swine husbandry, as it has been determined at the Experiment Station that alfalfa is a much more desirable source of protein for swine than digester tankage, which is the most economical source of this element on the market. Furthermore, the alfalfa is a home-grown product. With potent serum available for preventing outbreaks of hog cholera, the greatest drawback to swine production is removed, and the rent paying rooters and mortgage lifters are sure money makers for the farmer.

The hot house lamb is still another Jersey specialty, and in Northern New Jersey furnishes a ready income to sheep farmers during the winter months. The leading hotels in Philadelphia and New York pay a premium for Spring lamb during early Winter and through the Holiday season. There is a brisk demand throughout the year for mutton and lamb products. The high rolling land furnishes excellent pastures, free from parasites and other pests prevalent in the meadow and pasture districts of other sections where low or level land is utilized for forage purposes. As a means of increasing fertility, destroying weeds and utilizing coarse and rough fodders, there is no animal superior to the sheep. Considering the money invested, and the inexpensive labor required to properly provide for and handle a flock of sheep, the industry is both profitable and practical. The live stock farmers of New Jersey have many reasons for being prosperous.

BEE KEEPING.

As a side line with fruit raising or general farming, bee keeping makes an interesting and profitable pursuit. The comparatively mild climate of New Jersey reduces the risk of Winter loss as the bees winter very well on the ordinary summer stands with but little if any, protection.



One of the Imported Clydsdale Stallions, Owned by the State.

There are over ten thousand colonies of bees kept on the farms in the State. Where the colonies have access to alsike clover fields the yield runs up to seventy-five or a hundred pounds of honey per year. This honey commands the highest market price. Bees will do fairly well on the ordinary farm with no special crops planted for their benefit, but where several colonies are kept it is found profitable to sow small fields of clover, buckwheat, etc. In the operation of hot-houses for vegetable growing it is found necessary to keep some bees in order to insure pollination of the flowers and a satisfactory set of fruits.

FISH AND OYSTER INDUSTRIES.

The Fisheries of New Jersey are protected, governed and aided by a Fish and Game Commission. The Commission is on a self-sustaining basis, securing its support from licenses and fines. A special appropriation has recently been made by the Legislature for the erection and maintenance of a fish hatchery at Hackettstown, Warren county. For years the Board has stocked the streams and lakes of the State with trout, black bass, white and yellow perch, crappie, pickerel, catfish and bait fish. The northern parts of the State furnish ideal streams for trout, and in some brooks they are abundant. The shad fisheries of the Delaware river constitute a very important industry.

It is estimated that the oysters and clams produced in the State yield an annual income of something like four million dollars. There are probably a hundred thousand acres where oysters grow naturally, within the State boundaries. This area is constantly diminishing through exploitation without proper conserving care. Over thirty thousand acres are now leased for planting and growing purposes. The raising of seed oysters by means of shell planting, upon leased ground, has only just begun. Previously these seed could be purchased from the Chesapeake Bay and elsewhere. Laws are being enacted prohibiting the exporting of these small bi-valves and, no doubt, the growing of these seed oysters will rapidly increase from now on. Nearly all of the product is sold in the shell. The greater part of the oysters harvested are "floated." This requires the transferring of the oysters from their growing place to the mouth of a stream. The movement of the fresh water has a very beneficial effect on the appearance of the flesh and renders the product marketable at

a higher price. Steps have been taken by the Board of Health, to the effect, that "floating" be done only in uncontaminated water. The principal oyster center is at Bivalve and Maurice River on the Delaware Bay. More than three-fourths of the production comes from this vicinity. There is a special Bureau of Shell Fisheries which have control of the Oyster Industry in New Jersey. The State Experiment Station is also carrying on studies and investigations of the breeding habits, etc., of oysters.

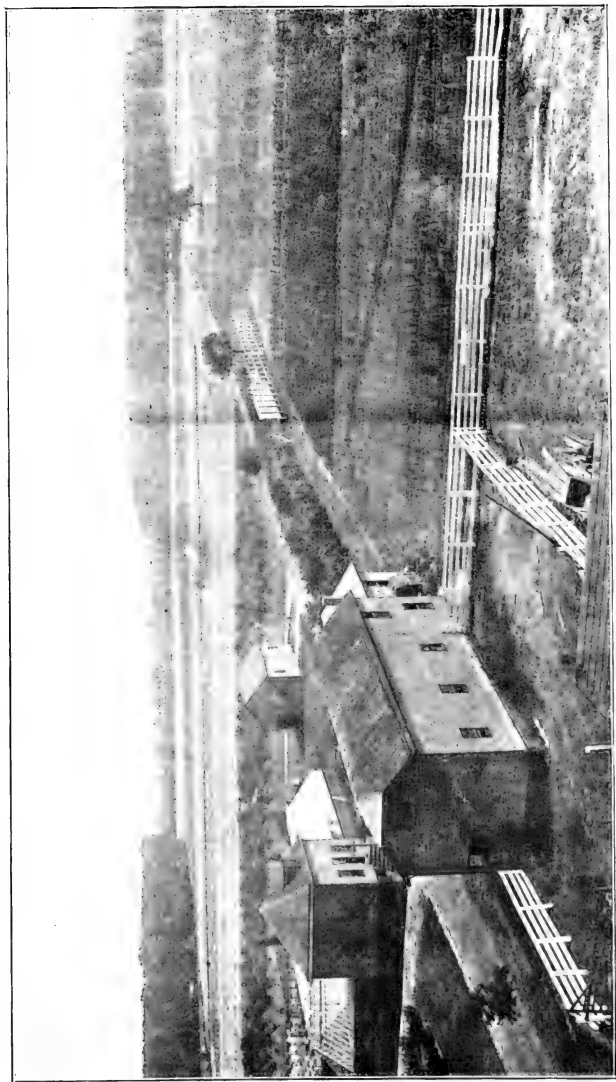
THE CANNING INDUSTRY.

Owing to the great quantities of fruits and vegetables produced in favorable localities and to the extremely perishable nature of these products, canning factories have been erected and do flourishing business several months in the year. There are over forty such factories in the Central and Southern parts of New Jersey. These factories give employment to over five thousand people, a large percentage of which are women. The selling value of the canned goods produced in the State during the year of 1909 was considerably over two million dollars. Tomatoes are the principal vegetable and pears the principal fruit. Peas, beans and corn are also canned in large quantities.

The preserving of unfermented grape-juice is quite an industry in some localities, perhaps the Vineland district is the center of this business.

FERTILIZERS.

One of the most important factors in the development of farming interests in this State has been the use of commercial fertilizers. This fact has been thoroughly demonstrated and the constantly increasing tonnage used is due to the results obtained. There are no available statistics that will show the amount of fertilizers used at the present time, but it is estimated from the information at hand that during the present year at least 150,000 tons will be used. On account of this large tonnage, and various other conditions, there is a very strong competition in the trade and as a result the fertilizers can be purchased at a cost which allows but a small margin of profit to the manufacturer when high grade materials are used in preparing the mixtures. The average selling price of the various grades of mixed goods is about \$28 per ton, and if our estimate of



A View of a Portion of the College Farm, New Brunswick, N. J., Showing the Fruit Tree Nursery, Greenhouses and General Farm Crop Areas.

the total tonnage sold is fairly accurate, the fertilizer bills for the present year will amount to over \$4,000,000.

The records of the last official inspection show that the fertilizer needs of the farmer are carefully looked after by the manufacturers. Over one hundred manufacturers are delivering their products in this State, and five hundred and thirty different brands are sold here. The essential elements, nitrogen, phosphoric acid and potash, are furnished in the commercial brands in almost every conceivable proportion and, in addition, if a consumer desires a mixture in which the elements are furnished in even a slightly different proportion, there is apparently no trouble to have it prepared as desired.

Notwithstanding the claims made for special brands, the large sum of money spent for fertilizers can be charged to the cost of the nitrogen, phosphoric acid and potash contained in the mixtures, and the returns are due to the actual amounts of these elements which the crops, such as hay, grain, potatoes, market crops and fruits, are able to obtain from the fertilizers applied.

Thousands of carloads and many boatloads of stable manure are annually purchased from New York and Philadelphia. This is used for vegetable growing particularly, but also for fruit and general farm crops. The use of green manures—plowing under growing crops—is considered very profitable on the lighter soils of the State. Clover, vetch, rye and mixtures of these are used considerably for this purpose.

During years gone by the catching of King Crabs along the Delaware Bay shores of Cumberland and Cape May counties assumed considerable proportions. It is even now carried on to some extent and many farms secure their fertility from this source. The crabs are caught in "pounds" built out in the shallow water, are thrown out at low water and make excellent fertilizer, being high in nitrogen content.

PART THREE.

AGRICULTURAL EDUCATION.

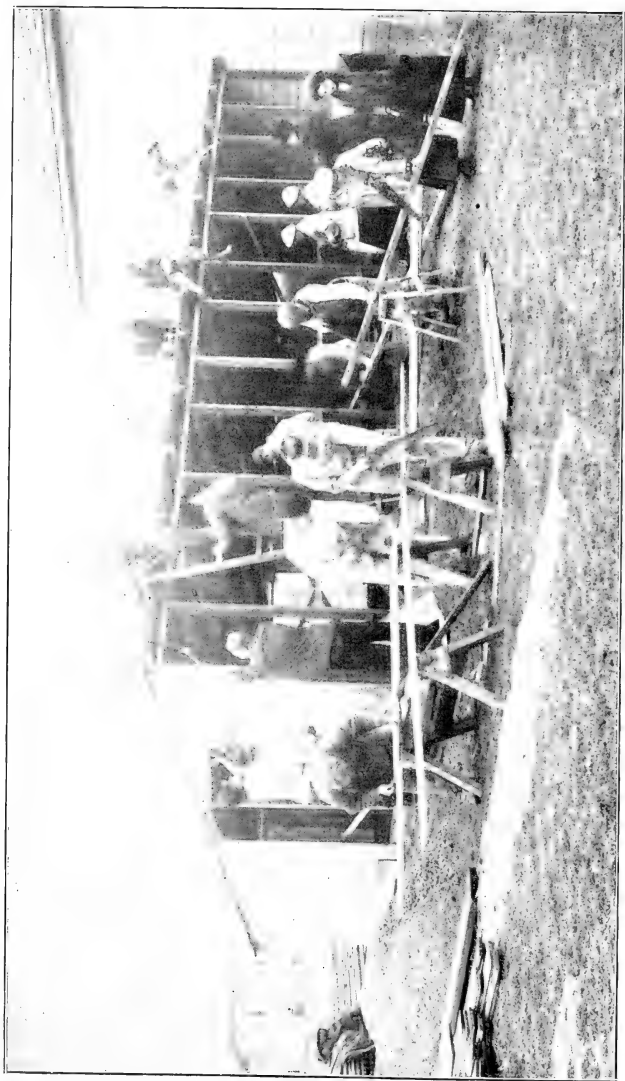
Agriculture as an art has undergone important changes within a short time. Farm practice has become modified by the use of agricultural machinery, the introduction of new crops, the employment of insecticides and fungicides, and the wide application of commercial fertilizers. The old rule of thumb is no longer adequate for coping with present day problems of farm management, and with the far-reaching transformation in market conditions and requirements. Labor problems on the farm are vastly different from those of a generation ago. The refrigerated car and cold storage plant have placed the great cities of the United States within reach of outlying regions. Central America, the Pacific Coast States, the West Indies, the South and the North supplement or compete with the products of the home markets. In a word, then, the new inventions and discoveries, the improved means of communication, and the wide diffusion of knowledge are forcing the farmer, as they have forced the man in the city, to secure a firmer grasp on the principles underlying the performance of his daily tasks. Slowly, but surely, agriculture as a *trade* is passing and agriculture as a *profession* is coming to take its place.

But important as have been the changes in agriculture as an art, they are overshadowed by the changes that have occurred in agriculture as a science. Geology, Chemistry, Physics, Botany, Zoology and Bacteriology have given this new science a broad vision. The research institutes in the Old World and the New, with their thousands of trained investigators are accumulating data that will help to reveal to us the secrets of soil-fertility and of plant and animal development. Thanks to these investigations agriculture is even enriched by new creations in plant-life, new methods of tillage and cropping, and innumerable products unknown a generation ago.

The rapid expansion of agriculture both as an industry and as a science is calling for the services of many men. Trained farm managers are in great demand. The establishment of agricultural



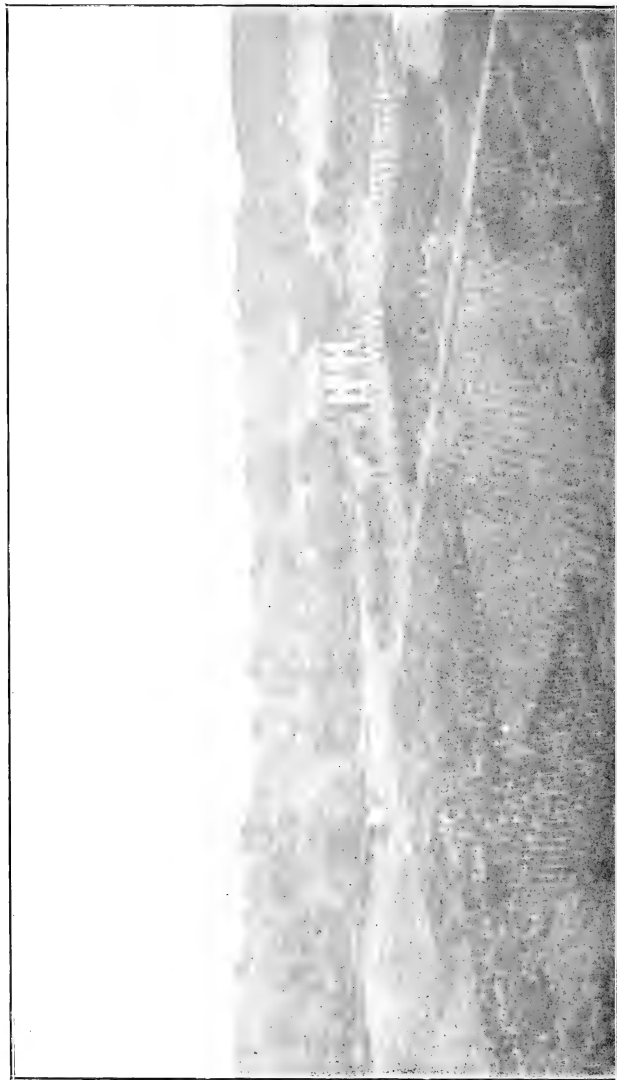
The N. J. State Agricultural Experiment Station Building,
New Brunswick, N. J.



Poultry Short Course Students at Work.



Partial View of Rutgers College and Campus.



View of Plant Breeding Grounds, Horticultural Grounds and Pot Experiments at College Farm, New Brunswick.

courses in our rural schools is creating a need for teachers properly equipped to teach agricultural subjects. Commercial organizations, such as railroads, fertilizer and lime companies, commission merchants, real estate firms, etc., are providing remunerative positions for agricultural college graduates. The colleges and universities, the experiment stations and the United States Department of Agriculture are offering attractive work at attractive salaries to young men capable of investigating agricultural problems. At present, the supply of trained men is wholly inadequate, notwithstanding the astonishing increase in the number of men now graduating from agricultural courses at the state colleges and universities.

The four year course in agriculture at Rutgers College is believed to be a well-balanced course in the science of agriculture. In the framing of this course it was recognized that the farm manager, like the teacher and the investigator, must be a broadly trained man. He should possess some familiarity with modern languages, history, political and social science and the natural sciences if he is to be successful as a farmer, and a living force in his community. As is shown by the following outline, the agricultural course at Rutgers College attempts to produce not merely farmers or technical specialists, but educated men.

A portion of the elective work in agricultural science is taught in the buildings located on the main campus. The subjects taught here include chemistry, physics, geology, biology, botany, entomology and bacteriology. The usual laboratory equipment is provided, the students expecting to devote themselves to research work are especially encouraged to acquire proficiency in laboratory technique. Every facility is offered for reading and study in the college library whose collection of scientific books and periodicals is among the best in the East.

Another portion of the elective work is taught at the College Farm. The latter comprises an area of about two hundred and sixty acres, and is equipped for investigation and teaching work in soil fertility, agronomy, horticulture, dairy and animal husbandry, farm mechanics, and poultry husbandry. Recent appropriations by the Legislature provide for additional buildings and equipment in poultry husbandry, floriculture, dairy husbandry and agronomy. Thanks to this equipment the students can be given a good training in applied, as well as in the theoretical agriculture. The practical instruction at the College is supplemented whenever the students desire it by actual experience during the summer vacation on farms

in the State. Positions on farms, at moderate salaries, can be secured for most of the students in the agricultural course.

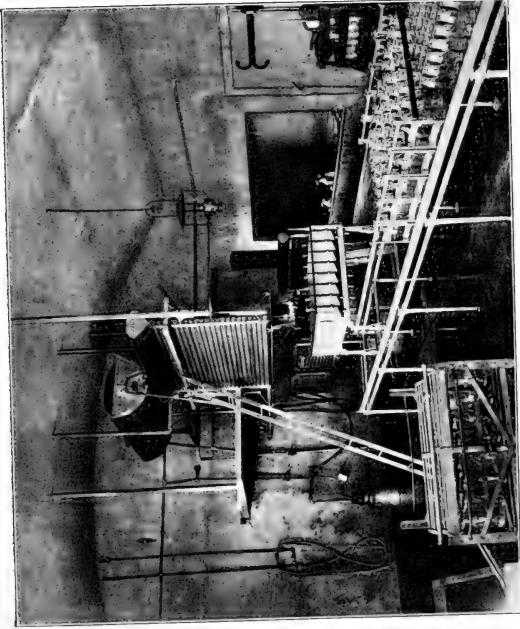
SHORT COURSES IN AGRICULTURE.

The Short Courses in Agriculture were established by an act of the Legislature in 1907. Their popularity and usefulness have been attested to by the rapid increase in the number of students attending these courses. The first class, that of 1907-8, contained twenty-three students. The following classes have steadily grown larger from year to year until the last class, that of 1911-1912, contained one hundred and twenty-eight members.

The short courses are planned to give needed assistance to those who desire to become better farmers, more skillful stockmen, dairymen, fruit growers or market gardeners. Those who do not wish to become the slave of some profession in a city, or those who do not wish to tie themselves down to a confining business life, will here find an opportunity to start intelligently in an independent calling. Those in city occupations wishing to shake off the bands which tie them to a daily monotonous routine where their profits are used in buying commutation tickets or in various forms of expensive city living—those will find here such courses as they need to lead them to a world of free endeavor where they can lift up their eyes to the hills. The isolation, drudgery and hermit life of farmers are rapidly becoming things of the past, and farmers are now men among men.

The instruction in everything is practical, with the special view of being immediately useful. The students are taught by practical demonstration how to manage soils; to use fertilizers; to judge farm stock; select varieties of farm crops; propagate plants; to bud, graft, plant and prune orchards; to handle and test milk and cream; graft, plant and prune orchards; to handle and test milk and cream; and in general to more intelligently conduct farming operations

Equipment.—The College Farm is well equipped with good buildings and apparatus for the most modern instruction in agriculture. The main building is provided with laboratories, class rooms, library and shop. The greenhouses and stock-judging pavilion are well-planned for use by winter classes. The stables are stocked with the best type of animals for study by students.



Dairy Practice Room at the State College.

Expenses.—Tuition is free to residents of New Jersey; non-residents pay a tuition fee of \$25. There will be an entrance fee for all of \$5 to cover incidental expenses in laboratory work, use of apparatus and instruments, and breakage. Practically the only expense of the course will be the cost of living in New Brunswick and the cost of travel to and from the city. Comfortable rooms, with table board, can be obtained within ten to fifteen minutes' walk of the main agricultural building for from \$5 to \$5.50 per week. The cost of books need not be more than \$5, but it would be well, if possible to allow a larger sum for them, as many not required would be useful for students, and should be a part of their home libraries. The total expense of the course may, therefore, range from \$60 to \$100, and should not exceed an average of \$80 for each student. The required entrance fee must be paid to the treasurer of the College on the opening day.

Application for Admission.—There are no entrance examinations for admission to these courses. The students should, however, have a good common school education, in order to make the best use of the instruction given. All the courses will be open to persons of sixteen years of age and upwards.

SHORT COURSES OFFERED.

I. *Course in General Agriculture and Dairy Farming.*—This includes the following sub-divisions: Soils. Manures, Fertilizers. Forage and Field Crops. Feeds and Feeding. Types and Breeds of Farm Animals. Care and Management of Stock. Poultry. Bees. Milk Handling, Bottling and Testing. Farm Buildings and equipment with shop and machinery practice. Bacteriology. Control of Insects and Plant Diseases. Farm Management.

II. *Course in Fruit Growing and Market Gardening.*—This includes such subjects as: Manures and Fertilizers. Soils. Insects and Plant Diseases. Spraying. Propagation of Plants. Planting and Pruning. Packing, Storing and Marketing. Small Fruits. Vegetable Growing. Greenhouse Methods.

III. *Course in Poultry Husbandry.*—This includes sub-divisions as follows: Types and Breeds. Principles of Breeding. Preparation and Marketing of Products. Scoring. Construction of Poultry Buildings. Sanitation. Parasites. Insects. Diseases. Incu-

bation and Brooding. Feeding. Management of Poultry Farms. Crops. Special Poultry Practices. Turkeys, Ducks, Geese, Pigeons, etc.

IV. A course in Domestic Science has recently been organized for young women.

For further information regarding the agricultural courses, address Irving S. Upson, Registrar.

The New Jersey State Agricultural Experiment Station is also located at New Brunswick. During the past two years decided steps have been taken to enlarge the scope of the Station's endeavors and make it more vital to the agricultural people of the State. The work of the Experiment Station is along four quite distinct lines; experimental, investigational, educational and what may be called police work. On the college farm consisting of some 200 acres of tillable land, experiments of many sorts are carried out. Fertilizing experiments, breeding experiments, crop rotation and many other subjects are receiving attention. The investigations in soil bacteriology and soil chemistry by this Station have received marked attention by scientists in this country as well as in the countries of Europe. The peach industry which a few years ago was threatened with extinction has now through the work of the Horticultural Department been placed upon a profitable basis once more. Poultry feeding and housing problems have been largely solved for the benefit of the farmers in the State. The production of home-grown feeds for the dairy is a line of work which is actually showing the dairy farmers how to save a large percentage of their feed cost.

The members of the Station Staff are called upon for advice in all parts of the State and some of them are in attendance at most of the agricultural gatherings throughout the State. Lectures and demonstrations are given on the different subjects which are of the most interest to the people in each locality. An Extension Department has recently been organized and with this department a closer connection can be maintained with the practical problems which the farmers are unable to successfully cope with. By the aid of this department the results from the work carried on at the Station and the scientific methods of modern agriculture will be shown to the farmer right on his own land. Much of the work of the Station

bee inspection as well as other branches of police work are carried on by members of the Station Staff.

The New Jersey State Board of Agriculture has been in existence forty years. Under its auspices Farmers' Institutes were introduced, and have been conducted for a number of years. Regular annual meetings of the Board are held at the State House in the winter. Auxiliary to the State Board, County Boards of Agriculture are organized in twenty counties, these report annually to the State Board the work done by their respective Boards, for the advancement of agriculture in their respective fields.

The State Board through its system of Farmers' Institutes and County Boards has done much for the improvement of agriculture throughout the State. Pleasant and intimate relations have been connected with the Agricultural College and Experiment Station is under the Executive Committee of the State Board, as are also the work of the Plant Pathologist and Bee Inspector. The President and Secretary of the State Board are by law members of the Commission on Tuberculosis in Animals, the President being required to appoint five others, who with himself and the Secretary constitute the Commission. This Commission is charged with the work of eradicating tuberculosis from the dairies of the state as they may be requested by the owners or by the State Board of Health. It is required also to prevent the importation of tubercular dairy animals into the state. Besides the Secretary there is one Chief Inspector and five District Inspectors in charge of the work.

The State has a Live Stock Commission with power to enforce the laws regarding the registering of stallions for service, etc. The New Jersey Horticultural Society has a large membership.

Field meetings of much interest are held during the Summer on fruit and truck farms in various localities. One or more Winter meetings are held in some central town. Poultry raisers are organized in nearly every county and in many villages and cities. Exhibitions are held during the Winter months in several large cities, while nearly all of the Fall fairs have poultry shows in connection with them. The cranberry growers are united in an association which has materially reduced the cost of distribution. In several towns there are farmers' organizations for purposes of co-operative buying and selling. The Monmouth County Farmers' Exchange

is one of the largest organizations of this kind in the country. There are some fifteen hundred members and the business amounts to a million and half dollars or more annually.

CORN GROWING CLUBS.

New Jersey has taken a forward step in the introduction of school and home gardening and corn club work among the school pupils and other young people of the State. Nearly all of the County Superintendents have aroused an interest in the work in their own counties. The work has been started in several instances by the County Y. M. C. A. Secretaries.

At the present time we find the educational work along these lines being carried on under the auspices of several organizations; namely, the schools, the County Y. M. C. A., the local women's clubs, and other local bodies. Large numbers of pupils and others have taken part in the contests during the season of 1912. These took part in the fall garden exhibits, and are participating in the Winter corn shows.

The boys' corn contests are chiefly limited to their own counties, or cover even smaller districts.

State contests are being planned and will come next.

The interest taken in these contests is surprising and even wonderful. It is certain that similar clubs for girls will be organized soon. The State Department of Public Instruction is sending out literature along several lines which will tend to increase the development and work of boys' and girls' clubs of various kinds. Indeed this is a good form for the beginning of instruction in agriculture in the public schools of the State.

This club work will aid in an increased production of corn in New Jersey—both the total yield and the acre yield will be increased. Local interest is aroused in the work of the schools.

The possible yield of the soil in any locality is brought out by the enormous yields of the best growers.

A boy raising an unusual amount per acre respects himself and the neighbors respect him more than ever, and he becomes a better person both morally and mentally. No one in any right calling should be satisfied with less than the best.

New Jersey is one of the best states for swine, and corn is needed for their feed and finish.

More corn should be grown because we need more home-grown feed on the farm instead of purchasing so much.

The Grange is very popular among the farmers of New Jersey. There are over seventeen thousand members belonging to one hundred and thirty-five subordinate Granges. These Granges hold meetings every week or two at which the members discuss questions of interest to themselves and their communities. The subordinate Granges are also combined into County or Pomona Granges. The Pomona Granges hold quarterly meetings around the county at the several subordinate Grange Halls. The State Grange is composed of members of the subordinate and Pomona Granges, and it holds a meeting once a year. The present Master of the State Grange has held this office since 1900 and is an influential and zealous defender of the farmers' rights. He has been a member of the State Senate for several years and holds positions of influence there.

Through the efforts of the Grange and other agricultural organizations the needs of agricultural education has been impressed upon the members of the State Legislature. During the 1911 and 12 session over three hundred thousand dollars was appropriated for experimental and educational work in agriculture.

SUMMARY.

Some of the advantages offered by agriculture in New Jersey are easily recognized by the casual observer. The truth of the situation is forcefully presented by a tour of the farming districts of the State. The reasons for the very apparent prosperity among the farmers and the opportunities in North and South Jersey are understood, when one realizes that the combination of Cheap Lands, Fertile Soils, Excellent Transportation and the Best Markets in the World which are found in New Jersey are met with in few, if any, other localities in the United States.



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