TARR & McMURRY'S GEOGRAPHIES

SUPPLEMENTARY VOLUME

NEW JERSEY

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NEW JERSEY


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TARR AND McMURRY GEOGRAPHIES

SUPPLEMENTARY VOLUME

NEW JERSEY

BY

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PREFACE

In the following pages the larger facts of the geography of New Jersey are discussed in the light of the causes which have produced them.

When the geography of any state is studied with care, it usually becomes evident that the state's development has been directed by some two or three predominant geographical influences. Sometimes the controlling influence arises from climate and physiography; sometimes from the state's geographical position; sometimes from other factors. The trend of New Jersey's growth has been most largely influenced by the state's *position* between the two great cities of New York and Philadelphia, and this fact is frequently brought out in the text.

Modern ideals of geography teaching require more than simply stating, for example, that Paterson is on the Passaic River and manufactures silk. Paterson is at a *particular place* on the Passaic River *for a very definite reason;* namely, that here is a waterfall furnishing power to run machinery. Moreover, the fall is at a *particular place* in the river *for a definite reason;* namely, that the river, flowing for the most of its course over the softer rocks of the Piedmont Plain, here encounters a ridge of hard trap rock, and a waterfall results. Geographical causes are not always so definite as the ones mentioned above. Where the causes are *definite* and reasonably *simple*, and especially where they are *typical*, they are discussed. General principles of geography and the "type idea" are emphasized. The treatment of cities receives a relatively large amount of attention, for New Jersey is an urban state and is becoming more and more so.

Cordial acknowledgment is due to State Geologist Henry B. Kümmel and to Secretary Franklin Dye of the State Board of Agriculture for frequent courtesies. The excellent reports and maps prepared by the State Geological Survey have been my most valuable source of material. Francis B. Lee's "New Jersey as Colony and State" has been frequently consulted. Figures 2, 3, 9, 10, 11, 12, 13, 18, are after maps or models prepared by the State Geological Survey, and Figs. 4, 5, 8, and 16 are made from negatives belonging to the office of the Survey. Figure 31 was presented by Rutgers College; Fig. 30, by the Singer Company, Elizabethport; Fig. 29, by the Botany Mills, Passaic; Fig. 17, by Mr. Warren Atkinson, Mullica Hill; Fig. 32, by the New York Ship Building Company, Camden; and Fig. 35, by the Whitall Tatum Company, Millville.

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NEW JERSEY.
Scale of Miles.
0 5 10 15 20
25 MILES TO ONE INCH.
Capitals : County Seats : Other places :
Railroads : Canals : Electric Roads :
Cities with over 100,000: Newark
Cities with 25,000 to 100,000: Camden
Cities and towns with 10,000 to 25,000: Orange
Cities, towns and boroughs with 5,000 to 10,000: Burlington
County Seats with less than 5,000: Newton
Cities, towns, villages, boroughs and other places with less than 5,000: Cape May
Longitude West from Greenwich
ATLANTIC OCEAN
Delaware Bay
Philadelphia
Trenton
Paterson
Jersey City
New York
Hoboken
Elizabeth
Atlantic City
Camden
New Brunswick
Sandy Hook
Long Branch
Cape May

NEW JERSEY SUPPLEMENT

Preliminary Questions. — What are the natural boundaries of New Jersey? The state's entire boundary line is about 480 miles in length. With the exception of 48 miles, this boundary is water. What fraction is land boundary? What parallel of latitude practically divides the state into halves? Trace this parallel westward on a map of the United States, and name some of the states which have about the same latitude as New Jersey. Trace the same parallel eastward across a map of Europe and Asia. What are some of the important countries through which it passes? What meridians of longitude shown on the map (Fig. 1) pass through New Jersey? What parts of the world lie directly south? north? Point toward New York State; Pennsylvania; New York City; Philadelphia; the Atlantic Ocean; the British Isles; the Philippine Islands. Is New Jersey nearer the north pole or the equator? How do you decide? How many states as large as New Jersey could be made from Texas? from Pennsylvania? One of the other states has nearly the same area as New Jersey; what one is it? What states are smaller than New Jersey? Using the scale of miles shown on the map (Fig. 1) find the extreme length of New Jersey. Find the distance across the widest part; the narrowest part; distance in a straight line from your home to New York City; to Philadelphia; from New York to Philadelphia. Locate (Figs. 1 and 22) New York Bay, Newark Bay, Sandy Hook, Staten Island, Barnegat Bay, Little Egg Harbor, Cape May, Passaic River, Raritan River, Mullica River, Maurice River, Musconetcong River, Newark, Jersey City, Paterson, Camden, Trenton, Elizabeth, Atlantic City, Passaic, New Brunswick, Perth Amboy, Kittatinny Mountains, Delaware Water Gap. Name the counties bordering on the Delaware River; on the Atlantic Ocean; on Delaware Bay; on the Hudson River; on New York State. What counties do not form any part of the state's boundary? How many counties has New Jersey? (p. 57.) In what county is each of the cities mentioned above? In what part of the state are the smallest counties found? the largest? Name the three counties most thickly populated (p. 57); the three most thinly populated. What part of the state is mountainous? What part is quite level? What cities of New Jersey have you visited? What railroads of New Jersey have you travelled on? What rivers have you seen? What interesting natural features have you seen? (For example, the Palisades or Water Gap.) Could you describe them to the class?

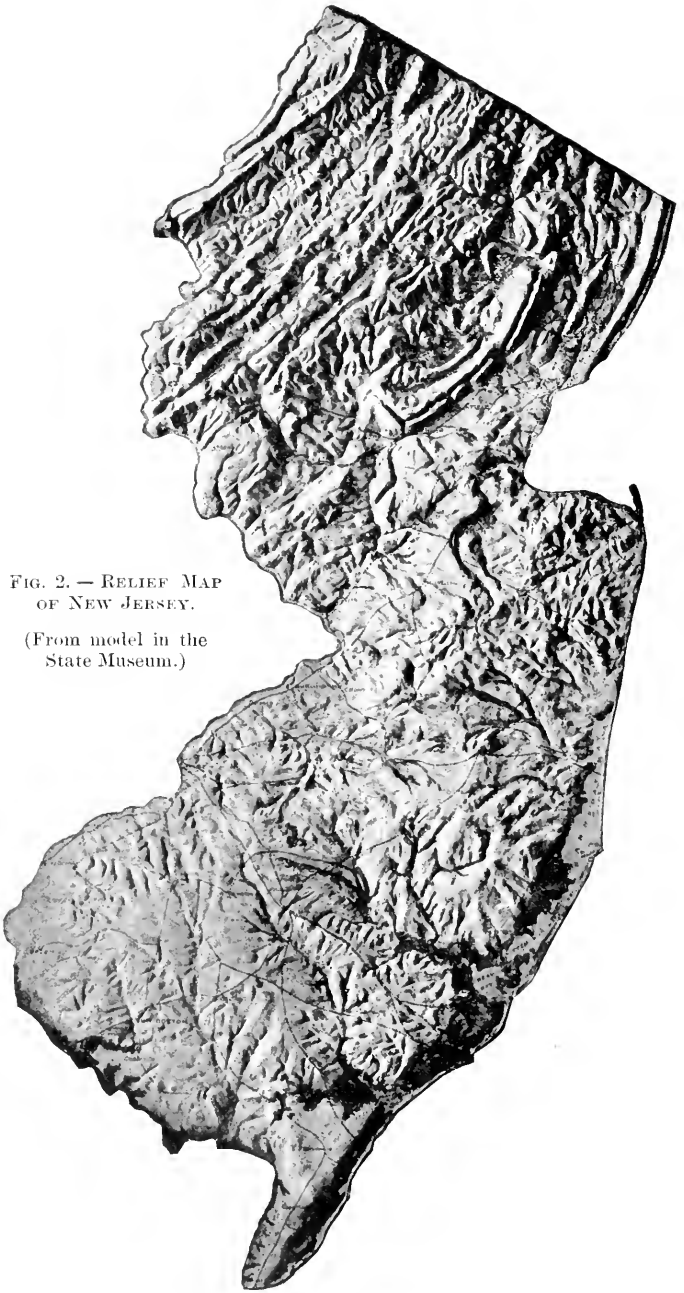


FIG. 2. — RELIEF MAP OF NEW JERSEY.

(From model in the State Museum.)

Introduction

New Jersey is one of the small states. Only Rhode Island, Delaware, and Connecticut are smaller. Much of its northern half is mountainous, and much of its southern half, forest-covered; yet, as a whole, New Jersey is more densely populated than the most fertile of the prairie states or the great manufacturing states of New York and Pennsylvania. It has more miles of railway in proportion to area than any other state. The majority of the eastern trunk line railways cross New Jersey. Its farms yield a larger income in proportion to the area cultivated than the richest states of the Mississippi Valley. Small as New Jersey is, it leads thirty-nine out of the forty-five states in value of manufactured goods. Only five states surpass it in this particular.

These remarkable facts are not due to chance. We do not live in a world of chance. *For every effect there is a cause, even in Geography.* If New Jersey takes a larger part in the country's activities than its size might lead us to expect, there is a *cause* for it. Men carry on industries for profit. Farms or factories must be advantageously located if they yield adequate profit. Two of the greatest advantages of location are (1) nearness to great markets where products may be sold, (2) good transportation facilities, such as roads, railways, and navigable waters. How fully New Jersey possesses these advantages, we shall see. How largely they have contributed to her prosperity we shall also see.

Physiography

For every hill that rises above the surrounding country, for every valley between the hills, for every lake and waterfall, for every one of the features of the landscape, there is a cause. They have not always been as they are now. They will not remain as they are. Somewhat like living things they are constantly changing — very, very slowly changing. New Jersey's hills and mountains are what they are and where they are because of the geological history through which they have passed.

The state naturally divides into four parts (Fig. 3) : —

1. The Appalachian belt (Kittatinny Valley and Mountains).
2. The Highlands (very ancient, worn-down mountains).
3. The Piedmont Plain (hilly ; red sandstone and shales).
4. The Coastal Plain (sandy ; quite level ; youngest part of the state).

The Appalachian Belt. — Across the northwestern part of the state extend the Kittatinny Mountains and Valley. This belt is New Jersey's part of the Appalachian Mountains and Valley, which extend across Pennsylvania and on to Alabama. The Kittatinny Mountains reach an elevation of 1800 feet at High Point, near the New York boundary. They stand up as a rather even-crested ridge because they are formed of hard layers of rock that have resisted the agents of waste. The softer rocks at the southeast have not been able to resist and have been slowly eroded into a broad depression, the beautiful Kittatinny Valley (Fig. 4). In New Jersey this part of the great Appalachian Valley is from ten to thirteen miles wide. The mountains are steep and wooded and wild, but the limestone and shale of the valley decay into rich soil, and here are some of New Jersey's best farms, — the grain lands of Warren and the dairy farms of Sussex.

FIG. 3.

At many places in the Appalachian Mountains, rivers cut across the ranges, forming great notches in them. The most noted of these water gaps has been cut by the Delaware River where it breaks

through the Kittatinny Mountain Ridge (called the Blue Mountain in Pennsylvania). This is the famous Delaware Water Gap. On either side of the river the rocks rise steeply 1200 feet above the water (Fig. 5). So wild and beautiful is the scenery about the Water Gap, that it has become a favorite summer resort.

If we followed this even-crested range from the New York boundary southwestward for sixty miles, we should find railways crossing it at only two places, — through the Delaware Water Gap and

FIG. 4.

Scene in the Kittatinny Valley, one of New Jersey's best farming sections.

the Lehigh Water Gap. So important are water gaps that without them railroads could be built across the Appalachian Mountains only with very great difficulty and at enormous cost.

The Highlands. — Bounding the Kittatinny Valley on the southeast rise the Highlands, the oldest land in New Jersey. They form a belt about fifteen miles in width. Their ancient crystalline rocks were a part of the first land that rose above the ocean to form the beginning of the North American continent. Farther south they are called the Blue Ridge Mountains. These mountains, now worn down to their roots, were once a lofty range that formed the ancient

backbone of eastern North America, and extended a thousand miles from northeast to southwest.

Long ages before our continent had grown to be as it is now, these ancient rocks were uplifted into a great mountain fold that outlined the shape of North America's eastern coast. Slowly, through long ages, the

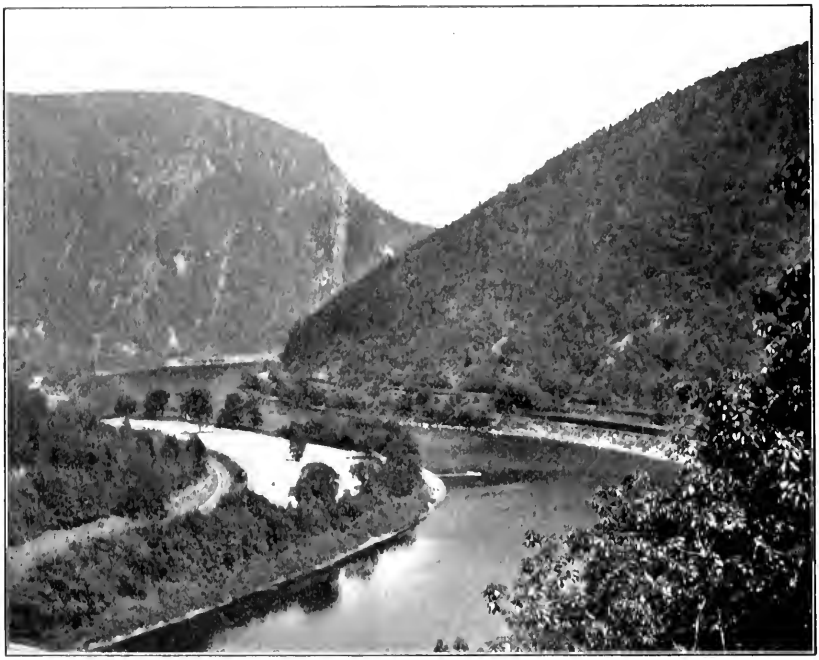


Fig. 5.

Delaware Water Gap, where the Delaware River gets through the Kittatinny Ridge.

untiring agents of waste wore down these once lofty mountains, and the streams carried the sediments to the sea and spread them out over the ocean bottom, just as streams are doing now. Other periods of uplift came, — for the earth's crust is always rising in some places and sinking in others, — and the weathering agents worked on, and streams cut valleys, and carried their loads of waste out to the sea. Some of these sediments, forming layer upon layer, were compressed into the rocks which, having been uplifted since, form the Newer Appalachian Mountains and the red

sandstones of the Piedmont belt of New Jersey. Similar sediments, uplifted but a little, form the sandy plain of South Jersey. Thus does it appear that the Highlands are, as it were, the parent of the rest of New Jersey, having furnished much of the rock waste of which other parts of the state are made up.

The Highlands extend across southeastern New York into New England and Canada. In these crystalline rocks are found beds of iron ore that have been worked for a hundred and fifty years. At Franklin Furnace and Ogdensburg are some of the richest zinc mines in the United States (see p. 16).

FIG. 6.

Lake Hopatcong, one of the most beautiful of the glacial lakes.

The Highlands form a region of beautiful scenery. Many of their slopes are too steep and rugged to be cultivated, and in some parts more than half of the country is covered with forests (Fig. 18). The farm lands lie in the valleys. In these highland valleys are many beautiful lakes, attracting thousands of summer visitors. The most noted are Lake Hopatcong (Fig. 6) and Greenwood Lake (Fig. 7); the latter being partly in New York. There are nearly a hundred other smaller lakes, all north of the terminal moraine, for all were caused by the glacier (p. 9).

The southwestern portion of the Highlands, with the adjacent country on either side, is especially adapted to grazing. The

farmers keep herds of cows, whose milk is sent to New York City by daily milk trains. These sheltered valleys afford a climate in

FIG. 7.
Greenwood Lake.

which fruit trees, particularly the peach, thrive, and large quantities of peaches, pears, and apples are produced. Hunterdon County is famed for its peaches.

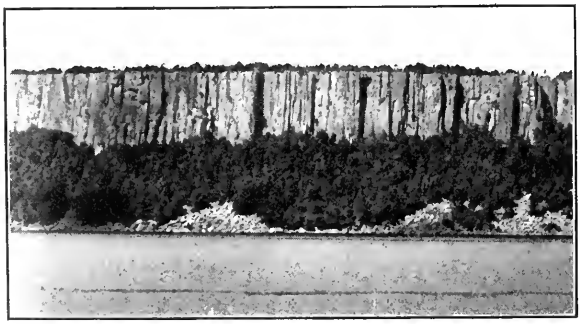


FIG. 8.
The Palisades, on the western bank of the Hudson.

The Piedmont Plain (also called the Triassic Plain, and the Red Sandstone belt). — This belt of low hills and broad valleys is some thirty miles in width and forms about one-fifth of the state. The

underlying rocks contain enough iron to give a deep red color to the soil which forms from their decay.

In places hard trap rock, more resistant to weathering, stands up in long ridges from one to five hundred feet above the general level. The Palisades of the Hudson, the Watchung Mountains, Long Hill, the Cushetunk, Sourland, Rocky Hill, and other ranges are really the projecting edges of beds of lava which was long ago forced up in a melted state. When this cooled and hardened it formed into column-like masses which are seen in the Mountain Colonnades near Orange and in the Palisades along the Hudson (Fig. 8). Being poorly fitted for agriculture, these trap ridges have not been cleared of forests. Their natural beauty, thus preserved, has attracted wealthy men who have built upon them costly homes, and have laid out beautiful grounds. Some of the finest country seats in America are found in northern New Jersey.

Where the Passaic River crosses the trap ridges of First and Second Mountains, waterfalls occur, the larger of which determined the site of the city of Paterson. During the closing stage of the Glacial Period, a large lake, locked in by the Highlands on one side and the Watchung Mountains on the other, occupied the Passaic River basin. The Great Swamp is a remnant of the extinct Lake Passaic. Owing to the large proportion of fertile land, to the many railroads, and to the presence of large cities requiring farm produce, the Piedmont Plain is, as a whole, highly cultivated. It is the most densely populated part of the state, and in it are located most of the large cities and manufactories of New Jersey.

Glacial Work. — The ice sheet of the Glacial Period overspread the northern part of the state. The front of the glacier advanced as far south as Perth Amboy, on the eastern side of New Jersey, and as far as Belvidere, on the western side. Trace on the map (Fig. 3) the terminal moraine from east to west across the state, and note what towns are near it. All of the land north of this moraine was covered with a slowly moving mass of ice and snow, hundreds — perhaps thousands — of feet deep. Across mountains and valleys the ice monster slowly ground and scoured its way, scraping up the loose soil, tearing off loosened blocks of rock and carrying them

along as it advanced, only to drop them later when it melted. The gracefully rounded hills, which constitute the terminal moraine, are made of the soil, sand, clay, and boulders gathered up by the moving ice. Smaller moraines and scattered boulders are found all over northern New Jersey. Many changes were caused, especially in the drainage. There are nearly a hundred lakes and natural ponds and scores of beautiful waterfalls in this part of the state, resulting from the glacier's work. Beds of sand and clay were deposited. Many swamps were produced, and the course of nearly every stream was changed more or less. The Passaic River, for example, formerly flowed directly to the sea by way of the gap in the Watchung Mountains at Short Hills. This gap is now nearly filled with glacial deposits, and the river has to flow many miles to the north and crosses the ridges by way of the gaps at Paterson and Little Falls, then flows south to reach the sea.

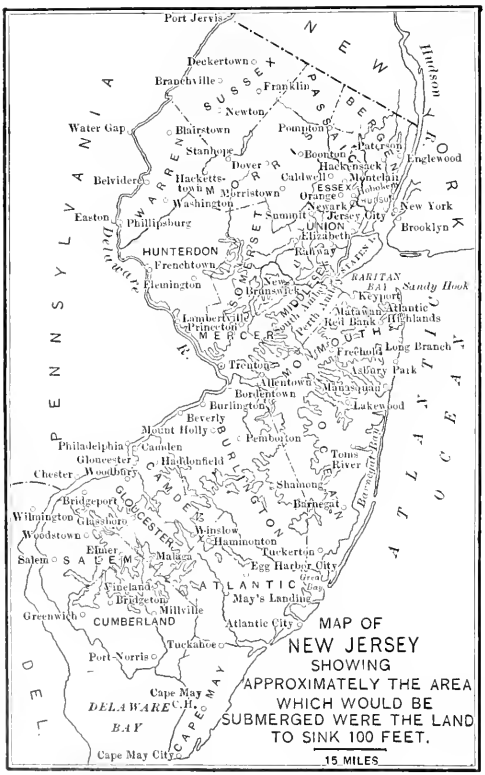


FIG. 9.

The Coastal Plain. — This, the youngest and flattest part of New Jersey, forms more than one-half of the state. Only yesterday, as geologists reckon time, this plain was below the surface of the ocean. The layers of sand, gravel, and clay, of which the Coastal Plain is built up, are mostly sediments washed down by streams from the

older land. These sediments are hundreds of feet deep, but have not been compacted into rock. By a rising of the land, a part of the continental shelf was lifted above the sea, making this low, sandy plain. The streams wind sluggishly along in shallow, swampy courses. One-third of the area is less than fifty feet above the ocean level, and an eighth of it is tide marsh. The highest land is a range of hills extending from Navesink Highlands, on the northeast, to Mount Holly, on the southwest. The highest of these hills reach an elevation of scarcely four hundred feet.

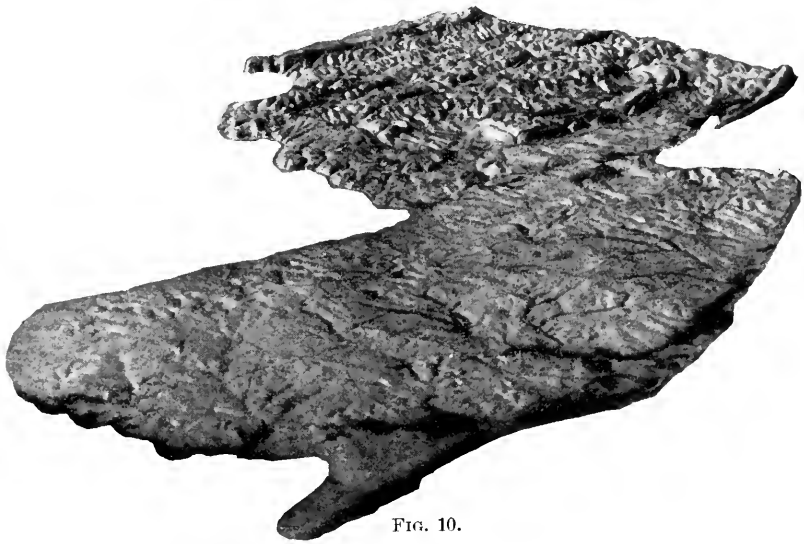


FIG. 10.

New Jersey in perspective.

Much of the land is not fertile; hundreds of square miles are uncultivated, and are covered with pine forests (Fig. 18). The region is often called "The Pines." The marl belt, however, reaching from Raritan Bay southwest to Delaware Bay, is fertile and includes some of the state's best farm lands (Fig. 3; p. 21).

A coast without good harbors, rivers with swampy banks, and a large extent of unproductive land have tended to prevent the growth of population in the Coastal Plain. It contains relatively few cities. Raising fruit and vegetables is, in the marl belt and some other sec-

tions, an extensive industry (p. 21). The deposits of glass-sand, and the abundance of wood for fuel, have led to glass-making on a large scale, particularly in Cumberland County (p. 18). The pleasant climate and sandy beaches have made the New Jersey coast a fringe of summer resorts.

At many points in the Coastal Plain, notably at Camden and Atlantic City, deep wells have been bored to supply the population with pure artesian well water.

Summary. — New Jersey divides naturally into four belts. Each of these differs from the others in age, in the nature of the underlying rocks, and in topography. The Appalachian belt, made up of the Kittatinny Mountain ridge and Valley, forms the north-

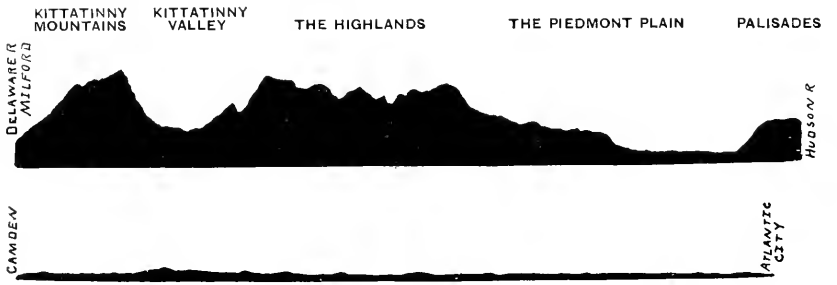


FIG. 11.

Cross sections of northern and of southern New Jersey.

western part of the state. This mountain ridge is due to tilted-up layers of hard rock that have been able to resist the agents of waste, while the softer rocks were being slowly worn away to form the Kittatinny Valley. The Kittatinny ridge is the highest land in the state, and is forest covered. The valley is one of the most fertile parts of the state, and is devoted to general farming and grazing. There are no large cities, and but little manufacturing in this section.

The Highland belt is the oldest part of the state, and is a portion of the very ancient mountain system of which the Blue Ridge Mountains are a worn-down remnant. The Highlands are low mountains, generally less than 1500 feet high. They are a region of lakes, forests, and picturesque valleys, but not a productive farming

section. In these ancient crystalline rocks are valuable beds of iron ore and zinc ore. There are no large cities, and no extensive manufacturing.

The Piedmont belt is a rolling plain from which rise abrupt ridges of hard trap rock. The Palisades along the Hudson and the Orange, or Watchung, Mountains are the most prominent of these ridges. While the rocks of the Piedmont Plain are mostly sandstone and shale, the trap rocks are ancient lava sheets. This is the belt of dense population, many cities, great manufacturing activity, and generally productive soil. It is by far the most wealthy part of the state.

The northern part of New Jersey was covered by the ice sheet of the Glacial Period. As a result, there are many swamps, lakes, and waterfalls; a glacial soil with many boulders, and the terminal moraine formed of low, rounded hills. These hills are made of till, gravel, boulders, etc., brought together by the advancing ice sheet, and piled up along its front.

The Coastal Plain is the youngest, the flattest, and the largest of the four natural divisions of New Jersey. It is composed of layer upon layer of sand, clay, gravel, and marl — sediments that were, in past ages, slowly deposited in the ocean waters along the coast, and afterward uplifted into a low, sandy plain. The marl belt and some other portions are fertile, but the rest is not. More than half of the Coastal Plain is covered with pine forests, and is thinly peopled. Outside of the larger cities the raising of fruit and vegetables for the city markets and the manufacture of glass are the chief industries. The seacoast is fringed with summer resorts.

QUESTIONS AND SUGGESTIONS

INTRODUCTION. — 1. What states are smaller than New Jersey? 2. What is the area of the state? (p. 57.) 3. Find the average number of people to the square mile in the state as a whole (p. 57); in the metropolitan district (p. 31); in your own county (p. 57). 4. How does New Jersey rank among the states in railway mileage? in value of farm products per acre of cultivated land? in value of manufactured goods? 5. Why must farms and factories be advantageously located to be profitable? 6. What advantages do New Jersey farms and factories, as a whole, enjoy?

Physiography. — 7. What are the natural physiographic divisions of New Jersey? 8. Do you understand the reason for dividing the state thus? 9. In which of the four belts do you live? 10. Do you think you could find the *exact* boundary line between two of the belts, for example, between the Highlands and the Piedmont Plain? Why? 11. Locate the Appalachian belt. 12. Of what mountain system is it a part? 13. How far does this mountain system extend? 14. Why does the Kittatinny Mountain stand up as a ridge above the surrounding country? 15. How high is it at High Point? 16. How has the Kittatinny Valley come into existence? 17. Do you understand that most mountains and valleys are due to these same causes? 18. How wide is the Kittatinny Valley? 19. Describe it from the picture (p. 5). 20. What parts of the Appalachian belt are forest-covered? (Fig. 18.) 21. Why these parts? 22. Where is the best soil found? 23. Why found here? 24. Give two reasons why the owners of land cut down the forests. 25. What is meant by "dairy farms"? 26. In what county are they numerous? 27. What are dairy products? 28. Suggest reasons why Sussex County has a large proportion of dairy farms while Gloucester County, for example, has a large proportion of garden farms. 29. Describe the Delaware Water Gap. (Modern text-books on physical geography, *e.g.* Tarr's "New Physical Geography," pp. 102–104, explain how water gaps are formed.) 30. Why are water gaps of great importance to man? 31. What other noted water gaps do you know of? 32. Sum up the main facts about the Appalachian belt.

The Highlands. — 33. Locate the Highlands. 34. What do you know of their age? 35. Of what kind of rock are they formed? Secure specimens and examine them through a magnifying glass. 36. How wide is the Highland belt? 37. To what elevation do the Highlands rise? 38. Of what mountains are they a part? 39. Give facts in the history of these mountains. 40. What ores are mined in the Highlands? Where? 41. Why is so much of the land forest-covered? 42. Why are the Highlands not generally adapted to farming? 43. Are there any large cities in this belt? Reasons? 44. Why are there many summer hotels and country homes? 45. Locate some of the lakes. How many are there? How formed? 46. What are the leading farm products? 47. What counties may be called "Highland counties"?

The Piedmont Plain. — 48. Width? 49. What counties are included? 50. Peculiarity of the soil? 51. Mention the most prominent trap-rock ridges. 52. How were they formed? 53. Why do they stand up higher than the surrounding land? 54. What is the peculiarity of their structure? 55. Why are they not adapted to farming? 56. Why are they being selected as sites for country homes? 57. What causes the falls at Paterson? 58. Where was glacial Lake Passaic? 59. What caused it? 60. Why has it disappeared? 61. What can you say of the surface of the Piedmont Plain? 62. Of the density of population? Of the cities? 63. Why are its farms more intensively tilled than those of the Kittatinny Valley? 64. Since there are so many cities near by, what type of farming would naturally be carried on? 65. Summarize the leading facts about the Piedmont Plain.

Glacial Work. — 66. Recall what you have learned about the Glacial Period. 67. How much of New Jersey was covered by the ancient ice sheet? 68. What

changes did the glacier make in New Jersey? 69. How was the course of the Passaic River changed? 70. Have you seen glacial boulders? Glacial scratches? 71. The main line of the Pennsylvania Railroad crosses the terminal moraine near Metuchen. The Lehigh Valley, the New Jersey Central, and the Reading cross it a few miles east of Bound Brook. When you travel, look for the low, rounded hills that form the terminal moraine.

THE COASTAL PLAIN. — 72. Its comparative age? 73. Its topography? 74. Materials of which made? 75. Character of its streams? 76. Its soil? 77. Why is so much land left to forests? 78. Where is the best soil? 79. Locate the marl belt (Fig. 3). 80. What counties include "The Pines"? 81. What proportion of the state is included in the Coastal Plain? 82. What proportion of this plain is less than fifty feet above sea? 83. What is the greatest elevation in the Coastal Plain? 84. What are the chief industries? Give reasons. 85. Why are there few large cities? 86. Summarize the main facts about the Coastal Plain.

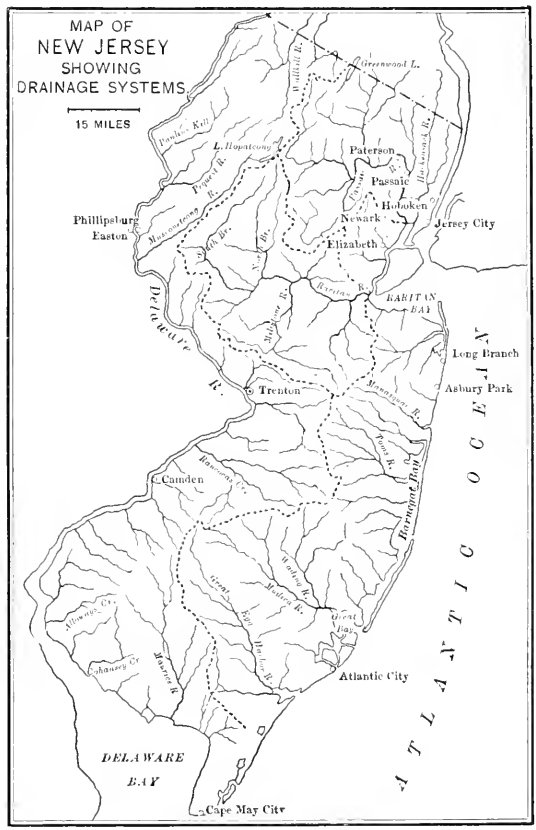


FIG. 12.

QUESTIONS ON THE MAP (Fig. 12). — By what rivers is the Appalachian belt drained? Where do these rivers flow? What river drains Lake Hopatcong? What river has the largest basin? What two rivers drain most of northeastern New Jersey? Into what bays do they flow? Does the Delaware River or the Atlantic Ocean receive the larger part of the drainage of the state? By what rivers is the Coastal Plain drained? What do the dotted lines on the map indicate? Give a brief general description of the drainage of New Jersey.

Mineral Industries

Iron. — Away back in 1676 Colonel Lewis Morris started iron works in Monmouth County. Before the Revolutionary War the iron ore of the Highlands was being mined, and smelteries at Oxford, Warren County, were converting it into pig iron. From 1855 to 1883 iron ore mining was one of New Jersey's greatest industries. Scores of mines have been opened, all in the ancient rocks of the Highlands (Fig. 13). But the discovery of the marvelously rich ore deposits near Lake Superior, where great beds of iron ore lie almost on the surface, has so reduced the price of ore that only a few of the best mines in New Jersey can now be worked at a profit. All of these are over a thousand feet deep. What does Fig. 14 show regarding iron ore mining in New Jersey?

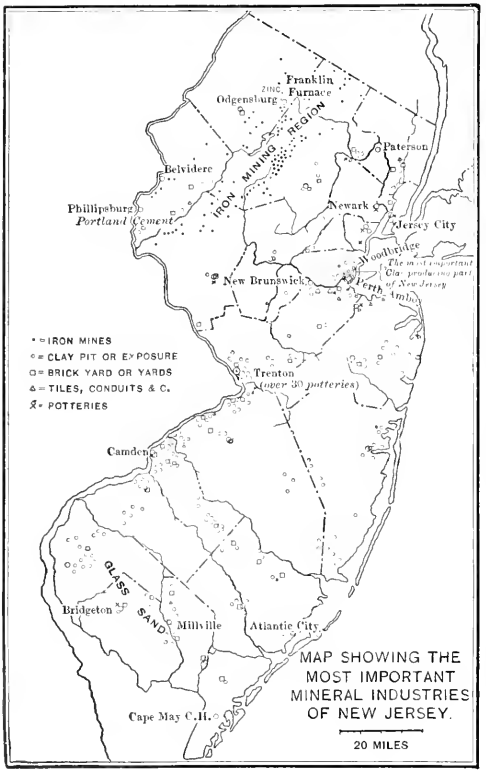


Fig. 13.

Questions on the Map. — Locate the iron-mining region; the zinc mines; the Portland cement region; the most important clay-producing region; the glass-sand region. Note the numerous clay-pits along the lower Delaware. How many potteries at Trenton?

Zinc. — The ancient crystalline rocks of the Highlands contain the largest body of zinc ore found in the United States. The mines are near Franklin Furnace and Ogdensburg. Does Fig. 15

show that the production of zinc in New Jersey is increasing or decreasing? What are some of the uses of zinc?

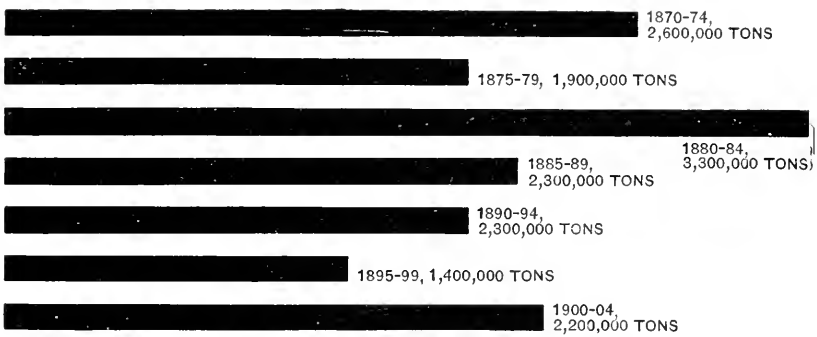


FIG. 14.

Showing the production of iron ore in New Jersey, 1870 to 1904.

Clay. — This forms the basis of one of the large industries of the state. Name some of the articles that are made from clay. In the manufacture of pottery, New Jersey holds third rank among the states; Ohio leads, with Pennsylvania second. Beds of clay are found in every county of the state. Most of the clay, however, is used for brick and tile and for the coarser kinds of pottery. Our richest clay beds are near the mouth of the Raritan River, around Woodbridge and Perth Amboy. Some clays are formed by the decaying of certain rocks, but the clays of New Jersey are the fine sediments which have been deposited by water. The extensive deposits at the mouth of the Raritan are called estuarine clays, because they were deposited in an estuary. New Jersey not only manufactures great quantities of brick, tile, pottery, etc., but it also sells clay to manufacturers in

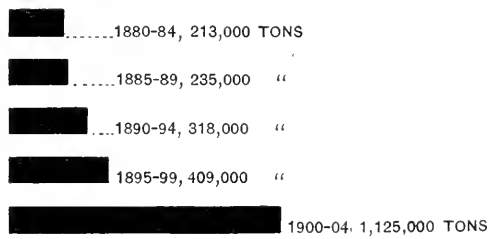


FIG. 15.

Showing the production of zinc ore in New Jersey, 1880 to 1904.

other states to the extent of 150,000 tons yearly. The finer clays, of which china and porcelain are made, are mostly brought from the Southern states, or are imported from abroad.

Glass-sand. — Nearly all of the Coastal Plain is sandy. Why? In the southern part there are deposits of nearly white sand, one of the chief materials of which glass is made. Near these beds of sand many glass factories have been erected, and glass-making is one of South Jersey's leading industries (Fig. 35).

Cement. — You have seen the mortar which masons use in making stone walls or brick walls. When this mortar, made of sand and lime mixed with water, hardens it forms a cement which binds the stone or brick into a solid mass. In recent years a material called Portland cement has come into extensive use in building. This cement is made by grinding, mixing, and burning shale rock and limestone, or a form of rock called "cement rock." These rocks are found in abundance in the Kittatinny Valley, and have led to the building of large cement works. Indeed, the region about Phillipsburg, New Jersey, and Easton, Pennsylvania, just across the river, is one of the greatest Portland cement regions in the United States.

Other Minerals. — Copper in very small quantities, considerable granite, some marble and slate, and many kinds of building stone are found in New Jersey. The trap rocks are firm and hard, and when crushed into small pieces make the best of material for the splendid macadam roads for which New Jersey is justly famous.

QUESTIONS. — 1. In which of the four physiographic belts are all of the iron mines? 2. Particularly in what county? (p. 40.) 3. Tell something of the rise and decline of iron mining in New Jersey, with the reasons. 4. Where are the zinc mines? 5. What states lead New Jersey in the production of pottery? 6. Where are the best clay deposits? 7. Origin of the deposits? 8. What products are chiefly made from New Jersey clay? 9. Whence come the clays for the finer grades of pottery? 10. What county leads in the production of clay? 11. What city leads in the making of pottery? 12. Why did glass-making develop so extensively in South Jersey? 13. For what is Portland cement used, and where in New Jersey is it made? 14. What other mineral resources has the state? 15. Where are the richest iron mines in the United States? 16. What is pig iron? cast iron? steel? 17. Learn how iron ore is smelted. 18. In what

other states is zinc mined? 19. Can some one who has seen brick made, describe the process? 20. Can some one who has seen pottery made, tell the class about it? 21. From what foreign countries do we import fine china? 22. **Problem.** — Suppose there are in New Jersey four beds of brick clay, all of the same extent and quality; one is on the shore of Raritan Bay; the second in a remote part of Sussex County; the third is close to the tracks of the Pennsylvania Railroad in Mercer County; the fourth is two miles from the city limits of Camden, but the brick must be hauled by horses two or three miles to market. Which of these would you consider the best place to establish a brick-making plant? Why? The next best place? Why? 23. Why is South Jersey a favorable place for manufacturing glass? 24. What superior advantage has the Pittsburg, Pa., glass district? 25. Of what are macadamized roads made?

AGRICULTURE

The farmers of New Jersey sell from their farms more than $50,000,000 worth of products yearly. The United States census shows that the cultivated lands in New York, Pennsylvania, and Illinois yield, on an average, eight dollars' worth of products to an acre; in New Jersey, twelve dollars' worth to an acre. In this, New Jersey stands first among all the states of the Union. About one-half of the state, however, is not cultivated at all, and, as has been said, is covered with forests or bushes. Of the remaining half, a portion, lying at a distance from the large cities, is farmed in a general way, producing varied farm crops or furnishing pasturage for cattle, horses, and sheep. But the remaining portion, lying in the fertile part of the state, and within easy reach of the cities, is caused to yield products of high value. Four million dollars' worth of poultry and eggs, and eight million dollars' worth of milk and butter, are produced yearly on New Jersey farms. There are ten thousand farms, mostly of smaller size, that produce chiefly vegetables, fruit, and flowers. The reason for this particular type of farming, and the high value of its products, is not hard to discover. On the borders of New Jersey are two great cities, New York and Philadelphia, and within the state are other large cities; along its coasts and among its mountains are many summer resorts, attracting thousands of people. There are seven millions of people living in cities in New Jersey, and near its borders. All these must be constantly fed. Some of the food, like flour and meat, may be more profitably produced in the

West, and shipped to these eastern cities. But milk, eggs, small fruits, and garden vegetables should be fresh daily. The near-by farmers can best supply them, and in so doing they receive high prices. For example, a farmer living at a distance from a city seldom gets more than two cents a quart for milk. One living near enough to deliver the milk directly to city customers often gets eight and sometimes even ten cents a quart for it.

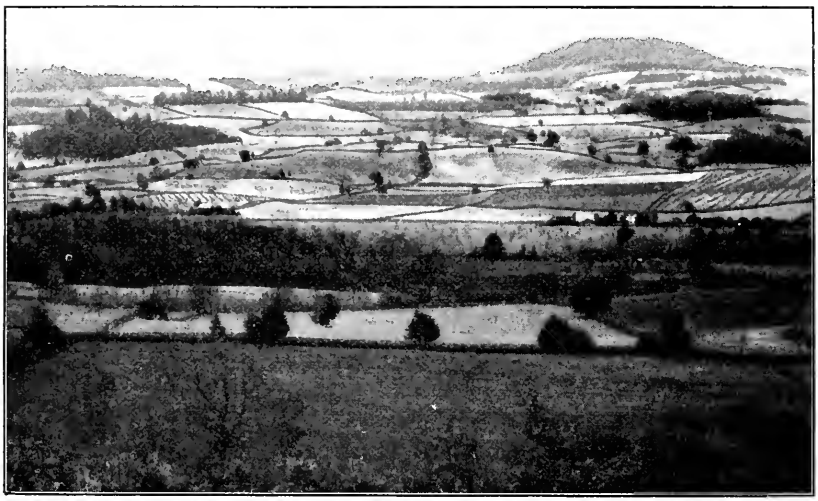


FIG. 16.
Farm lands of northern New Jersey.

The soil of New Jersey varies widely. North of the terminal moraine the soil is, of course, of glacial origin. This may be sandy loam, clay, gravel, or all three mixed together. Many boulders and cobble stones are mixed with it. Naturally the best land is found in the valleys. Why?

The rolling lands of Sussex and part of Warren counties are quite generally given to dairying. Most of the six thousand dairy farms are in the northwestern part of the state.

The soil of the Piedmont Plain is naturally fertile, and south of the terminal moraine is formed by the decay of the sandstones and

shales, usually of a reddish color. South of this is the marl belt, a part of the Coastal Plain. The fertility of this strip (Fig. 3) is due to the presence of natural phosphates. The marl is composed chiefly of sand and clay mingled with the microscopic shells of tiny creatures that lived in the sea.

Fig. 17.

A crop of sweet potatoes in Gloucester County.

The Piedmont Plain and the marl belt are highly cultivated. They produce the larger part of the garden crops of the state. Potatoes, tomatoes, peas, beans, corn, melons, and sweet potatoes are grown in great quantities. Gloucester County alone produces more than a million bushels of sweet potatoes yearly (Fig. 17). The canning of vegetables is a large industry in the southwestern counties.

Outside of the marl belt, the Coastal Plain has much poor soil. In places, as, for example, around Hammonton, Atlantic County, and

in the southern counties fertile lands exist. Five thousand acres in the vicinity of Hammonton are devoted to raising small fruits, especially berries. Vineland, as its name suggests, produces large quantities of grapes. On the low lands bordering the streams of Ocean County and eastern Burlington County, cranberry bogs are being extensively developed.

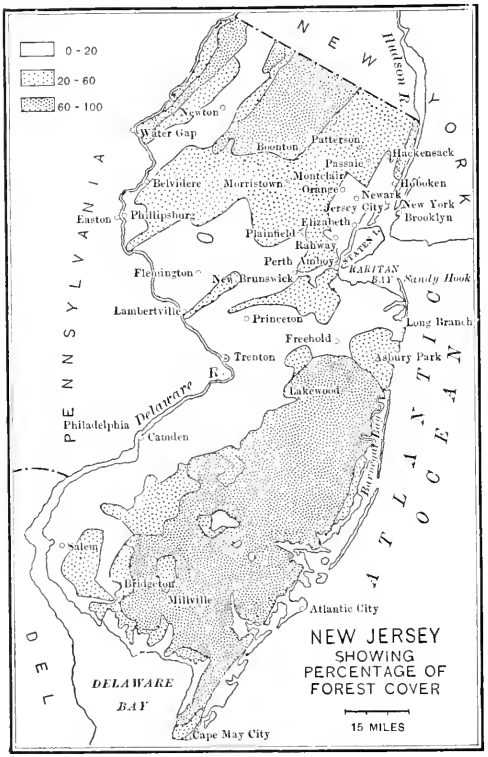


FIG. 18.

JEWISH COLONIES. — At several places in southern New Jersey, notably at Alliance, Rosenhayn, Woodbine, and Carmel, large tracts of land are occupied by colonies of Hebrews. These families have, in many cases, come to America to escape persecution in Europe. Aided by generous men of their own race, and particularly by the Baron de Hirsch fund, these colonists have secured farms, built villages, established schools, and developed manufacturing. It was originally thought that they would be farming communities, but manufacturing is now an industry of considerable importance.

QUESTIONS. — 1. What advantages has New Jersey as an agricultural state? 2. What disadvantages? 3. What proves that the former outweigh the latter? 4. Why is the average yield per acre in New Jersey of greater money value than in Illinois or Iowa, for example? 5. What are some of the leading farm products of New Jersey? 6. Explain why the farmers near large cities raise different crops than the more distant farmers. 7. What is meant by glacial soil? 8. Of what is soil composed? 9. Upon what does the fertility of soil depend? 10. What parts of the state are most fertile? 11. Why is the marl

belt fertile? 12. What is marl? 13. What are the leading crops of the southwestern counties? 14. Why? 15. What county leads in sweet potatoes? 16. In what parts are peaches chiefly raised? berries? cranberries? grapes? 17. Why are good roads a great benefit to farmers? 18. Why is the value of a farm influenced by its nearness to a railroad? 19. Why do summer resorts benefit the surrounding farmers? 20. Show why good roads benefit all classes of people. 21. Why does nearness to a city increase the value of a farm? 22. Tell the main facts about the Jewish colonies of South Jersey.

CLIMATE

What is meant by latitude, altitude, torrid, frigid, temperate, humid, arid, prevailing winds, cyclonic storms, continental climate, oceanic climate? Name the four influences by which the climate of a region is chiefly determined.

Lying about midway between the equator and the north pole, New Jersey has a *temperate* climate. Since there is no region of high altitude, no part of the state is extremely cold. For example, in the Adirondacks of New York, the winter temperature reaches thirty to forty degrees below zero; it only rarely falls below zero in New Jersey. Since the state lies in the region of prevailing westerly winds, it has a *continental* climate. Records covering many years show that the winds of New Jersey come from the western quarter three times as much as from the eastern. This is not true, however, of the coast region of the state, where the alternating land breezes and sea breezes blow. Lying in the region of cyclonic storms, the state has sudden and sometimes extreme changes. It often happens that when people go to bed at night, a cold, dry west wind is blowing; and when they get up in the morning, a warm south wind, bringing rain. The sudden changes are caused by the passing of cyclonic storms, usually in northern New York or Canada. Chiefly on account of the passing of these storms we get our east and south winds, bringing rain from the Atlantic or the Gulf of Mexico. The westerly winds, having passed across the continent, are generally dry.

The rainfall is ample for crops and is quite evenly distributed over the state. The seacoast and the southern counties receive about fifty-three inches of rainfall (including snow) annually, while

the Highlands receive about fifty inches. Can you name parts of the United States which receive much more than this? much less? Can you explain the reasons?

The coldest parts of the state in winter are the northwestern slopes of the Kittatinny Mountains and of the Highlands, for they receive the cold winds from the northwest. The lowlands in the interior of the state get very hot in summer, and thousands of people go to the shore or to the mountains during July and August. While the *average* temperature of South Jersey is only four degrees warmer than that of North Jersey, yet this does not show the real difference in climate. For example, the fruit trees in the southern counties blossom about three weeks earlier than those in the northern counties. Frosts come later in spring and earlier in fall in North Jersey. This difference causes a difference in the kinds of crops raised in the two sections. The northern part can more successfully raise hardy fruits and crops like the grains, white potatoes, apples, and pears; the southern part raises early spring vegetables, berries, grapes, sweet potatoes, melons, etc. Peaches, however, are successfully grown in the sheltered valleys of the northwestern part of the state.

A great body of water like the Atlantic has a tempering influence upon the climate of the lands along its shore. This influence is much greater when the prevailing winds blow from the ocean over the continent, as they do over western Europe. The influence is less where the prevailing winds blow from the land to the sea, as they do in New Jersey. The ocean absorbs a great amount of heat during the summer and slowly releases it during the winter. The land warms and cools quickly, even from day to night. The ocean does not. Thus the ocean tends to prevent sudden and extreme changes in temperature in the lands that border it. The sea breezes in summer feel cool and in winter they tend to temper the cold. Hence it is that Atlantic City and Cape May are winter resorts as well as summer resorts.

QUESTIONS. — Why has New Jersey a temperate climate? A continental climate? What is the ratio of easterly winds to westerly in New Jersey? Why does the climate of the coast differ from that inland? What causes the sudden

changes of our weather? Explain how the rainfall of the state is affected by the passing of cyclonic storms. What causes rain? What is the average annual rainfall of the state? Where are the coldest parts of the state? Why? Show how the climate of the northern counties differs from that of the southern. How does this affect farming? Why does the ocean influence the climate of New Jersey less than it does that of Ireland or of the state of Washington? Why are Atlantic City and Cape May both summer and winter resorts?

Fishing

An early settler of New Jersey wrote: —

> "Crabs, mussels, oysters, too, there be,
> So large that one does overbalance three
> Of those of Europe; and in quantity
> No one can reckon."

At many points along the shore, where streams flow into shallow bays, are coves protected from the ocean waves. Here the oyster finds its natural home, and near these places towns have grown up, many of whose inhabitants live by oyster fishing. Perth Amboy, Keyport, Shark River, Barnegat Bay, Tuckerton, West Creek, Great Bay, Bass River, and Port Republic all have their oyster fleets. It is said that two-thirds of the people of Tuckerton are dependent upon oyster fishing. New Jersey's chief oyster fields are in Maurice Cove, off Delaware Bay. There are nearly two thousand registered vessels and tenders engaged in the oyster industry, yielding four millions of dollars income yearly. This is more than the combined value of the annual wheat, rye, and oat crops of the state. Besides oysters other fish are taken in abundance from New Jersey waters; for example, a million pounds of shad and nearly as many pounds of sturgeon are taken in a good year from the lower Delaware River.

Questions. — Why is the New Jersey shore adapted to oysters? Locate on the map (Fig. 1) some of the places near which oyster fishing is carried on. Where are the most important oyster beds? What other forms of fishing are carried on in New Jersey waters?

History

The earlier history of a state, and to a certain extent its whole history, is influenced by its geography. The presence or absence of harbors and navigable rivers, the trend of mountains and valleys, the quality of the soil, the climate, the smoothness or ruggedness of the land, and the position of the state with respect to other important parts of the nation, — all these exert a constant influence upon the settlement and development of the state. The influence of New Jersey's geography upon its history is readily traceable.

Rising in New York two large rivers flow southward, forming part of the boundaries of New Jersey. They are the Hudson and the Delaware. Sometime in the past the land about the mouths of these rivers sank, admitting the ocean waters far up the valleys. Thus New York Bay and Delaware Bay came into existence. Most harbors are formed in this way. These two bay-mouthed rivers have had a larger influence upon the history of New Jersey than one might suppose. The coast from Sandy Hook to Delaware Bay is without good harbors, and is flanked by dangerous sand bars. For such a coast, mariners have little friendship; but the sheltered bays at the mouth of the Hudson and Delaware attracted the early Dutch, Swedish, and English explorers. Henry Hudson's men, the first Europeans to step on New Jersey soil, went ashore, September 4, 1609, on the banks of the river that now bears his name. Captain Mey, in another Dutch ship, later ascended the Delaware. Near the Hudson and along the Delaware the early Dutch settlers made their homes. Gradually the pioneers at the south pushed the settlements northward and met those from the north. The inhospitable eastern coast long remained almost untouched. In most of the colonies the settlers landed along the seaboard and pushed inland. In South Jersey, they landed along the Delaware and slowly pushed the settlements eastward toward the sea. Atlantic City was one of the last of New Jersey's cities to be founded.

The Dutch found the Lenni-Lenape Indians between the Hudson and the Delaware. They were not a strong or warlike tribe. The settlers bought and paid for the land, and treated the Red Men

with such fairness that the Delaware Indian, Calvin, is reported to have said: "Not a drop of our blood have you spilled in battle; not an acre of land have you taken but by our consent."

The early Swedish settlements in the southwestern part of the state soon passed under the control of the Dutch, who had settlements at both ends of the state. In 1664 the whole region came under the power of the English and passed into the hands of Lord Berkeley and Sir George Carteret. The latter had been governor of the Isle of Jersey, south of England, and the colony was named New Jersey in his honor. Lord Berkeley sold his share to a company of English Quakers, and the province was then divided into East and West Jersey (Fig. 19). The English soon planted colonies at Salem, Burlington, Trenton, and elsewhere in West Jersey, and at Elizabethtown, Middletown, Shrewsbury, Woodbridge, Bergen, and Newark in East Jersey.

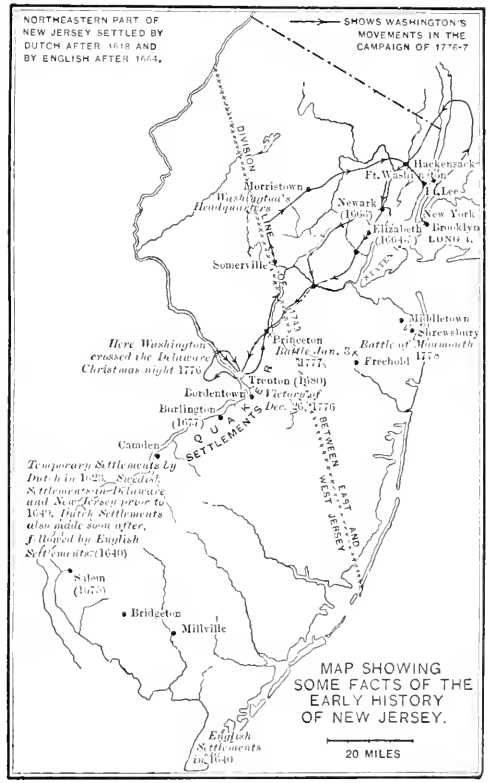


FIG. 19.

During the Revolutionary War New Jersey's position and topography — both facts of geography — made her the marching ground of armies and the scene of frequent conflicts. With the exception of the winter at Valley Forge and the campaign of Yorktown, the Continental troops were constantly on New Jersey soil. Back and forth

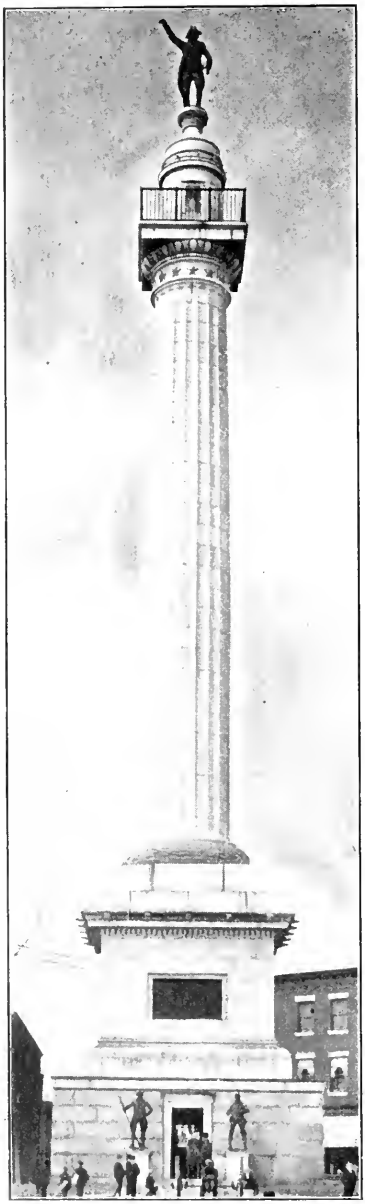


FIG. 20.
The Trenton Battle Monument.

along the level strip of land between New York and Trenton the contending armies marched and countermarched in retreat or in pursuit. You are familiar with the thrilling story of Washington's midnight crossing of the Delaware, and his swoop down upon the English and Hessians at Trenton, followed by the capture of their army on the morning after Christmas, 1776. Important battles were fought also at Princeton and Monmouth. At Morristown, Somerville, and Middlebush the Continental soldiers spent winters of terrible suffering. **New Jersey's geographical position made her the storm-center of the war.**

Since the War of 1812 the establishing of manufactures and the building of canals and railroads have gone on steadily. The Delaware and Raritan Canal was built about 1830, and completed an inland water route between Philadelphia and New York. At about the same time the Camden and Amboy Railroad, one of the oldest in the United States, was completed. Between 1825 and 1831 the Morris Canal was built chiefly as a coal route between Pennsylvania and New York City. The New Jersey canals, like most others, are now but little used. Why?

In the last half century several trunk line railways, seeking termini

on New York Bay, have pushed their steel tracks across the state. No other eastern state is crossed by so many important railroads.

Situated between two navigable rivers, two spacious harbors, and two of America's greatest cities, and lying athwart the path of the nation's leading arteries of commerce, New Jersey is developing into a manufacturing state among the first in the Union. The key to this is —Geographical Position.

QUESTIONS. — Show how the geographical features of a state influence its history. How were New York Bay and Delaware Bay formed? Name other harbors that have been thus formed. What is the nature of the coast from Sandy Hook to Delaware Bay? Why were early settlements not made along this coast? Where were early settlements made? Why here? By whom? Why was the strip of land between New York and Philadelphia occupied earlier than other parts of New Jersey? What do you know about the Indians of New Jersey? Where were the early Swedish settlements? The early Dutch settlements? The early English settlements? At about what time were these settlements made? (Fig. 19.) Explain why New Jersey was a storm-center of the Revolutionary War. What important events of that war took place in New Jersey? Tell or write the story of the battle of Trenton; of General Lee's disgrace at Monmouth. Describe the route of the Morris Canal. Of the Delaware and Raritan Canal. Why are they used but little now? Why do so many trunk line railways cross New Jersey? Why is manufacturing increasing rapidly in New Jersey?

THE CITIES OF NEW JERSEY

The Metropolitan District. — While New Jersey as a state is thickly populated, the people are very unevenly distributed. The triangular area shown in Fig. 21 forms only one-sixth of the state, yet it contains four-fifths of the people and nearly all of the manufacturing. Outside of this triangle Atlantic City is the only place of over 15,000 population. At one end of this "busy belt" lies Philadelphia; at the other end, New York. Just as these two cities, with their 5,000,000 people, make eager markets for New Jersey's farm products, so they are also markets for her manufactured goods.

New York and the surrounding region is called the Metropolitan district. New Jersey's part includes Hudson and Essex counties, most of Bergen, Passaic, and Union, and portions of adjacent counties. The first four of these counties form only one-tenth of the

state's area, yet they contain half of its people (Fig. 23). Thousands of men whose business is in New York live in northern New Jersey, going to and from their business daily by train and ferry. Suggest reasons for this. It is said that 25,000,000 suburban passengers cross to New York on the Jersey ferries yearly. Tunnels are now being constructed under the Hudson, and soon passengers will be carried directly into the city. The convenience of this will greatly increase New Jersey's suburban population. So thickly peopled is the Metropolitan district, that one city merges almost unnoticeably into another. A person may ride outward from Newark and pass through one city or town after another, and easily suppose himself to be all of the time in the same city.

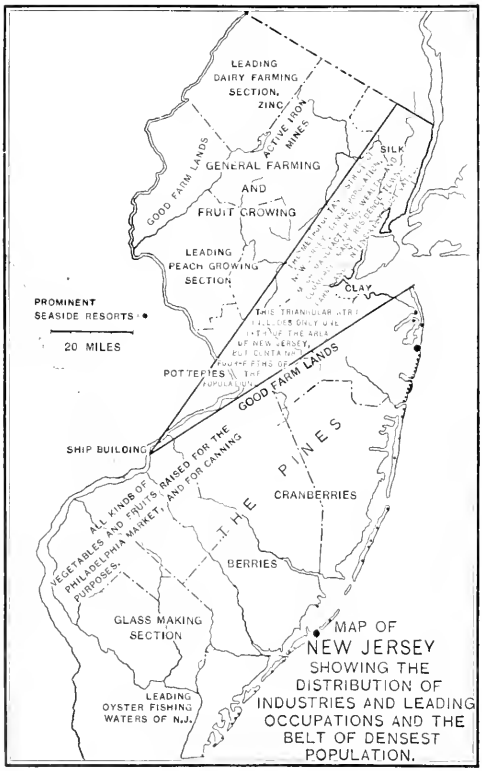
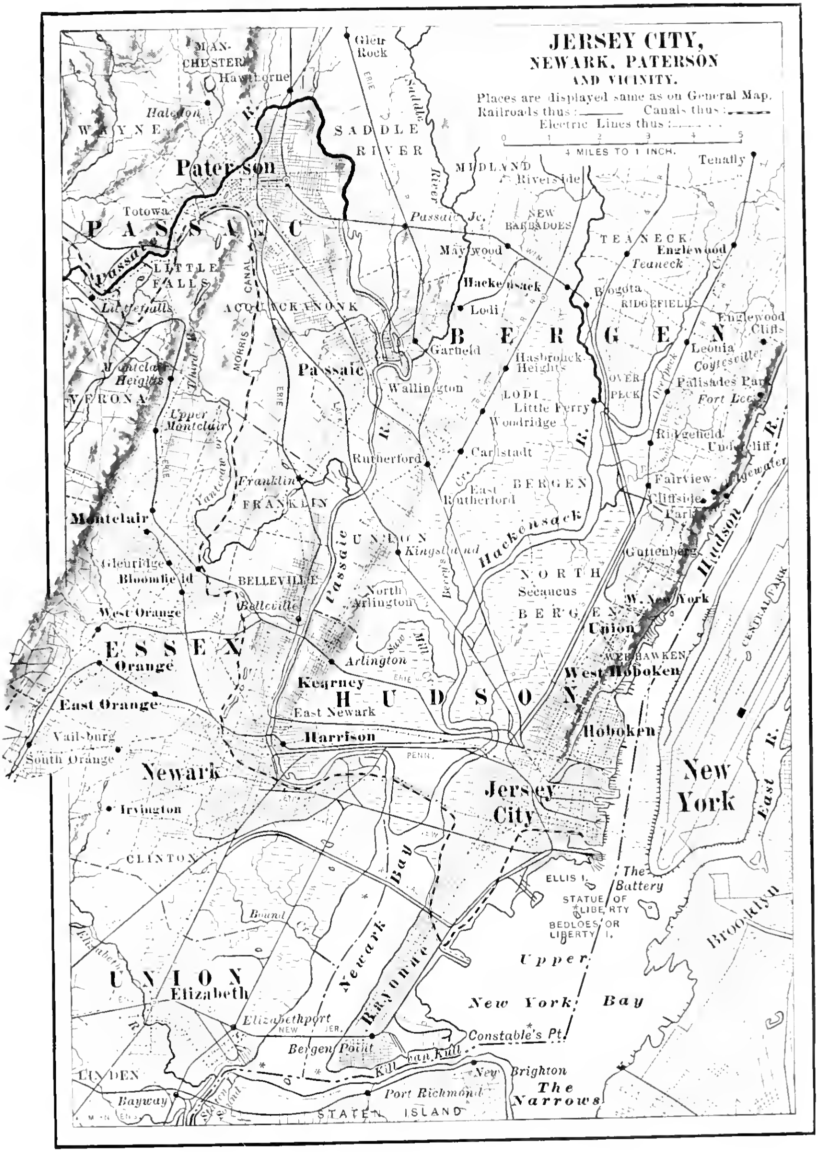
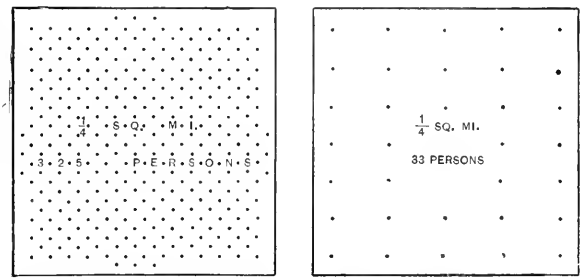


FIG. 21.

New York is the country's greatest market, and also its greatest importing and exporting city. It is advantageous for manufacturing plants to be located in or near it. Land in the metropolis is very, very expensive, and taxes are high; so, many manufacturers locate their factories just outside. Thus the nearness of New York has greatly stimulated manufacturing in New Jersey. The entire Metropolitan district is almost like a mammoth manufacturing city that has grown up around the splendid harbor of New York.


JERSEY CITY,
NEWARK, PATERSON
AND VICINITY.
Places are displayed same as on General Map.
Railroads thus: Canals thus:
Electric Lines thus:
4 MILES TO 1 INCH.
Paterson
Passaic
Newark
Jersey City
Hoboken
New York
Brooklyn
Elizabeth
Orange
East Orange
Montclair
Bloomfield
Harrison
Kearney
East Newark
Hackensack
Rutherford
Englewood
Tenafly
Upper New York Bay
The Narrows
Staten Island
Newark Bay
Bayonne
Bergen Point
Constable's Pt.
Ellis I.
Statue of Liberty
Bedloes or Liberty I.
The Battery
Port Richmond
New Brighton
Elizabethport
Irvington
Vailsburg
South Orange
West Orange
Arlington
Belleville
North Arlington
Kingsland
Secaucus
Union
West Hoboken
Weehawken
W. New York
Guttenberg
Cliffside Park
Fairview
Ridgefield
Palisades Park
Fort Lee
Leonia
Coytesville
Englewood Cliffs
Bogota
Teaneck
Maywood
Lodi
Garfield
Wallington
Hasbrouck Heights
Little Ferry
Woodridge
Carlstadt
East Rutherford
Franklin
Upper Montclair
Montclair Heights
Little Falls
Totowa
Haledon
Hawthorne
Glen Rock
Riverside
Passaic Jc.
Glenridge
Bayway
PASSAIC
BERGEN
ESSEX
HUDSON
UNION
Hudson R.
East R.
Passaic R.
Hackensack R.
Saddle River
Morris Canal

Newark. — Shortly after the English took possession of New Jersey (1664), a few families from New England sought new homes in the "West," and settled on the west bank of the Passaic River, nine miles from New York. They named their little settlement Newark, in honor of their pastor's old home in England. The place needed a shoemaker, of course; so (in 1680) the town meeting resolved that "Samuel Whitehead should come and inhabit among us, provided he will supply the town with shoes." Thus began Newark's leather industry that has since grown to such large proportions. The city cannot be reached by the large ocean vessels, but the smaller vessels used in years past could load and unload their cargoes at Newark. Some commerce is still carried on by way of the river. With the completion of the Morris Canal, Newark had water communication with the coal region of Pennsylvania, a very valuable advantage. Later, one railway after another, seeking a terminal on New York Bay, passed through Newark. New York was outgrowing its island and was overflowing into New Jersey. Newark was near by. Land was much cheaper than in New York, and taxes were lower. With its excellent transportation facilities, and direct communication with the coal fields, it was an ideal place for manufacturing, and one factory after another was located there. Newark's leather makers sought and captured the leather trade with the South, and held it until about the time of the Civil War. There are now in the city more than sixty establishments engaged in tanning leather and in making shoes, harness, saddles, and other leather goods.

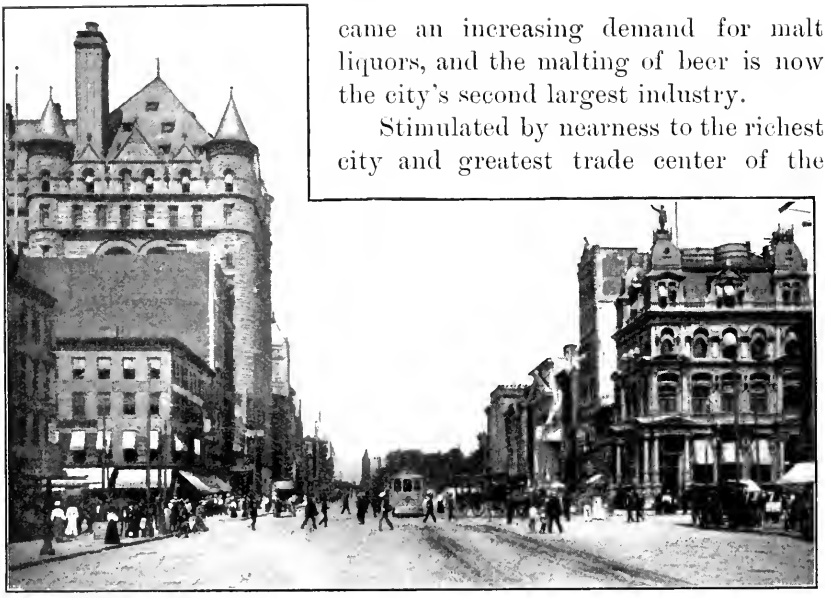


DENSITY OF POPULATION OF THE AREA INCLUDING HUDSON, ESSEX, BERGEN AND PASSAIC COUNTIES; 1300 PEOPLE TO THE SQ. MI.

DENSITY OF POPULATION OF THE REST OF NEW JERSEY; 132 PEOPLE TO THE SQ. MI.

FIG. 23.

With the rapid influx of foreigners into the Metropolitan district



came an increasing demand for malt liquors, and the malting of beer is now the city's second largest industry.

Stimulated by nearness to the richest city and greatest trade center of the country, the manufacture of jewelry has become the third largest industry in Newark. A hundred establishments are engaged in this one line of manufacture.

FIG. 24.
Street scene in Newark.

FIG. 25.
City Hall, Newark.

Newark and its suburbs, the Oranges, form a center of the fur hat manufacture, having over forty establishments. Here, too, is the home of celluloid manufacture.

In population Newark ranks six-

teenth among the cities of the United States, being next smaller than Washington, and next larger than Jersey City. It ranks eleventh among the cities in the value of its manufactured goods, having (in 1900) 3300 manufacturing establishments, large and small.

Environs of Newark. — Across the Passaic are **East Newark**, **Kearney**, and **Harrison**, manufacturing suburbs. Between Newark and the Watchung Mountains lie **Montclair**, **Bloomfield**, **Glenridge**, **West Orange**, **Orange**, **East Orange**, and **South Orange**, with **Summit** a little farther west. These are beautiful suburban towns, quite largely the homes of New York business men. Some manufacturing is done, especially in Orange. This section of the state is noted for the excellence of its schools.

Jersey City, Hoboken, Bayonne, and Environs. — Newark, Elizabeth, Trenton, and other cities of New Jersey were founded before 1700; but Jersey City had, in 1804, only fifteen inhabitants. The place was then called Paulus Hook. Thirty years later the settlement consisted of one hundred and seventy houses, and was not half as large as New Brunswick or Elizabeth. But this strip of land facing the expanding metropolis could not long evade the destiny which its situation was sure to bring. When the land about the Hudson sank, ages ago, the splendid harbor was born, and the river became a long arm of the ocean, navigable for a hundred and fifty miles. Stretching westward from the Hudson is the valley of the Mohawk, forming the one and only gap through the eastern mountains leading from the Atlantic seaboard to the great interior of our country. This "Eastern Gateway of the United States," as the Mohawk Gap has been called, made possible the building of the Erie Canal, one of the leading causes for the growth of New York City. More than half of the nation's imports are received through New York Bay, and from its wharves are shipped more than half of the country's exports. The Morris Canal united New York Bay with the valley of the Lehigh River, and opened an important coal route. The Delaware and Raritan Canal gave inland water communication between New York and Philadelphia. One by one railways were built, and gradually united into trunk line systems, all seeking to terminate at New York, the nation's business center. The railways from the south, west, and northwest terminate on the New Jersey

side of the bay, and have made this section one of the greatest railway terminals in the world. Seven railway systems meet the ocean at the water front of these New Jersey cities, chiefly at Jersey City.[1]

Jersey City, Hoboken, Bayonne, and the Amboys are, commercially, a part of the great metropolis at the mouth of the Hudson. To their wharves the trains roll in an unending line, and there discharge their loads of wheat, corn, meat, and flour to be carried across the ocean to feed Europe's millions. At these wharves ships from every part of the world are receiving and unloading their cargoes of merchandise. The harbor is thronged with ferry boats, tugs, schooners,

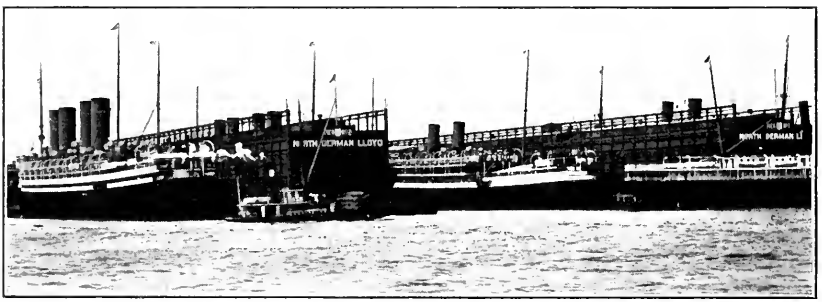


FIG. 26.

Types of the piers which fringe the water front of Jersey City, Hoboken, and Bayonne.

ponderous freight steamers, and graceful ocean liners. These terminal cities are the points where the nation's trade routes converge to meet those of the ocean. Nowhere else in all the world is such a mighty transshipping business carried on.

These cities share largely in the manufacturing life of the Metropolitan district. Jersey City is one of the first cities in the nation in the manufacture of tobacco. At its slaughterhouses six million dollars' worth of meat is annually dressed both for New York and New Jersey markets and for ocean shipment. Depending partly upon the by-products of the slaughterhouses are factories that

[1] They are the Pennsylvania, Philadelphia and Reading, Erie, West Shore, New Jersey Central, Lehigh Valley, and Lackawanna.

make soap, candles, chemicals, and fertilizers. Perhaps the pencil which you are using was made at the Dixon Works in Jersey City.

At **Bayonne** are some of the largest oil refineries in the world. They receive the crude oil through large pipes reaching all the way to western Pennsylvania and Ohio. The refineries are located here on the water front so that the refined oil can be discharged directly into the tank ships which carry it abroad or to our own seaboard cities. Of course, much of the oil finds a market in the near-by cities. At **Hoboken** is the Stevens Institute of Technology, one of the excellent technical schools of the East.

West Hoboken has a beautiful situation on the Palisade ridge. Its leading industry is the manufacturing and dyeing of silk. Still farther north is the growing manufacturing town of **Union**. At **Weehawken** Alexander Hamilton was fatally shot in a duel with Aaron Burr.

For miles northward along the western slope of the Palisades are beautiful suburban towns, mostly residence places, the homes of New York business men. **Englewood** is the largest of these.

Paterson. — More than a century ago Alexander Hamilton conceived the idea of founding somewhere in the United States a "city of mills," which should manufacture goods for the whole country. It was important that the city should be located at a point where water power could be secured. The falls of the Passaic seemed to Hamilton and his company to be the ideal site, and it was selected. The place was named Paterson, in honor of Governor Paterson, who signed the charter. The plan, as conceived by Hamilton and his company, did not succeed, but Paterson has nevertheless become a city of mills.

In 1840 Christopher Colt began making silk on one floor of the building in which his brother was making the famous Colt revolvers. Christopher did not succeed as a silk maker, yet the business went on under other management. Paterson had several advantages of location. It had excellent water power (Fig. 27) ; it had connection with the coal region by way of the Morris Canal and later by railroad, and it was near New York. Such advantages ought to attract manufacturers, and they did. To-day Paterson is the greatest silk-making city in the United States. It is called "The Lyons of America." Why? Nearly 30,000 persons are employed in its silk industry. New Jersey manufactures nearly three-fourths

of all the silk made in the United States, and most of it is made in or near Paterson. Among the other industries should be mentioned the making of locomotives and silk-making machinery. Paterson is growing rapidly, and is now the third largest city in the state.

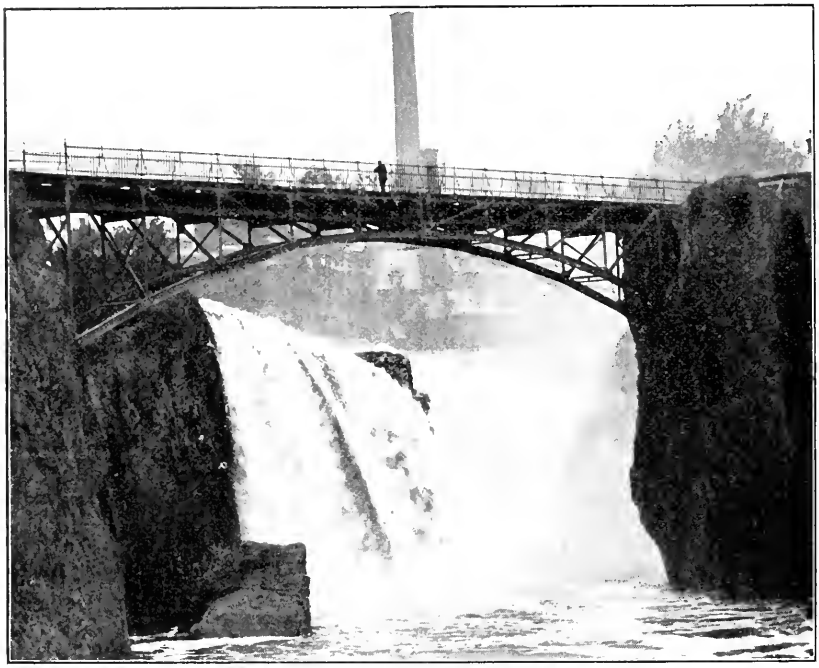


Fig. 27.
Paterson Falls.

Passaic. — Lying between Paterson and Newark, Passaic possesses the advantages for manufacturing and residence common to the cities of the Metropolitan district. The production of woolen and worsted goods is the city's largest single industry. The Botany Mills (Fig. 29), employing over 3500 persons, are among the largest of their kind in the United States. A dozen smaller mills are engaged in the manufacture of cotton and woolen goods, or in dyeing, printing, or finishing them.

Several smaller towns north and south of Passaic nearly join it to Paterson on one side and to Newark on the other. The time does not seem far distant when the three cities will actually meet. Passaic, like the other cities in this part of the state, has had a remarkable growth in recent years. In the last quarter century, New-

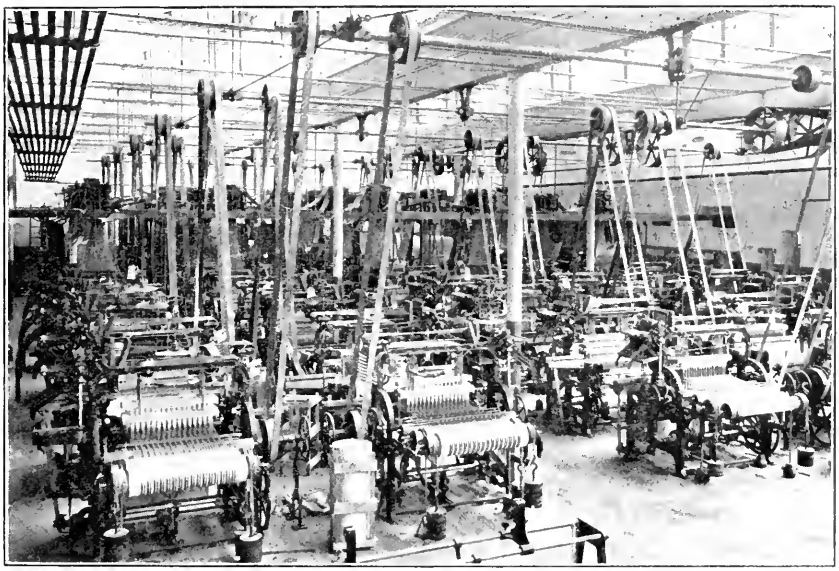


FIG. 28.

Weave room in a Paterson silk mill.

ark, Jersey City, Paterson, and Hoboken have doubled, or more than doubled, their population. Bayonne has quadrupled, and Passaic has sextupled. In 1870 Passaic was not so large as Gloucester, Salem, Bordentown, Rahway, or Phillipsburg. Of these cities, Phillipsburg alone has passed the 10,000 mark, while Passaic now has 38,000.

Between the Passaic and Hackensack rivers are several fine residence towns, of which HACKENSACK, the county seat of Bergen County, is the largest. The cities and most of the towns of the Metropolitan district are joined by a network of trolley lines.

The rapid extension of trolley roads in New Jersey is one of the notable facts of recent years.

Elizabeth. — This is one of New Jersey's old and historic cities, the first English settlement and the first seat of government of the state, settled by New Englanders in 1664. In 1820 it had grown to a population of 3500. A writer of the time says quaintly of the town: "It has some good gardens, and supplies many agricultural products for the New York market."

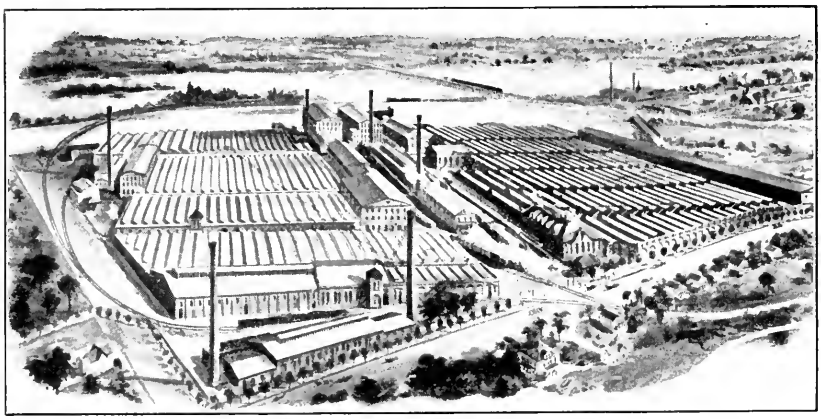


FIG. 29.

Worsted mills, Passaic.

Elizabeth has always been a residence city, and the plan of "commuting" to New York had its first real development here. The city's favorable situation for manufacturing has drawn to it several large industries. The chief of these is the great plant of the Singer Sewing Machine Company (Fig. 30), employing over 5000 persons and turning out yearly half a million sewing machines. The eastern part of the city, called Elizabethport, is on Staten Island Sound, a branch of New York Bay. Here the Singer Company has its works. The selection of this site for a great manufacturing plant well illustrates how a city grows up in response to the natural advantages of its situation. By locating its factories at

Elizabethport, the company has the advantage of being near New York, the trade center of the country. It is on the water front, and so can ship its products and secure many of its raw materials by water, the cheapest means of transportation. It has excellent railway connections and direct communication with the coal fields. Transportation facilities and cost of fuel are important considerations in manufacturing. Probably this single industry gives direct support to no less than 15,000 people in or near Elizabeth, while thousands of others find employment in supplying the wants of these fifteen thousand.

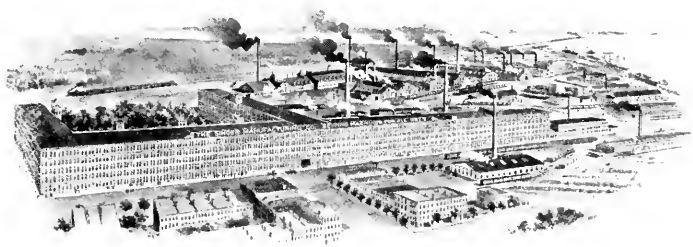


FIG. 30.

Works of the Singer Sewing Machine Company, Elizabethport.

The Crescent Ship Building Yard is also located at Elizabethport. Here are built gun boats, torpedo boats, submarine boats, and other craft.

Elizabeth and **Rahway**, a little farther south, are situated on the natural trade route between the Delaware and the Hudson, once called the King's Highway, now the route of the main line of the Pennsylvania Railroad.

In Union County also is **Plainfield**, one of New Jersey's beautiful residence cities. It is one of the group of North Jersey cities which are so justly proud of their fine homes and good schools.

Morristown, in Morris County, is another city of handsome residences. General Washington had his headquarters here during three winters of the Revolution.

Perth Amboy, at the mouth of the Raritan, and **Woodbridge**, a little north, are in the region of New Jersey's best clay deposits. Both cities make large quantities of brick, terra cotta, tile, pottery, and other clay products. Many smaller places in Middlesex County manufacture clay products. In fact, this is the county's leading industry. The extensive clay beds found here, the nearness to New York, and the cheap water transportation combine to encourage the industry. Both Perth Amboy and **South Amboy** are important coal-shipping ports.

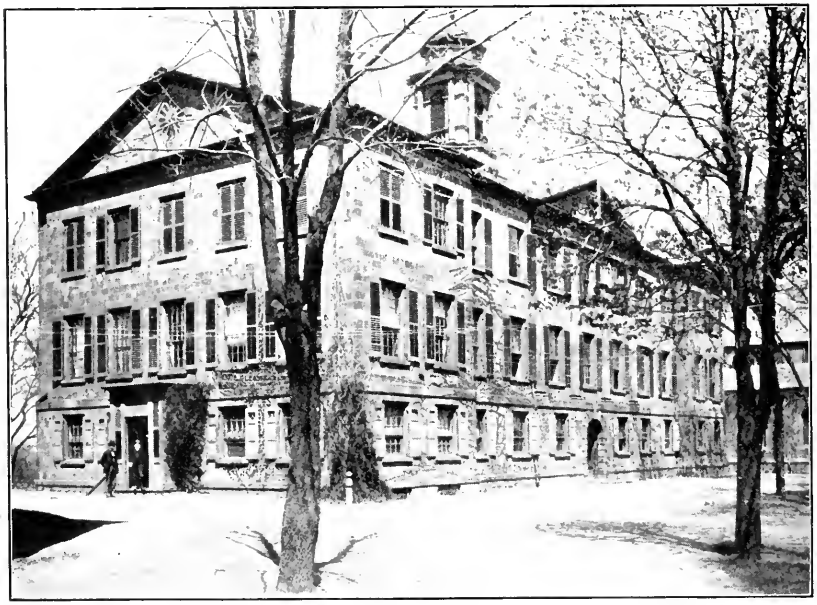


FIG. 31.
Queen's College, Rutgers, at New Brunswick; built in 1810.

New Brunswick, like many another city, began with an inn at a fording place on a river. The ancient trail of the Lenni-Lenape also crossed the Raritan at this point. It was a ferrying place on the King's Highway in colonial days. It is the northern terminus of the Delaware and Raritan Canal, and the place where the main line of the Pennsylvania Railroad bridges the river. Indian fording place, colonial ferry, canal terminus, railroad bridge — they tell the story of modes of travel along this noted route.

New Brunswick has large rubber mills and wall-paper mills, and is the seat of Rutgers College, one of New Jersey's old and honored institutions of learning (Fig. 31).

Delaware River Towns. — It has already been pointed out that the sinking of the land, by which the lower Delaware Valley was drowned and became Delaware Bay, has been a very important fact in the history and development of New Jersey. It made the river navigable by largest ocean steamships as far as Philadelphia and Camden and by river steamers as far as Trenton. How great an influence this navigable river has had may be readily seen. From Trenton southward there are, on the New Jersey side of the river, nine incorporated places with a total population of about 200,000. North of Trenton there are only four such places, with a total population of less than 20,000. The upper valley is a more healthful and beautiful region in which to live, but the lower valley offers better facilities for commerce; and it is in such localities that manufacturing plants are erected, and thither the people flock.

All of the lower Delaware towns have close business relations with Philadelphia, much as the North Jersey towns have with New York. Camden and Philadelphia are as closely joined in their business relations as are New York and Jersey City. The early stage routes between Philadelphia and New York, the Delaware and Raritan Canal, and the old Camden and Amboy Railroad brought these lower river towns into direct communication with New York and thus aided in their growth.

Camden, the largest of these cities, is practically a part of expanding Philadelphia. It is a city of recent growth, having had only 3400 people as late as 1840. But nearness to Philadelphia, deep-water transportation, and extensive railway connections make it an advantageous site for a city. Already it has become a manufacturing city of importance. Among its chief manufactures are worsted goods, leather, and oilcloth.

Here is located one of the largest of American ship-building yards, that of the New York Ship Building Company. When ships were made of wood, Maine was the leading ship-building state. Now that steel is so largely used, shipyards have grown up along the

Delaware River and the Chesapeake Bay in order that they may be within easy reach of the Pennsylvania steel mills and the coal mines. The ship-building plant at Camden, with its enormous steel buildings under whose roofs the largest ships may be built, and with its giant machinery, is one of the most modern in the world (Fig. 32).

South of Camden is **Gloucester**, a manufacturing city, and an important shipping point for the farm products of South Jersey. The sur-

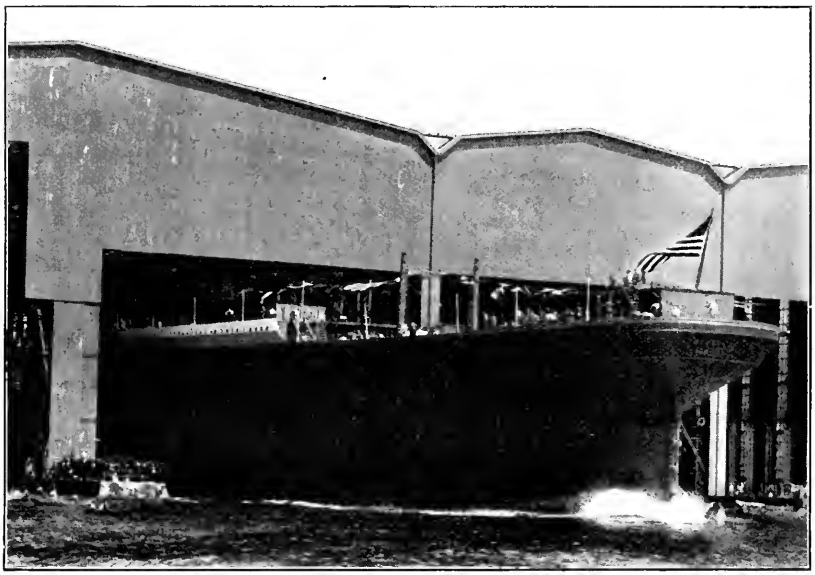


FIG. 32.

Launching a six-hundred-foot ship at Camden.

rounding farms are largely devoted to raising fruit and vegetables for Philadelphia, and during the summer and autumn fifteen hundred wagons a day, loaded with farm produce, cross to Philadelphia on the Camden and the Gloucester ferries.

Still farther south is the old and historic town of **Salem**. Like Gloucester, it sends large quantities of farm produce to Philadelphia. Salem is a center of the canning industry of South Jersey. Between Camden and Trenton are a number of towns originally settled by the English Quakers who came to America in William Penn's time. **Burlington** is older than

either Philadelphia or Trenton. **Bordentown** is the southern terminus of the Delaware and Raritan Canal. In the days of the stagecoach it was an important point on the Delaware. It was for many years the home of the exile, Joseph Bonaparte, formerly king of Spain.

Trenton. — In 1680, two years before William Penn founded Philadelphia, a mill was built on the present site of Trenton. The settlement was called "The Falls," for here is the fall line of the

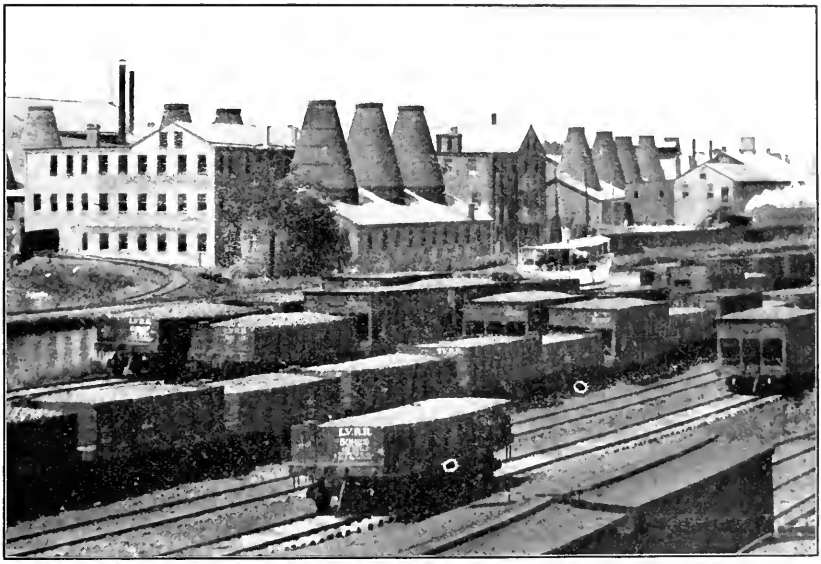


FIG. 33.

One of Trenton's thirty potteries. The tapering chimneys are the kilns.

Delaware. What is the fall line? Name other fall-line cities. Why, in the early days, were settlements often made at points where water power could be secured? Why is the head of navigation of a river usually the site of a town or city?

For a century Trenton grew but slowly, and in 1820 had only 4000 people. It was here that Washington struck his first great blow for freedom, when, in the driving storm of a Christmas night, he fell upon the sleeping English and Hessians and captured their

army. This brilliant victory is now commemorated by a splendid battle monument (Fig. 20).

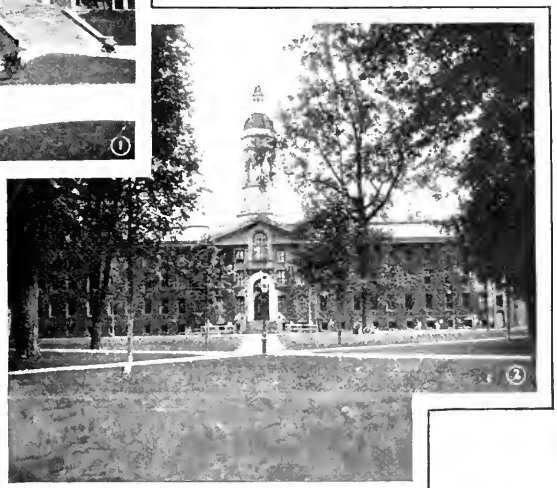
The central location of Trenton led to its selection, in 1790, as the capital of the state. The old State House has been replaced by a handsome new structure (Fig. 38).

Here is located the State Prison, with more than a thousand inmates. Here, too, are the State Normal and Model Schools, with more than a thousand pupils, the State Hospital, State School for Deaf Mutes, and other state institutions. Trenton is a rapidly growing manufacturing city, famed particularly for its potteries. In this industry it leads all the cities of the United States. In its thirty potteries more than 4000 people are employed in making almost every kind of ware known. Trenton makes one-fourth of all the pottery made in the United States. Here, too, are many rubber mills and large iron and steel plants. The Roebling Company of Trenton are the builders of the two colossal bridges that connect New York and Brooklyn.

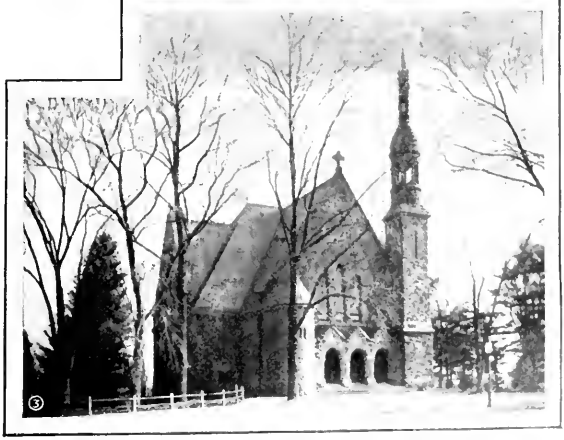
The reasons for Trenton's location and growth are easily traced. The presence of water power and the rapids which made this the head of navigation determined the site. With the opening of the Delaware and Raritan Canal, in 1830, Trenton had direct water communication with both New York and Philadelphia. More important still, perhaps, is the fact that here one of America's greatest railways, the Pennsylvania, crosses into New Jersey on its way to New York City. With canal and river navigation, water power, best of railway connections, nearness to the coal mines of Pennsylvania and to the nation's greatest markets, it is natural that a manufacturing city should grow up here. It should be noted that Trenton's potteries do not get much of their clay near the city. It comes chiefly from the Southern states and from Europe. Beds of clay suitable for brick and other coarse manufactures are found in and near the city. While these local deposits were the starting point of Trenton's pottery industry, they now supply but a small part of the clay used. Nearness to the coal fields and to markets, and "the momentum of an early start" help to explain Trenton's growth as a pottery-making center.

Near Trenton is **Princeton**, noted for the battle of Princeton in Revolutionary days. It is most widely known for its old and deservedly famous university (founded in 1746). Princeton is now the home of ex-President Grover Cleveland. A few miles up the river from Trenton

1. One of the beautiful entrances to the Princeton Campus; Blair Hall.



2. "Old North," one of the first buildings of Old Nassau (1746).



3. The Princeton College Chapel.

FIG. 34.

is the manufacturing city of **Lambertville**, and still farther north is **Phillipsburg**, opposite Easton, Pennsylvania. Phillipsburg is the western terminus of the Morris Canal. Situated near the coal of Pennsylvania and the iron ore of New Jersey, it is natural that iron-smelting and iron-working should be the city's leading industries. The manufacture of Portland cement has already been referred to (p. 18).

The Glass-making District. — Southern New Jersey is one of the leading glass-making sections of the United States. The two chief

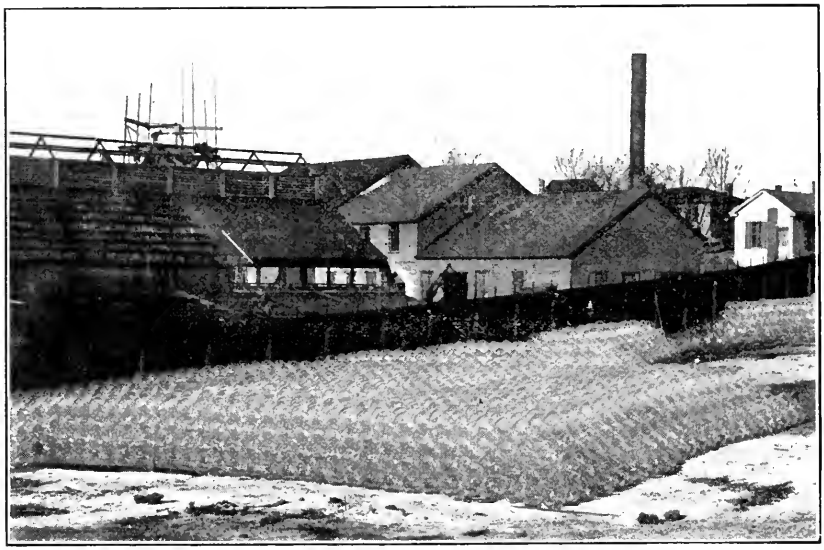


FIG. 35.

Glass works at Millville. Thousands of large bottles in the foreground.

items required in this industry are quartz-sand, the most important ingredient of the glass, and fuel for the intensely hot fires needed to melt the sand and other ingredients. Abundance of sand and extensive forests, furnishing wood for fuel, existed side by side in these southern counties. The sand is suitable for making bottles, jars, window glass, and the like, but it contains a little too large a trace of iron to be suitable for clear white glass. The iron gives to the glass a greenish tinge, seen in window panes. For making clear

white glass, the sand is brought from elsewhere. Coal and crude petroleum are now largely used for fuel, wood being still used to heat the annealing ovens.

Six thousand persons are employed in the glass factories of South Jersey ; in some towns glass-making is almost the only manufacturing industry. MILLVILLE and BRIDGETON are the largest of these towns. Besides these are VINELAND, GLASSBORO, WOODBURY, SALEM, SWEDESBORO, and others.

THE COAST CITIES AND RESORTS

A glance at the map of New Jersey will show that a line of long, narrow sand bars extends along the shore from Point Pleasant to Cape May. These are separated from the real mainland by shallow lagoons and swampy "meadows." The sea bottom slopes away very gently, and in many places along the shore a man may wade out into the water a long distance without getting beyond his depth. The low, sandy coastal plain that forms South Jersey blends very gradually into the continental shelf. In fact, the former rises gradually from the shore, inland ; the latter slopes gradually seaward.

As the waves roll in from the ocean they have washed up the sand into the long, narrow bars that now skirt the shore. In places the wind has drifted the sand into dunes. Behind the bars the shallow lagoons have been partly filled with the silt that the streams have brought down ; marsh grass grows, and now only narrow channels wind their way among the marshy islands. A nearly continuous channel, called the thoroughfare, extends the whole way behind the beaches from near Point Pleasant to Cape May. Such a coast as this, of course, affords no good harbors for large vessels, and so there is no opportunity for the growth of commercial cities. Such a shore is, however, admirably fitted for seaside resorts. The shore, with its soft carpet of white sand, and the gently sloping beach make an ideal place for the delights of sea-bathing. Here people flock by thousands in summer to escape the heat of dusty cities, and to breathe the invigorating ocean air and

bathe in the surf. The shore from Sandy Hook to Cape May is dotted with summer resorts (Fig. 21).

The largest of these is **Atlantic City**, a place that has grown with an almost magic swiftness. In 1840 it had only 700 residents. It now (1905) has more than 30,000. It is a city of hotels, among which are some of the most palatial in the land. Along the water front extends for several miles the famous "Board Walk," looking out on one side upon the great blue Atlantic; on

FIG. 36.

Beach scene, Atlantic City.

the other, closely set with stores, bazaars, places of amusement, etc. On a pleasant day in summer tens of thousands of people throng the Board Walk, while thousands of bathers stroll on the beach and swim in the surf (Fig. 36).

Long Branch, though not so large as Atlantic City, is a favorite resort. Not far away are **Asbury Park** and **Ocean Grove**. The places from Atlantic City southward have such an equable climate that they are both summer and winter resorts. These coast towns do practically no manufacturing. The resident population is largely engaged in caring for the hosts of

pleasure and health seekers. **Lakewood**, in the region of the pine forests of Ocean County, has become a very fashionable resort.

The United States Life-saving Service. — Parallel with the Jersey coast, and from three hundred yards to eight hundred yards away, extends an almost continuous sand bar. The water over the bar is often only a few feet deep, but the space between it and the shore is a death-trap. The raging "northeasters" and the bar make this coast one of the most dangerous along the Atlantic seaboard. It has been called "the graveyard of the sea." A half century ago the life-saving service was established

FIG. 37.

A life-saving crew and apparatus.

along this perilous coast, and now the life-saving stations extend at frequent intervals from Sandy Hook to Cape May. They have done valuable service (Fig. 37).

QUESTIONS. — 1. What is remarkable about the triangular area shown in Fig. 21? 2. Why is the northeastern section of New Jersey regarded as a part of the Metropolitan district? 3. What counties are most densely populated? 4. Why do so many New York business men live outside of the city? 5. Why will the completion of tunnels from New Jersey to New York City tend to make our state still more a residence section for New Yorkers? 6. Explain how the nearness of New York stimulates manufacturing in New Jersey. 7. Tell of the settlement of Newark and the beginning of its leather industries. 8. What have been some of the leading causes of Newark's growth? 9. What are the chief manufactures of Newark? 10. How does it rank among American cities in population and manufacturing? 11. Mention some of the manufacturing towns and residence towns near Newark. 12. Tell of the settlement and growth of Jersey City.

13. Why is the business of Jersey City closely connected with that of New York? 14. What great railways have their ocean terminals on the New Jersey water front? 15. Explain why the harbor of New York became the nation's chief importing and exporting point. 16. Would you class Jersey City as a manufacturing city or as a commercial city? Why? 17. Is the same true of Newark? 18. What are the leading manufactures of Jersey City? 19. What large industry at Bayonne? 20. What noted school at Hoboken? 21. What tragic historical event occurred at Weehawken? 22. What is the chief industry of West Hoboken? 23. Locate Union and Englewood. 24. Tell of the beginning of Paterson. 25. Why was this site chosen? 26. What causes the waterfall at Paterson? 27. Mention other cities in the United States that have grown up at waterfalls. 28. Describe the beginning, the growth, and the present magnitude of Paterson's silk industry. 29. Locate Passaic and tell of its leading industry. 30. Locate Hackensack. 31. Tell the leading facts about Elizabeth. 32. What advantages of location does it possess? 33. Locate Rahway, Plainfield, Morristown, Perth Amboy, South Amboy, and Woodbridge, and give one important fact about each. 34. Explain the changes in methods of travel and transportation which New Brunswick has witnessed. 35. What college is located in New Brunswick? 36. Give reasons why so many more towns and cities are found along the lower Delaware than along the upper part of the river. 37. Is this equally true of other large rivers in the eastern states? 38. Tell the leading facts about Camden. 39. To what kind of farming is the region about Gloucester and Camden devoted? Why? 40. What fact is given to show the extent of this industry? 41. What old historic town in the southeastern part of the state? 42. Name the larger towns between Camden and Trenton. 43. By whom were they settled? 44. At about what time? 45. What historical events are connected with Bordentown? 46. What natural causes led to the location of Trenton? 47. What advantages of location has it? 48. What extensive industry centers here? 49. What other facts should be remembered in connection with Trenton? 50. What important university town near Trenton? 51. Name two cities on the Delaware above Trenton. 52. What causes have led to the growth of Phillipsburg? 53. What natural causes favored the locating of glass factories in South Jersey? 54. What cities are extensively engaged in glass-making? 55. What kind of glass is made from the local sand? 56. Why is the sand not suitable for clear white glass? 57. Can any member of the class describe the process of making and blowing glass? 58. Would it not be a good topic for special study? 59. What is the nature of the New Jersey coast? 60. What causes such a coast? 61. Why are there no deep harbors along this coast? 62. How were the sand bars or "beaches" formed? 63. Why are there no commercial cities along this coast? 64. What are the leading coast cities? 65. Give reasons why so many resort cities and towns have grown up along the New Jersey shore. 66. Do you think that the many large cities in and near New Jersey have had anything to do with it? Why? 67. Locate on the map Atlantic City, Long Branch, Asbury Park, Ocean Grove, Cape May City, Lakewood. 68. What ones of these resorts have you visited? 69. What, that you saw, impressed you most? 70. Why does the coast of New Jersey require many life-saving stations?

Government and Education

Government. — New Jersey's form of government is very much the same as that of the other states. The law-making body, called the Legislature, consists of the House of Assembly and the Senate. The Legislature meets each winter at the State House in Trenton (Fig. 38). Bills that are passed by

Fig. 38.

State Capitol at Trenton.

both houses of the legislature and are approved by the Governor become laws. They may also become laws by being passed "over the Governor's veto."

There are many officials whose duty it is to see that the laws are enforced. The chief of these is the Governor, elected for three years at a yearly salary of $10,000. He cannot hold office two successive terms. Can you think of any reason for this restriction? The government of the state is divided into many departments, each with its head official and his subordinates. Some of these are the departments of Education,

of Labor, of Agriculture, of the Treasury, of State, of Law, of Public Roads, of Health, and the Geological Survey. Do you know men who occupy positions in any of these departments?

Laws are sometimes disobeyed and disputes arise. These call for courts of different grades. Can you mention any of the different grades of courts? Have you ever attended a lawsuit or a trial? How was it conducted? Judges hold office longer than almost any other class of officials; suggest reasons. What is a jury?

The state is divided into counties and the counties are subdivided into townships. Explain why this is so. Mention some county officials. If

FIG. 39.

State Normal and Model schools at Trenton.

you live in the country, mention some township officials. Larger villages and cities are incorporated and have special officers. Why does a city need a different form of government and different officials from a country township?

Who is the present Governor of New Jersey? Who is sheriff of your county? Mayor of your city (if you live in a city)? Who represents your county in the state Senate? in the House of Assembly? Who are New Jersey's United States Senators?

Education. — Next to the American people's devotion to free popular government is their devotion to free public schools. New Jersey's school system has come about by a gradual growth through more than 200 years. Starting with a single Dutch school in Bergen (now Jersey City) in 1662,

the schools of the state have increased to 2000 with nearly a half million pupils. At the head of the State Department of Public Instruction is the State Superintendent, appointed by the Governor. He exercises a general supervision over the public school system of the state. The State Board of Education is appointed by the Governor, and consists of two members from each Congressional district. This board appoints the county superintendents of schools, and exercises supervision over the different state educational institutions, such, for example, as the Normal School.

The state is divided into many school districts each having its own school or schools, controlled by the officers whom the voters of the district select. In cities the school board may be appointed by the mayor. How is it in your city? Each city and large town has its own superintendent, or supervising principal, and each county its county superintendent. Who is superintendent of your county? From your own knowledge tell the chief duties of these officers. All public school teachers must have a license to teach. These licenses are of different grades, and are obtained by passing examinations or by graduating from normal schools.

The schools are open to children between five and twenty, but pupils both younger and older often attend. The public schools cost over $7,000,000 a year, about half of which is paid from state funds and half by local taxes.

The State Normal School for training teachers, at Trenton, was organized in 1855. Connected with it is the State Model School. Are any of your teachers from normal schools? At Beverly is the Farnum School, a preparatory school associated with the State Normal; at Trenton is the State School for Deaf Mutes; at Bordentown is the Manual Training and Industrial School for Colored Youths; and connected with Rutgers College is the State Agricultural College.

Conclusion

The *physiography* of a state, its *geographical position*, its *climate*, and its *natural resources* of soil, minerals, forests, or fisheries, all are important influences which affect the development of the state. Some states, like those of the Middle West, have a large proportion of fertile soil and level land. They are the great agricultural states. Some, like Colorado and Pennsylvania, have mines of wonderful richness, and much of the wealth of these states is derived from mining, and from industries connected with mining. Others, like

the New England and North Atlantic States, have deep harbors, and their cities carry on extensive ocean commerce.

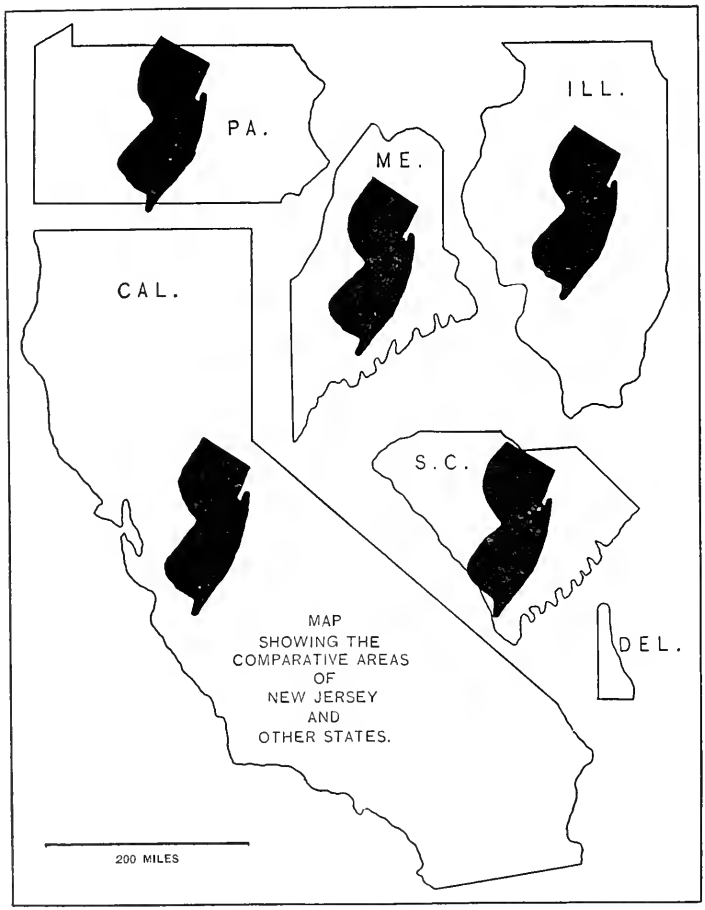


FIG. 40.

Some states, like New Jersey, have a particularly favorable location. They are so situated that trade routes naturally pass through them; or they are near to great cities which furnish ready markets for the products

of the state; or they are so near to rich and prosperous states that they share in their prosperity. This is the case with our own state. It has not a large proportion of fertile soil, yet its thousands of fruit and vegetable farms have given it the name of "The Garden State." While the zinc and iron mines produce considerable ore, yet mining is not one of the large sources of the state's wealth. These mines, however, are more valuable situated in New Jersey than they would be in a remote part of the country. While New Jersey has no deep harbors along most of its coast, and the customhouse reports credit the foreign commerce of Jersey City to New York, yet the state profits largely by the nation's foreign trade.

But it is in *manufacturing* that New Jersey is developing most rapidly, now ranking sixth among the manufacturing states. When we examine the state's leading lines of manufacture, we note how generally its mills use *raw materials brought from outside of the state;* and, secondly, *how many of these mills are located near New York City.*[1] It is evident that, not nearness to raw materials of manufacture, but *nearness to good markets* has chiefly attracted manufacturing plants to New Jersey.

Not forgetting our soil, fisheries, and forests; our iron, zinc, clay, and building stone; our excellent roads and many railroads, we shall remember that **our geographical position between the great cities of New York and Philadelphia has made more valuable all of our natural resources, and has been the chief cause of our rapid growth in manufacturing and commerce.**

[1] New Jersey's leading manufactures are:—
Iron and steel products, made in nearly all of the cities of the state;
Silk goods, chiefly made in Paterson;
Oil refining, chiefly done in Bayonne;
Chemicals, largely made in Newark and Jersey City;
Leather goods, chiefly made in Newark;
Woolen and worsted goods, mostly made in the Metropolitan district;
Felt and wool hats, largely made in Newark and the Oranges;
Jewelry, chiefly made in Newark;
Tobacco, especially in Jersey City.

Publications of State Departments

The State Geological Survey has published much material useful to teachers of geography in New Jersey. It has issued many excellent maps and valuable reports. A "Summary and Subject Index" of its reports and maps may be obtained by addressing the State Geologist, Trenton. For the teacher's use Volume IV, "Physical Geography," is most valuable. It is a veritable storehouse of classified information about the state. While the volume deals chiefly with the physical features of the state, yet it contains historical material, population tables, drainage areas, tables of elevations, areas of townships and counties, and many other facts. Volume V, "Glacial Geology," is the best treatise of its kind published by any state. This is especially valuable to teachers in the northern counties. Volume VI, "Clay Industry," is also an excellent volume.

The State Department of Agriculture issued a little book in 1901 called "The New Jersey Hand-Book," which treats of the agricultural industries of the state. It also contains chapters on county and state history, manufacturing, fishing, education, forests, and transportation.

The Bureau of Statistics and Labor issues a yearly statistical report dealing with industries of the state.

The New Jersey Geological Survey has issued two series of topographic maps. One series consists of 17 maps covering the entire state, each 27 by 37 inches; scale 1 mile to an inch. This series was mounted for school use, and was distributed among the schools several years ago. Newly organized schools may secure the maps by addressing the State Superintendent of Public Instruction, Trenton.

The "New Series" topographic maps is not yet complete. They are on a large scale (2000 feet to an inch), and are most excellent. They sell for 25 cents each. (Address State Geologist, Trenton.) The following sheets had been completed in 1905: Paterson, Hackensack, Newark, Jersey City, Camden, Elizabeth, Plainfield, Amboy, Woodbury, Mount Holly, Taunton, Navesink, Long Branch, New York Bay, Morristown, Atlantic City, Trenton East, Shark River, Boonton, Dover, and Chester.

STATISTICS OF COUNTIES

County	Organized	Area Square Miles	County Seat	Population 1900	Population 1905
Atlantic	1837	613.49	Mays Landing	46,402	59,862
Bergen	1709	246.17	Hackensack	78,441	100,003
Burlington	1709	823.49	Mount Holly	58,241	62,042
Camden	1844	225.96	Camden	107,643	121,555
Cape May	1685, 1709	450.91	Cape May C. H.	13,201	17,390
Cumberland	1748	674.33	Bridgeton	51,193	52,110
Essex	1709	129.72	Newark	359,053	409,928
Gloucester	1709	341.45	Woodbury	31,905	31,477
Hudson	1840	60.48	Jersey City	386,048	449,879
Hunterdon	1713	439.12	Flemington	34,507	33,258
Mercer	1838	227.90	Trenton	95,365	110,516
Middlesex	1709	324.44	New Brunswick	79,762	97,036
Monmouth	1709, 1813	537.94	Freehold	82,057	87,919
Morris	1738–1739	480.19	Morristown	65,156	67,934
Ocean	1850	750.91	Toms River	19,747	20,880
Passaic	1837	198.65	Paterson	155,202	175,858
Salem	1709	389.37	Salem	25,530	26,287
Somerset	1709	305.02	Somerville	32,948	36,270
Sussex	1753	535.31	Newton	24,134	23,325
Union	1857	104.94	Elizabeth	99,353	117,211
Warren	1824	364.65	Belvidere	37,781	40,403
(21 counties)		8224.44		1,883,669	2,144,143

TABLE SHOWING GROWTH OF THE CITIES IN NEW JERSEY WITH MORE THAN 30,000 INHABITANTS, 1820 TO 1905

	1905	1900	1880	1860	1840	1820
Newark	283,289	246,070	136,508	71,941	17,290	6,507
Jersey City	232,699	206,433	120,722	29,226	3,072	—
Paterson	111,529	105,171	51,031	19,586	7,596	—
Trenton	84,180	73,307	29,910	17,228	4,035	3,942
Camden	83,363	75,935	41,659	14,358	3,371	—
Hoboken	65,468	59,364	30,999	9,662	—	—
Elizabeth	60,509	52,130	28,229	11,567	1,184	3,515
Bayonne	42,262	32,722	9,372	—	—	—
Passaic	37,837	27,777	6,532	—	—	—
Atlantic City	37,593	27,838	5,477	687	—	—

POPULATION OF THE INCORPORATED CITIES, TOWNS, VILLAGES, AND BOROUGHS OF NEW JERSEY (1905)

	1905	1900		1905	1900
Absecon, town	616	530	Chesilhurst, borough	258	283
Allendale, borough	762	694	Clayton, borough	1,864	1,951
Allenhurst, borough	247	165	Cliffside Park, borough	2,128	968
Allentown, borough	653	695	Clinton, borough	830	816
Alpine, borough	448		Closter, borough	1,272	
Andover, borough	427		Collingswood, borough	2,538	1,633
Anglesea, borough	400	161	Cresskill, borough	505	486
Asbury Park, city	4,526	4,148	Deal, borough	164	70
Atlantic City	37,593	27,838	Deckertown, borough		1,306
Atlantic Highlands, borough	1,480	1,383	Delford, borough	841	746
Audubon, borough	525		Demarest, borough	480	
Avalon, borough	86	93	Dover, town	6,353	5,938
Avon, borough	322		Dumont, borough	913	643
Barnegat, city	78		Dunellen, borough	1,517	1,239
Bayhead, borough	278	247	East Millstone, borough	333	447
Bayonne, city	42,262	32,722	East Newark, borough	2,828	2,500
Beach Haven, borough	301	239	East Orange, city	25,175	21,506
Belleville, town	7,632	5,907	East Rutherford, borough	3,165	2,640
Belmar, borough	1,089	902	Edgewater, borough	1,392	
Belvidere, town	1,869	1,784	Egg Harbor, city	2,280	1,808
Bergenfields, borough	1,095	729	Elizabeth, city	60,509	52,130
Beverly, city	2,258	1,950	Elmer, borough	1,219	1,140
Bloomfield, town	11,668	9,668	Englewood, city	7,922	6,253
Bogota, borough	522	337	Englewood Cliffs, borough	266	218
Boonton, town	3,935	3,901	Englishtown, borough	416	410
Bordentown, city	4,073	4,110	Essex Fells, borough	393	
Bound Brook, borough	3,389	2,622	Etna, borough	681	
Bradley Beach, borough	1,037	982	Fairview, borough	1,693	1,003
Branchville, borough	591	526	Fanwood, borough	445	399
Bridgeton, city	13,624	13,913	Farmingdale, borough	399	
Brigantine, city	95	99	Fieldsboro, borough	457	459
Brooklyn, borough		75	Florham Park, borough	803	752
Burlington, city	8,038	7,392	Fort Lee, borough	3,433	
Butler, borough	2,188		Freehold, town	3,064	2,934
Caldwell, borough	1,670	1,367	Frenchtown, borough	975	1,020
Camden, city	83,363	75,935	Garfield, borough	5,092	3,504
Cape May, city	3,006	2,257	Garwood, borough	564	
Cape May Point, borough		153	Glen Ridge, borough	2,362	1,960
Carlstadt, borough	3,100	2,574	Glen Rock, borough	778	613
Chatham, borough	1,554	1,361	Gloucester, city	8,055	6,840
			Guttenberg, town	4,563	3,825

	1905	1900
Hackensack, town	11,098	9,443
Hackettstown, town	2,594	2,474
Haddon Heights, borough	654	
Haddonfield, borough	3,466	2,776
Hammonton, town	4,334	3,481
Harrington Park, borough	283	
Harrison, town	12,823	10,596
Harvey Cedars, borough	46	39
Hasbrouck Heights, borough	1,650	1,255
Hawthorne, borough	2,570	2,096
Helmetta, borough	575	447
Haworth, borough	400	
High Bridge, borough	1,382	1,377
Highland Park, borough	714	
Highlands, borough	1,275	1,228
Hightstown, borough	2,083	1,749
Hoboken, city	65,468	59,364
Holly Beach, borough	1,327	569
Hopatcong, borough	125	
Hopewell, borough	984	980
Irvington, town	7,180	5,255
Island Heights, borough	250	316
Jamesburg, borough	1,315	1,063
Jersey City	232,699	206,433
Junction, borough	974	998
Kearney, town	13,601	10,896
Keyport, town	3,385	3,413
Lambertville, city	5,016	4,637
Lavalette, city	22	21
Leonia, borough	1,041	804
Linden, borough	403	402
Linwood, borough	503	495
Little Ferry, borough	1,776	1,240
Lodi, borough	2,793	1,917
Long Branch, town	12,183	8,872
Longport, borough	133	80
Madison, borough	4,115	3,754
Manasquan, borough	1,636	1,500
Matawan, borough	1,479	1,511
Maywood, borough	687	536
Merchantville, borough	1,632	1,608
Metuchen, borough	1,907	1,786
Midland Park, borough	1,617	1,348
Millstone, borough	156	200
Milltown, borough	1,210	561
Millville, city	11,884	10,583
Montclair, town	16,370	13,962
Montvale, borough	502	416
Morristown, town	12,146	11,267
Mountainside, borough	314	367
Mt. Arlington, borough	250	275
National Park, borough	160	
Neptune City, borough	808	1,009
Netcong, borough	1,024	941
Newark, city	283,289	246,070
New Brunswick, city	23,133	20,006
New Providence, borough	754	565
Newton, town	4,122	4,376
North Arlington, borough	408	290
North Caldwell, borough	483	297
Northfield, city	688	
North Haledon, borough	697	
North Hanover	747	
North Plainfield, borough	5,616	5,009
North Spring Lake, borough		361
Norwood, borough	432	
Nutley, town	4,556	
Oakland, borough	586	
Oaklyn, borough	454	
Ocean City	1,835	1,307
Old Tappan, borough	280	269
Orange, city	26,101	24,141
Orvil, borough	443	
Palisades Park, borough	911	644
Park Ridge, borough	1,189	870
Passaic, city	37,837	27,777
Paterson, city	111,529	105,171
Paulsboro, borough	2,269	
Pemberton, borough	821	771
Pennsgrove, borough	2,062	1,826
Pennington, borough	768	733
Perth Amboy, city	25,895	17,699
Phillipsburg, town	13,352	10,052
Pitman, borough	1,018	
Plainfield, city	18,468	15,369
Pleasantville, borough	2,824	2,182
Point Pleasant Beach, borough	978	746

	1905	1900
Pompton Lakes, borough	1,013	847
Port Oram, borough		2,069
Port Republic, borough	451	
Princeton, borough	6,029	3,899
Prospect Park, borough	1,911	
Rahway, city	8,649	7,935
Raritan, town	3,954	3,244
Red Bank, town	6,263	5,428
Ridgefield, borough	745	584
Ridgewood, village	3,980	2,685
Riverside, borough	670	561
Riverton, borough	1,557	1,332
Rockaway, borough	1,585	1,483
Rocky Hill, borough	479	354
Roselle, borough	2,142	1,652
Roselle Park, borough	2,236	
Rutherford, borough	5,218	4,411
Saddle River, borough	474	415
Salem, city	6,443	5,811
Seabright, borough	1,166	1,198
Sea Isle City, borough	432	340
Seaside Park, borough	92	73
Secaucus, borough	3,191	1,626
Somers Point, borough	431	308
Somerville, town	4,782	4,843
South Amboy, borough	6,258	6,349
South Atlantic City, borough	115	69
South Bound Brook, town	939	883
South Cape May, borough	5	14
South Orange, village	4,932	4,608
South River, borough	3,585	2,792
Spring Lake, borough	1,039	526
Stanhope, borough	887	
Stockton, borough	588	590
Summit, city	6,845	5,302
Surf City, borough	36	9
Sussex, borough	1,318	
Swedesboro, borough	1,484	
Tabernacle	462	
Tenafly, borough	2,142	1,746
Totowa, borough	738	562
Trenton, city	84,180	73,307
Tuckerton, borough	1,332	
Undercliff, borough		1,006
Union, town	17,005	15,187
Upper Saddle River, borough	324	326
Vailsburg, borough		2,779
Ventor, city	116	
Vineland, borough	4,593	4,370
Wallington, borough	2,475	1,812
Washington, borough	3,431	3,580
Wenonah, borough	569	498
West Caldwell, borough	490	
West Cape May, borough	902	696
West Hoboken, town	29,082	23,094
West New York, town	7,196	5,267
West Orange, town	7,872	6,889
Westwood, borough	1,044	828
Wharton, borough	2,285	
Wildwood, borough	500	150
Woodbine, borough	1,850	
Woodbury, city	4,560	4,087
Woodcliff, borough	477	329
Woodlynne, borough	388	
Woodridge, borough	721	582
Woodstown, borough	1,500	1,371

TOWNSHIPS OF NEW JERSEY HAVING A POPULATION OF OVER 3,000 NOT INCLUDED IN FOREGOING LIST (1905)

	1905	1900		1905	1900
Aquackanonk	7,187	5,351	Neptune	9,357	7,943
Bernards	4,514	3,066	North Bergen	11,134	9,213
Chester	4,849	4,420	Northampton	5,509	5,168
Cranford	3,600	2,854	Pennsauken	3,957	3,145
Deerfield	3,212	3,066	Pohatcong	3,408	2,215
Hamilton	5,150	4,164	Raritan (Hunt.Co.)	3,861	4,037
Hanover	5,294	5,366	Riverside	3,301	2,581
Hardyston	3,434	3,425	Rockaway	5,153	4,528
Hohokus	3,107	2,610	Sayreville	4,779	4,155
Hopewell	3,209	3,360	Shrewsbury	5,402	3,842
Lakewood	4,265	3,094	Wall	3,518	3,212
Landis	5,351	4,721	Weehawken	8,027	5,325
Little Falls	3,079	2,908	Westfield	5,265	4,328
Middletown	5,600	5,479	Woodbridge	10,221	7,631
Milburn	3,182	2,837			

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