YOUNGSTOWN,

MAHONING COUNTY, OHIO.

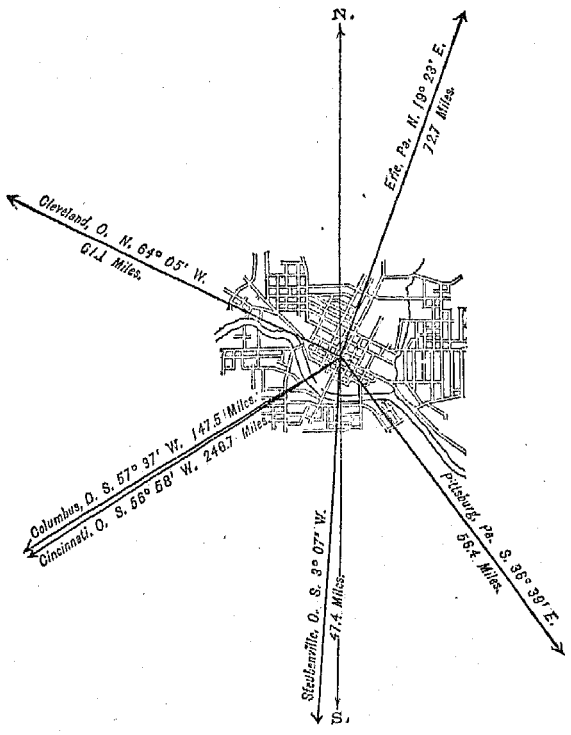
POPULATION

IN THE

AGGREGATE,

1850-1880.

	Inhab.
1790	.....
1800	.....
1810	.....
1820	.....
1830	.....
1840	.....
1850	2,802
1860	2,759
1870	8,075
1880	15,435



POPULATION

BY

SEX, NATIVITY, AND RACE,

AT

CENSUS OF 1880.

Male	7,963
Female	7,472
Native	10,678
Foreign-born	4,757
White	15,112
Colored	*323

*Including 3 Chinese.

Latitude: 41° 7' North; Longitude: 80° 38' (west from Greenwich).

FINANCIAL CONDITION:

Total Valuation: $4,459,340; per capita: $289 00. Net Indebtedness: $193,407; per capita: $12 53. Tax per $100: $2 54.

HISTORICAL SKETCH.(a)

Youngstown, Ohio, is situated on the Mahoning river, whose waters ultimately reach the Ohio river. It is nearly on the direct line from Cleveland to Pittsburgh, and about 70 miles distant from each city. It was one of the first townships of the Western Reserve to be settled, the first settlement occurring in 1797. The township received its name from John Young, who in that year purchased it from the Connecticut Land Company, and immediately began a settlement. The town plat, which was the nucleus of the present city, was then laid out, but was not formally recorded until 1802. The first settlers were largely from Connecticut and Pennsylvania, but many of the pioneers were from other eastern states, as far south as Maryland. The population has been increased by immigrants from the eastern and southern states, and from different European countries.

a The following sketch of Youngstown was prepared by Mr. John M. Edwards.

Bituminous coal of an excellent quality was found in the township at an early period, and to supply the demand in the township and vicinity it was mined to a considerable extent. On the opening of the Pennsylvania and Ohio canal, about 1840, David Tod sent from his coal-mine at Brier hill, north of the present city, a few boat-loads of coal to Cleveland. It was on trial found to be excellent as a fuel for making steam on the boats navigating the lakes, and also in manufactories. This was the beginning of the coal trade from the region, and this trade is now very large. By experiment it was found that the Brier Hill coal, or "block coal", as it is technically termed, could be successfully used, in its raw state, in making pig-iron from the ore. A blast furnace for making iron with raw coal was constructed at Lowellville, about 8 miles southeast of Youngstown, in 1845. In 1846 the second furnace for using mineral coal was built in Youngstown. In the same year a rolling-mill was erected in the city by the Youngstown Iron Company. This mill has received numerous additions, and is now one of the largest iron-manufacturing works in the United States. Other furnaces and rolling-mills have been built in the city and township from time to time, and five extensive rolling-mills, in which are made all the various kinds of merchant-iron, hoop-iron, nails, spikes, etc.

Other manufacturing works have also been erected, and are now in operation. Among these are mower- and reaper-works, two foundery- and machine-shops, a nut and washer factory, bridge-works, stove-works, carriage and wagon manufactories, scale-works, pump factory, flouring-mills, etc., while still other industrial enterprises are being contemplated. The iron-mills, furnaces, and other works, up to 1856, depended upon the canal for means of transportation, but in that year the Cleveland and Mahoning railroad was built and went into operation. This afforded facilities then much needed for additional transportation, and gave a stimulus to additional manufacturing business. The road only connected Youngstown with Cleveland, but by later roads the city is connected with all the railroads running to the Atlantic and Pacific coasts.

The advantages of Youngstown as a manufacturing city are marked. It has coal in abundance; it has a river draining a large extent of country, always maintaining a good flow of water, supplying the city with all that is needed for domestic use and for extinguishing fires, and for use in manufacturing. This is in addition to the water of excellent quality for drinking purposes easily obtained by sinking a well a few feet into the ground. The surrounding country is fertile, capable of supplying food for a large population, and is now to a great extent under cultivation. Within a short distance there are inexhaustible deposits of limestone, and in the hills bordering the river sandstone is found of the best known varieties and qualities for building and for making glass. Clay, for building and fire-brick, is near at hand, and wood used in manufacturing tools and implements can be obtained from the portions of the native forests yet left standing. The city is lighted by gas, has good schools, and churches of all the leading denominations, and has a healthy climate.

The first newspaper was published in 1843 and was called the *Olive Branch*. There are now seven, of which two are daily and five weekly papers. Four banks and one private banking-house meet the needs of the business men of the city.

Mahoning county was organized in 1846 from parts of Trumbull and Columbiana counties, with its shire town at Canfield. By a vote of nearly two-thirds of the legal voters, taken in 1874, in pursuance of an act of the legislature, the county-seat was removed to Youngstown in 1876 on the completion of the county buildings, erected by the citizens at a cost of over $100,000.

YOUNGSTOWN IN 1880.

The following statistical accounts, collected by the Census Office, indicate the present condition of Youngstown:

LOCATION.

Almost exactly half way between Cleveland and Pittsburgh stands the city of Youngstown, in latitude 41° 7′ north, longitude 80° 38′ west from Greenwich. The altitude of the city has never been exactly ascertained. It is situated on the Mahoning river, a stream navigable only for small boats.

RAILROAD COMMUNICATIONS.

Youngstown is touched by the following-named railroads:

The Mahoning division of the New York, Pennsylvania, and Ohio railroad, termini Cleveland, Youngstown, and Chenango, Pa.

The Pittsburgh and Lake Erie railroad, termini Youngstown and Pittsburgh.

A branch of the Lake Shore and Michigan Southern railroad, termini Youngstown and Andover.

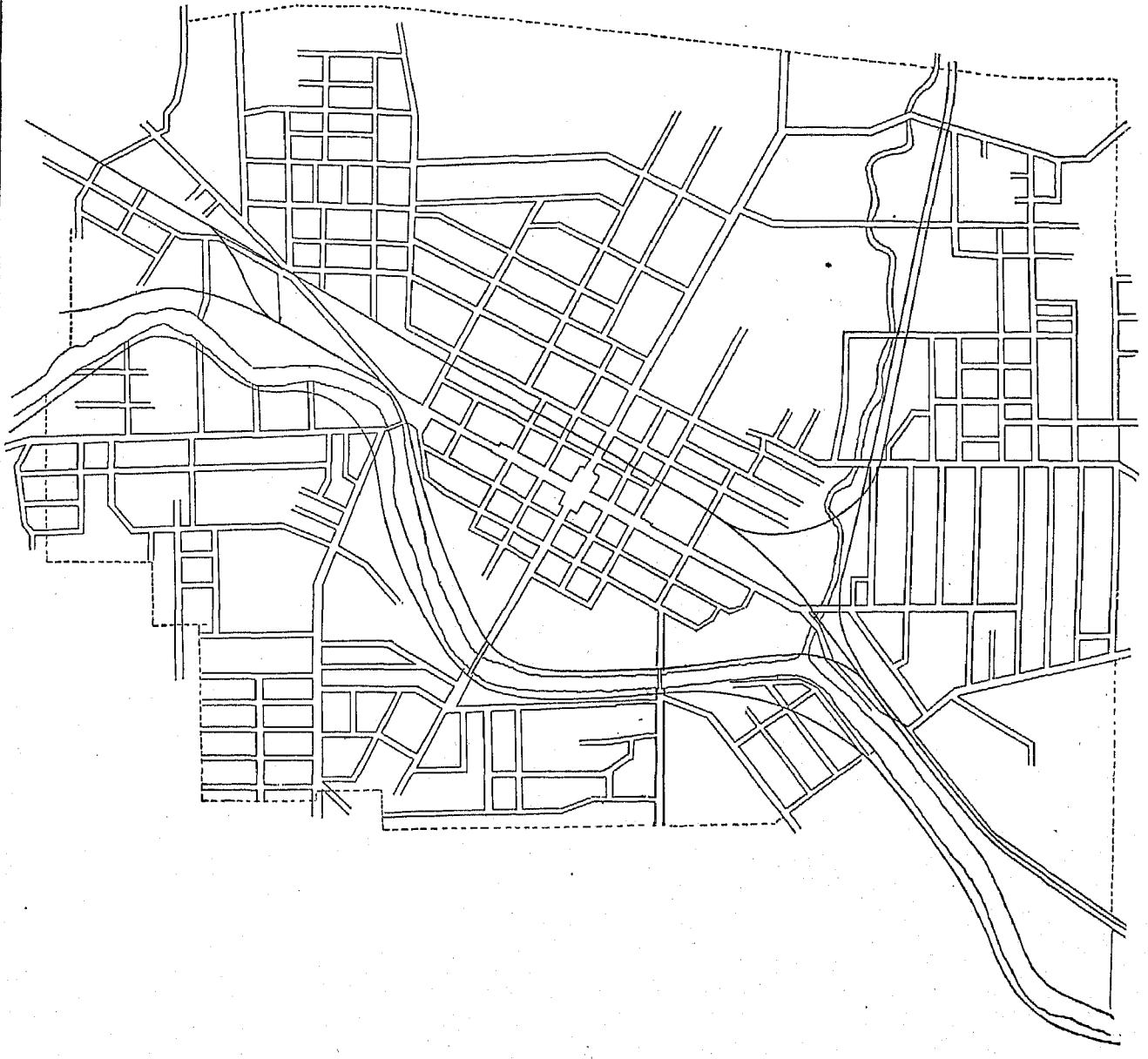
The Painesville and Youngstown railroad, termini Youngstown and Fairport.

TRIBUTARY COUNTRY.

The city is the commercial, manufacturing, and business center for a rich agricultural district extending for many miles. Coal-mining is an important industry throughout this district.

YOUNGSTOWN,

OHIO.



TOPOGRAPHY.

Youngstown stands on both sides of the Mahoning river, which here flows through a channel 300 feet below the tops of the neighboring hills. The surface is very irregular, the district standing on the divide between lake Erie and the Ohio river, forming the southern rim of the drainage basin of lake Erie. The soil is in some places sandy loam, in others clayey, and rests upon underlying rock of the Carboniferous age, the sandstone and limestone of the Ohio Coal Measures, rich veins of bituminous coal lying beneath the city and in its vicinity. The natural drainage to the Mahoning is good. There are no marshes, lakes, or ponds in the vicinity, and within a radius of 5 miles the country in general is open, although here and there a few traces of the original forests still remain.

CLIMATE.

The highest recorded summer temperature is 96°, and the lowest recorded winter temperature is —23°.

STREETS.

The total length of the streets is 39.7 miles, about 25 miles of which are of gravel; no other paving has ever been laid. The cost of the gravel streets is 20 cents per square yard, exclusive of the cost of grading. The sidewalks are principally of stone, either natural flags or blocks cut to a desired size; a few plank sidewalks are in use. The street-gutters are paved with cobble-stones. Trees are planted along the streets, being placed in a grassed plat between the curbstone and the sidewalk, not nearer than 2 feet to the curb, and sometimes as much as 5 feet distant.

There is one horse-railroad line. This has 2 miles of tracks, 4 cars, and 20 horses; it employs 9 men, and charges fares of 5 cents. There are no omnibus lines.

WATER-WORKS.

The works for the public water-supply are owned by the city, and have been erected at a cost of $160,000. A pressure of 75 pounds to the square inch is maintained by a system of pumping directly into the mains. The pump in use is of Worthington manufacture, and pumps daily from 750,000 to 1,500,000 gallons. The cost of maintenance, aside from the cost of pumping, was $2,261 06 during the past year, and the income from water rates was $10,157 59. Water-meters are used at manufactories, either of Worthington, Eagle, Rotary, or Union Water-meter Company patterns. They generally effect an increase of revenue.

GAS.

The city is supplied with gas by a private company. The average daily production is 30,000 cubic feet, for which a charge of $2 per 1,000 feet is made. There are 194 gas street-lamps, for each of which the city pays $1 75 per month.

PUBLIC BUILDINGS.

The city owns and uses for municipal purposes the following buildings, which together are valued at $12,000: The marshal's residence, the mayor's office, the fire-department building, and a hospital. It pays a rent of $300 per annum for rooms in the court-house, which it uses for a council-chamber, the engineer's office, and the office of the water-works.

PUBLIC PARKS AND PLEASURE-GROUNDS.

There are no public parks.

PLACES OF AMUSEMENT.

The city has a fine theater in the opera-house, a building seating 1,500 people. An annual license of $50 is required from all theaters. Excelsior hall, seating 900, is used as a concert- and lecture-room. A concert- and beer-garden, erected in 1876, and capable of seating 500, is situated beyond the city limits, but draws a large attendance on Sundays from the city's population.

DRAINAGE.

Sewerage works are being constructed in accordance with a comprehensive plan. Subsoil drainage is done by agricultural tiles discharging into catch-basins or conducted to the surface gutters of streets on a lower level. The main outlet for the ordinary flow of sewage is submerged at all times of the year. Ventilation is by perforated manhole covers and by house-drains extended to the roofs of houses without any intervening trap. Only one sewer has required cleansing by hand, and this is reported to be on account of bad construction. It was built in 1873, and about 800 feet had to be cleaned in 1880 at an expense of about $100. All other sewers are reported to be self-cleansing, not even requiring to be flushed.

The cost of main-trunk sewers is paid by the districts to be drained by them, that of laterals is assessed upon the abutting property on the basis of frontage across the shortest end of the lot. The cost of a main sewer built in 1881, from 60 to 84 inches in diameter, was: for trenching, $2 95 per foot; brick-work, $14 95 per thousand. Pipe-sewer cost from 75 cents to $2 50, according to size and depth of cutting. The average cost was nearly $1 per foot, including manholes, lamp-holes, and basins.

CEMETERIES.

There are 4 cemeteries connected with the city, as follows:

Oak Hill Cemetery is the property of the Mahoning Cemetery Association, and contains 10½ acres.

Rose Hill Cemetery, area 2 acres, is owned by the Catholic church.

The other two cemeteries are quite small.

No record of interments in any of these grounds except Oak Hill has been kept, and the record of that cemetery extends back only to 1879. The rules of the Mahoning Cemetery Association require all graves not to be less than 3 feet nor more than 7 feet deep; and provide that before any interment can be made a permit must be obtained of the secretary, who must be informed of the name of the deceased, his place of birth, date of birth, of decease, and of interment, cause of death, names of parents, name of undertaker, and name of person applying for the permit. Landscape gardening has been practiced in the arrangement of the cemetery.

MARKETS.

The city has no public or corporation markets.

SANITARY AUTHORITY—BOARD OF HEALTH.

The chief sanitary organization of Youngstown is a board of health, consisting of 6 members, appointed by the city council. Five members of the present board are physicians; the board meets once a month. In the absence of an epidemic its expenses are small—during the past year $655; but in case of an epidemic it has power to increase its expenses to any amount deemed necessary. Its authority when no epidemic exists is confined chiefly to the abatement of nuisances and the general maintenance of a good sanitary condition of the city; during an epidemic its authority is without limit. The chief executive officer is a health-officer, who serves without pay; one assistant, the sanitary policeman, is employed; he has full police powers. Inspections are made regularly in all parts of the city, and especially when nuisances are reported.

NUISANCES.

The board has authority to pass and enforce regulations defining and placing a penalty on nuisances. When a nuisance is found to exist orders are at once issued for its abatement, and if these orders are disregarded the offender is arrested and brought before the mayor for trial. Defective house-drainage, privy-vaults, cesspools, sources of drinking-water, sewerage, and street-cleaning are all treated as nuisances. In case nuisances arise from the improper conservation and removal of garbage, the board has authority to enforce proper methods.

BURIAL OF THE DEAD.

Persons dying of small-pox must be buried within 24 hours after death; those dying from diphtheria or scarlet-fever, within 48 hours. In no case of death from the above diseases must the burial be made from a church, or more than four persons, besides the undertaker and two assistants, be present at the burial.

INFECTIOUS DISEASES.

Small-pox patients are removed to a pest-house situated 2 miles distant from the city. Scarlet-fever patients are quarantined at home. In cases where the board of health for any reason allows a person suffering from the small-pox to be quarantined at home, the house is placarded, and a heavy penalty is incurred by any one who removes this card without the permission of the board. Should contagious diseases break out in the schools, the board has full authority to take any action it may deem best. Vaccination is compulsory and is done partly at public expense. Every one knowing of the existence of any infectious, contagious, or pestilential disease must at once notify the board. The regulations to prevent contagion and infection are very strict.

The registration of deaths is in the hands of the board of health; that of births is included in the assessor's yearly returns, while diseases are registered only in contagious or infectious cases.

Weekly reports are made to the secretary of the national board of health.

MUNICIPAL CLEANSING.

Street-cleaning.—The streets are cleaned by the city's force and entirely by hand. The work is done daily, and reasonably well. The sweepings are deposited on a dump below the city. The cost for the year ending March 31 was $2,708 22.

Removal of garbage and ashes.—Garbage and ashes are removed at the expense of the householders. The regulations of the board of health prohibit keeping garbage more than 24 hours before removal, but allow it to be kept in the same vessel with ashes. Both are disposed of by taking them to the dump below the city. The system is considered good enough.

Dead animals.—The carcasses of dead animals must be removed within 24 hours after death, at the expense of the owner. They are taken to what is known as the "bone-yard". During the past year the service cost $125; 40 horses, 6 hogs, 80 dogs, and 7 cows being removed.

Liquid household wastes.—About one-third of the liquid household wastes run into the public sewers, the rest going into porous cesspools. None are allowed to pass into the street-gutters. The cesspools are cleaned once a year. No cases of contamination of drinking-water by the soakage from cesspools are known to have taken place.

Human excreta.—Only few water-closets are in use, most of the houses depending on privy-vaults. These are water-tight, and are cleaned from to time when necessary to prevent their becoming nuisances. Only a very limited use is made of the dry-earth system. The night-soil is disposed of by dumping it into the river below the city.

Manufacturing wastes.—No system of disposing of manufacturing wastes has yet been elaborated, though one is greatly needed.

POLICE.

The police force is appointed by the mayor, and is governed by him, with the assistance of the marshal, who is the chief executive officer of the force, and receives an annual salary of $600. The rest of the force consist of 3 day and 6 night policemen, each of whom receives a salary of $55 a month. The uniform is of blue cloth, with brass buttons. Each man furnishes his own, at a cost for the entire suit of $65. The men are armed with batons, handcuffs, and revolvers. The night police are on duty from 6 p. m. to 5 a. m. from May 1 to November 1, and until 6 a. m. during the rest of the year. During 1880 the force made 678 arrests, principally for intoxication and disorderly conduct. The force is not expected to co-operate with the fire department of the city government.

Special police are sometimes appointed. The total cost of the department in 1880 was $3,500. The force has been increased since the fiscal year 1880 expired, and in the future the expense will be greater.

ZANESVILLE,

MUSKINGUM COUNTY, OHIO.

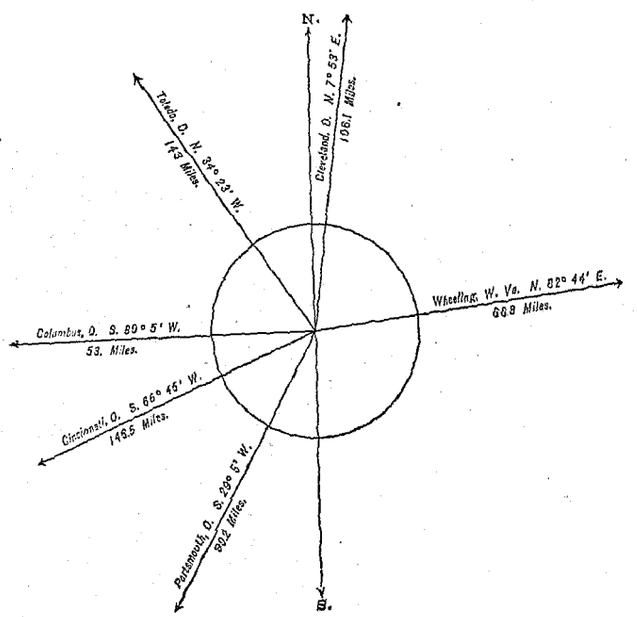
POPULATION

IN THE

AGGREGATE,

1820-1880.

	Inhab.
1790	.....
1800	.....
1810	.....
1820	2,052
1830	3,094
1840	4,766
1850	7,929
1860	9,229
1870	10,011
1880	18,113



POPULATION

BY

SEX, NATIVITY, AND RACE,

AT

CENSUS OF 1880.

Male	8,596
Female	9,517
Native	15,996
Foreign-born	2,117
White	17,187
Colored	*926

*Including 1 Chinese.

***Latitude*: 39° 58′ North; Longitude: 81° 59′** (west from Greenwich); **Altitude: 700 feet.** (*a*)

FINANCIAL CONDITION:

Total Valuation: $7,122,850; per capita: $393 00. Net Indebtedness: $529,097; per capita: $29 21. Tax per $100: $2 35.

HISTORICAL SKETCH.

In May, 1796, an act was passed by Congress authorizing and directing Ebenezer Zane, of Wheeling, Virginia, to survey and construct a road from Wheeling to Limestone, now Maysville, Kentucky. The work was begun in the following year by Zane, with the assistance of his brother, Jeremiah, and his son-in-law, John McIntire. It had at first been intended to cross the Muskingum river at what is now Duncan's Falls; but, led by the finer water-power offered by the river at the confluence of the Licking, the surveyors determined to cross at the present site of

a At station of Smithsonian Institution.

Zanesville. In consideration for surveying and building the road three sections of land were granted by Congress, one of them at the crossing of the Muskingum, and here in 1799 Zane and McIntire laid out a town which they called Westbourn. A post-office called Zanesville was soon after established there, and its name was assumed by the village, that of Westbourn passing out of use. In 1804 the commissioners appointed to choose a county-seat for the new county of Muskingum selected Zanesville. In the year 1810 the legislature of Ohio, which had up to that time held its sessions in Chillicothe, voted to meet at Zanesville, but after two sessions the capital was removed to Columbus, the present seat of the state government.

The Maysville road, as it was called, brought many immigrants to Zanesville, but the extension of internal improvements to other parts of the state soon diverted immigration to other places, and the town lost much of its importance. The site has great advantages for manufacturing. Coal and iron in abundance are close at hand; the Muskingum offers good water-power, but the cheapness of coal has led to the almost exclusive use of steam for supplying motive power; clay for fire-brick and kaolin for pottery are found in the country not far distant; and limestone for use as a flux in the blast-furnaces, and sandstone for the manufacture of glass, are obtained in abundance from the neighboring hills. Few cities are so admirably situated in relation to the places from which the raw materials of their manufactures must come. The Muskingum is navigable for small steamers to a point 15 miles beyond Zanesville, and connects with the Ohio canal, through which the products of its manufactories find their way to lake Erie. The completion of railroads to Zanesville, which was incorporated as a city in 1855, led to a decided advance in its interests. The increase in population between 1860 and 1870 was small; but during the last decade it has been rapid, in spite of the business depression which has so generally prevailed.

A public water-supply was obtained in 1842, water being taken from the Muskingum and pumped to a reservoir 185 feet above the river, from which it was distributed through the town. Gas was introduced in 1848-'49. The public schools are partly maintained by a fund left by John McIntire, one of the founders, for the education of poor children. There are 22 churches and 2 charitable institutions. One daily and several weekly newspapers are published. Among the manufacturing establishments are large rolling-mills, machine-shops, glass-works, a cotton-mill and several woolen-mills, a file factory, a foundery, and other industrial enterprises.

ZANESVILLE IN 1880.

The following statistical information in regard to the present condition of the city has been obtained by the Census Office:

LOCATION.

Zanesville is situated in latitude 39° 58′ north, and longitude 81° 59′ west from Greenwich, on both banks of the Muskingum river, at its confluence with the Licking, 170 miles by railroad northeast from Cincinnati, 137 miles southwest from Cleveland, and 59 miles east from Columbus. The Muskingum is navigable here for small steamers.

RAILROAD COMMUNICATIONS.

Zanesville is touched by the following-named railroads:

The Central Ohio division of the Baltimore and Ohio railroad, termini Newark and Wheeling.

The Cincinnati and Muskingum Valley division of the Pittsburgh, Cincinnati, and Saint Louis railroad, termini Cincinnati and Dresden.

TRIBUTARY COUNTRY.

The city is surrounded by a thickly populated district, devoted largely to agriculture, although coal and iron mining are extensively carried on. In the immediate vicinity of the city the land is chiefly devoted to market-gardening, but farther away, stock-raising and farming on a larger scale are followed. Muskingum county is one of the largest sheep-growing counties in the state.

TOPOGRAPHY.

Zanesville is placed on almost level ground along the Muskingum and Licking rivers, shut in by hills, and its natural drainage to these rivers is excellent; there are no marshes, ponds, or lakes in the vicinity. The underlying rocks are the shales, sandstones, and limestones of the Ohio Coal Measures. Coal lies in veins under the city. The whole country was once densely wooded, but the forests have now largely been cut away. The soil along the river is a rich alluvial deposit; on the hills the disintegration of the limestone rocks has formed a fertile soil, and in some places a clayey soil is found, from which, with care, excellent crops have been raised.

CLIMATE.

The tables of temperatures published by the Smithsonian Institution show that in the forty years from 1819 to 1859 the mean annual temperature was 53.76°. The summer mean is 74.20°; the winter mean, 33.21°.

STREETS.

The total length of the streets is about 64 miles. Stone-block paving, of limestone blocks, is laid for a distance of 500 feet; broken-stone pavement, a distance of 22.7 miles, and gravel pavement, 41.7 miles. The cost of the broken-stone pavement per square yard was 36 cents, the gravel 25 cents, and the stone blocks $1 80. The sidewalks are of brick, with 5-inch limestone curbings; and the street-gutters are paved with limestone. The work of paving and curbing the streets is done by contract, repairing by day-labor. The annual cost of repairs could not be ascertained. Neither a steam stone-crusher nor roller is in use on the streets.

The total length of the horse-railroad tracks is 4½ miles. There are 11 cars in use, and 55 horses and mules; 15 men are employed, and during the past year about 255,000 passengers were carried, at fares of 5 cents. There are no regular omnibus lines.

WATER-WORKS.

The water-works are owned by the city, and have cost in all $600,000. The water is pumped from the Muskingum to 2 reservoirs 185 feet above the river. These reservoirs are each about 100 by 200 feet in dimensions, and are built of brick and stone. The pumps are of Worthington make, and have a capacity of 2,000,000 and 3,000,000 gallons. To supply the higher portions of the city a Knowles pump is used, pumping into a stand-pipe 75 feet high. There are 33.81 miles of cast-iron pipe, varying from 30 to 2 inches in diameter. The average number of gallons pumped daily is 2,282,131; the daily consumption is 1,947,000 gallons. The cost of raising 1,000,000 gallons 1 foot high is 10 cents. The yearly cost of maintenance, aside from the cost of pumping, is $2,000; the yearly income from water rates is $24,000. A few Worthington and Crown meters are in use, and effect quite a saving of water.

GAS.

The gas-works are owned by private persons, and produce on the average 56,000 cubic feet a day. The charge per 1,000 feet is $2. The city has 391 gas street-lamps, for each of which it pays $23 a year.

PUBLIC BUILDINGS.

The city owns a market-house, in the second story of which are the city offices; several hose-houses, and a station-house.

PUBLIC PARKS AND PLEASURE-GROUNDS.

No information in regard to the parks of the city was furnished.

PLACES OF AMUSEMENT.

Schultz & Co.'s opera-house and Black's music-hall, the former seating 1,200, the latter 800, are the only theaters in Zanesville. They pay a license of $50 and $25, respectively, per annum, or $5 for each entertainment. There are 3 halls used for concerts and lectures. Two beer-gardens have been built just outside the city limits.

DRAINAGE.

No information on this subject was furnished.

CEMETERIES.

Four cemeteries are connected with the city:

The *City Cemetery*, bordering on the eastern side of the city, contains about 100 acres.

The *Irish Catholic Cemetery*, also on the east side of Zanesville, contains 25 acres.

The *German Catholic Cemetery*, near the two others, has an area of 10 acres.

The *Woodlawn Cemetery*, situated at the western extremity of the city, has an area of 58 acres.

No record of the number of interments within these cemeteries has been kept. McIntire burying-ground and Putnam burying-ground, the former in the eastern, the latter in the western part of the city, contain about 1 acre each, but are now disused and closed, no burials within them being permitted.

MARKETS; SANITARY AUTHORITY.

No information on these subjects was furnished.

MUNICIPAL CLEANSING.

Street-cleaning.—The streets are cleaned both by the householders and by the city scavengers. The work is done without the aid of machines, and about twice a month. The cost to the city is about $1,500 a year. The sweepings are deposited on the river-bank.

Removal of garbage and ashes.—The householders dispose of their garbage and ashes as best they can. When garbage is taken away it is generally dumped on the river-bank and carried away by any rise in the waters. Ashes are used on newly made streets and walks. No estimate of the cost of removal can be made. No regulations govern the conservation and removal of garbage, but apparently no nuisances or injuries to the public health result.

Dead animals.—The carcasses of large animals are removed by the teams of a glue manufacturer, who uses them in his industry; about 50 are removed annually.

Liquid household wastes.—Nearly all the liquid household wastes run into the public sewers, very little going into the street-gutters, while cesspools are almost entirely abandoned. Such as exist are porous and without overflows; no regulations govern their construction and cleansing.

Human excreta.—Two-thirds of the houses of the city depend upon privy-vaults, the rest upon water-closets, all of which deliver into the public sewers. There are no regulations in regard to the construction and emptying of privy-vaults. Night-soil is removed beyond the city limits, but no regulations govern its ultimate disposal.

POLICE.

The police force is appointed and governed by the mayor, the appointment being subject to confirmation by the city council. The chief executive officer is the marshal, whose salary is $600 a year and fees. The rest of the force consists of 9 men, each of whom receives a salary of $50 per month. The uniform is of blue cloth, with brass buttons, each man supplying his own, at a cost of about $35. The men are armed with a billy and a revolver, and are on duty at night from 6 p. m. to 6 a. m. Between 400 and 500 arrests were made during the past year, drunkenness being the principal cause. No record of the amount of property reported to the police as lost or stolen has been kept, nor of the number of station-house lodgers. The force is not expected to co-operate with the fire or other departments of the city government. Special police can be appointed by the mayor when necessary. The annual cost of the department is about $10,000.

INDIANA.

EVANSVILLE,

VANDERBURGH COUNTY, INDIANA.

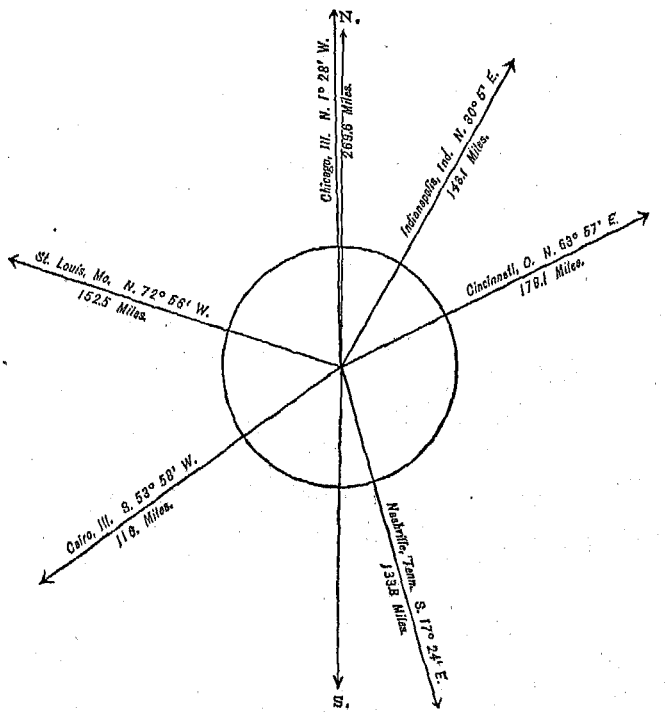
POPULATION

IN THE

AGGREGATE,

1850-1880.

	Inhab.
1790	.....
1800	.....
1810	.....
1820	.....
1830	.....
1840	.....
1850	3,235
1860	11,484
1870	21,830
1880	29,280



POPULATION

BY

SEX, NATIVITY, AND RACE,

AT

CENSUS OF 1880.

Male	14,228
Female	15,052
Native	23,177
Foreign-born	6,103
White	26,565
Colored	*2,715

*Including 3 Chinese.

Latitude: 38° North; Longitude: 87° 30′ (west from Greenwich); **Average altitude: 370 feet.**

FINANCIAL CONDITION:

Total Valuation: $17,307,725; per capita: $591 00. Net Indebtedness: $1,984,000; per capita: $67 76. Tax per $100: $3 22.

HISTORICAL SKETCH.(a)

Several years prior to the erection of the county of Warrick (1813), Colonel Hugh McGary emigrated from Kentucky and settled upon a part of the fractional section 30, township 6 south, range 10 west of the second principal meridian, where he built a rude log cabin, and in the month of June, 1814, laid out the first plan of the town of Evansville. He donated a tract of land to the new county of Warrick upon condition that Evansville should be

a The following is taken from a sketch of the history of Evansville furnished by the mayor, Hon. John J. Kleiner.

made the seat of justice. The donation was accepted. But the creation of the counties of Posey and Perry from the territory of Warrick so changed its shape that Evansville was left in the extreme southwestern corner, and the legislature accordingly ordered the removal of the county-seat to Darlington, 12 miles northeast of Evansville, and appointed an agent to reconvey to Colonel McGary the land he had deeded for county purposes. About this time he made a conveyance of part of his real estate to James W. Jones and General Robert M. Evans, and he then abandoned the original plan of Evansville (which had up to this time been known as McGaryton, or McGary's Landing), and made a new survey and plan of the town, which was officially recorded in the spring of 1817. The town so laid out fronted 2,160 feet on the Ohio river, and ran back from it 1,126 feet, so that it included about 56 acres, and was the original plan of the present Evansville, which has been formed by successive additions.

In 1818, about two years after the admission of Indiana as a state of the Union, the general assembly passed an act creating the counties of Vanderburgh and Spencer from the territory of Warrick, and appointed a commission to locate the seat of justice for the new county of Vanderburgh. The commissioners met at the house of Colonel McGary, in Evansville, where they received a communication from the proprietors of the town-site, offering to deed 100 acres of land in the center of their town, about the spot reserved on the plan for a public square, to the county for the erection of county buildings, and, on behalf of John Gwathmey, of Louisville, to give the sum of $500 toward the cost of these buildings, if Evansville should be chosen as the county-seat. This offer was accepted by the commissioners, and, on their recommendation, the seat of justice of Vanderburgh county was formally established at Evansville.

The organization of a town government took place March 20, 1819, Colonel McGary being chosen president of the board of trustees. At this time the village contained a hotel or tavern and a store, and had about 100 inhabitants. The taxes assessed that year were $191 28, a larger sum than the average annual assessment of the succeeding years until 1835, when they reached the sum of $417 67. The town government continued until 1846, by which time the valuation of real estate had become $547,476, and of personal estate $270,595, while the tax-levy was $3,386 89. A city charter was granted to Evansville by the legislature January 27, 1847, and was drafted by James Jones, esq., a son of one of the original proprietors. This charter, though frequently amended, has been retained to the present time. The first election under it took place on the first Monday of April, 1847, and the city government went into operation on the 12th of April following. By this charter the city officers consist of a mayor and common council, a clerk, marshal, recorder or city police judge, treasurer, and scavenger, all elected by the people, the mayor and recorder for a term of three years, the members of the common council, two for each ward for a term of two years, one from each ward going out each year, and the others for a term of one year. The common council has almost absolute control of the city's affairs; by a simple order entered on the minutes of the clerk, money can be voted for almost any purpose and direction given for the execution of many kinds of public works. The mayor has no veto, and, although presiding at the meetings of the council, has a vote only in case of a tie. The council is divided into seventeen committees, which have large discretionary powers in regard to the subjects under their control, and can decide finally many questions referred to them without making any report to the council as a whole. The various administrative officers, with the exception of the auditor, who is appointed by the mayor and confirmed by the council, are elected by the latter body. The mayor receives a salary fixed by the council (at present $2,500), and is the executive head of the city government.

This charter also granted liberal powers regarding schools, so that the free-school movement, which took form here in 1853, has grown without the interruption caused generally in Indiana, first, by a decision of the supreme court in the fall of 1854 declaring unconstitutional the 130th section of the general school law, which authorized local taxation for the support of free schools; (*a*) and, secondly, by a supreme court decision, promulgated in January, 1858, declaring unconstitutional the first section of an act of 1855 for supporting, by local taxation, free schools in incorporated cities and towns. (*a*)

The schools are noted for their efficiency and for the neatness of the property occupied.

The streets of the city are numbered on what is known as "the decimal plan"; starting at a fixed point with the number 1, the houses are numbered in regular order, odd on one side, even on the other, until a cross-street is reached; beginning again with 100, the numbers follow regularly until a second cross-street is met; the numbers then begin with 200; and so on, each cross-street beginning the appropriate hundred. Gas is supplied to the citizens for private consumption and to the city for street purposes by a private corporation, which was originally chartered for fifty years. Whenever the property-holders upon a particular street wish gas-mains extended through it they subscribe the cost of laying the mains, and the company is then compelled by its charter to lay them. The price is regulated by a special contract between the city and the gas company, and is now $2 for 1,000 feet for both public and private consumption. A very extensive system of sewerage has been constructed, and the drainage of the city is excellent.

At the time the charter was granted, the city included in all about 280 acres. In 1837 John Law, William H. Law, James B. MacColl, and Louis H. Scott, owners of a considerable tract of land in the immediate vicinity of Evansville, laid out a new town upon it, which they called "Lamasco". The name was formed by taking the first

a Report of the Superintendent of Public Instruction of Indiana, 1878, pp. 344, 345.

two letters of Law, the first two of MacColl, and the first three of Scott, and combining them in La-ma-sco. Their town included about 735 acres, and improved rapidly, so that about the time Evansville was made a city Lamasco was made a town. The two municipalities continued separate until March 2, 1857. Since their union it has been the policy of the city to annex all suburban property as fast as the owners see fit to lay it out in streets and blocks. By an amendment of the city charter the common council can, by means of an application of the board of commissioners of Vanderburgh county, add to the corporate limits territory which has not been subdivided for town purposes. This method is occasionally resorted to when the streets or sewers have to be extended through parcels of ground not plotted into town lots.

Evansville has been particularly fortunate in escaping the ravages of destructive fires. While damage has occasionally been done by the burning of valuable property, fires have not been frequent or of great extent. A fire in 1843 destroyed a whole block in the center of the city. Another fire in 1845 destroyed the adjoining block. A short time afterward two volunteer fire-companies were organized, and small hand-engines were purchased. Cisterns were excavated in appropriate parts of the city to furnish a supply of water in case of a fire; and in process of time additional companies were organized until five were in operation. In the summer of 1859 the first steam fire-engine was purchased. The introduction of steamers led the volunteer companies to disband; the hand-engines were sold, and two steamers were purchased to take their places.

In 1871 a contract with the Holly company was made, and in 1872 the water-works were completed and accepted. Additional machinery has since been found necessary to supply the demand for purposes of domestic use and in case of fire, but the system has proved a success. The use of steam fire-engines has been abandoned, and well-regulated hose-companies, with fire-hydrants placed at convenient distances throughout the city, have furnished ample protection against fire during the last eight years.

While the trade and commerce of Evansville have been subject to the same vicissitudes that have attended the business of the whole country during seasons of financial depression, her business interests on the whole have prospered. The financial disturbances of 1857, and the business panic of 1873, for a time retarded the business of her tradesmen and manufacturers, but they have recovered with remarkable alacrity, and are now in an unusually flourishing condition. Perhaps the severest blow to the commerce of the city was the civil war in 1861. Located on the border of the insurrectionary states, and chiefly dependent upon the South for customers, the suspension of business relations had the effect, in a great measure, of closing the doors of her merchants and putting out the fires in the furnaces of her manufactories. The resumption of amicable relations with the South has been productive of a healthy revival of southern trade, which is now far in excess of any former business period.

The early settlers were chiefly of southern birth, most of them coming from Kentucky; but between 1840 and 1850 occurred a large immigration of foreigners, Germans predominating.

EVANSVILLE IN 1880.

The following statistical accounts, collected by the Census Office, indicate the present condition of Evansville:

LOCATION.

Evansville is situated in latitude 38° north, longitude 87° 30′ west from Greenwich, on the right bank of the Ohio river, 8 miles below the mouth of Green river, 185 miles below Louisville and 192 miles above Cairo. The mean altitude of the city above the sea-level is 370 feet. It is located upon an almost level plain, the variation in level between the highest and the lowest point not exceeding 17 feet. The Ohio river at this point is open for navigation at all periods of the year. During the lowest stages the water at Evansville is 2.5 feet deep, during the highest 46.7 feet. Extreme low water is reached almost every year; but extreme high water only at intervals of several years, the ordinary high-water mark being 7 or 8 feet below the highest. The current at low water is about 2 miles per hour; at high water it is 4 miles per hour, and in some places even more. Water communication is at all times open to all points on the Ohio and Mississippi rivers; also with all points on Green river (in Kentucky) as far as Bowling Green, 225 miles; on the Tennessee river as far as Eastport, Mississippi; on the Cumberland river as far as Nashville, Tennessee; and, for about ten months, on the Wabash, during the winter and spring months as far as a point 150 miles from its confluence with the Ohio.

RAILROAD COMMUNICATIONS.

The Evansville and Terre Haute railroad connects these two cities, distant 109 miles.

The Lake Erie, Evansville, and Southwestern railroad connects Evansville with Boonville, Indiana, 17 miles distant.

The Louisville and Nashville railroad, through its two links, the Saint Louis and Southeastern and the Evansville, Henderson, and Nashville, which meet at Evansville, connects it with Saint Louis, Missouri, 161 miles away, and with Nashville, Tennessee, 155 miles distant.

TRIBUTARY COUNTRY.

The tributary country is devoted to raising wheat, corn, grass, and live stock, for all of which Evansville is the distributing point.

TOPOGRAPHY.

The city is on a level plain along the Ohio river, while on the east, west, and north it is shut in by a range of hills about 115 feet above the city level, which extends completely around the city within a radius of 2 miles. The soil is a moderately productive alluvion, overlying strata of yellow clay, fine sand, sandstone, shale, and coal deposits. The surrounding hills are filled with gray limestone. The drainage by means of small streams and rivulets running to the Ohio river is good. There are no marshes. Within a radius of 5 miles the country was originally heavily wooded with several varieties of oak, and of hickory, walnut, poplar, and ash timber, but the forests have for the most part been cleared away, and the land is cultivated.

CLIMATE.

The highest recorded summer temperature is 110°, the highest in average years being 95°. The winters are cold, a temperature of 22° below zero having been recorded, while in average years the thermometer touches —20°. The adjacent waters are not thought to influence either the health or the climate of the city. There are no winds that can be said to prevail.

STREETS.

The total length of the streets is 100 miles 870 feet. Of these, 15,120 feet are paved with cobble-stones (bowlders), and 32,400 feet with gravel; the rest are unpaved. The cost per square yard of the bowlder pavement averages $2 94; of the gravel, $1 32. The cost of repairing the former per year is 2½ cents; of repairing the latter, one-half cent. The gravel streets are generally preferred. The sidewalks are of brick; the gutters are made of limestone laid in courses, or of hard-burned brick laid edgewise. Shade-trees are planted along the streets just inside the curb-stones. Repairing is done under the direction of the street commissioners, there being one for each of the two districts, who keep a force of from 10 to 15 men at work constantly, at wages of from $1 25 to $1 50 per day. The construction of streets has been done largely by contract work, but it has been found more expensive than construction by day labor, under the supervision of the city officers. There is no stone-crusher or road-roller in use.

There are 6 miles of horse-railroad tracks. The roads make use of 12 cars, and 50 horses and mules. They employ 22 men, and during the past year carried 400,000 passengers. The fare is 5 cents. Two omnibuses and 2 baggage-wagons ply between the depots, landings, and hotels. They use 8 horses, employ 7 men, and carried 14,925 passengers during the past year. The fare is 25 cents, with an additional 25 cents for baggage.

WATER-WORKS.

The works for the public water-supply are owned by the city, and have cost in all $500,000. They are arranged on the Holly system, and give a pressure of 30.4 pounds per square inch. The average amount pumped per diem is 3,000,000 gallons. The yearly cost of maintenance, including the cost of pumping, is $12,925; the yearly income from water-rates is $18,900. No water-meters are in use.

GAS.

The works for the gas supply of Evansville are the property of a private company, and the city authorities were unable to obtain any detailed information in regard to the daily average production, income, etc.

PUBLIC BUILDINGS.

The buildings owned by the city and used for municipal purposes are valued at $5,000. The city hall cost $3,500.

PUBLIC PARKS AND PLEASURE-GROUNDS.

The total area of the public parks and pleasure-grounds is 399,000 square feet. There are 4 parks, all small; 2 have an area of 62,500 square feet each, the third has an area of 100,000 square feet, and the fourth an area of 174,000 square feet. The last is situated along the Ohio; the others are in the interior of the city. All the parks were donations from the original proprietors; the largest from Hugh McGary, James W. Jones, and Robert M. Evans; the others from John Law, William H. Law, Louis H. Scott, and James MacColl. The only expense incurred in maintenance has been for setting out trees, a merely nominal sum. The parks are not laid out for carriage drives. They are under the direct control of the city council.

PLACES OF AMUSEMENT.

The places of amusement in Evansville are Evans hall, seating capacity, 2,200; Opera-house, 1,266; Apollo theater, 1,150; Turner hall, 600; and Cahn's vaudeville theater, 100. Evans hall is a fine brick edifice with a large auditorium and a single capacious gallery; it is used mainly for lectures, public meetings, and conventions, and was erected in 1879 by the friends of temperance. It is provided with four separate committee rooms, vestibule, kitchen, and dining-room for the accommodation of festivals, and cost $30,000. The opera-house, used for operas and the drama, was built in the usual style of theaters, by a stock company, in 1866; it has double galleries, and cost $65,000. Apollo theater, a substantial frame building, is used for vaudevilles. It is private property, and was built in 1872, and rebuilt during the present year at a cost of $5,000. Turner hall, a brick building, is used for the exercises of the Turnverein and for theatrical purposes; it is private property and is valued at $7,000; built built in 1876. Cahn's theater is a small building built in 1879 for the accommodation of patrons of a beer and wine hall.

Theaters pay no annual license. The city council can, if it wishes, require the payment of a license for every performance, but it has never used this power. There are two or three small summer beer-gardens whose seating capacity is 200 or 300 each; they are not of expensive construction. The Crescent City Springs is a fine property used as a summer beer-garden, for pleasure parties, picnic-grounds, etc. It embraces 16 acres of ground, with several buildings, a dwelling-house, dancing-hall, billiard and ten-pin alley room, and a fine grove with carriage drives. It is owned by a stock company and is worth $100,000. There are saline waters upon it, a well having been bored there 577 feet deep.

DRAINAGE.

Evansville has an extensive system of sewers, but no information in regard to it was furnished.

CEMETERIES.

There are 4 cemeteries—2 public and 2 private—connected with the city, all located beyond the corporation limits. *Oak Hill Cemetery*, area 60 acres, situated 1 mile east of the city limits, and *Locust Hill Cemetery*, area 75 acres, located about 1½ mile north of the city limits, are managed by boards of trustees appointed by the city council, one for each cemetery. *Rose Hill Cemetery*, area 4 acres, situated about 1 mile east of Locust Hill and about equally distant from the city, belongs to the Jewish congregation. *Saint Joseph's Cemetery*, area 72 acres, is located about 1½ mile northwest from the city limits, and is controlled by the Catholic church. There are two small parcels of ground formerly used by the Jewish and Catholic congregations, but they have now been vacated, and many of the bodies buried in them have been removed to Rose Hill and Saint Joseph's cemeteries. These were within the city limits. The number of interments within the various cemeteries is as follows: Oak Hill, 10,053, which includes about 500 who were soldiers in the civil war; Locust Hill, 2,037; Saint Joseph's, 2,034, of which 610 are removals; and Rose Hill, 75, of which 36 are removals. Lots in these cemeteries vary in price from $15 to $150; all are carefully maintained. No burial is permitted within either Oak Hill or Locust Hill cemetery until a certificate of death, showing its cause, is presented to the sexton. This must be signed by the attending physician or in his default by a member of the board of health, or by a coroner if a coroner's jury investigated the matter. If through any cause it is impossible to obtain the signature of any of these, the mayor may make out a certificate stating the facts of the case, and this will justify the sexton in making the interment.

MARKETS.

There is no market building in Evansville, but a street 120 feet wide and 600 feet long is used as a market-place and divided into 120 stands, and an area of 1,000 feet adjacent is used by farmers' and hucksters' wagons. The annual income of the city from this market space is about $2,000. The market hours are from 4 to 9 a. m. on Tuesdays, Thursdays, and Saturdays, and from 5 to 9 p. m. on Saturdays. The market is under the charge of a market-master appointed by the city council.

SANITARY AUTHORITY—BOARD OF HEALTH.

The chief sanitary authority of Evansville is a board of health, consisting of the mayor *ex officio*, and 5 physicians appointed by the city council. The term of office of the members is five years, and one retires each year. The annual expenses of the board, when there is no declared epidemic, are about $900—for the salary of the health officer $300, and the expense of maintaining a city dispensary, the city council being required by the ordinance establishing the board of health to appropriate $50 each month for this purpose. In case of an epidemic the expenses may be increased to any amount deemed necessary by the board, as no limit is set by the city ordinances. The board has authority in the absence of an epidemic to maintain a good sanitary condition of the city and to compel the removal of nuisances, while during an epidemic it may establish a quarantine or take any other measures it may deem proper to arrest the spread of disease. The board meets weekly, and the city

ordinances provide that if any member is absent without good cause, in the opinion of the board, for three consecutive meetings, he shall be dismissed and another appointed. The chief executive officer is the health officer, who is appointed by the city council. He is assisted by 2 sanitary policemen, who have full police powers.

NUISANCES.

Inspections are made regularly in all parts of the city by the health officer and his assistants, and specially when requested. When a nuisance is found to exist the owner of the premises in fault is ordered to remove it; if this order is disobeyed he is prosecuted in the city courts. Defective house-drainage, privy-vaults, cesspools, and sources of drinking-water are treated in the same way as nuisances; and the same is true in case of the pollution of the streams and river if it causes a nuisance.

INFECTIOUS DISEASES.

The board has authority to prevent the introduction and spread of contagious and infectious diseases. Small-pox patients are generally removed to a small-pox hospital, situated about one-half mile beyond the city limits; but if they are allowed to remain at home they are quarantined, and the house is marked with a yellow flag. Scarlet-fever patients are isolated at home, and the children from families where the disease exists are excluded from the schools. If contagious diseases break out in the public or private schools the board of health has full authority to take any action it thinks wisest. Vaccination is compulsory only for children in the public schools; it is done at public expense only when so ordered by the board.

There is no system of registration of births; but burial certificates are preserved and form a record.

REPORTS.

The board of health reports regularly to the city council, but these reports have not been published.

MUNICIPAL CLEANSING.

Street-cleaning.—The city's force cleans the streets from time to time as their condition requires it, with moderate efficiency. No sweeping-machines are used. The annual cost to the city is $15,000.

Removal of garbage and ashes.—Garbage is removed by a contractor paid by the city, who takes it to the country and disposes of it. He receives $1,000 per annum for this service. Complaint has been made that, through infrequent removal of the garbage, injuries have resulted to the public health. Garbage must not be kept in the same vessel with ashes. The householders provide for the removal of ashes as best they may, generally using them as filling.

Dead animals.—The carcasses of animals are removed by a contractor, paid by the city, on receiving notice from the owner of the dead animal. This notice is left at any of the engine-houses of the fire department and received by the contractor, who makes a daily round. He receives $180 per annum. No account of the number of animals removed has been kept.

Liquid household wastes.—All the liquid household wastes are generally disposed of in the same way. A part goes into the public sewers, very little into the street gutters, and considerable into porous cesspools, which do not receive the wastes, however, from water-closets. The board of health controls the cleansing of cesspools.

Human excreta.—A large proportion of the houses depend on privy-vaults. Where water-closets are in use they nearly all deliver into the public sewers, none into cesspools. The ordinances of the city require that privy-vaults shall be at least 20 feet deep and walled with brick or stone 9 inches in thickness, unless they are circular in form, in which case the walls need be only 4 inches thick. Hardly any of them are water-tight. The dry-earth system is not in use. The night-soil is taken into the country and there disposed of. None is allowed to be used in manuring lands within the gathering-ground of the public water-supply.

Manufacturing wastes.—Nearly all the factories of the city connect with the public sewers and dispose of their wastes through them.

POLICE.

The police force is appointed and governed by the city council. The chief executive officer is the chief of police, who has the command of the force and general charge of it. His salary is $19.25 per week. The rest of the force consists of a first lieutenant, salary $15.75 per week; a second lieutenant, 2 sanitary policemen, 27 patrolmen, and 1 man attached to the city prison, each of whom receives $14 per week. The city contracts for uniforms for the whole force, and retains the cost from the policemen's salaries. The men are armed with revolver, mace, and police whistle, and each man carries a fire-alarm box key. They are on duty 9 and 10 hours alternately. During the past year 856 arrests were made, the principal causes being drunkenness, disorderly conduct, vagrancy, prostitution, and associating with prostitutes. The cases are generally disposed of by fines, and in default of payment the offender is compelled to break stone for macadamizing purposes. No record was kept of property lost or stolen and reported to the police, or of the amount recovered and returned. During 1880 the number of station-house lodgers

accommodated was 1,146, as against 1,225 in 1879. An allowance of $172 was made to the lockup keeper to provide meals for these lodgers. The force co-operates with the fire, health, and building departments when so ordered by the chief. Special policemen are appointed by the council at the request of one or more citizens; their services are chiefly for the protection of private property and as watchmen for individuals. They are not paid by the city, and while they have the same powers as members of the regular police force, they are entirely distinct from that force. The total cost of the department in 1880 was $17,493.

MANUFACTURES.

The following is a summary of the statistics of the manufactures of Evansville for 1880, being taken from tables prepared for the Tenth Census by Charles H. McCarer, special agent:

Mechanical and manufacturing industries.	No. of establishments.	Capital.	Average number of hands employed.			Total amount paid in wages during the year.	Value of materials.	Value of products.
			Males above 16 years.	Females above 15 years.	Children and youths.			
All industries	313	$4,733,815	2,945	337	387	$1,305,006	$4,972,090	$8,091,914
Agricultural implements	5	266,414	111	.....	7	53,516	103,481	233,929
Blacksmithing (see also Wheelwrighting)	18	17,250	27	.....	.....	8,501	9,060	32,130
Boots and shoes, including custom work and repairing	35	26,050	72	11	2	37,314	61,331	137,260
Bread and other bakery products	16	30,300	26	1	6	10,107	58,056	86,731
Brick and tile	4	43,000	45	.....	8	14,250	8,100	30,100
Brooms and brushes	3	7,000	21	2	5	7,070	18,000	37,000
Carpentering	5	6,350	20	.....	.....	8,803	10,382	25,438
Carriages and wagons (see also Wheelwrighting)	6	67,500	46	.....	1	20,900	35,550	79,300
Confectionery	4	6,150	5	3	5	4,052	25,850	33,680
Cooperage	12	102,500	107	.....	7	60,421	76,150	108,310
Flouring- and grist-mill products	12	337,800	91	.....	.....	42,342	1,107,400	1,243,215
Foundery and machine-shop products	12	823,253	330	.....	8	166,440	340,418	734,458
Furniture (see also Mattresses and spring beds)	5	303,000	202	1	99	151,714	223,600	407,000
Furniture, chairs	4	119,200	117	24	42	46,120	88,952	113,496
Leather, curried	4	82,001	33	.....	.....	13,944	170,455	214,050
Leather, tanned	4	63,000	28	.....	.....	11,965	137,622	168,000
Lumber, planed	5	104,521	127	.....	3	60,774	190,520	338,178
Lumber, sawed	10	580,350	376	.....	25	134,048	633,050	958,405
Marble and stone work	7	35,827	55	.....	4	27,317	35,803	82,573
Mattresses and spring beds (see also Furniture)	3	13,000	8	5	.....	3,000	5,550	14,300
Painting and paperhanging	11	6,300	34	.....	.....	13,443	14,450	46,400
Patent medicines and compounds	3	11,500	3	1	1	1,700	11,500	25,000
Printing and publishing	6	125,500	127	5	21	75,200	32,901	146,735
Saddlery and harness	17	134,400	122	.....	16	55,028	178,400	287,260
Shipbuilding	8	16,650	28	.....	.....	15,770	40,070	60,955
Slaughtering and meat-packing, not including retail butchering	4	199,000	75	.....	.....	11,600	824,623	846,278
Stone- and earthen-ware	3	18,300	14	.....	1	5,800	2,850	14,000
Tinware, copperware, and sheet-iron ware	16	120,550	128	.....	12	62,224	105,705	254,131
Tobacco, cigars and cigarettes	16	26,400	60	.....	9	24,253	29,462	79,043
Wheelwrighting (see also Blacksmithing; Carriages and wagons)	11	15,150	14	.....	2	4,948	5,450	17,700
All other industries (a)	44	1,029,100	343	284	103	197,352	867,079	1,480,959

a Embracing bags, other than paper; baking and yeast powders; bookbinding and blank-book making; boxes, cigar; brass castings; clothing, men's; coffins, burial cases, and undertakers' goods; cotton goods; drain and sewer pipe; files; hats and caps; iron and steel; liquors, malt; liquors, vinous; lock- and gun-smithing; malt; mantels, slate, marble, and marbleized; mineral and soda waters; mixed textiles; models and patterns; musical instruments, organs and materials; paper; plumbing and gasfitting, pumps; safes, doors, and vaults, fire-proof; shirts; stencils and brands; tobacco, chewing, smoking, and snuff; trunks and valises; umbrellas and canes; vinegar; watch and clock repairing; wooden ware; and woolen goods.

From the foregoing table it appears that the average capital of all establishments is $15,124 01; that the average wages of all hands employed is $372 04 per annum; and that the average outlay in wages, in materials, and in interest (at 6 per cent.) on capital employed is $21,155 67.

FORT WAYNE,

ALLEN COUNTY, INDIANA.

POPULATION

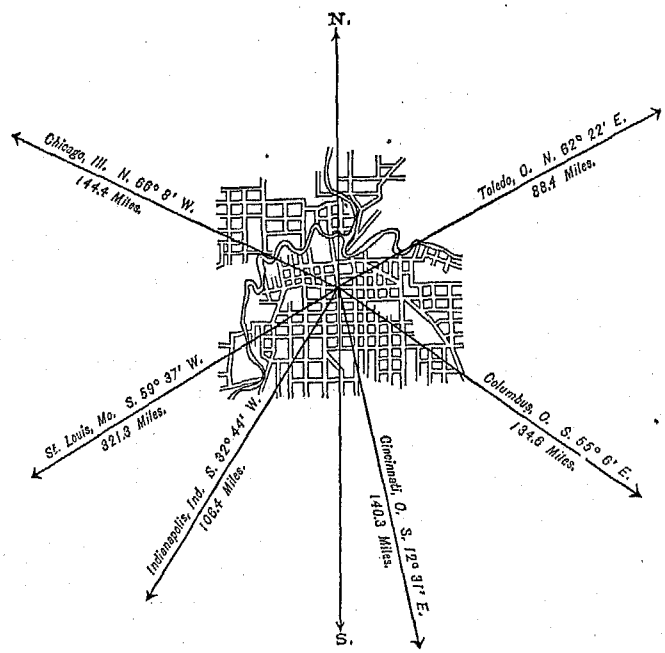
IN THE

AGGREGATE,

1850-1880.

	Inhab.
1790	.....
1800	.....
1810	.....
1820	.....
1830	.....
1840	.....
1850	4,282
1860	*10,388
1870	17,718
1880	26,880

* Including township.



POPULATION

BY

SEX, NATIVITY, AND RACE,

AT

CENSUS OF 1880.

Male	13,717
Female	13,163
Native	21,028
Foreign-born	5,852
White	26,753
Colored	*127

* Including 3 Chinese.

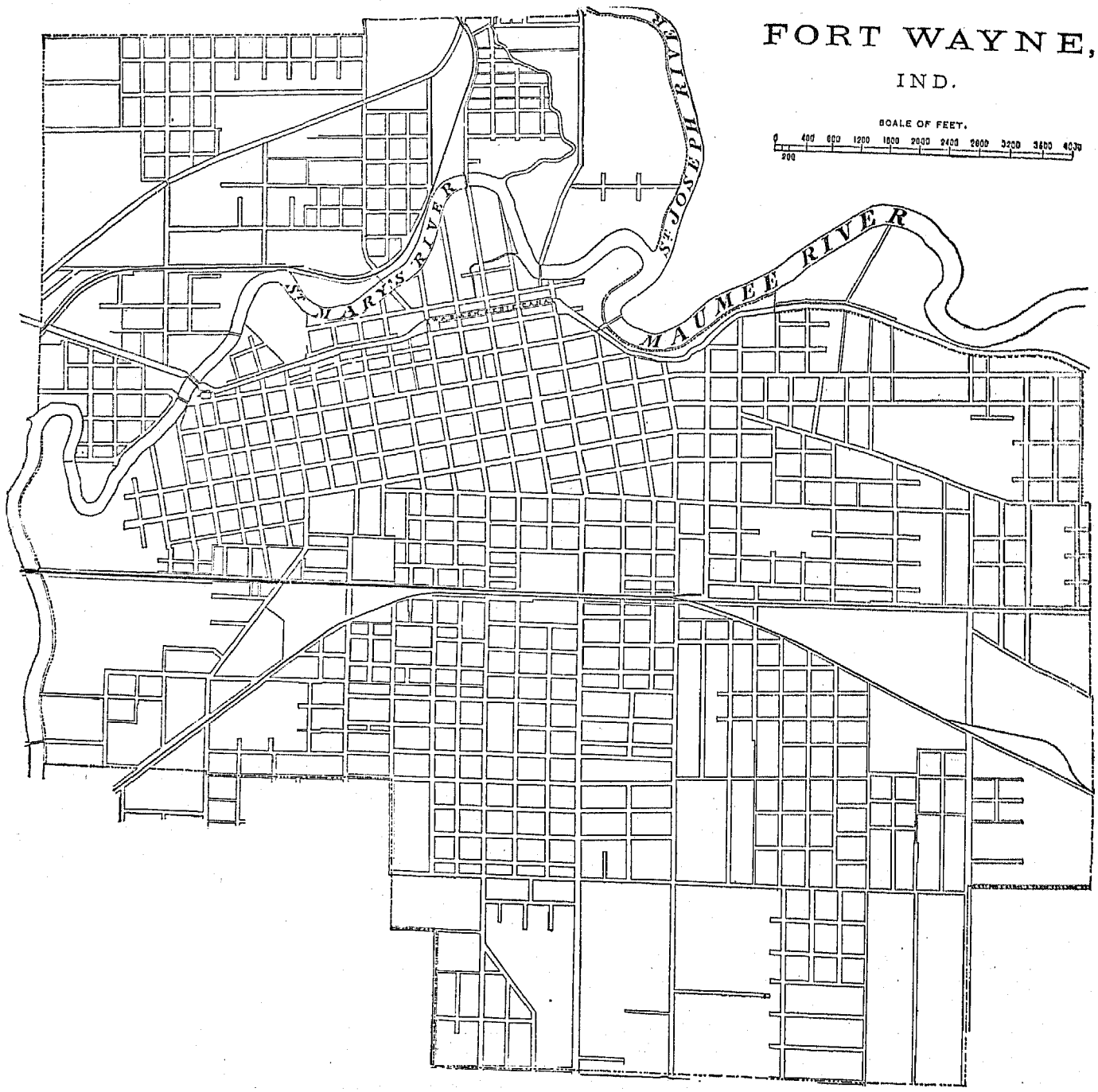
Latitude: 41° 5′ North; Longitude: 85° 4′ (west from Greenwich).

FINANCIAL CONDITION:

Total Valuation: $13,450,075; per capita: $500 00. Net Indebtedness: $856,900; per capita: $31 88. Tax per $100 00: $2 58.

HISTORICAL SKETCH.

The Indian village of Twightwee once stood where now stands the city of Fort Wayne; but in 1794 General Wayne, during his expedition against the Maumee Indians, ordered a fort to be built on the spot, and a garrison was stationed there until 1819. It was natural that settlers should cluster about the fort, and, in time, the settlement became a flourishing town. The country about it was fertile, several plank-roads led from it to various places in Ohio and Indiana, and the Wabash and Erie canal, which passed through it, added greatly to its importance. In 1840 it was made a city, and in 1850 was a place of 4,282 inhabitants. Shortly afterward the construction of railways through the city gave it an impetus which led to a rapid advance in population and importance. In ten years the population had doubled, in twenty had quadrupled, while the Census of 1880 shows that Fort Wayne is six times as large as it was in 1850. Here are located the great workshops of the Pittsburgh, Fort Wayne, and Chicago and the Wabash railroads. There are many churches. The schools of Fort Wayne began


FORT WAYNE,
IND.
SCALE OF FEET.
0 400 800 1200 1600 2000 2400 2800 3200 3600 4000
200
ST. JOSEPH RIVER
ST. MARY'S RIVER
MAUMEE RIVER

in 1852, with little available means, but had secured a good standing when an adverse decision of the supreme court checked them. From the reorganization, in 1873, the schools have had a good repute. In 1878 the board dropped the name of high school, not intending, however, to lower the standard of their work. The streets are lighted with gas, and the principal ones are traversed by horse-cars; while the houses are supplied with water from public water-works. The city's trade is large, extending over Michigan, northern Ohio, and northern Indiana. A few years ago there were nearly 150 manufacturing establishments and 1,600 stores. Few cities of Indiana surpass Fort Wayne in importance, and only Indianapolis and Evansville exceed it in population.

FORT WAYNE IN 1880.

The following statistical accounts, collected by the Census Office, indicate the present condition of Fort Wayne:

LOCATION.

Fort Wayne is located in latitude 41° 5′ north, longitude 85° 4′ west from Greenwich, at the point where the Saint Joseph's and Saint Mary's rivers join to form the Maumee, about 145 miles in a direct line east-southeast from Chicago, 115 miles northeast from La Fayette, and 106 miles east-northeast from Indianapolis. The Maumee is not navigable at this point, the only means of water communication being the Wabash and Erie canal, which extends from Toledo, on lake Erie, to Evansville, on the Ohio river.

RAILROAD COMMUNICATIONS.

The city is an important railroad center, and is touched by the following-named railroads:

The Pittsburgh, Fort Wayne, and Chicago railroad connects Fort Wayne with Chicago, 148 miles, and Pittsburgh, 320 miles distant.

The Fort Wayne and Jackson railroad connects it with Jackson, Michigan, 100 miles distant.

The Grand Rapids and Indiana railroad, which operates the Cincinnati, Richmond, and Fort Wayne railroad also, connects it with Richmond, Indiana, 92 miles, and Petoskey, Michigan, 332 miles distant.

The Fort Wayne, Muncie, and Cincinnati railroad connects it with Connersville, Indiana, 108 miles distant, there connecting with the Cincinnati, Hamilton, and Indianapolis railroad for Cincinnati.

The Wabash, Saint Louis, and Pacific railroad connects the city with its numerous terminal points—with Toledo, 94 miles; with Saint Louis, 342 miles; with Quincy, Illinois, 360 miles; with Burlington, Iowa, 366 miles; and with the other cities touched by the members of this vast railroad system.

TRIBUTARY COUNTRY.

The country in the vicinity of Fort Wayne is devoted chiefly to agriculture.

TOPOGRAPHY; CLIMATE.

No information on these subjects was furnished.

STREETS.

The city has in all about 82 miles of streets, 1 mile of which is paved with broken stone, 6 miles with wood, and 12 miles with gravel. The cost of paving per square yard has varied from 80 cents to $1. No separate account is kept of the cost of repairs. In the central parts of the city the sidewalks are of brick and flagstone, but in the less thickly settled sections they are of wood. The street gutters are of wood on streets paved with wood; elsewhere they are of cobble-stone. It is customary to have a grass plot about 4 feet wide between the curbstones and the walks, and in this space trees have been quite generally planted by the property-holders. New streets are generally built by contract labor, while repairing is done by day laborers under the supervision of the street commissioners. Neither a steam stone-crusher nor a steam road-roller is in use.

There are 7 miles of horse-railroad tracks in the city. Ten cars and 32 horses are in use, 21 men employed, and during the year 1880, 420,000 passengers were carried. The fare is 5 cents. Omnibuses ply between the hotels, railroad stations, etc. There are 16 vehicles, using 30 horses and furnishing employment to 16 men. The fare is 25 cents, and during the past year 42,000 persons made use of these vehicles.

WATER-WORKS.

The total cost of the public water-works has been thus far $300,000; the works are owned by the city. At present water is pumped directly into the pipes, yielding a pressure of 50 pounds to the square inch; but when the reservoir which is now building is completed, the distribution through the pipes will be by gravity, pumps being

used only in keeping the reservoir full, and the pressure is expected to be 40 pounds to the square inch. The engines are of Holly manufacture, and pump from 575,000 to 1,000,000 gallons daily, the consumption increasing steadily. The yearly cost of maintenance, aside from the cost of pumping, is $3,500; and the yearly income $6,500. A few Worthington and Crown water-meters are in use, but sufficient time has not yet elapsed to show whether or not they effect a saving.

GAS.

The gas-works are the property of a private corporation. They produce 40,000 cubic feet of gas daily, for which $2 50 per 1,000 feet is charged. The city pays $27 50 per annum for each of its 245 gas street-lamps.

PUBLIC BUILDINGS.

The public buildings owned by the city and used for municipal purposes are valued at $55,000, and include a city hall, which cost about $20,000, a market-house, the houses of the fire department, and the city prison.

PUBLIC PARKS AND PLEASURE-GROUNDS.

There are no public parks or pleasure-grounds in the city.

PLACES OF AMUSEMENT.

The Academy of Music, seating 1,200, is the only theater in Fort Wayne. It pays an annual license of $100 to the city. There are 2 halls used for lectures and concerts, and 4 concert- and beer-gardens, each seating from 300 to 500.

DRAINAGE.

No information on this subject was furnished.

CEMETERIES.

There are 4 cemeteries connected with the city: 1 Lutheran, 1 Catholic, and 1 Jewish, and *Lindenwood Cemetery.* The first three are small, and no information could be obtained in regard to them. Lindenwood cemetery is located on Huntington road, one-half mile west of the city limits, and contains 170 acres. It was opened in 1860, since which time there have been 2,880 interments within its limits. It is finely laid out and carefully kept. Previous to its opening a small burial-ground, not far from the city limits as they existed prior to 1850, had been in use; but it was becoming rapidly filled up, and the city was extending around and beyond it, so that it was finally abandoned, and the bodies it contained were removed, mostly to Lindenwood cemetery.

MARKETS.

The market-house of Fort Wayne is located on Barr street, between Berry and Washington streets, and cost $12,000. It contains 12 stalls, 4 of which rent at $25 per year, the others at $35 per year. A space about the market building is reserved for farmers' and hucksters' wagons. From May 1 to November 1 the market is open from 4 a. m. to 10 a. m.; the days of the week on which it is open are not stated. The amount of business done in the market is very small compared with that done by private stores. No wholesale dealing is carried on there.

SANITARY AUTHORITY—BOARD OF HEALTH.

A board of health, consisting of 3 members, all physicians, is appointed by the city council, upon which the board relies for its authority. Each member receives a salary of $75 per year. The expenses of the board in the absence of an epidemic are very small; no epidemic has occurred to test its powers as to increasing its expenses. It has authority to abate nuisances and to command any police officer or councilman to assist in abating them. The city ordinances give it authority to order the street commissioners to remove nuisances, but it has been found difficult to enforce this. The board meets regularly twice a year, oftener if the public health demands it. The only assistants employed are the police officers, who are commanded to serve notices.

NUISANCES.

Inspections are made only when nuisances are reported. When a nuisance is found to exist an order issued by the board directing the removal of the nuisance is served by a policeman on the owner or occupant of the premises at fault. An interval of from one hour to five days is allowed within which to make the removal; if the owner refuses to obey the notice he is prosecuted. The board makes inspections of defective house-drainage and privy-vaults when requested; an inspection of drinking-water is made on complaint. It compels the cleansing of privy-vaults and cesspools when they cause nuisances or are overflowing. When defects are found in the city sewerage, the matter is referred by the city council to the committee on sewers, which investigates the trouble and has it rectified as soon as possible. When complaint is made that garbage is causing a nuisance, the board can compel its removal.

BURIAL OF THE DEAD.

The board requires that a permit, giving the name, age, nativity, condition (single, married, or widowed), and cause of death of the deceased, shall be obtained before a burial can be made.

INFECTIOUS DISEASES.

Small-pox patients are generally removed to a pest-house located about 2 miles from the city. Scarlet-fever patients are cared for at home. The board obtains no special control of the schools in case contagious diseases break out in them. Vaccination is compulsory only when specially ordered by the city council, and is not done at the public expense.

There is no system for the registration of births or diseases, deaths alone being recorded.

REPORTS.

The board reports annually to the city council, and specially when it has measures to recommend.

MUNICIPAL CLEANSING.

Street-cleaning.—The streets are cleaned by the city's force under direction of the street commissioner, and the work is done wholly by hand-labor. The paved streets are cleaned whenever they need it, at an average annual cost to the city of $600; the dirt streets are cleaned only once a year, the cleansing consisting in removing the accumulations from the gutters. Part of the cost of the latter work is met by a special tax, called the "road-labor tax". The total annual cost to the city is about $1,800. The sweepings are deposited upon Clinton street, north of the city.

Removal of garbage and ashes.—The householders remove the garbage and ashes which collect upon their premises, being compelled to remove garbage before it becomes offensive. Garbage must be kept apart from ashes; it is finally disposed of by being removed beyond the city limits, and ashes are disposed of in a similar manner.

Dead animals.—The carcasses of animals dying within the city are removed at the city's expense, about $50 being spent annually in paying for this service.

Liquid household wastes.—All the liquid household wastes are disposed of alike, nine-tenths of them passing into the public sewers. None are allowed to run into the street-gutters. About one-tenth goes into cesspools; these are porous, but do not receive the wastes from water-closets. They must be kept clean. No cases of contamination of drinking-water are known by the street commissioner to have occurred.

Human excreta.—Ten per cent. of the houses are provided with water-closets; the rest depend upon privy-vaults. About one-half of the water-closets deliver into the public sewers, the rest into privy-vaults. They must be at least 8 feet deep and walled with brick or stone. They are cleaned by the odorless-excavator process, and the night-soil is removed beyond the city limits. None is used as a fertilizer on lands within the gathering-ground of the public water-supply.

Manufacturing wastes.—Industries which produce wastes likely to be a source of nuisance or injury to the public health are not allowed within the city.

POLICE.

The police force is appointed by the city council and governed by the chief of police, who is the chief executive officer, and receives a salary of $900 and fees per year. The rest of the force consists of a lieutenant, salary $800 per year; 20 patrolmen, $730 per year each; a marshal, salary $900 per year; and 3 deputy marshals, salary $730 per year each. The uniform is a blue-cloth suit and a stiff felt hat, with shield and number; each man provides his own. The men are equipped with revolver, billy, twisters, whistle, and dark lantern; they are on duty 10 hours, patrolling the entire city. They made 1,123 arrests during the past year, chiefly for intoxication and disorderly conduct. Property to the value of $3,741 was reported to the police as lost or stolen, and of this, $1,904 was recovered and $1,836 returned to the owners. No account is kept of the number of station-house lodgers accommodated, but there are about 500 annually; free meals are not given. The force must co-operate with the fire department at all fires, and must serve the notices of the board of health. Special police are appointed by the chief of police in case of emergency, and while on duty are treated as members of the regular force. The annual cost of the department for 1880 was $19,886.

MANUFACTURES.

The following is a summary of the statistics of the manufactures of Fort Wayne, Indiana, for 1880, being taken from tables prepared for the Tenth Census by Martin A. Nolle, special agent:

Mechanical and manufacturing industries.	No. of establishments.	Capital.	Average number of hands employed.			Total amount paid in wages during the year.	Value of materials.	Value of products.
			Males above 16 years.	Females above 15 years.	Children and youths.			
All industries	114	$3,252,101	2,426	104	145	$1,020,703	$4,007,955	$5,816,024
Blacksmithing (see also Wheelwrighting)	6	8,750	10	.....	.....	5,540	3,850	15,600
Boots and shoes, including custom work and repairing	11	5,400	20	.....	1	12,812	13,625	37,000
Bread and other bakery products	4	34,000	27	2	.....	11,232	83,906	100,365
Carpentering	3	13,500	72	.....	.....	24,000	43,250	83,000
Carriages and wagons (see also Wheelwrighting)	4	25,000	46	.....	1	18,000	27,000	56,600
Cooperage	3	10,900	12	.....	4	4,980	5,950	17,000
Flouring- and grist-mill products	5	105,000	33	.....	.....	17,440	473,150	532,265
Foundery and machine-shop products	5	785,000	900	.....	45	387,000	1,941,400	2,520,000
Furniture	5	71,000	35	.....	1	17,515	33,100	70,300
Liquors, malt	3	95,000	23	.....	.....	10,710	40,240	85,438
Lumber, sawed	5	295,000	282	.....	30	93,100	285,300	458,300
Marble and stone work	3	15,000	17	.....	.....	10,550	9,500	29,500
Printing and publishing	5	68,500	88	1	43	45,780	70,700	157,000
Saddlery and harness	11	29,200	38	.....	.....	16,725	53,400	90,500
Tinware, copperware, and sheet-iron ware	4	9,800	15	.....	.....	7,750	14,200	27,500
Wheelwrighting (see also Blacksmithing; Carriages and wagons)	9	16,650	35	.....	1	17,700	14,750	44,700
All other industries (*a*)	28	764,401	764	101	19	319,359	888,034	1,473,036

a Embracing agricultural implements; bookbinding and blank-book making; brooms and brushes; carriage and wagon materials; clothing, men's; coffee and spices, roasted and ground; confectionery; files; handles, wooden; iron work, architectural and ornamental; leather, curried; leather, tanned; lumber, planed; masonry, brick and stone; oil, linseed; painting and paperhanging; patent medicines and compounds; plumbing and gasfitting; pumps; sash, doors, and blinds; shirts; trunks and valises; upholstering; and woolen goods.

From the foregoing table it appears that the average capital of all establishments is $20,632 46; that the average wages of all hands employed is $373 23 per annum; and that the average outlay in wages, in materials, and in interest (at 6 per cent.) on capital employed is $45,349 77.

INDIANAPOLIS,

MARION COUNTY, INDIANA.

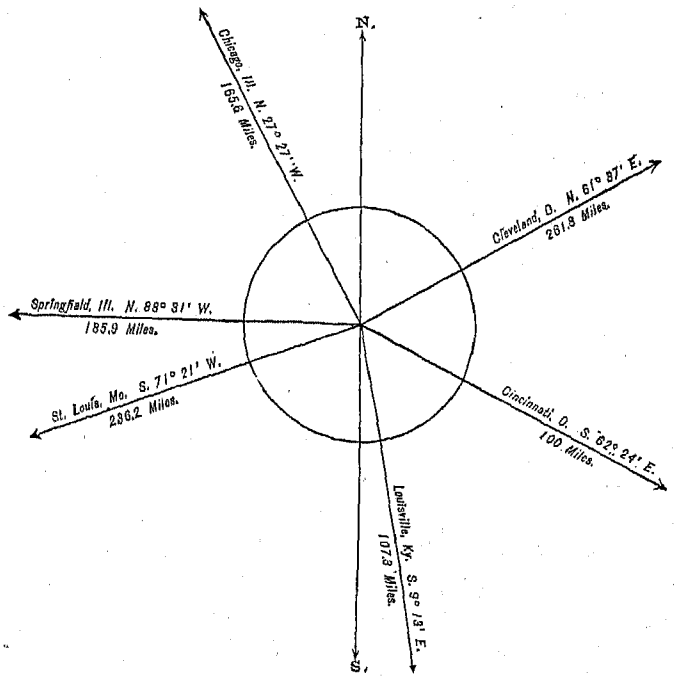
POPULATION

IN THE

AGGREGATE,

1840-1880.

	Inhab.
1790	.....
1800	.....
1810	.....
1820	.....
1830	.....
1840	2,692
1850	8,091
1860	18,611
1870	48,244
1880	75,056



POPULATION

BY

SEX, NATIVITY, AND RACE,

AT

CENSUS OF 1880.

Male	36,863
Female	38,193
Native	62,446
Foreign-born	12,610
White	68,538
Colored	*6,518

* Including 13 Chinese and 1 Indian.

Latitude: 39° 47′ North; Longitude: 86° 9′ (west from Greenwich); **Altitude: 691 to 753 feet.**

FINANCIAL CONDITION:

Total Valuation: $48,099,940; per capita: $641 00. Net Indebtedness: $1,914,500; per capita: $25 51. Tax per $100: $1 60.

HISTORICAL SKETCH.

Sixty years ago the site of the present great city of Indianapolis was a wilderness. For 40 miles on all sides stretched an unbroken forest. Whether or not a settlement was made here in 1819 is a matter in dispute, but it is certain that several families established themselves on the spot in 1820. In the same year the United States government gave to the new state of Indiana, which had been admitted to the Union in 1816, four sections of land at this place as a site for its capital. The land was surveyed, and a town was laid out early in 1821. The original plat was 1 mile square, and was divided into regular 40-acre squares, each to contain twelve lots. They were divided through the middle by alleys, those running east and west 30 feet wide, and those running north and south 15 feet wide. The streets in general were made 90 feet wide, while Washington street, the central street of the city, was made 120 feet wide, partly because through it passed the great "National road". A circular plot in the center of the city was reserved for the mansion of the governor and was surrounded by a street 80 feet wide. The state offices

were removed from Corydon in 1824, and in January, 1825, the legislature met for the first time in Indianapolis. The first settlers were from the Whitewater valley, in the eastern part of the state, but soon others came from Kentucky, Tennessee, and North Carolina.

Until 1847 the growth of the town was very slow. Far from civilization, surrounded by swamps, which extended for miles, and across which only corduroy roads had been built, that were absolutely impassable for wheeled vehicles, and on which even horsemen sometimes spent a week or ten days in reaching the river towns, there was little inducement to immigration. To remedy the lack of easy communication the legislature planned a vast state system of railroads and canals. Large amounts of money were borrowed, and the building of the various roads was pressed with all possible rapidity. But the crisis of 1837 ruined the credit of the state, and it was forced to leave the roads unfinished. By the plan which the legislature had elaborated, the various railway lines had centered in Indianapolis, and this feature was preserved in the system of railroads that finally grew up. In 1847 the Madison and Indianapolis railroad was completed, and from this moment the increase of Indianapolis began and its future was assured. The population was then only about 4,000, but in 1850, not four years later, it had increased to 8,091. Other lines were fast completed, the La Fayette and Indianapolis, the Peru and Indianapolis, the Terre Haute and Richmond, the Indianapolis and Bellefontaine, and the Indiana Central, all radiating from Indianapolis and bringing to it trade and population. The crisis of 1857 checked the advance of the city, and the opening of the civil war also delayed its progress; but the United States government made it a great depot for ordnance and supplies for the southern and western armies. Most of Indiana's contingent were assembled here before being sent to the front. Manufacturing in the city dates from the beginning of the civil war. Fields of coal and iron within easy reach were then first utilized, and the discovery of the so-called "block" coal in the region tributary to the city, about the year 1870, greatly assisted the iron industry. The location of the city near the great corn-belt made it an important point for the distribution of this cereal, and elevators and flouring-mills have sprung up, while pork-packing became an important industry.

Many of the charitable institutions of the state are located here, the state asylum for the blind, the deaf and dumb, and the insane. Just a little beyond the city limits there is a United States arsenal, surrounded by beautiful grounds, including in all about 78 acres. At the beginning of last year there were 79 churches, with a membership of 26,000 and owning property valued at $1,577,000. There were 5 daily newspapers, 16 weeklies, and 10 monthly publications. In addition to the public schools, Indianapolis has 24 educational institutions.

INDIANAPOLIS IN 1880.

The following statistical accounts, collected by the Census Office, indicate the present condition of Indianapolis:

LOCATION.

Indianapolis, the capital of Indiana and the seat of justice for Marion county, lies in latitude 39° 47′ north, longitude 86° 9′ west from Greenwich, near the center of the state, and on the east bank of the White river, which is not navigable. The altitudes above mean sea-level are—lowest point, 691 feet; track at the Union depot, 721 feet; and highest point, 753 feet.

RAILROAD COMMUNICATIONS.

The city is touched by the following-named railroads:

The Indianapolis division of the Cleveland, Columbus, Cincinnati, and Indianapolis railroad, from Indianapolis to Galion, Ohio, 203 miles.

The first division of the Pittsburgh, Cincinnati, and Saint Louis railroad, from Indianapolis to Columbus, 187 miles.

The Cincinnati, Hamilton, and Dayton railroad, to Hamilton, Ohio, 90 miles.

The Indianapolis, Saint Louis, and Chicago railroad, to Kankakee, Illinois, 250 miles.

The Jeffersonville, Madison, and Indianapolis railroad, between the points named.

The Indianapolis and Vincennes railroad, to the latter place.

The Saint Louis, Vandalia, and Terre Haute railroad, to Saint Louis.

The Indianapolis and Saint Louis railroad, also to Saint Louis.

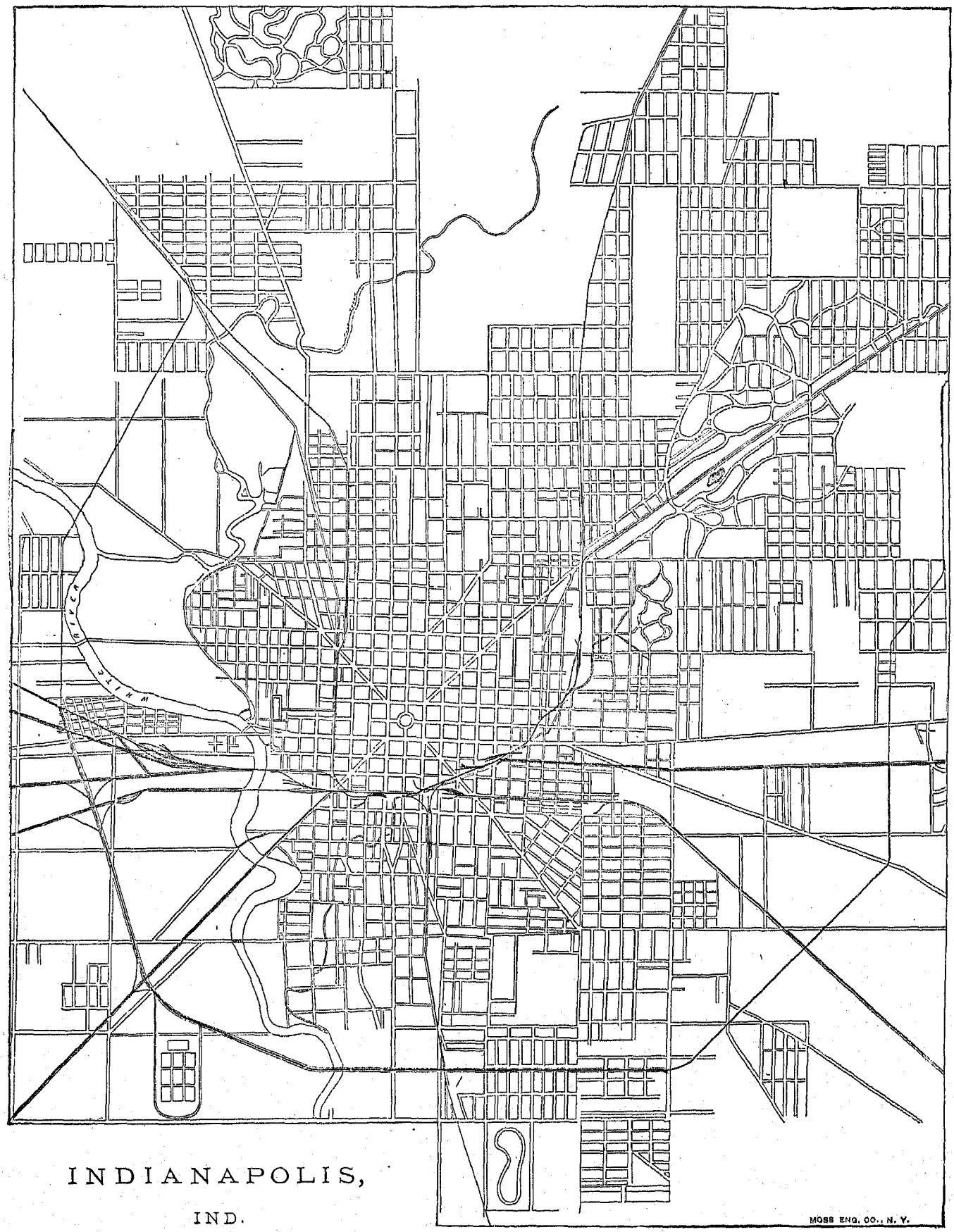
The Indianapolis, Decatur, and Springfield railroad, to Decatur, Illinois.

The Indiana, Bloomington, and Western railroad, to Peoria, Illinois.

The Indianapolis, Peru, and Chicago railroad, to Michigan City.

The Union Railway transfer, extending around the city, 12 miles in length, and connecting the numerous lines.

Besides the completed roads, there are partially finished and organized the Indianapolis and Evansville, and the Indianapolis, Delphi, and Chicago railroads.



INDIANAPOLIS,

IND.

TRIBUTARY COUNTRY.

The neighboring country is devoted almost entirely to agriculture, having, however, some industrial establishments, principally connected with the working of the soil, such as saw- and grist-mills, and brick and pipe kilns.

TOPOGRAPHY.

Indianapolis lies in the midst of a gentle depression, 12 miles long and 5 miles wide, which is covered to an average depth of 80 feet with glacial drift. The average difference in level between this depression and the surrounding uplands is about 50 feet. Under the east half of the county lies Carboniferous limestone, the western edge of the "Flat rock" formation. In the center is found Marcellus shale, and on the western limit Marshal limestone, which crops out in the bluffs of White river south of the city. The soil is a sandy loam, changing into clay at the eastern and western limits. The drainage is by and into White river, which runs almost through the center of the county from north to south, all the streams of the county being tributary to it. There are now no near considerable marshes, and with one slight exception no lakes or ponds. Originally the country around Indianapolis was heavily timbered, but now only occasional woodlands remain.

CLIMATE.

Highest recorded summer temperature, 97°; highest summer temperature in average years, 89°. Lowest recorded winter temperature, —22°; lowest winter temperature in average year, —10°. Ordinarily the city is not in a position to be climatically influenced by bodies of water; but in winter, when the wind blows from the north so as to pass over lakes Superior and Michigan, the temperature is modified about 10°. There are no marshes or elevated lands sufficient to influence the climate. Southerly and westerly winds prevail, and their immediate effect is to produce rain.

STREETS.

The streets measure about 211 miles, paved as follows: Cobble-stones, 45 miles; broken stone, about 1 mile; and wood, 5 miles; the remainder being of gravel or bowlders. The cost per square yard of each, as nearly as may be estimated, is, cobble-stones, 53 cents; broken stone, 58 cents; wood, $1 65; and gravel, 30 cents. The relative facility with which each is kept clean is, first, the wooden blocks, then the broken stone, and, lastly, cobble-stones and gravel. As to the quality and permanent economy of each, the street commissioners think broken stone is the best and cheapest in the long run; next are preferred cobble-stones for the business part of the town, and raked river gravel for the less-used streets, while the wooden pavement has not been satisfactory. A few of the sidewalks are paved with stone, also a little paving with cement and artificial stone was done several years ago; but the majority of the walks are laid with brick and gravel. Gutters are frequently of earth only. Where the street has cobble-stone or macadam pavement the gutters are of the same material, while in the wooden streets they are laid with wood blocks. Trees are very generally planted for shade at the outer edge of the sidewalks. In some instances narrow lawns are prepared for them, but this is optional with the property-owners. Most of the tree-planting is done under ordinance, and this feature is quite general—so general that Indianapolis is said to have the reputation of having more shade-trees than any other city of its size in the country. Streets are constructed by contract. The cost is assessed upon the abutting property, the city paying only for the intersections. Street repairs are made by the city, and the estimate of the cost of this work, which includes their cleaning and the care of sewers and bridges, for the year ending May 30, 1880, was $35,000. For construction of streets contract work is preferred, while day-labor for repairs and cleaning is considered best. Some years ago the city bought a road-roller, but it was found to be too heavy for the graveled streets. It was tried on a broken-stone pavement and worked tolerably well, but its use has long since been discontinued. There are 19 miles of horse-railroads (single track) in the city, including 4 miles in the suburbs, using 59 cars and 300 mules, and giving employment to 125 men. On an average, 2,250,000 passengers are carried annually, at rates of fare of 5 cents in the city, and 10 cents on the suburban lines. In addition to a short line, operated by one of the street-car companies, a single line of omnibuses, with 18 vehicles, 35 horses, and 25 employés, carries passengers to all parts of the city for the uniform fare of 50 cents, and 25 cents for baggage.

WATER-WORKS.

The water-works are the property of a private corporation, and cost about $750,000. The Holly system of pumping is used, affording a pressure to the square inch of 45 pounds for domestic and 110 pounds for fire uses. The yearly cost of maintenance, aside from the cost of pumping, is $16,000, and the yearly income from water-rates is $66,256. Water-meters are used, but the water company is taking them out as fast as possible, and does not recommend them.

GAS.

The gas-works are not owned by the city. The daily average production of the Indianapolis Gas Company is 363,259 cubic feet. The charge per 1,000 feet is $2. The city pays this company $25 per annum each for 2,400 street-lamps. The Citizens' Gas Company produces 5,000 feet of gas per day, for which the charge to customers is $2 per 1,000 feet.

PUBLIC BUILDINGS.

The city owns one fire-engine house. A property, assessed at $75,000, has been left by J. T. Tomlinson, the proceeds to be used in erecting a city hall, but nothing has yet been done toward realizing the bequest. The municipal offices are now located in the county court-house, being rented from the county at an annual cost of $3,000.

PUBLIC PARKS AND PLEASURE-GROUNDS.

The public parks of Indianapolis comprise about 150 acres of land. *Southern Park* is located south of the city, on Pleasant run, and covers 90 acres of woodland and pasture. A strip of land 100 feet wide and 4 miles long, on both sides of Fall creek, north of the city, has been set aside by the property-owners for a pleasure-drive, but it has never been improved. In the city are 2 open squares, owned by the state, one called *Military Park*, and covering 16 acres of land, and the other, *University Square*, with an area of 4 acres. These latter were donated by the state government, and set aside for the purpose by the commissioners who laid out the city. They have been improved by the city and are under its police supervision, but the title to the land is irrevocably in the commonwealth. The total cost of the parks is $109,500, which is the price paid for Southern park, none of the others having cost any thing. The annual appropriation for the maintenance of the parks is $1,200, which includes the cost of police attendance in summer. The parks are controlled by the committee on public property, appointed by the council and the board of aldermen.

PLACES OF AMUSEMENT.

There are 2 theaters in the city—Grand opera-house, seating 1,608, and Park theater, seating 1,200. There are also, under the control of singing societies and used mostly for amateur performances, Germania theater, seating 600, and Männerchor hall, seating 500. The two first mentioned pay a yearly license fee of $100 each. Of concert-halls, etc., having no stage appliances, there are Masonic hall, a large room in Masonic temple, seating capacity 800; Mozart hall, situated on the third floor of a business house, seating 500; Washington hall, on the third floor of a business block, capacity 600; and Ryan's hall, also on a third floor, capacity 400. Among the pleasure resorts are the following concert- and beer-gardens: Come's garden and theater, which superseded a garden attached to a saloon, is roofed over, has a permanent stage, a capacity of from 800 to 1,000, and is open the year round; and Gilmore's Zoölogical garden, with a saloon attached, in which music is furnished. These two places pay an annual license to the city. In addition there are many saloons that have music and give variety performances, but they can hardly be classed as concert- and beer-gardens.

DRAINAGE.

No sewers, either public or private, were built until the year 1870. At that time a general plan was adopted providing for the sewerage of the whole city, and the work of building was begun. Since then all sewers constructed have been made to conform to this general plan. Most of the city is built on a formation of sand and gravel, from 30 to 40 feet deep, into which there have been sunk about 1,500 wells, for water-supply, and about 30,000 cesspools and privy-vaults now in use, besides an equal or a greater number of old ones that have been abandoned and filled in.

Beneath the surface-sand were alternate layers of clay, sand, hard pan, and gravel, to a depth of 90 feet or more before reaching the limestone bed-rock. In the southern part of the city the clay comes to the surface, and there damp or wet cellars are often found. The elevation of the city is 40 feet or more above the water of White river. The surface drainage flows generally to a small stream flowing through the city. From the porous character of its soil a large proportion of rain-water is immediately absorbed. The system of sewerage adopted provides for the drainage of the southern part of the city, about 280 acres, to the sewer in Ray street; the western district, 340 acres, to the sewer in Bright street; and the principal part of the city to a main-trunk sewer, 8 feet in diameter at the outfall and 7 feet in diameter at its upper end, which is intended to remove the drainage of 1,600 acres within the city limits and of 1,500 acres without the city limits. All sewers thus far built are of brick, and discharge into White river, the mouths of the outfalls being fully exposed at low water. No provision has been made for ventilation. No necessity for the removal of deposits by hand or by artificial flushing has yet been developed. The grades are reported to be sufficient to insure cleansing by the action of storm-water.

The cost of construction is assessed upon abutting property to the amount of $1 50 per linear foot of the frontage on each side of the street, the excess of cost above this amount being paid by the city.

The prices paid for sewer construction in 1880 were: For sewers 2 feet in diameter, per foot, $1 75 and $2 25; for sewers 2½ feet in diameter, per foot, $1 65; for sewers 7½ feet in diameter, per foot, $11.

The average cost of inlet-basins is $80; of manholes, $40.

CEMETERIES.

Indianapolis uses the following cemeteries and burial-grounds:

Green Lawn Cemetery lies in the western part of the corporation, and contains about 25 acres. The first interment therein was made about the year 1822.

Crown Hill Cemetery lies about 4 miles northwest of the city and 50 feet above its highest part, and contains 385 acres of land.

Catholic Cemetery lies one-half mile south of the city, and contains 18 acres.

Lutheran Cemetery, area 3 acres, also lies south of the city, distant three-quarters of a mile.

Jewish Cemetery is situated near the last two, and has an area of 2 acres.

The three last named are near White river, and below the level of the city. All of the cemeteries drain to the westward and away from the city. There are no cemeteries or burial-grounds in which interments are no longer permitted. The number of interments in the different cemeteries of those only who died within the city limits, from 1872 to 1880, inclusive, is as follows:

Green Lawn cemetery, 4,480; Crown Hill cemetery, 3,243; Catholic cemetery, 1,578; Lutheran cemetery, 331; Jewish cemetery, 64; total, 9,696.

Indianapolis has a society whose object is to induce the adoption of a system of cremation instead of ordinary burial. It is as yet without a furnace; but a member of the society dying about a year ago, his remains were taken to a crematory in Pennsylvania and there cremated.

SANITARY AUTHORITY—BOARD OF HEALTH.

The chief sanitary organization of Indianapolis is the board of health, composed of 3 physicians, elected by the common council and the board of aldermen in joint convention. The annual expense of the board does not exceed $1,000, and is incurred for salaries, pay of sanitary policemen, etc. At no time may the board increase its expenses except by order of the city council, and its authority is at all times very limited. The executive officer of the board is the secretary, who receives $200 a year, while the president and the other member receive $100 each per annum. The board meets regularly. Until the 1st of June, 1880, 2 sanitary policemen were detailed from the police force to act as inspectors; since June 1 the number has been increased to 4. In this capacity they retain their police powers. An attempt is made to inspect all parts of the city regularly, but on account of the inadequacy of the number of sanitary policemen there is practically no inspection except as nuisances are reported. Under the liability to a fine of not more than $25 for refusal, the parties maintaining a nuisance, when such are reported, are notified to abate the same within 10 days. There is no regular system for the inspection and correction of defective sewerage, street-cleaning, house-drainage, privy-vaults, cesspools, and sources of drinking-water. The board maintains no control over the handling of garbage unless it becomes a nuisance. Previous to interments a permit must be obtained from the board.

INFECTIOUS DISEASES.

Small-pox patients are isolated at home, and a flag is placed on the house. Scarlet-fever cases are neither quarantined nor isolated. The board has no control over the public or private schools in the case of the breaking out therein of contagious diseases. The public pest-house is situated northwest of the city, in the hollow between Fall creek and White river. Vaccination is not compulsory, nor is it done at the public expense.

REGISTRATION, REPORTS, ETC.

The registration of births, diseases, and deaths is conducted by the state board of health, which furnishes blanks for the purpose, to be filled up and returned by physicians, midwives, and householders. The board reports to the common council and the board of aldermen.

During last year a city dispensary was organized, with 3 physicians to do the work, and a staff of 21 physicians who render voluntary service in consultations, etc. This is doing a good work.

MUNICIPAL CLEANSING.

Street-cleaning.—The streets are cleaned at the expense of the city and with its regular force. The work is done wholly by hand. There are no stated times for street-cleaning; the board of public improvements orders the street commissioner, upon motion of the city council, and when, in its judgment, it is necessary. When done at all the work is well done; but it is not sufficiently general to be of much advantage from a sanitary point of view. The sweepings are deposited on low lots and in the river. The cost of the work is included in the sum appropriated for streets.

Removal of garbage and ashes.—Garbage is removed only by the householders. Its conservancy and hauling are not regulated, except that it must not be left in the streets or allowed to become a nuisance; it is disposed of variously as each householder may arrange. Ashes are generally used for filling low grounds. The annual cost of the removal of these matters is not given. The manner of keeping, handling, and disposing of the garbage is, in the opinion of the board of health, injurious to health.

Dead animals.—The question of the disposition of animals dying within the city is satisfactorily disposed of by means of a contract between the city and a fertilizing company for the removal of all such carcasses, the company paying the city $100 annually for the privilege. No record of the number annually removed is kept.

Liquid household wastes.—Where there are sewers, all household wastes are run into them; where sewers do not exist, chamber-slops are generally thrown into vaults, while laundry wastes and kitchen-slops go into sinks or cesspools; but in some cases all the wastes are thrown into vaults. The amount going into the sewers is small, while a good deal is thrown into alleys and gutters, which are never artificially flushed. The cesspools are porous, being dug in the loose earth with which the city is underlaid, allowing the contents to soak away into the ground, and are unprovided with overflows. The cesspools receive the wastes from water-closets. Concerning the pollution of drinking-water by the underground escape of the contents of privy-vaults and cesspools, it is stated that out of 100 wells in the city, the water of which was analyzed, only 10 proved to be good.

Human excreta.—Not over 10 per cent. of the houses of the city have water-closets. Of these half deliver into the sewers and half into cesspools; the remaining houses depend on privy-vaults. Very few of the vaults are even nominally water-tight, as an ordinance providing that the sides shall be tightly lined says nothing regarding the bottoms. These and cesspools may be ordered cleaned by the board of health. The night-soil is dumped into the river at a place designated by the city, none of it being allowed for manuring land within the gathering-ground of the public water-supply.

Manufacturing wastes.—There are no regulations as to the disposal of either liquid or solid manufacturing wastes.

POLICE.

The police force of Indianapolis is appointed and governed by a police board consisting of 3 councilmen. The chief of police is the executive officer; he has a general superintendence of the force, and receives a salary of $1,200 per annum. The rest of the force consists of 4 captains at $2 50 per day each, and 2 turnkeys and 57 patrolmen at $2 per day each. The uniform is a double-breasted frock, buttoned up to the chin, with two rows of brass buttons, and a helmet hat; the men provide their own uniforms. The patrolmen carry a 14-inch mace. The hours of duty are twelve for day men and ten for night men. The arrests made in 1880 numbered 4,151, the chief cause for which was drunkenness. Stolen and lost property to the value of $12,313 96 was recovered by the police during the year.

FIRE DEPARTMENT.

The manual force of the department consists of 1 chief, 6 engineers, 13 foremen, and 56 men. The apparatus consists of 6 fire-engines, 5 hose-carriages, and 2 hook-and-ladder trucks, with 1 engine and 1 hose reel in reserve. There are 9,000 feet of hose and 36 horses in service. During the year ending June 1, 1880, the department attended 155 alarms of fire. The buildings, with their stock, in which these fires occurred were covered by an insurance of $558,506, and 10⅞ per cent. of this amount was lost. There were 41 fires where no insurance was involved, on which the loss was $2,913 75. A fire-alarm telegraph is in use, and in addition to this the several engine- and hose-houses as well as the residence of the chief have telephone connections, the telephone company granting the department the use of the instruments in return for the privilege of using the poles of the fire-alarm telegraph for their lines. In addition to 599 hydrants, there are, for fire purposes, 144 cisterns, distributed throughout the city, and having a capacity of 120,838 barrels.

PUBLIC SCHOOLS.

The public schools of Indianapolis represented an irregular effort of the community to 1856, when a general system of public schools was inaugurated. This was cut short by the decisions of the supreme court that the laws authorizing taxation for school purposes were unconstitutional. After an entire stoppage for some years, followed by short terms in other years, the school organization was renewed in 1863, and has expanded with the growth of the city.

Of all taxes in 1879, 24½ per cent. was for educational purposes.

MANUFACTURES.

The following is a summary of the statistics of manufactures of Indianapolis, Indiana, for 1880, being taken from tables prepared for the Tenth Census by J. M. Ridenour, chief special agent:

Mechanical and manufacturing industries.	No. of establishments.	Capital.	Average number of hands employed.			Total amount paid in wages during the year.	Value of materials.	Value of products.
			Males above 16 years.	Females above 15 years.	Children and youths.			
All industries	688	$10,049,500	8,071	830	499	$3,917,114	$19,198,102	$27,453,089
Agricultural implements	3	41,000	55	.....	.....	11,400	31,200	55,500
Baking and yeast powders (see also Drugs and chemicals)	3	5,500	16	2	.....	6,620	35,000	56,500
Baskets, rattan and willow ware	3	850	5	.....	.....	700	1,150	4,720
Blacksmithing (see also Wheelwrighting)	22	14,000	44	.....	1	19,023	24,994	70,112
Boots and shoes, including custom work and repairing	79	24,495	114	4	1	47,398	65,804	176,973
Boxes, wooden packing	3	37,300	52	.....	.....	20,020	43,200	118,200
Bread and other bakery products	25	95,000	142	27	6	75,821	234,110	423,071
Brick and tile	8	86,300	117	.....	10	38,050	34,118	101,000
Brooms and brushes	5	13,000	38	8	17	10,892	27,604	55,350
Carpentering	22	60,575	235	.....	20	89,225	221,484	384,400
Carpets, rag	7	6,550	5	7	2	4,347	12,350	21,850
Carriages and wagons (see also Wheelwrighting)	14	248,500	200	.....	3	78,400	115,020	250,420
Clothing, men's	27	172,410	219	127	1	165,235	375,410	658,960
Coffee and spices, roasted and ground	4	63,000	24	4	.....	10,130	197,450	230,100
Coffins, burial-cases, and undertakers' goods	5	67,000	61	.....	.....	28,464	43,800	69,140
Confectionery	12	90,750	54	24	6	20,568	181,835	273,200
Cooperage	13	277,700	520	.....	75	153,100	812,475	1,107,582
Dentistry, mechanical	16	10,780	9	6	1	5,212	8,670	38,021
Drugs and chemicals (see also Baking and yeast powders)	6	62,700	35	26	.....	22,450	50,000	113,000
Dyeing and cleaning	6	4,850	16	24	.....	12,350	9,900	32,900
Dyeing and finishing textiles	5	4,400	15	24	.....	12,100	9,850	32,000
Electrotyping	3	1,400	3	.....	.....	1,218	1,150	4,530
Fertilizers	5	103,000	94	.....	.....	41,424	714,000	920,000
Flouring- and grist-mill products	12	462,000	110	.....	.....	50,054	1,511,885	1,655,517
Foundery and machine-shop products (see also Iron work, architectural and ornamental).	15	1,188,000	1,275	4	34	534,000	742,000	1,736,000
Furniture (see also Mattresses and spring beds; Upholstering)	17	357,000	488	7	57	197,083	582,212	917,000
Hardware	4	3,205	3	.....	.....	1,500	3,575	8,500
Hats and caps, not including wool hats	3	2,725	5	3	.....	3,500	7,800	15,420
Iron work, architectural and ornamental (see also Foundery and machine-shop products).	3	103,000	126	.....	.....	41,000	79,101	130,592
Liquors, malt	3	400,000	148	.....	.....	60,036	280,558	508,740
Looking-glass and picture frames	3	30,050	37	1	0	21,830	51,800	90,500
Lumber, sawed	6	255,500	110	.....	10	44,400	348,000	497,200
Marble and stone work	11	46,050	91	.....	5	47,700	112,985	237,265
Masonry, brick and stone	4	22,000	104	.....	1	67,625	108,300	200,000
Mattresses and spring beds (see also Furniture)	4	10,700	25	1	1	11,300	26,440	53,000
Millinery and lace goods	6	37,000	.....	99	.....	12,100	78,000	132,000
Painting and paperhanging	16	38,800	111	30	1	70,929	179,350	301,050
Photographing	10	20,000	20	8	1	10,185	11,050	45,800
Plumbing and gasfitting	9	19,400	52	.....	.....	22,035	38,900	70,300
Printing and publishing	24	446,320	541	75	21	322,302	301,052	811,377
Pumps, not including steam pumps	4	20,050	44	.....	1	17,280	35,000	71,500
Roofing and roofing materials	4	13,200	13	.....	.....	5,288	41,500	71,500
Saddlery and harness	19	42,500	85	.....	3	30,500	104,600	163,300
Sash, doors, and blinds (see also Wood, turned and carved)	8	306,500	178	1	24	87,045	261,000	442,000
Saws	3	112,000	64	.....	.....	50,050	101,000	201,000
Shirts	4	12,300	11	45	6	21,260	24,500	59,000
Slaughtering and meat packing, not including retail butchering	7	1,618,000	892	.....	.....	345,236	7,893,203	9,014,422
Soap and candles	3	12,500	21	.....	.....	6,600	38,000	47,500
Stencils and brands	3	1,800	10	.....	2	5,400	5,200	18,000
Tinware, copperware, and sheet-iron ware	28	62,700	117	2	13	50,562	124,305	240,461

Mechanical and manufacturing industries.	No. of establishments.	Capital.	AVERAGE NUMBER OF HANDS EMPLOYED.			Total amount paid in wages during the year.	Value of materials.	Value of products.
			Males above 16 years.	Females above 15 years.	Children and youths.			
Tobacco, cigars and cigarettes	43	$52,025	189	9	34	$83,776	$121,482	$298,950
Trunks and valises	6	20,600	47	.....	1	18,012	26,600	60,500
Upholstering (see also Furniture)	6	13,425	24	2	1	12,800	46,000	72,500
Watch and clock repairing	12	11,850	14	1	3	10,192	5,770	30,400
Wheelwrighting (see also Blacksmithing; Carriages and wagons)	24	33,365	64	.....	3	21,769	29,815	77,579
Window blinds and shades	3	22,000	28	1	.....	10,000	32,000	59,000
Wood, turned and carved (see also Sash, doors, and blinds)	3	15,000	44	.....	1	20,127	43,155	93,500
Wooden ware	3	124,000	107	32	37	55,250	59,000	158,000
All other industries (*a*)	45	2,612,825	1,334	247	81	632,033	2,431,535	3,501,107

a Embracing awnings and tents; belting and hose, leather; boxes, paper; carriage and wagon materials; cheese and butter (factory); clothing, women's; cotton goods; engraving, wood; fruits and vegetables, canned and preserved; furniture, chairs; glue; grease and tallow; hairwork; hosiery and knit goods; iron and steel; liquors, distilled; lock- and gun-smithing; mineral and soda waters; oil, lard; oil, linseed; paper; patent medicines and compounds; regalia and society banners and emblems; starch; surgical apparatus; telegraph and telephone apparatus; varnish; and woolen goods.

From the foregoing table it appears that the average capital of all establishments is $14,606 83; that the average wages of all hands employed is $391 71 per annum; and that the average outlay in wages, in materials, and in interest (at 6 per cent.) on capital employed is $34,474 11.

LA FAYETTE,

TIPPECANOE COUNTY, INDIANA.

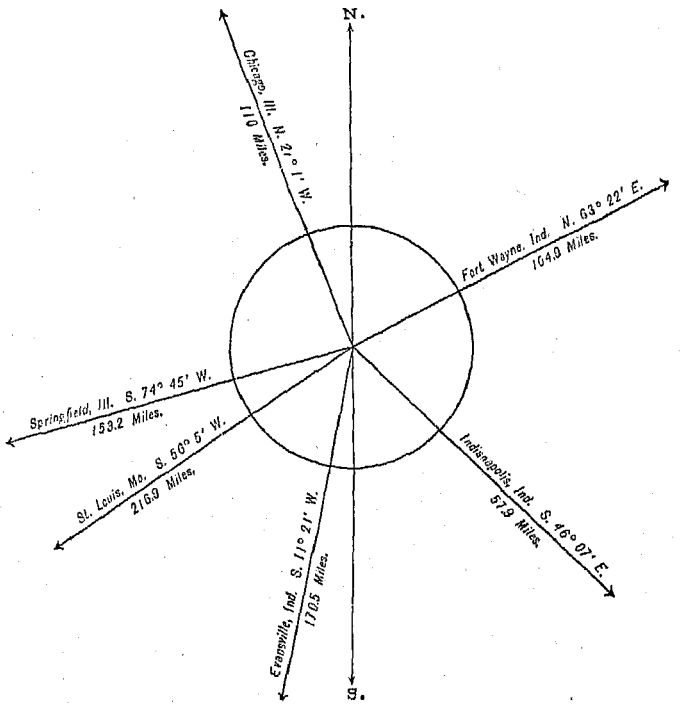
POPULATION

IN THE

AGGREGATE,

1840-1880.

	Inhab.
1790	.....
1800	.....
1810	.....
1820	.....
1830	.....
1840	1,570
1850	6,120
1860	9,387
1870	13,506
1880	14,860



POPULATION

BY

SEX, NATIVITY, AND RACE,

AT

CENSUS OF 1880.

Male	7,321
Female	7,539
Native	12,047
Foreign-born	2,813
White	14,668
Colored	*192

*Including 2 Chinese.

Latitude: 40° 25′ North; Longitude: 86° 52′ (west from Greenwich); **Altitude: 566 to 682 feet.**

FINANCIAL CONDITION:

Total Valuation: $9,263,490; per capita: $623 00. Net Indebtedness: $300,000; per capita: $20 19. Tax per $100: $1 87.

HISTORICAL SKETCH.

Soon after the visit of La Fayette to America, in 1824, the public lands of Tippecanoe county became subject to entry. On the 25th of May, 1825, the town of La Fayette was laid out by William Digby, and in 1826 it was made the county-seat of Tippecanoe county. Prior to the completion of the Ohio and Erie canal in 1840 trade was carried on mainly by means of steamboats and smaller craft traversing the waters of the Wabash. Now, however, the railroads do most of the transportation. Free schools were first instituted in 1854, but were seriously interrupted for several years by the adverse decisions of the supreme court. The high school, established in 1864, is the pride of the city. The property of the public schools now consists of five buildings, which, with their furniture and apparatus, are valued at fully $150,000. A fitting climax to the free educational facilities of La

Fayette was supplied by the donations and bequests of the Hon. John Purdue, one of her public-spirited citizens. By means of them Purdue University was founded and put into successful operation, and its total assets to-day amount to near $600,000. No serious conflagrations have ever visited the city; and with an admirable system of water-works in operation, and an efficient fire department, the probabilities of large fires occurring are reduced to a minimum. The business depression which swept over the country in 1873 did not reach La Fayette until two or three years later, and its effect passed sooner than in most other cities. Only one bank suspended payment, and but few failures in business occurred, and of these none were leading houses. In its people La Fayette is cosmopolitan, all the leading nations of Europe and some of Asia being represented. Of Europeans the great majority are Irish and Germans. Of immigrants from sister states, Ohio, Pennsylvania, and New York have contributed the greater part.

LA FAYETTE IN 1880.

The following statistical accounts, collected for the Census Office by W. H. Caulkins, esq., indicate the present condition of La Fayette:

LOCATION.

La Fayette lies in latitude 40° 25′ north, longitude 86° 52′ west from Greenwich, on the left bank of the Wabash river, at the head of steamboat navigation, and on the Wabash and Erie canal, no longer in use, about 66 miles northwest from Indianapolis. The average altitude above sea-level is 600 feet. The lowest portion of the city, lying along the line of the canal, is 506 feet above sea-level, 26 feet above the level of the river at low water, and 67 feet below the level of lake Erie. The highest point has an elevation of 682 feet above sea-level, 227 feet above low water in the river, and 109 feet above the level of lake Erie. The Wabash river is navigable about eight months in the year for boats drawing 3 feet of water, and by means of its communication is open to all points upon the Ohio and Mississippi rivers and their navigable tributaries.

RAILROAD COMMUNICATIONS.

La Fayette is touched by the following-named railroads:
The Cincinnati, Indianapolis, Saint Louis, and Chicago railroad, from Cincinnati to Chicago, Louisville.
The New Albany and Chicago railroad, from Michigan City to New Albany.
The Peoria division of the Wabash, Saint Louis, and Pacific railroad, from Toledo to Burlington.
The Lake Erie and Western railroad, from Fremont to Bloomington.

TRIBUTARY COUNTRY.

The country tributary to La Fayette is mainly agricultural, the staple crops being wheat and corn. To the west and northwest the country is well adapted to grazing, and thousands of cattle, sheep, and hogs are annually fattened for both home and foreign consumption. Much attention is paid to the improvement of stock. As a result the county has secured an enviable reputation for the amount and variety of its imported breeds of horses, cattle, sheep, and hogs. To the south and southeast extends the fertile *Wild Cat* prairie, while to the southwest lies the far-famed *Wea plain*, very fruitful, and the site of ancient Oiatenon, founded by the French *voyageurs*, contemporary with La Salle. Farther to the southwest, at a distance of 30 miles from the city, the northern extension of the coal and iron belt of the state is reached. This produces iron-ore of good quality and inexhaustible supplies of coking and block coal, the latter being the typical coal for the manufacture of iron and steel.

TOPOGRAPHY.

Geologically speaking, the district of country about La Fayette is thickly covered with glacial drift, consisting of clay, sand, gravel, and bowlders. This rests upon the upper series of the Subcarboniferous formation, the Genesee bituminous black shale appearing in the northeast corner of the county and the Carboniferous conglomerate in the southwest corner. The site of the city is partly in the trough of the Wabash valley and partly upon the sides and top of the high bluffs which form its rim. The lower town stands upon a bed of drift and rounded gravel, 170 feet thick, as shown by the *débris* from the bore of an artesian well which pierces it. The upper town is built upon a heavy deposit of bowlder clay, resting upon strata of sand and gravel, that are, in places, consolidated by percolations of iron-charged water. The best possible drainage is secured to the city by the rapid slope of its site and the porous nature of its underlying beds. From the top of the bluffs, back, the country is level or gently undulating, and is entirely free from marshes or ponds. For a radius of 5 miles the country is equally divided between timber and prairie, but at a greater distance it expands into wide reaches of country. The soil is generally a rich black or brown loam, from 1 to 4 feet thick, with a subsoil of clay, sand, or gravel.

CLIMATE.

Highest recorded summer temperature, 104°; highest summer temperature in average years, 99°. Lowest recorded winter temperature, —20°; lowest winter temperature in average years, —10°. These figures are taken from observations extending over 16 years. The prevailing winds are from the south and southwest, and tend to increase the humidity of the atmosphere, as well as to modify the extremes of heat and cold.

STREETS.

Total length, 69½ miles, of which one-half mile is paved with cobble-stones, 2½ miles with broken stone, 1 mile with wood, and 30 miles with gravel. The cost per square yard of each, as nearly as may be estimated, is: Broken stone, 75 cents; wood, $2 45; and gravel, 20 cents. Of sidewalks there are 30 miles of brick and 30 miles of gravel, with stone curbs; 1¼ mile of plank, and three-quarters of a mile of flag and concrete. There are 60 miles of gutters paved with bowlders. The principal residence streets are planted throughout their whole length with a continuous line of shade-trees on either side. The work of construction for many years past has been done by contract, and the repairs by day labor. The annual cost of the latter ranges from $10,000 to $12,000. There are 4 omnibuses in the city, with 16 horses and 6 men, carrying annually 75,000 passengers.

WATER-WORKS.

The water-works are owned by the city, and their total cost was $400,000. The water is taken from the Wabash river and pumped into a distributing reservoir, the pressure being 45 pounds to the square inch. The average amount pumped per diem is 900,000 gallons, the least being 800,000 and the greatest 1,000,000 gallons. The average cost of raising 1,000,000 gallons 1 foot high is 6$\frac{1}{25}$ cents. The yearly cost of maintenance, aside from the cost of pumping, is $4,000, and the yearly income from water-rates is $9,000. There are a few water-meters in use, and they have been found to diminish the consumption of water.

GAS.

The gas-works are owned by a private company. The daily average production is 48,000 cubic feet. The charge per 1,000 feet is $2 75. The city pays $37 yearly for each street-lamp, 342 in number.

PUBLIC BUILDINGS.

The only municipal buildings are 2 engine-houses, valued at $4,000 each.

PUBLIC PARKS AND PLEASURE-GROUNDS.

There are 3 parks in the city, with a total area of 83 acres. *Fairground Park*, area 70 acres, lies in the high table-land south of the city, and cost $20,000. It contains a spring of never-failing water, has a number of picturesque drives, and is covered with a fine growth of young timber. About 8,000 people visit this park annually—5,000 on foot, 1,000 in carriages, and 2,000 on horseback. *Summit Park* cost $4,000, and *Reservoir Park* $6,000. These two last named are controlled by the city council, and the larger one by the city council conjointly with the association owning it.

PLACES OF AMUSEMENT.

There is one theater in the city, the opera-house, built in 1872, at a cost of $75,000, and having a seating capacity of 2,500. It pays an annual license to the city of $50. In addition to this there are 2 halls, used for lectures, concerts, entertainments, etc.

No further information was furnished.

NEW ALBANY,

FLOYD COUNTY, INDIANA.

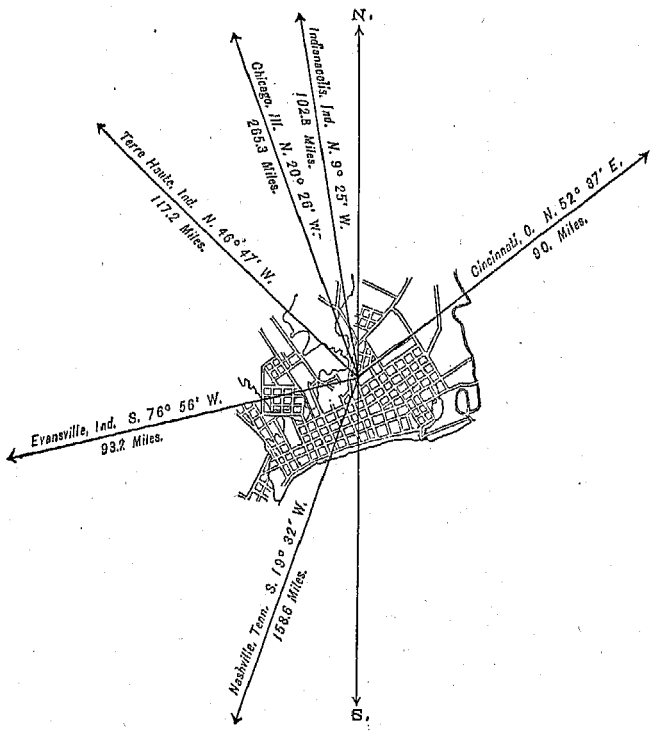
POPULATION

IN THE

AGGREGATE,

1830-1880.

	Inhab
1790	...
1800	.....
1810	.....
1820	.....
1830	2,079
1840	4,226
1850	8,181
1860	12,647
1870	15,396
1880	16,423



POPULATION

BY

SEX, NATIVITY, AND RACE,

AT

CENSUS OF 1880.

Male	7,833
Female	8,590
Native	14,011
Foreign-born	2,412
White	15,089
Colored	*1,343

*Including 6 Indians.

Latitude: 38° 19′ North; Longitude: 85° 51′ (west from Greenwich); **Altitude: 375 to 930 feet.**

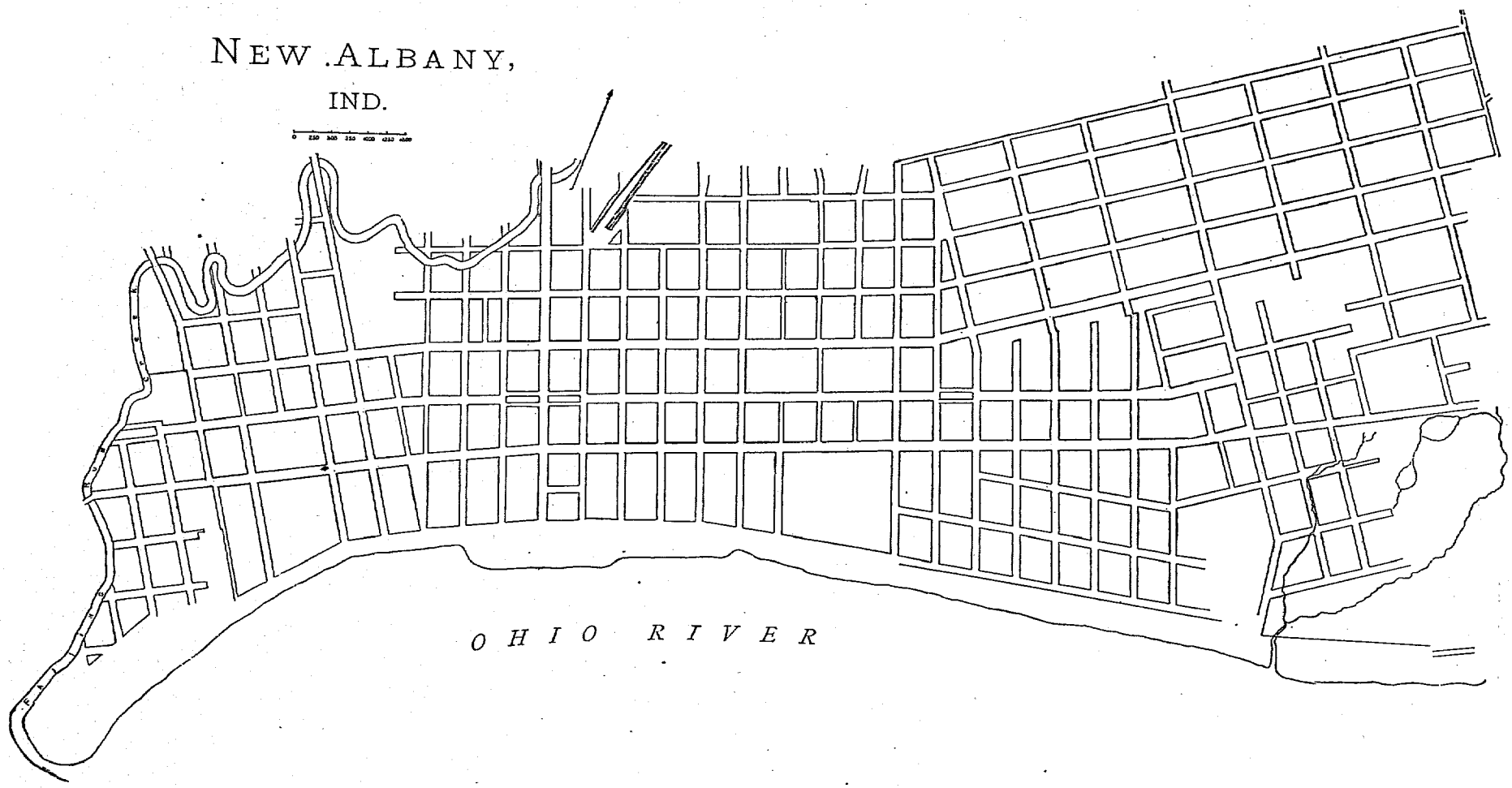
FINANCIAL CONDITION:

Total Valuation: $3,725,390; per capita: $227 00. Net Indebtedness: $358,482; per capita: $21 83. Tax per 100: $2 20.

HISTORICAL SKETCH.

The present site of New Albany was first settled November 12, 1814, and the place was incorporated as a town by act of assembly January 1, 1817. The early settlers were from the New England states and New York state, with some from England and Germany. Until 1830 the growth of the town was slow. New Albany became a city in 1839. The "general act of incorporation" was adopted by the city March 7, 1853. Boat-building was a very prominent industry, and some gunboats were built here during the civil war. Recently the English element of the population has rapidly increased, owing to the establishment of many large manufactories here employing English operatives. Glass-works of large capacity are among the present industries. No great fires have occurred to impede the onward march of the city. The trade and commerce are large, and the manufactories, driven by water-power afforded by the falls of the Ohio, are very extensive. New Albany is the capital of Floyd county.

The first school was opened in 1823. The liberal donation of a private individual, combined with public effort, had established a good system of public schools, but the adverse decisions of the supreme court made them irregular and finally closed them.


NEW ALBANY,
IND.
OHIO RIVER

For over a year, 1862–'63, the United States government leased some of the school-houses for hospital purposes, but in September, 1864, the law having been remodeled and the buildings refitted, the schools were reopened.

NEW ALBANY IN 1880.

The following statistical accounts, collected by the Census Office, indicate the present condition of New Albany:

LOCATION.

New Albany lies in latitude 38° 19′ north, longitude 85° 51′ west from Greenwich, on the right (north) bank of the Ohio river, opposite the lower end of Louisville, Kentucky, and about 2 miles below the foot of the falls of the Ohio. The altitudes of the city above mean sea-level are: At railroad station, 436 feet; at court-house, 448 feet; low-water mark in the Ohio river, 375 feet; and the "knob", northeast of the city, 930 feet. The draft of water in the Ohio river here averages 6 feet, the channel being half a mile wide and the current running 5 miles per hour. The harbor has a capacity for 40 steamboats and 100 barges.

RAILROAD COMMUNICATIONS.

New Albany is touched by the following-named railroad lines:
The Louisville, New Albany, and Chicago railroad, from Louisville to Chicago.
The Jeffersonville, Madison, and Indianapolis railroad, from New Albany to Indianapolis.
The Louisville, New Albany, and Saint Louis railroad, between Saint Louis and Louisville.
The Ohio and Mississippi railroad, from Cincinnati to Saint Louis.

TRIBUTARY COUNTRY.

The soil of the river-bottoms is a rich black loam, which is very productive. The upland soil is good, producing all the cereals and good fruits, of which latter quite a specialty is made. The adjoining country is thickly settled and highly cultivated, and abounds in mechanical industries, such as tanneries, flour-mills, smithies, agricultural-implement factories, and woolen-mills.

TOPOGRAPHY.

The surface of the site is generally level or gently rolling, with a range of hills on the west and north of from 500 to 550 feet above the city. Underlying the soil is a rock formation, part drift and part with underlying freestone. There are no near lakes or ponds. The natural drainage is good. About three-quarters of the adjoining territory has been cleared of its woods; the remainder is in isolated woodlands.

CLIMATE.

Highest recorded summer temperature, 106°; highest summer temperature in average years, 92°. Lowest recorded winter temperature, —10°; lowest winter temperature in average years, 20°. The hills near the city prove a shelter from the winds coming from the north and west, and are believed to cause a higher temperature. East winds are damp and south winds are considered healthful, while the winds from the west and northwest are pleasant in summer but cold in winter.

STREETS.

There are 66 miles of streets in the city, of which 27.3 miles are paved with Telford pavement, the cost of which was $6 per square yard, 1 mile being partially improved with sidewalks and gutters. The sidewalks are paved with brick laid in sand, under which are placed 2 inches of fine cinders. The gutters are made from 4 to 5 feet wide, having a limestone center 1 foot wide and 9 inches deep; the rest of the gutter is laid with limestone blocks on about 5 inches of clean gravel. Streets are constructed by contract, but repairs are made by day-labor. The annual cost of such work is between $7,000 and $8,000. A preference is expressed for day-work, as it is better, though more expensive. No steam stone-crusher or roller is used. There are 5 miles of horse-railroads, using 14 cars and 32 horses, and giving employment to 12 men. The rate of fare is 5 cents.

WATER-WORKS.

The water-works are owned by a private company, and cost $200,000. The pumping system is used, the pressure in the pipes being 85 pounds to the square inch. The average amount of water pumped per diem is 500,000 gallons, the greatest being 700,000 and the least 370,000 gallons. The average cost of raising 1,000,000

gallons 1 foot high is 4.53 cents. The annual cost of maintenance, aside from the cost of pumping, is $5,000, and the yearly income from water-rates is $10,000. A few water-meters are used, generally in manufacturing establishments, and are found to be in favor.

GAS.

The gas-works are not owned by the city. The daily average production is 30,000 cubic feet. The charge per 1,000 feet is $2 50. The city pays $18 per annum for each street-lamp, 431 in number.

PUBLIC BUILDINGS.

The city owns and occupies for municipal purposes the city hall, which covers the council-chamber, police court, and the offices of the city officials.

PUBLIC PARK.

The city had given it by the founders a spot of ground covering 2 acres. This has not been greatly improved, and is now a mere inclosure set with shade-trees and controlled by the city.

PLACES OF AMUSEMENT.

New Albany has one theater, the Opera-house, with a seating capacity of 1,200. It pays an annual license-fee to the city of $125. In addition, there is Turner's hall, size 50 by 120 feet, which is used for concerts, lectures, etc. There are no concert- and beer-gardens.

DRAINAGE.

The city has but one sewer, and this is about half a mile in length, and built of brick and stone. Only a few private drains enter it, most of the city's drainage running off through the street-gutters into Falling Run creek and then into the Ohio river. The only inlet-basin in connection with the work cost $250. The average cost of the manholes is $50. It is thought that the gutter-drainage (open) is better than sewers, owing to the topographical conformation. The fall is such as to move water rapidly, leaving but little *débris* or deposit.

CEMETERIES.

New Albany has connected with it 5 cemeteries, 2 public and 2 private, and the *National Soldiers' Cemetery*. The public cemeteries are as follows:

Northern Burying Ground (white), containing 40 acres of land, is laid out in regular system, handsomely decorated with trees and shrubbery, and has a lake or fish-pond.

Colored Cemetery, containing 6 acres.

The private cemeteries are: *German Catholic Cemetery*, containing 20 acres, and laid out in squares; and *Irish Catholic Cemetery*, of the same area, and also laid out in squares.

All these are either within or near the city limits. Aside from the National cemetery, which contains 3,200 bodies, the aggregate number of interments in these burial-grounds made during the past 30 years is 6,000, showing an average interment of 200 per year.

The city has complete control over the public cemeteries, but none over the private or church cemeteries. In the latter, lots are sold only to members of the church, who are required to conform to certain rules governing the grounds. No regular plan of ornamentation is followed, but the drives are excellent. Lots 12 by 12 feet sell at an average price of $10 each. The National cemetery is under the care of a superintendent, who is appointed by the Secretary of War. Of the total number of interments in this cemetery 1,000 are colored. By ordinance no burial is allowed to take place unless a permit is first obtained from the city clerk. Bodies may be placed in the vaults of the city cemeteries to remain for a period not exceeding three months.

MARKETS.

There are 2 public markets in the city, "Lower" and "Middle" market-houses. The two buildings are situated on adjoining squares, on Market, between Upper and Lower First streets. Each cost $10,000, and has 80 stalls for butchers inside, and the same number on the porches outside for hucksters. Each building is 250 feet long and 30 feet wide, with porches on either side, and each has a market-space 20 feet wide on both sides for farmers' and hucksters' wagons. The stalls rent for from $5 to $25 a year, according to position, etc. The markets are open from 4 a. m. to 12 noon, and on Saturdays from 6 to 10 p. m. in addition. It is estimated that the gross annual sales from the markets will amount to $1,000,000 per annum, about nine-tenths of the city's retail supply of meats, poultry, fish, and vegetables being sold from these markets.

SANITARY AUTHORITY—BOARD OF HEALTH.

The city council appoints the board of health, which consists of 3 physicians, and, except in time of an epidemic, controls it entirely. The members of the board receive no fixed salary, but are paid out of an appropriation made

for the purpose, according to the service rendered. During an epidemic the board may incur any expense and adopt any measures it may deem necessary, usually acting in conjunction with the mayor and council, by whom its actions, before they can become binding, must be approved. The president of the board is its chief executive officer. He may act without the whole board in time of emergency. The business of the board is transacted at meetings held irregularly. No assistant health officers or inspectors are employed. Inspections are made ordinarily only as nuisances are reported, but in case of epidemics more vigorous measures may be employed. When a nuisance is reported and declared such by the board, the city marshal gives official notice to the party concerned to abate the same. In cases of defective house-drainage, privy-vaults, cesspools, and sources of drinking-water, the city takes the matter in hand and issues notices through the city clerk, which are served by the marshal, for the correction of all defects. Failure to obey this notice subjects offenders to a heavy penalty. Defective sewerage and street-cleaning are treated as nuisances. The board exercises no control over the conservation and removal of garbage or the pollution of streams, except the same become nuisances.

INFECTIOUS DISEASES.

As a rule, small-pox patients are isolated, an "eruptive hospital" being provided for them some 3 miles from the city on the grounds of the county poor asylum. Sometimes, but not generally, scarlet-fever patients are isolated or quarantined at their homes. The board takes cognizance of the breaking out of contagious diseases in public and private schools, and may dismiss the same. Vaccination is compulsory, and, for the indigent only, is done at the public expense.

REGISTRATION AND REPORTS.

A register is kept of births and deaths, but not of diseases. Whenever called upon, the board reports to the city council, and its reports, together with the proceedings of the council, are published in the newspapers. The medical profession of New Albany cordially co-operate with the board.

MUNICIPAL CLEANSING.

Street-cleaning.—The work of street-cleaning is done by the city's force and entirely by hand. As far as possible the principal streets are cleaned once in every two weeks, and, as a rule, the work is done efficiently. The annual cost to the city is $8,000. The sweepings are used for filling.

Removal of garbage and ashes.—Garbage is removed both by the city and by householders. If the city removes it, it does so, when the quantity is great, at the expense of the householder. When ready for removal it is placed on the street or alley, and the street commissioner is notified. Ashes and garbage may be kept in the same vessel, and both are disposed of in the same manner as street-sweepings. The cost to the city for the service is included in the cost of street-cleaning. In a few cases it is thought that a nuisance or probable injury to health may result from the improper keeping or handling or disposal of the garbage; but, as a rule, the system is reported to work fairly and to be as good as could be had with the city's ability to pay.

Dead animals.—An officer is appointed by the city council whose duty it is to remove the carcasses of animals dying within the city. If available, the carcasses are used by the fertilizing factories; otherwise they are buried. About 300 animals are annually removed, at a cost of $300. The system is reported to be defective in that carcasses are frequently allowed to remain too long before removal.

Liquid household wastes.—As a rule, all liquid household wastes are disposed of together, being thrown into privy-vaults or cesspools, but very little going into the one sewer of the city and very little into the street-gutters. The cesspools are nominally water-tight, but there are no special regulations as to their cleansing. The street-gutters are frequently flushed. The opinion is expressed that wells of drinking-water in the thickly settled parts of the city are doubtless somewhat contaminated by the escape of the contents of vaults and cesspools.

Human excreta.—About 10 per cent. of the houses of the city have water-closets, one-third of which deliver into the sewer. The remaining houses depend on privy-vaults. Very few of these latter are nominally water-tight. All are dug down to sand or gravel, and lined, except on the bottom, with brick or stone. The average depth is 18 feet, and the contents are not allowed to come nearer the top than 4 feet. The dry-earth system is used only to a limited extent. Night-soil is disposed of to the fertilizing factories, which convert it into "bromophyte". It is not allowed to be used for manuring land within the gathering-ground of the public water-supply.

Manufacturing wastes.—The wastes from manufactories are run off by the sewer or by gutters to the streams. Sometimes, during long heated terms, the liquid wastes become noxious and unhealthful.

POLICE.

The police force of New Albany is appointed by the council, and governed by the police commissioners, consisting of the mayor and police committee of the council. The chief of police is the executive officer, being at the head of the force and responsible for its discharge of duty; his salary is $2 per day. The rest of the force consists of 12 patrolmen, 2 for each ward. The chief and 2 men comprise the day force, and the rest the night force.

The patrolmen also receive $2 per day each. The uniform is of blue cloth, the frock coat being trimmed with brass buttons. The men provide their own uniforms. The patrolmen are equipped with mace and revolver. Their hours of duty are from 6 a. m. to 7 p. m. and from 7 p. m. to 6 a. m., and 31 miles of street are patrolled.

During the past year 218 arrests were made, the principal causes for which were drunkenness and disorderly conduct. During the same time property to the value of $700 was reported to the police as either lost or stolen, and of this amount $400 was recovered and returned to the owners. During the year there were 121 station-house lodgers, to whom 40 free meals were furnished, as against 136 in 1879. The police force is required to co-operate with the fire department in keeping the streets clear and guarding property at fires, and it may also enforce the orders of the board of health. Special policemen are appointed by the mayor for elections, etc. The yearly cost of the police force (1880) is $8,760.

RICHMOND,

WAYNE COUNTY, INDIANA.

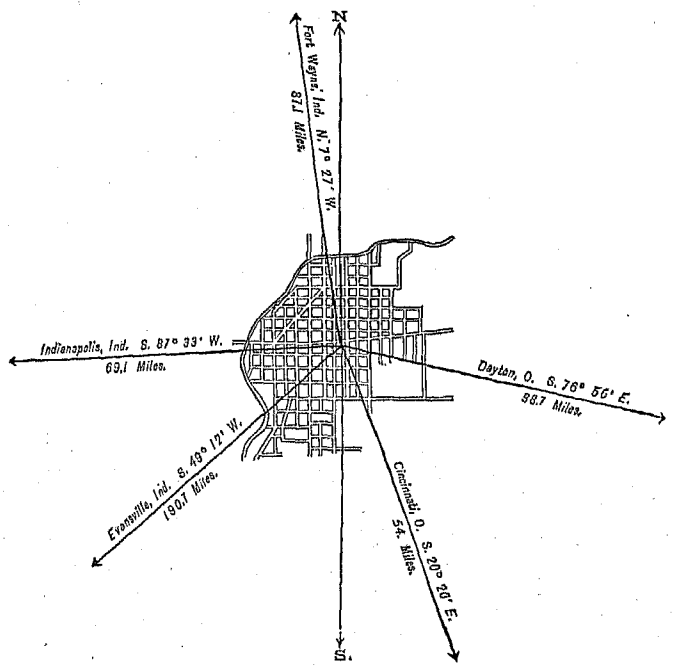
POPULATION

IN THE

AGGREGATE,

1840-1880.

	Inhab.
1790	.....
1800	.....
1810	.....
1820	.....
1830	.....
1840	2,070
1850	1,443
1860	6,603
1870	9,445
1880	12,742



POPULATION

BY

SEX, NATIVITY, AND RACE,

AT

CENSUS OF 1880.

Male	6,217
Female	6,525
Native	10,956
Foreign-born	1,786
White	12,104
Colored	*638

* Including 2 Chinese.

Latitude: 39° 41′ North; Longitude: 84° 51′ (west from Greenwich); **Altitude: 580 to 707 feet.**

FINANCIAL CONDITION:

Total Valuation: $7,785,350; per capita: $611 00. Net Indebtedness: $167,000; per capita: $13 11. Tax per $100: $1 84.

HISTORICAL SKETCH.

The land on which the city of Richmond now stands was originally included in the lands belonging to John Smith and Jeremiah Cox, and though it was settled as early as 1803 the place had no corporate existence until 1818. Wayne county was organized in 1810, and in 1816 Smith laid out into town lots the land along Front and Pearl streets, south of Main, the lots being "5 poles wide and 8 poles back". An acre, called the "Public Square", was reserved by Smith for such public uses as he should think proper. Agreeably to an act of the legislature, the citizens met September 1, 1818, and unanimously declared themselves in favor of the incorporation of the town, 24 votes being polled. The town was located on the National road, furnishing an outlet for its products and for direct intercourse with other towns. The Wayne County turnpike was incorporated in 1850, and several others were completed during the next few years. Railroad communication was opened with Cincinnati, via Dayton, in 1853, and later in the same year via Eaton. Richmond has been noted for its manufactures, from its foundation to the

present time, the principal industries being the making of caskets and burial-cases, thrashing-machines, engines, saw-mills, mill machinery, school- and church-furniture, cigars, galvanized iron, etc. The early settlers were mostly from North Carolina and Virginia, and belonged to the society of Friends, a Quaker meeting-house having been erected as early as 1807. The progress has been uniform and steady, and the city has never suffered much from financial depression.

RICHMOND IN 1880.

The following statistical accounts, collected by the Census Office, indicate the present condition of Richmond:

LOCATION.

Richmond lies in latitude 39° 41′ north, longitude 84° 51′ west from Greenwich, on the left bank of the Whitewater river, which is not here navigable, 4 miles from the eastern border of the state, and about 68 miles east of Indianapolis. The altitudes above mean sea-level are, average, 625 feet, lowest point 580 and highest point 707 feet.

RAILROAD COMMUNICATIONS.

Richmond is touched by the following-named railroads:
The Grand Rapids and Indianapolis railroad, to Petoskey, Michigan.
The Cincinnati, Richmond, and Chicago railroad, to Hamilton, and from there to Cincinnati and Chicago.
The Pittsburgh, Cincinnati, and Saint Louis railroad, between the points named.

TRIBUTARY COUNTRY.

The country immediately tributary to the city is agricultural, producing wheat, corn, oats, rye, barley, flax, potatoes, tobacco, hay, orchard- and small-fruits, etc. Horses, cattle, mules, sheep, hogs, etc., are raised to a considerable extent, and the amount of dairy products is large.

TOPOGRAPHY.

The underlying rock is the Lower Silurian limestone, cropping out on the west and north of the city, overlaid with gravel and clay. The surface soil is not deep within the city limits. The Whitewater river has here cut for itself a regular cañon, the banks being composed of from 100 to 110 feet of Hudson River rocks, that in places form almost vertical mural shores to the stream. The Pan Handle Railroad bridge spans this stream across a narrow part of its cañon. The differences in level in various parts of the city are considerable, and the natural drainage is good. The site of the city is 60 feet below the surrounding country, which is open, with a few wooded spaces remaining uncleared. The soil of the surrounding country is a sandy loam and clay.

CLIMATE.

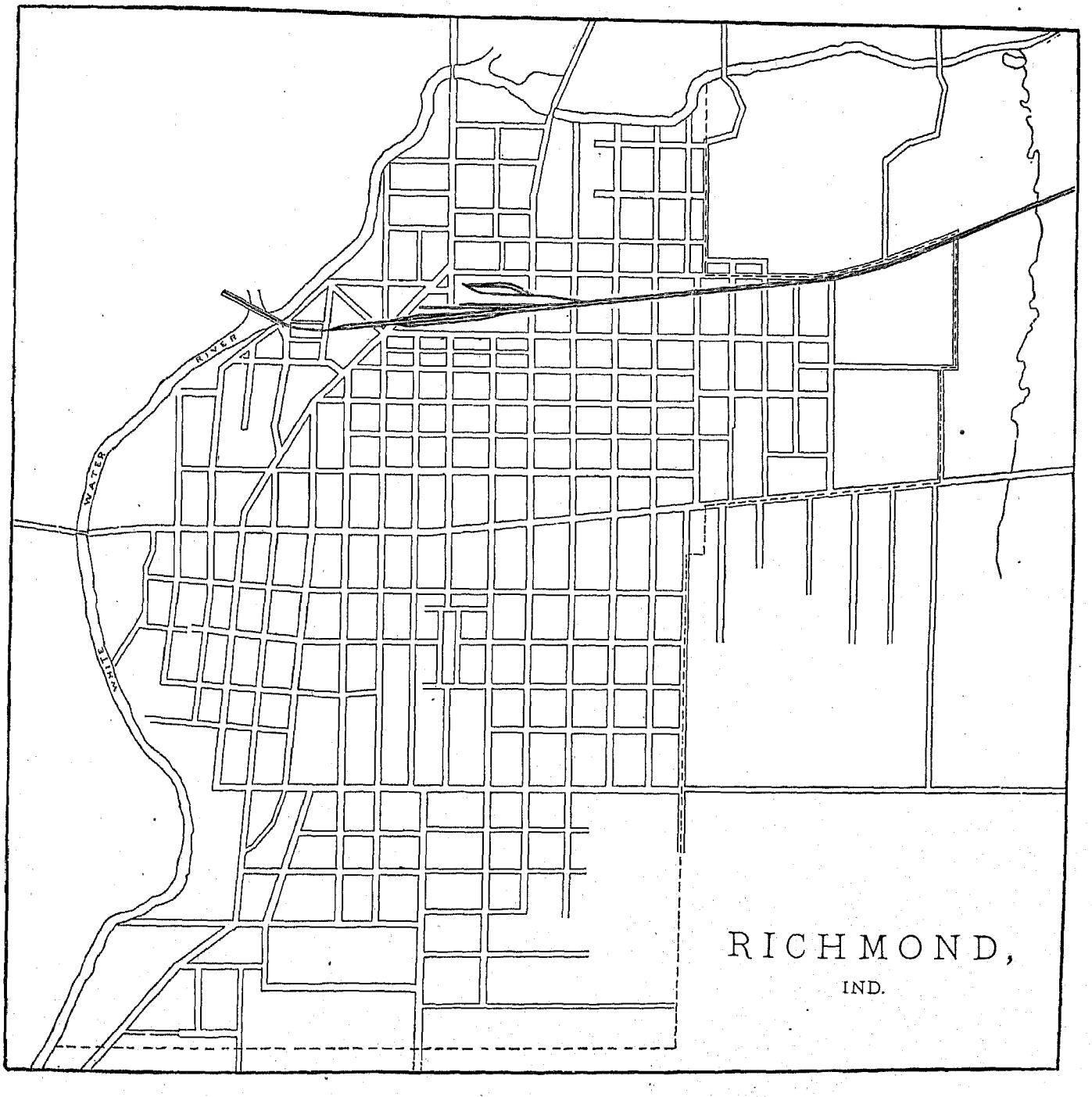
Highest recorded summer temperature, 106°; highest summer temperature in average years, 98°. The lowest recorded winter temperature is not stated, but the lowest winter temperature in average years is said to be about —20°. The prevailing winds are from the west, northeast, and southwest, according to the season of the year.

STREETS.

Total length, 39.6 miles, paved as follows: One-quarter of a mile with cobble-stones, 22¼ miles with gravel, and the remainder unpaved. The cost per square yard of each, as nearly as it may be estimated, is, for cobble-stones, including the necessary grading and gravel-bed, 50 cents, and for gravel, about 35 cents. The former are kept in repair at the cost of 2 mills per square yard annually, and the latter at 4¼ mills per square yard annually. The facility with which each is kept clean is about the same, but the cobble-stones are preferred for quality and permanent economy. The sidewalks are principally of hard-burnt bricks, laid flat on a bed of gravel and sand 8 inches deep; some few are of flagstones, laid in the same way; and the remainder are of gravel, 10 inches in depth. The gutters are paved to a width of 6 feet with good smooth cobble-stones; in some instances three or four bricks are laid on edge next the curb. Each individual owner of property is permitted to plant shade-trees on sidewalks, near the curb-line. There is usually about 2 feet left for a grass-plot in a 12-foot walk, and the trees are planted in the center of the plot. The construction of streets is done by contract, and for the past four years about $4,000 have been expended annually.

HORSE-RAILROADS, ETC.

There are 3 miles of horse-railroads in the city, with 7 cars and 19 horses, and giving employment to 7 men. The rate of fare within the city limits is 5 cents. One omnibus, with 4 horses and employing 2 men, annually carries about 9,000 passengers, at the uniform rate of fare of 25 cents. There are no water-works.


WHITE WATER RIVER
RICHMOND,
IND.

GAS.

The gas-works are owned by a private company. The daily average production is 35,000 cubic feet. The charge per 1,000 feet is $2 50. The city pays $25 68 per annum each for street-lamps, 196 in number.

PUBLIC BUILDINGS.

The city owns and occupies for municipal purposes one building containing the city offices and the city prison. Its total cost was $10,000. There is no city hall.

PUBLIC PARKS AND PLEASURE-GROUNDS.

There are none in the city.

PLACES OF AMUSEMENT.

There are two theaters in the city, with an aggregate seating capacity of 1,200. They pay no license, but all exhibitions pay a license of $5 per day to the city. In addition to the theaters there are four halls used for lectures, concerts, etc. There are no concert- and beer-gardens.

DRAINAGE.

There are no sewers in Richmond.

CEMETERIES.

There are 7 cemeteries in and connected with the city, as follows:
Maple Grove Cemetery, area 20 acres, situated in the easterly part of the city between Main and North D streets.
Earlham Cemetery, area 50 acres, is situated outside the city limits, one-half mile west of the river.
Lutheran Cemetery, area 10 acres, is 1 mile south of the city.
Saint Andrew's Cemetery, Catholic, area 3 acres, is one-quarter of a mile south of the city.
Old Catholic Cemetery, area one-eighth of an acre, is situated on South Fifth street near Liberty avenue.
City Cemetery, area one-quarter of an acre, is situated on South Seventh street, corner of South E street.
Quaker Cemetery, area 16 acres, on North Tenth street between F and H streets.
Burials are made on permits issued by the board of health on physicians' certificates of death.

MARKETS.

There are no public or corporation markets in the city.

SANITARY AUTHORITY—BOARD OF HEALTH.

The chief sanitary authority of Richmond is the board of health, an independent organization, composed of three members, two of whom are physicians, appointed annually by the city council. The salaries of the members are designated by the council, being at present $100 per annum for the president, and $50 per annum for each of the members. In ordinary times the expenses are $200 for salaries, but the board can employ inspectors if necessary. In case of an epidemic there is no limit to the expenses the board may incur. In absence of any declared epidemic the board has authority to exercise general supervision over the health of the city. After proclamation by the mayor that an epidemic exists the board has power to take all steps and use all measures necessary to avoid suffering, or to mitigate such disease, supplying such officers and agents and providing such hospitals as it may deem fit. The president is the chief executive officer, and is *ex officio* the health officer of the city. Meetings of the board are held only when business of importance is to be transacted. Complaints to any member of the board are referred to the president, and a record is kept of the action taken. Inspections are made in all parts of the city at least once a year, or oftener if ordered by the city council, and special inspections are made on complaints. When nuisances are found to exist, the city marshal is directed to abate them. All defective house-drainage, privy-vaults, cesspools, or sources of drinking-water are inspected and corrected. In case of defective street-cleaning, recommendations for correction are made to the city council, this being the mode of procedure prescribed by law; but during an epidemic, the board having unlimited authority, orders for correction are given. By custom (not by law) the board has entire control over the conservation and removal of garbage. Physicians are required to report all deaths to the board, and, when the reports are satisfactory, permits for burial are issued, the undertakers being required to report all interments. No body is allowed to be removed from the city except by permission of the board. There are no regulations regarding the pollution of streams.

INFECTIOUS DISEASES.

Small-pox patients are either isolated at home, the house being strictly quarantined, or removed to the pest-house, which is situated about 1½ mile outside the city limits. Scarlet-fever patients are quarantined at home in some cases, the board having full discretion in the matter. The board has full authority in the case of the

breaking out of a contagious disease in either public or private schools, and can exclude pupils or close the schools, as it may deem necessary. Vaccination is compulsory only when ordered by the board, and at such times is done at the public expense.

REGISTRATION.

All births, diseases, and deaths must be reported to the board, and a complete record of the same is kept. In case of births, the date, sex, age, residence, color, and nativity of parents are required; and, in case of death, a statement is required giving residence, age, sex, nativity, duration of disease, cause of death, and name of physician or other attendant.

REPORTS.

The board reports annually to the city council, and its report is published with the regular city documents in pamphlet form.

MUNICIPAL CLEANSING.

Street-cleaning.—The streets are cleaned at the expense of the city and with its regular force. The work is done wholly by hand. There is one general cleaning in the spring, and after that as often as it becomes necessary. The work is reported as well done. The annual cost to the city averages $1,500, and the sweepings are either sold or spread on low lots.

Removal of ashes and garbage.—During the summer months the garbage is removed by the city, and during the remainder of the year it is removed by the householders. It is required to be kept in tight covered vessels, unmixed with ashes, and in a place convenient for removal by the gatherers, who must collect the same at least once in three days. It is hauled outside the city and fed to hogs. The ashes are gathered by the city and disposed of in the same way as street-sweepings. The annual cost to the city for this service is $150 for garbage and $200 for ashes. The cost to private parties was not stated. The removal of garbage being superintended by the board of health, no nuisance or injury to health is reported to occur.

Dead animals.—The carcass of any animal dying within the city limits is required to be taken outside and buried on the city farm. This work is done by the owners of the animals.

Liquid household wastes.—The majority of the liquid household wastes are run into the street-gutters, a portion only being thrown into vaults or cesspools. The latter are porous, have no overflow, do not receive the wastes from water-closets, and are cleaned in the same manner as vaults. The gutters depend on rain for flushing, but, as the grades are good, the accumulated filth is carried into the river. The board of health, in its annual report for the past year, says that the water used for domestic purposes is "seriously contaminated", and supports its statement by analysis.

Human excreta.—The hotels are provided with water-closets that empty into vaults, but nearly all the houses in the city depend on privy-vaults. The vaults are required by ordinance to be water-tight, but very few really are so. They are emptied by regular licensed scavengers, one odorless excavator and three carts with buckets being used for the purpose. The "excavator" gives general satisfaction, but the use of the bucket-and-cart process is very objectionable. The night-soil is either used as manure on farms, 3 miles from the city, or buried in pits dug for the purpose on the city farm.

POLICE.

The police force is appointed and governed by the police board, consisting of the mayor and 2 councilmen. The chief of police is the executive officer, has full charge of the force, and governs it in accordance with rules and regulations making the usual provisions; his salary is $65 per month. The remainder of the force consists of 8 police officers, all of equal grade, at $60 per month each. The uniform consists of a dark-blue frock-coat with police buttons, dark-blue trousers, and blue police cap with metal wreath and number in front. Overcoats are of dark-blue cloth, double-breasted. The men provide their own uniforms. The patrolmen are equipped with maces and revolvers. Their hours of duty are from 6 a. m. to 6 p. m. and from 6 p. m. to 6 a. m., and they patrol all the streets of the city. During the past year 694 arrests were made, the principal causes being, assault and battery, 63; disorderly, 51; drunk, 324; drunk and disorderly, 20; larceny, 25; selling liquors unlawfully, 24; vagrancy, 76, etc. Most of these were fined, and those who could not pay their fines worked them out on the streets. The number of station-house lodgers during the same time was 142, as against 320 in 1879. No free meals were furnished to the lodgers. The police force is required to co-operate with the fire department when ordered by the chief of police, the chief engineer, or the mayor. Special policemen are appointed by the board to guard private property. They are under the orders of the chief of police, but receive no pay from the city. During the year one policeman was crippled for life, by a rowdy, while in discharge of his duty. The yearly cost of the police force (1880) is $6,566.

FIRE DEPARTMENT.

The force of the Richmond fire department consists of 22 men, viz, 9 who are permanently employed, 12 minute-men, and 1 chief engineer. The apparatus consists of 2 steam fire-engines, 1 hook-and-ladder truck, 3 two-wheeled hose-carts, and 2,800 feet of hose, 1,000 feet of which, though not reliable, can be used in case of necessity. There are 8 horses belonging to the department, 7 of which are in service. There is a fire-alarm telegraph, with 27 street signal-boxes. Water for fire purposes is taken from 50 wells and cisterns, some of them being small. During the year there were 27 alarms, 4 of which were false, 18 not requiring the throwing of water, and 9 were for fires needing the engines to work. The value of the property exposed was $231,000; property destroyed, $550, on which there was paid $525 insurance; property destroyed on which there was no insurance, $25; and the total amount on the property exposed was $68,775.

SOUTH BEND,

SAINT JOSEPH COUNTY, INDIANA.

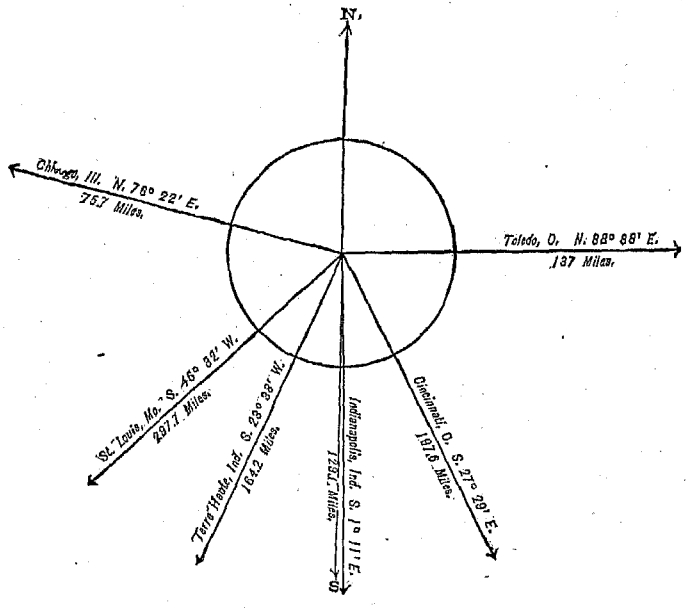
POPULATION

IN THE

AGGREGATE,

1850-1880.

	Inhab.
1790	.....
1800	.....
1810	.....
1820	.....
1830	.....
1840	.....
1850	1,652
1860	3,803
1870	7,206
1880	13,280



POPULATION

BY

SEX, NATIVITY, AND RACE

AT

CENSUS OF 1880.

Male	6,825
Female	6,455
Native	9,854
Foreign-born	3,426
White	13,066
Colored	214

Latitude: 41° 39′ North; Longitude: 86° 12′ (west form Greenwich); **Altitude: 729 feet.**

FINANCIAL CONDITION:

Total Valuation: $4,809,005; per capita: $362 00. Net Indebtedness: $316,975; per capita: $23 87. Tax per $100: $1 89.

SOUTH BEND.

South Bend is situated in Saint Joseph county, in the extreme northerly part of the state, not far from the Michigan state line. The river Saint Joseph, on which the city lies, was at one time navigable for steamboats and barges from its mouth, on lake Michigan, to South Bend, but since 1867 several dams have been built across the river, and navigation has been suspended. The altitude of the city, taken at the track of the Michigan Central railroad, is 156 feet above lake Erie, or 729 feet above mean sea-level. South Bend is touched by the following railroads: The Chicago and Grand Trunk railroad, from Chicago to Port Huron; the Lake Shore and Michigan Southern railroad, from Chicago to Buffalo; and the Niles branch of the Michigan Central railroad, between Chicago and Detroit. The great Kankakee swamp begins about 1½ mile southwest of the city, and covers several square miles of territory. The rest of the country tributary to the city is remarkable for its fertility, beauty, and wealth.

South Bend is a manufacturing place, producing largely and giving employment to many operatives. Some of the larger industries are the making of sewing-machines, 3 wagon-factories, 2 paper-mills, 2 woolen factories, 2 plow factories, 1 clover-huller factory, flouring-mills, etc.

The first white settler at South Bend was Alexis Coquillard, who came in the spring of 1824, and he was followed by Lathrop M. Taylor, who came in September, 1827. Both these men were Indian traders, and together they laid out the town. The original population was composed mostly of immigrants from New England, New York, Pennsylvania, and Virginia, and, though of late years many Poles and Germans have settled here, their descendants still form the major part of the population.

It is to be regretted that no information was furnished from which a report of the "present condition" of South Bend could be prepared.

TERRE HAUTE,

VIGO COUNTY, INDIANA.

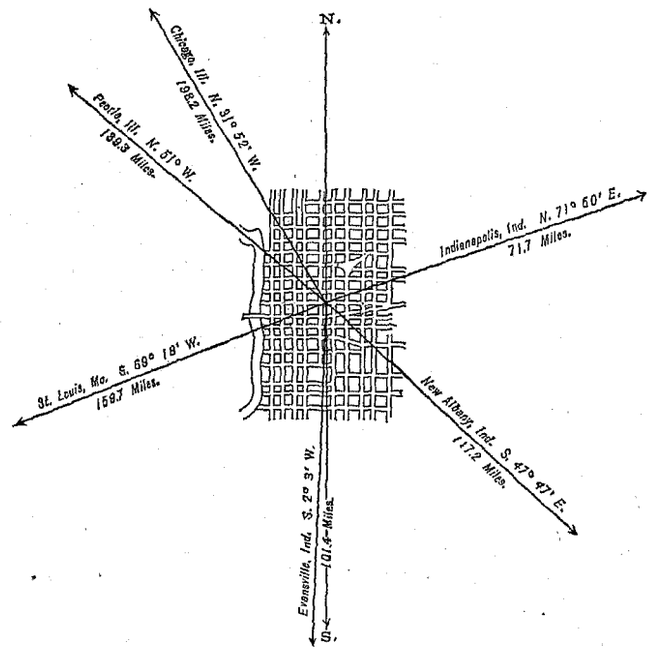
POPULATION

IN THE

AGGREGATE,

1850-1880

1790	.....
1800	.....
1810	.....
1820	.....
1830	.....
1840	.....
1850	4,051
1860	8,594
1870	16,103
1880	26,042



POPULATION

BY

SEX, NATIVITY, AND RACE,

AT

CENSUS OF 1880.

Male	13,128
Female	12,914
Native	22,050
Foreign-born	3,992
White	25,276
Colored	*766

* Including 2 Chinese and 1 Indian.

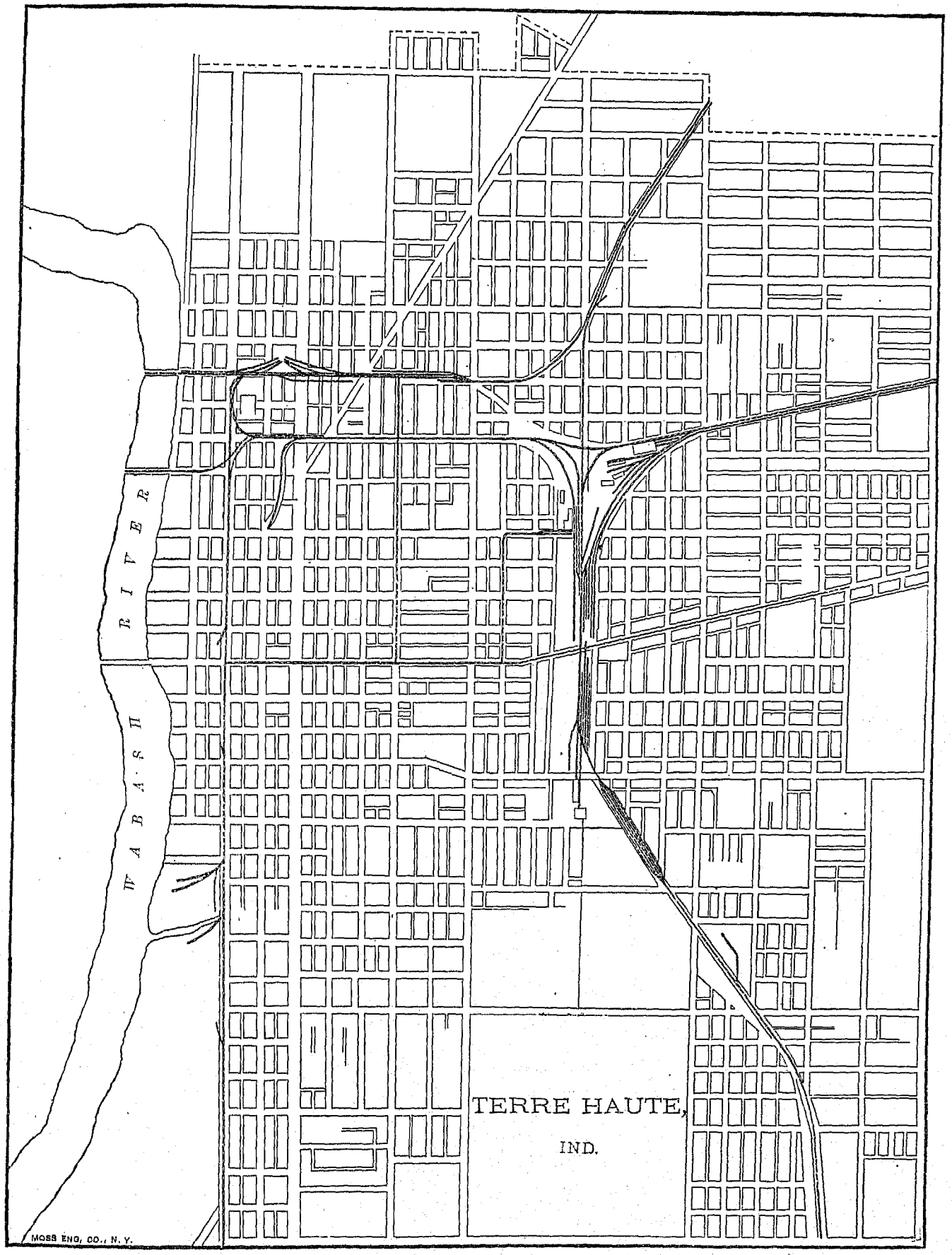
Latitude: 39° 28′ North; Longitude: 87° 26′ (west from Greenwich); **Altitude: 647 feet.**

FINANCIAL CONDITION:

Total Valuation: $13,562,625; per capita: $521 00. Net Indebtedness: $267,224; per capita: $10 26. Tax per $100: $1 81.

TERRE HAUTE IN 1880.

Terre Haute, capital of Vigo county, is situated on the west border of Harrison prairie, a long, narrow area of gently rolling prairie land in the western portion of the state, and on the east bank of the Wabash river, in latitude 39° 28′ north, longitude 87° 26′ west from Greenwich, about 70 miles southwest of Indianapolis. The bank on which the city is built is 60 feet above the river, and the altitude above mean sea-level, as taken on the railroad-track at the station of the Vandalia line, is 647 feet. The Wabash river is navigable here during the high stage of water, while the Wabash and Erie canal gives water communication with lake Erie. The plan of the city is rectangular, and the streets are wide and bordered with numerous shade-trees. In Vigo and the adjoining counties a good quality of block-coal is found, which has stimulated manufactures of different kinds in Terre Haute. The city is also a center of trade for the surrounding country, and is one of the most important shipping points of the Wabash and Erie canal. Terre Haute has gas- and water-works, and all the metropolitan conveniences. The


WABASH RIVER
TERRE HAUTE,
IND.
MOSS ENG. CO., N. Y.

Chicago and East Illinois, the Evansville and Terre Haute, the Illinois Midland, the Indianapolis and Saint Louis, the Terre Haute and Southeastern, and the Vandalia Line railroads pass through the city, and, with their several connections, afford ample communication with all railroad points in the country.

Public schools were opened in Terre Haute in 1853, but in 1854 they were interrupted for want of funds until a reorganization, dating from 1860. The schools now have a good degree of general efficiency.

The collection of social statistics for Terre Haute has been attended with but indifferent success, but what has been obtained is given below, that the city may not be wholly unrepresented.

DRAINAGE.

Formerly the drainage of the city was almost entirely surface, a few short drains near the river aiding the gutters to dispose of the surface water. Now sewers are built according to a regular plan, and the short drains are either taken up or incorporated with the system. The average cost of each inlet basin and its connection with the sewers is $80, and the average cost of each manhole, the average depth being 15 feet, is $30. Sewers are ventilated at the manholes only. Inverted blocks for subsoil drainage are not used. The sewers deliver into the Wabash river, the mouths being fully exposed; but their bottoms are built on a line with the low-water mark of the river. The sewers are reported as self-cleansing, the removal of deposits by hand or artificial flushing not being required. The cost of the main lines is paid by the city from the general tax fund, while the cost of lateral sewers is paid by abutters, the assessment being made by the front foot. All work on the sewers, making connections, etc., is under the supervision of the civil engineer, and a city ordinance provides that all houses connected with the sewers must have good fixtures. An ordinance also forbids the introduction of any substance into the sewers that would tend to obstruct the same. The contract price for work on sewers during the past year was from $3 60 to $4 per foot.

CEMETERIES.

Terre Haute has a public cemetery, area 80 acres, which is the property of the city, and under the charge of the public sexton, an officer appointed by the city council. About 5,000 interments have been made in this cemetery. The sexton has charge of all interments and keeps a record of the same. Graves are dug 4 feet deep for persons under ten years of age, and 5 feet for persons over ten years. Lots are sold by the city clerk, the prices ranging from $2 50 upward, according to size and location. No burials are allowed anywhere in the city except in this cemetery.

MARKETS.

There are 2 public markets in the city—one costing $8,000, which is no longer used, and the other, corner of Fourth and Ohio streets, costing $30,000. This latter has an area of 60 by 100 feet, with a street area for wagons of 120 by 300 feet, and has 20 stalls. The stalls rent for $4 and $8 per month, about half at each rate, and the total rentals amount to $400. The market is open on Tuesdays, Thursdays, and Saturdays, the hours being from 4 to 9 a. m. from April to October, and from 5 to 9 a. m. from October to April. The gross annual sales from the stalls are estimated at $30,000. The private stores in the city sell ten times as much as is sold at the market. The market is under charge of a market-master, appointed by the city council, who gives bonds for the proper performance of his duties.

SANITARY AUTHORITY—BOARD OF HEALTH.

The chief health organization of Terre Haute is vested in a board of health, composed of three members, all of whom are physicians, appointed and controlled by the city council. In ordinary times the annual expense of the board is $1,250, for examining the city, declaring nuisances, issuing orders, etc. During an epidemic the expenses are governed by the city council. In absence of an epidemic the authority of the board is confined simply to defining nuisances, while during epidemics it makes proper regulations to check and control the disease. Each member of the board acts as health officer for one month at a time. There are 2 sanitary policemen, who have police powers. The board meets monthly, or oftener if necessary. Inspections are made in all parts of the city regularly, and also as nuisances are reported. When a nuisance is discovered or reported it is ordered abated within a certain time, and if the order is not complied with the parties who are responsible are prosecuted before the mayor. All defective house-drainage, privy-vaults, cesspools, and sources of drinking-water are corrected. The board exercises full control over the conservation and removal of garbage. Small-pox patients are either quarantined at home or removed to the city hospital, situated on the northwest part of the city. Scarlet-fever patients are generally isolated at home. The board takes cognizance of the breaking out of diseases of a contagious nature in either public or private schools, and, if possible, controls the same. Vaccination is neither compulsory nor is it done at the public expense. There is no system of registration of births, diseases, or deaths. The board reports monthly to the common council.

MUNICIPAL CLEANSING.

Street-cleaning.—The streets are cleaned at the expense of the city and with its own force, wholly by hand. The cleaning is done quarterly, and is reported as thoroughly done. The annual cost is $4,000, and the sweepings are deposited outside the city limits.

Removal of garbage and ashes.—Ashes and garbage are removed by the city, under contract, at an annual cost of $5,000. Garbage is required to be removed, in water-tight barrels or boxes, to a place outside the city limits, designated by the board of health. Ashes are not allowed to be kept in the same vessel with the garbage, and they are hauled outside the city.

Dead animals.—Dead animals are removed by contractors, who take the hide and render the balance of the carcass.

Liquid household wastes.—A small portion of the liquid household wastes are run into the public sewers, while the majority are thrown into vaults and cesspools. No wastes are allowed to run into the street-gutters. The cesspools are generally porous, have no overflows, sometimes receive the wastes from water-closets, and are cleaned out in the same manner as privy-vaults.

Human excreta.—About 10 per cent. of the houses have water-closets, nearly all of which deliver into the sewers, while the remainder depend on privy-vaults. The vaults are required to be 10 feet deep, and walled with either brick or stone. None of them are even nominally water-tight. They are emptied by the odorless-excavator process, under direction of the board of health, and the night-soil is dumped into the river below the city limits, none of it being used as manure within the gathering-ground of the public water-supply. Manufacturing wastes are disposed of in the same manner.

POLICE.

The police force of Terre Haute is appointed and governed by the police board, an organization of which the mayor is chairman. The chief of police, salary $950 per annum, is the executive officer, and has direct command of the force. The remainder of the force consists of 1 captain at $2 20 per day, and 30 patrolmen at $2 per day each. The uniform is a dark-blue sack coat with brass buttons, and the men provide their own, at a cost of $35 each. The patrolmen are equipped with common wooden clubs covered with leather. The night hours of duty are from 7 p. m. to 6.30 a. m., and the beats are so arranged as to give 71 squares to every 2 patrolmen. During the past year there were 1,521 arrests made, the principal causes being drunkenness, disorderly conduct, larceny, suspicious, etc. They were disposed of either by fines or by imprisonment in the penitentiary. The total amount of property lost or stolen in the year was $1,987 75, and of this, $1,224 10 was recovered and $1,200 returned to the owners. There were 172 station-house lodgers during the year, and meals, costing from 12½ to 15 cents each, were furnished them. The force is required to assist the fire department at all fires. Special policemen, to act as watchmen over private property, are appointed, but they have no connection with the regular force. The yearly cost of the police force (1880) is $9,785.

MANUFACTURES.

The following is a summary of the statistics of the manufactures of Terre Haute for 1880, being taken from tables prepared for the Tenth Census by Joseph B. Gaddes, special agent:

Mechanical and manufacturing industries.	No. of establishments.	Capital.	Average number of hands employed.			Total amount paid in wages during the year.	Value of materials.	Value of products.
			Males above 16 years.	Females above 15 years.	Children and youths.			
All industries	224	$2,566,750	3,090	144	142	$1,406,352	$6,743,719	$9,185,246
Blacksmithing (see also Wheelwrighting)	10	9,900	30	.....	1	9,110	13,183	35,805
Boots and shoes, including custom work and repairing	30	17,725	41	.....	1	13,675	23,045	59,127
Brick and tile	9	35,200	116	.....	6	21,100	21,125	51,975
Carpentering	25	45,000	132	.....	1	52,245	133,005	235,400
Carriages and wagons (see also Wheelwrighting)	4	40,000	65	.....	1	30,250	58,500	105,000
Confectionery	3	14,000	26	.....	6	9,400	36,050	52,700
Cooperage	8	35,800	195	.....	.....	65,760	146,150	230,000
Flouring- and grist-mill products	9	583,500	172	.....	.....	70,152	2,708,895	2,908,557
Foundery and machine-shop products	6	122,000	141	.....	14	66,863	109,100	210,500
Iron and steel	3	355,000	495	.....	50	337,925	788,390	1,221,908
Lumber, sawed	5	181,000	146	.....	13	50,500	187,800	290,320
Marble and stone work	6	19,500	42	.....	.....	12,584	21,775	52,570
Masonry, brick and stone	5	4,800	56	.....	.....	19,040	29,700	56,550
Painting and paperhanging	9	4,025	41	.....	.....	9,370	15,500	35,658
Plumbing and gasfitting	4	13,600	6	.....	.....	4,450	9,500	23,020

Mechanical and manufacturing industries.	No. of establishments.	Capital.	AVERAGE NUMBER OF HANDS EMPLOYED.			Total amount paid in wages during the year.	Value of materials.	Value of products.
			Males above 16 years.	Females above 15 years.	Children and youths.			
Printing and publishing	8	$37,000	75	6	21	$42,380	$23,620	$86,700
Pumps, not including steam pumps	4	7,200	16	.....	1	5,000	6,880	18,500
Saddlery and harness	8	30,900	40	.....	1	17,052	40,541	69,340
Tinware, copperware, and sheet-iron ware	10	66,100	65	.....	.....	24,300	108,000	171,700
Tobacco, cigars and cigarettes	14	29,000	103	.....	5	40,500	38,640	106,397
Watch and clock repairing	5	12,700	13	.....	1	6,200	3,900	10,000
Wheelwrighting (see also Blacksmithing; Carriages and wagons)	3	400	.....	.....	.....	.....	615	2,065
All other industries (*a*)	36	902,400	1,074	138	20	498,496	2,219,405	3,142,394

a Embracing boxes, cigar; brass castings; brooms and brushes; carpets, rag; carriage and wagon materials; cars, railroad, street, and repairs; clothing, men's; coffee and spices, roasted and ground; coppersmithing; files; furniture; hones and whetstones; iron rails and spikes, cut and wrought; liquors, distilled; liquors, malt; lock- and gun-smithing; looking-glass and picture frames; lumber, planed; mattresses and spring beds; mineral and soda waters; musical instruments and materials (not specified); scales and balances; shirts; slaughtering and meat-packing; stencils and brands; and woolen goods.

From the foregoing table it appears that the average capital of all establishments is $11,458 71; that the average wages of all hands employed is $416 73 per annum; and that the average outlay in wages, in materials, and in interest (at 6 per cent.) on capital employed is $37,071 77.

ILLINOIS.

AURORA,

KANE COUNTY, ILLINOIS.

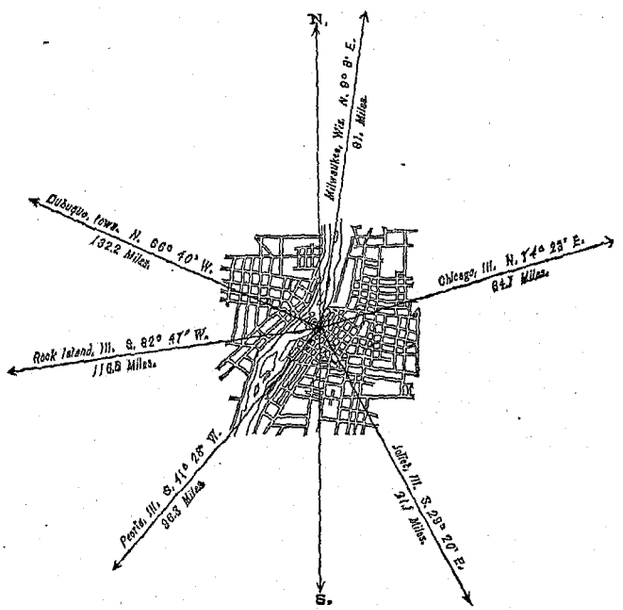
POPULATION

IN THE

AGGREGATE,

1850-1880.

	Inhab.
1790	.....
1800	.....
1810	.....
1820	.....
1830	.....
1840	.....
1850	1,805
1860	6,011
1870	11,162
1880	11,873



POPULATION

BY

SEX, NATIVITY, AND RACE,

AT

CENSUS OF 1880.

Male	5,764
Female	6,109
Native	9,241
Foreign-born	2,632
White	11,660
Colored	213

Latitude: 41° 46 North; Longitude: 88° 17′ (west from Greenwich); **Altitude: 670 feet.**

FINANCIAL CONDITION:

Total Valuation: $2,882,900; per capita: $243 00. Net Indebtedness: $25,506; per capita: $2 15. Tax per $100: $3 24.

HISTORICAL SKETCH.

Aurora was first settled in 1834. Saw-mills and flouring-mills were erected and manufactures on a small scale were first carried on. After the Chicago, Burlington, and Quincy railroad was built through the town, manufactures rapidly increased. The railroad company have built large shops here, employing about 1,200 men, while a number of the trainmen have their homes in the city. The principal industries now are the making of wood-working machinery and agricultural implements, silver-plating, woolen factories, and flouring-mills. Aurora has had superior public schools for many years. They are controlled by district officers under the general state law, and not by city ordinances.

With the exception of the burning, in 1872, of some of the machine-shops belonging to the railroad—the loss being quickly repaired by the erection of better buildings—there have been no serious fires in Aurora. During the past ten years the city has not advanced much, but the present year has brought about a change; a large amount of building is going on and manufactures are increasing. The original settlers were from the eastern states, New York being largely represented, and, though many Germans have come in of late years, the population now is largely native-born.

AURORA IN 1880.

The following statistical accounts, collected by the Census Office, indicate the present condition of Aurora:

LOCATION.

Aurora lies in latitude 41° 46′ north, longitude 88° 17′ west from Greenwich, on both sides of the Fox river, and about 39 miles, by railroad, south of west from Chicago. The river is not navigable. The altitude above mean sea-level, taken at the track of the Chicago, Burlington, and Quincy railroad, is 670 feet.

RAILROAD COMMUNICATIONS.

Aurora is touched by the following-named railroads:

The Chicago, Burlington, and Quincy railroad, from Chicago to Council Bluffs, and with branches to Geneva and Streator.

The Chicago and Iowa railroad, to Forreston and Rockford, Illinois.

TRIBUTARY COUNTRY.

The country immediately tributary to the city is agricultural, corn and hogs being the chief products. Butter and cheese are produced quite largely, and are rapidly increasing, being largely made in factories constructed for the purpose.

TOPOGRAPHY, ETC.

The soil is alluvial, and, within the city limits, there is gravel near the surface which crops out in places. The underlying rock is Upper Silurian of the Niagara and the Lower Helderberg periods. The surface is slightly rolling, and the natural drainage is by small streams and, mainly, the Fox river, passing through the city. The surrounding country is about the same as the city, there being but little elevated land. There are no lakes, but marshes and ponds are somewhat abundant.

CLIMATE.

Highest recorded summer temperature, 98°; highest summer temperature in average years, 90°. Lowest recorded winter temperature −18°; lowest winter temperature in average years −6°.

STREETS; WATER-WORKS; GAS.

But little information was obtained under these heads. No statement was furnished as to the total length of streets, number of miles paved and unpaved, different classes of pavement, and cost of same, gutters, or tree-planting. The sidewalks are reported as being of plank, stone, and gravel. From the annual report of the street commissioners it does not appear that any of the streets are paved with other material than gravel. The city has water-works on the Holly system. The gas-works are owned by a private company. The charge per 1,000 feet is $3. The city pays $42 per annum each for street-lamps, 128 in number.

PUBLIC BUILDINGS.

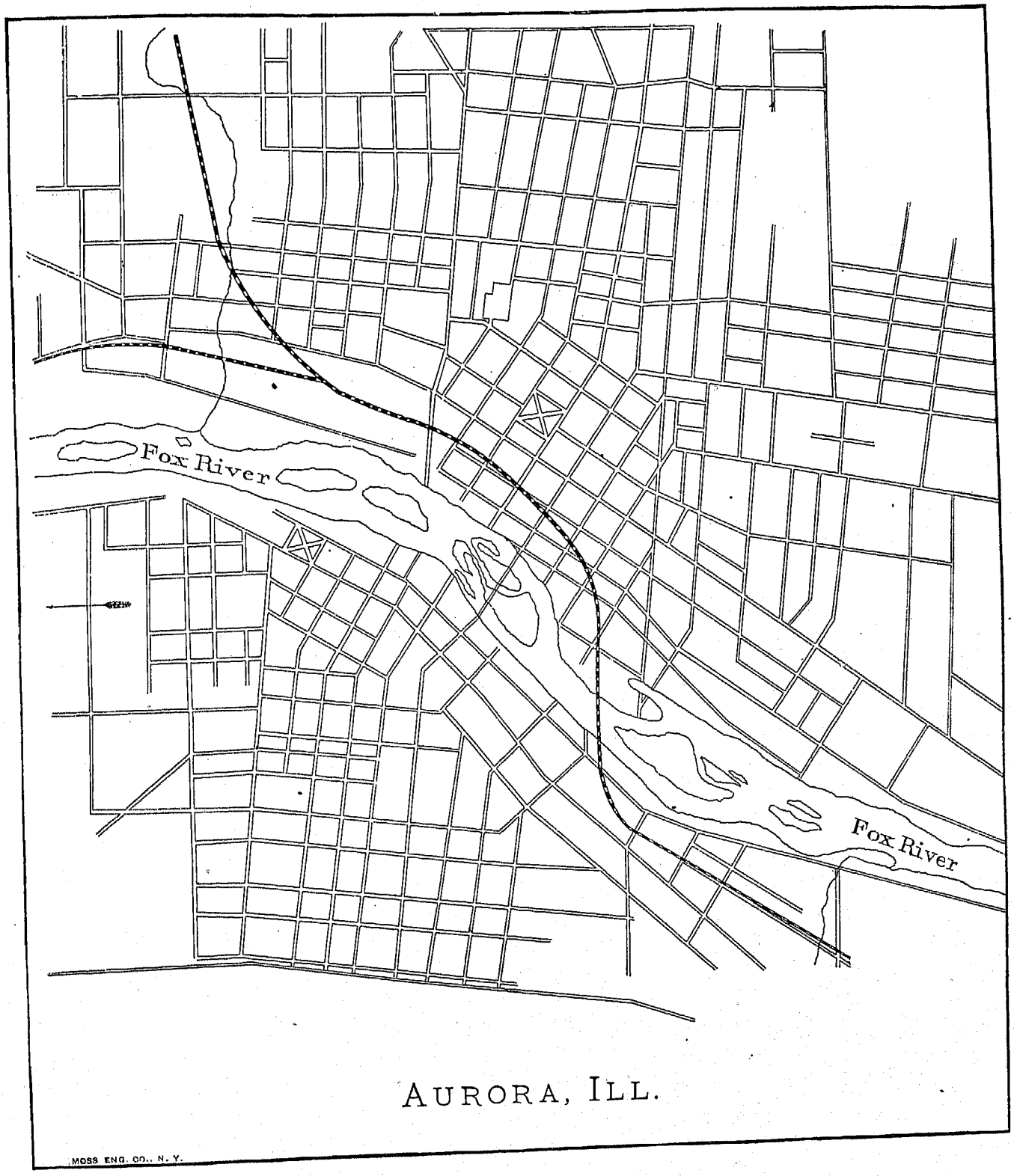
The city owns and occupies for municipal purposes, wholly or in part, 1 city hall, and 4 houses for the fire department. The total cost of the municipal buildings is $89,500, the cost of the city hall being $80,000.

PUBLIC PARKS AND PLEASURE-GROUNDS.

No public parks or pleasure-grounds were reported.

PLACES OF AMUSEMENT.

There is 1 theater, Colter's opera-house, with a seating capacity of 820, and the following halls: Brady's hall, seating 400; Hoyt hall, seating 300; and Driving's hall, seating 550; these halls are sometimes used for theatrical exhibitions. The buildings pay no license, but each performance pays $8 to the city.



AURORA, ILL.

MOSS ENG. CO., N. Y.

DRAINAGE.

There are no sewers in Aurora.

CEMETERIES.

There are 5 cemeteries within the city, viz:

Spring Lake Cemetery, belonging to a private corporation, on Lincoln avenue, near Fox river, in the extreme southwestern part of the city.

German Catholic Cemetery, area 4 acres, on Ohio street, near the eastern limits.

Irish Catholic Cemetery, area 5 acres, on Fox river, adjoining the northern boundary of the city.

West Aurora Cemetery, area 12 acres, between Cemetery and Illinois avenues; and a small cemetery of 2 acres in the 8th ward, on Fulton street.

The only information regarding interments was that 64 had been made in Spring Lake cemetery for the year ending March 1, 1880.

MARKETS.

There are no public or corporation markets in the city.

SANITARY AUTHORITY—BOARD OF HEALTH.

The chief sanitary organization of Aurora is the board of health, appointed by the city council, which exercises general control over its action, and is composed of 3 members, one of whom is a physician. In ordinary times the annual expense is $100 for salary, and this sum may not be increased in case of epidemics except by authority of the city council. In absence of epidemics the board has authority to do what it deems best for the preservation of the health of the city, but if to carry out its plans any expense is proposed the matter must be submitted to the common council for its action. In case of an epidemic the board has power to do all that it deems best to limit or control the disease. The president of the board is *ex officio* health officer, with a salary of $100 per annum. His duties are to carry out the orders of the board, to make such inspections as he may deem necessary, and to take such action, with the advice of the board, as may seem to be best. He has full police power. No assistant health officers or inspectors are employed, but the police are required to assist the health officer when he calls on them. The board meets monthly, or specially when necessary, and acts on business presented by the president. The ordinances provide for inspections only as nuisances are reported, but it has been the custom to make an occasional one of a more or less general character. When a nuisance is reported, the party on whose premises the same exists is notified to remove the same within a given time, usually from 2 to 5 days, and if this is not done proceedings against the offender are instituted. In the case of a non-resident the board abates the nuisance and charges the cost against the property. Defective privy-vaults and cesspools are treated as nuisances when offensive, but the powers of the board are advisory only so far as the disposal of sewage, street-cleaning, etc., are concerned. The board exercises no control over the conservation and removal of garbage, except to see that it does not become offensive or injurious to the public health. Burial permits are issued by the clerk of the board on certificates of death signed by the attending physician. The pollution of Fox river is prohibited, and the board regulates the removal of excrement.

INFECTIOUS DISEASES.

Small-pox patients are quarantined at home or removed to the pest-house, about a mile beyond the city limits. The ordinances do not provide for the isolation of scarlet-fever cases, but attention is given to them so that possible epidemics may be prevented. In case of the breaking out of a contagious disease in either public or private schools the board sees that no pupils from infected families attend. Vaccination is compulsory for all those who may be exposed to contagion, and in cases where persons are unable to pay it is done at the public expense.

There is no system of registration of diseases, except when they terminate fatally. A complete record of all births and deaths is kept by the city clerk, who is *ex officio* clerk of the board.

REPORTS.

The board reports to the common council monthly and annually; the annual reports are published with the regular city documents.

MUNICIPAL CLEANSING.

Street cleaning.—The streets are cleaned at the expense of the city and with its regular force. The work is done wholly by hand. There are no stated times for cleaning, it being done when necessary, and as well as can be by shovels and teams. No separate account is kept of the cost, and the sweepings are used about the suburbs where grading is necessary.

Removal of garbage and ashes.—The garbage and ashes are removed both by the city and by householders. So much as is done by the city is under charge of the street commissioner. While awaiting removal the garbage is

kept in boxes and barrels, and garbage and ashes are allowed to be kept in the same vessel. The garbage is deposited outside the city limits, while the ashes are used for grading purposes. The annual cost to the city for this service is $100, the balance of the expense being borne by the householders. No nuisance or probable injury to health is reported to result from either the manner of keeping or of removing garbage.

Dead animals.—The carcass of any animal dying within the city is ordered to be removed by the board of health, and the annual cost of this service is $50.

Liquid household wastes and human excreta.—All the liquid household wastes are either thrown into cesspools or into privy-vaults. The cesspools are porous, have no overflows, and there are no ordinances regarding their cleansing. The houses in the city, with but few exceptions, depend on privy-vaults. None of them are reported as even nominally water-tight. They are cleaned by a licensed scavenger, between the hours of 10 p. m. and 6 a. m., and the contents are removed in water-tight carts, either outside the city limits or buried at least 3 feet deep.

POLICE.

The police force of Aurora, with the exception of the city marshal, is appointed and governed by the common council. The city marshal is elected by the people, and acts as chief of police; his salary is $800 per annum. The regular force is composed of 4 policemen, with salaries varying from $720 to $96 per annum each, according to the duty performed. The uniform is of navy-blue cloth, and each man provides his own. The patrolmen are equipped with clubs and revolvers; they are on duty all night, and the business part of the city is patrolled by the force. During the past year there were 253 arrests made, the principal causes being for drunkenness, disorderly conduct, vagrancy, assault and battery, etc. Station-house lodgers are cared for by the county. The police force is not required to co-operate with the fire department. Special policemen are appointed by the council, but receive no pay from the city. The yearly cost of the police force (1880) exclusive of the salary of the city marshal, is $1,953 50.

FIRE DEPARTMENT.

The manual force of the fire department of Aurora consists of 1 chief and 1 assistant engineer and 84 men. The apparatus consists of 2 steam fire-engines with 2 two-wheeled hose-carts, 1 Holly hose-cart, and 1 hook-and-ladder truck complete. In addition, the city has the use of a company of 26 men, with 1 engine and 1 hose-cart, located at the Chicago, Burlington, and Quincy Railroad shops. The railroad company keeps this engine and hose-cart in repair, and the apparatus is brought to fires when specially called. Water, for fire purposes, is obtained from 16 hydrants and 8 cisterns, the latter having an aggregate capacity of 3,950 barrels. A fire-alarm telegraph is also in use. During the past year there were 14 fires. The total loss was $4,865 and the amount of insurance paid was $3,355, making the loss not insured $1,510. The cost of the department for the past year was $3,423 54.

BELLEVILLE,

SAINT CLAIR COUNTY, ILLINOIS.

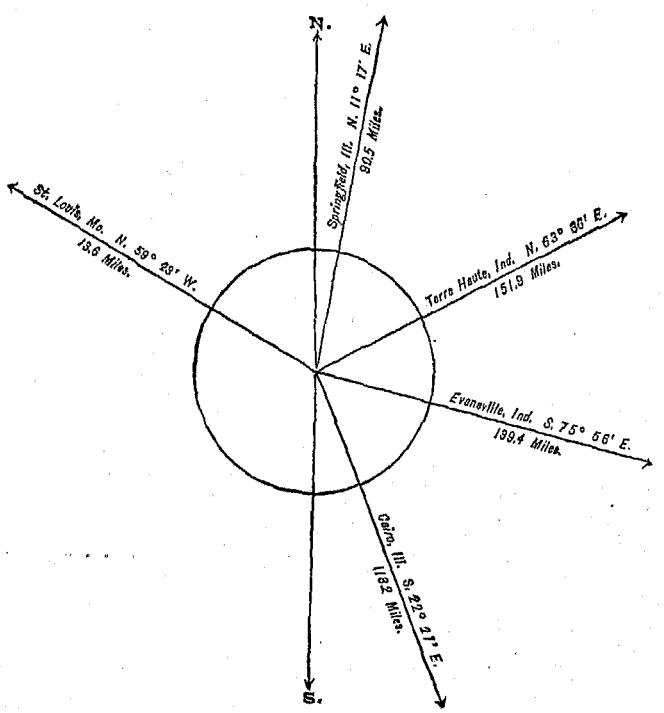
POPULATION

IN THE

AGGREGATE,

1850-1880.

	Inhab.
1790	.....
1800	.....
1810	.....
1820	.....
1830	.....
1840	.....
1850	2,941
1860	7,520
1870	8,146
1880	10,683



POPULATION

BY

SEX, NATIVITY, AND RACE,

AT

CENSUS OF 1880.

Male	5,321
Female	5,362
Native	7,729
Foreign-born	2,954
White	10,447
Colored	236

Latitude: 38° 29 North; Longitude: 89° 58′ (west from Greenwich); **Altitude: 600 feet.**

FINANCIAL CONDITION:

Total Valuation: $1,592,557; per capita: $149 00. Net Indebtedness: $217,712; per capita: $20 38. Tax per $100: $4 71.

HISTORICAL SKETCH.

In 1813 the citizens of Saint Clair county, Illinois, determined to remove the county-seat from the old French settlement of Cahokia to a more eligible point, and, with this end in view, the court of common pleas appointed commissioners to decide on some convenient place. The commissioners recommended a site on the high, rolling ground between the Mississippi and Kaskaskia rivers, about 14 miles from each, and near what was then known as Compton Hill. This site was accepted, the county-seat was laid out and called Belleville, and the records were moved hither. In 1814 the first court-house was built and a hotel was opened. In 1819 Belleville was incorporated as a town. Up to this time the settlers were from the eastern states, and still continued so until 1829, when a steady influx of Germans set in, attracted by the fertility of the soil and the proximity of Saint Louis as a market.

They spread over the whole county, and by their industry and thrift soon developed its resources. In 1850 Belleville was incorporated as a city. No serious fires have occurred, and there have been no serious periods of depression. Though the coal industry in Saint Clair county is quite extensive, the steady growth of the city must be attributed to agriculture, the returns of 1880 showing that this county alone produced over 2,000,000 bushels of corn and nearly 3,000,000 bushels of wheat.

BELLEVILLE IN 1880.

The following statistical accounts, collected by the Census Office, indicate the present condition of Belleville:

LOCATION.

Belleville, the capital of Saint Clair county, Illinois, lies in latitude 38° 29′ north, longitude 89° 58′ west from Greenwich, in the southwestern part of the state, midway between the Mississippi and Kaskaskia rivers, and about 14 miles southeast of Saint Louis. The average elevation of the city above mean sea-level is 600 feet. It is not situated on navigable water.

RAILROAD COMMUNICATIONS.

The city is touched by the following-named lines of railroad:
The Cairo Short line, from Saint Louis to Du Quoin.
The Louisvile and Nashville railroad, from Saint Louis to Nashville.
The Illinois and Saint Louis railroad, between Saint Louis and Belleville.

TRIBUTARY COUNTRY.

The country immediately tributary to Belleville is devoted to agriculture, wheat and corn being the chief product.

CLIMATE.

Highest recorded summer temperature, 107°; highest summer temperature in average years, 100°. Lowest recorded winter temperature, −22°; lowest winter temperature in average years, −12°. Southwest winds are considered more or less unhealthful.

STREETS.

Total length, 25 miles, of which 13 miles are paved with broken stone, at a cost of 90 cents per square yard. The cost of keeping this class of pavement in repair is about 15 cents per yard per year, and it lasts about 7 years.

Sidewalks are mostly laid in brick, while the gutters are laid with stone. Day work upon streets is preferred, the work being done by the city, except the building of stone gutters and bridges, which is done by contract work. In the breaking of stone for street paving no steam stone-crusher or roller is used, it being done by hand. The usual price paid for this is $2 per square rod. There are 3 miles of horse-railroads in the city, using 5 cars and 10 horses, and giving employment to from 8 to 10 men; the rate of fare is 5 cents. There are two lines of omnibuses, with 4 vehicles and 16 horses, employing 4 men; the rate of fare is 15 cents.

WATER-WORKS.

There are no water-works, but the city has large public cisterns.

GAS.

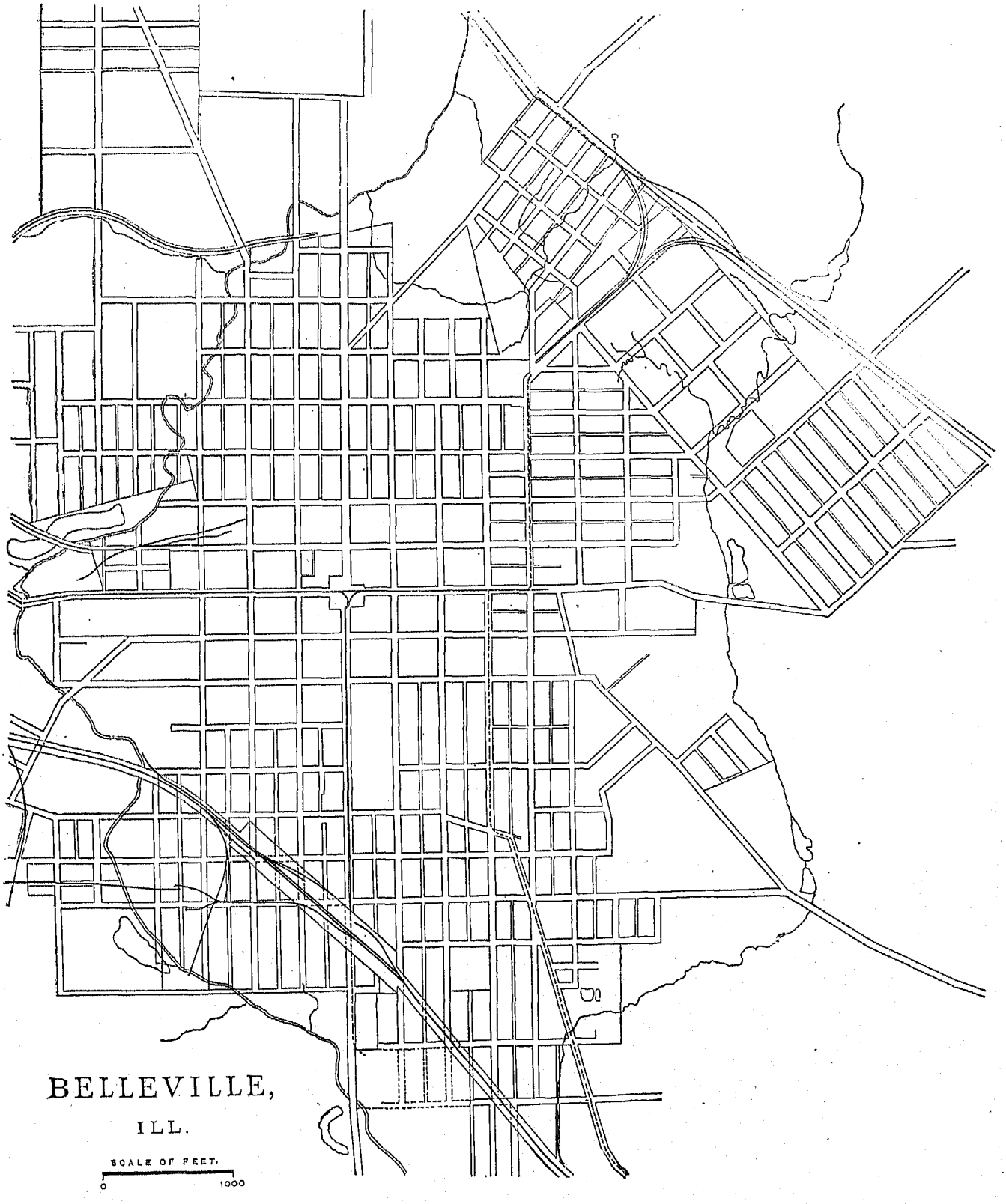
The gas-works are owned by private parties. The charge per 1,000 feet of gas is $2 50. The city pays $23 per annum for each of its 204 street-lamps.

PUBLIC BUILDINGS.

The city owns and occupies for municipal purposes, wholly or in part, the city hall, three engine-houses, and one market-house. The total cost of these buildings is about $18,000. The city hall cost $6,000, and is owned entirely by the city.

PUBLIC PARKS AND PLEASURE-GROUNDS.

There are no public parks or pleasure-grounds in Belleville.


BELLEVILLE,
ILL.
SCALE OF FEET.
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PLACES OF AMUSEMENT.

The following places in the city are used for theatrical exhibitions, concerts, lectures, etc.: Academy of Music, with a seating capacity of 1,000; City Park hall, with a seating capacity of 1,000; and Turner hall, seating capacity, 550. Theaters pay to the city a yearly license of $25 each. There are 2 concert- and beer-gardens—City Park garden, 200 by 300 feet, which has been opened about 20 years; and King's garden, which has been in operation about the same length of time. Both are patronized during the summer months, and largely by Germans. Each can seat about 1,200 persons.

DRAINAGE.

There is no general system of sewerage in Belleville. Some small stone pipes, 6 inches in diameter, are laid only through a few streets in the lower part of the city to drain cellars. These drains all empty into the creek and branches, but as they carry only surface-water, no nuisance is created. They are built and paid for by persons living along the line. Permission must be granted by ordinance before drains are allowed to be laid.

CEMETERIES.

There are 4 cemeteries connected with the city, as follows:

Green Mount Cemetery, area 40 acres, is situated 2 miles southeast of the city.

Walnut Cemetery, area 25 acres, adjoins the southeast limits.

Harrison Cemetery, area 1 acre, is situated in the eastern part of the city.

Catholic Cemetery, area 300 feet square, is in the south part of the city.

In the last-named cemetery no interments have been made for 30 years, while in Harrison cemetery no interments have been made for 10 years. It is stated that the burial permits issued to persons not owning lots in the cemeteries average 90 every six months, permits being issued simply to give a right of burial to those not owning lots. The depth of graves varies from 4 to 4½ feet. Concerning the care and management of cemeteries the following note is added by the mayor: "The private cemeteries are kept up by owners thereof, who have gardeners residing thereon. A city sexton is kept at Walnut Hill cemetery, who has charge of city property therein. Lots 20 by 20 feet are sold; prices range from 5 to 15 cents per square foot in private cemeteries. The city also sells lots in their portion of Walnut Hill at $20 per lot."

MARKETS.

The market-house is in Market square, adjoining Public square on the north. The building is 125 feet long. There are also sheds 300 feet in length, containing tables used by hucksters. Butchers' stalls rent for $40 per annum, while 2-horse wagons pay 15 cents and 1-horse wagons 10 cents per day. The total rental of the market is about $900 per annum. The market is open from daylight till 9 a. m.

SANITARY AUTHORITY—BOARD OF HEALTH.

The sanitary interests of the city are in the hands of a board of health, which is composed of 7 members of the city council. The board has no expense as a board, all expenditures being regulated by the city council. The chairman of the board is the chief executive officer. Inspections are made as nuisances are reported, and referred to the mayor. In the case of defective house-drainage, privy-vaults, cesspools, and sources of drinking-water the board visits the locality and inspects as a committee. The board has no control over defective sewerage or street-cleaning. In the conservation and removal of garbage the board, if it thinks necessary, recommends measures and actions. In case of small-pox or scarlet-fever, the house containing the patient is placarded. If disease of a contagious nature should break out either in the public or in the private schools, the board would recommend the closing of the schools. Vaccination is not compulsory, nor is it done at the public expense. A record of diseases, births, and deaths is kept by the county clerk, reports being made to him by physicians. The board reports to the city council as often as it may be expedient.

MUNICIPAL CLEANSING.

Street-cleaning.—The streets are cleaned by the city and by private abutters. All work done by the city is done by hand. The streets are swept and scraped after a continued wet season. The annual cost of the service is included in the regular street appropriation. The sweepings are deposited on low grounds adjoining the city.

Removal of garbage and ashes.—Garbage is removed by householders. An ordinance provides that when it is placed upon the streets it must be immediately removed. Ashes may be kept in the same vessel, and both are used as filling for low lands. The expense attending this service is slight.

Dead animals.—The carcasses of animals dying within the city are removed outside its limits by the city scavenger, at the cost of the owner, and are usually converted into soap or grease. About 75 carcasses are annually removed, and the system is reported as being satisfactory.

Liquid household wastes and human excreta.—All of the liquid household wastes of the city are thrown either into cesspools or privy-vaults. Regulations require the cleaning out of vaults and cesspools before they become nuisances. It is reported that there are no water-closets in the city, all the houses being dependent on privy-vaults. Probably about one-third of them are nominally water-tight. The opinion is expressed that privy-vaults affect the water in wells that are located within 20 feet of them.

Manufacturing wastes of all kinds are emptied into the creeks and streams.

POLICE.

The police force of Belleville is appointed by the mayor, subject to confirmation by the city council, and is governed by the mayor. The superintendent of police, salary $800 per annum, is the chief executive officer, and has general charge of the force, which consists of 1 captain and 5 patrolmen. The captain receives a salary of $60 per month, and the patrolmen $50 per month each. The uniform is of blue cloth; in winter a frock coat is worn, and in summer a sack coat, and each man provides his own. Patrolmen are equipped with club and revolver; their hours of duty are from 8 p. m. to 5 a. m., and all the streets in the city are patrolled. The arrests made during the past year were mostly for disturbances of the peace. The amount of property lost or stolen during the year did not exceed $200, and about one-third of this was recovered and returned to the owners. The number of station-house lodgers in 1880 was 200, as against 300 in 1879. Bread, meat, and coffee, at a cost of 15 cents per meal, are given to such of these lodgers as are destitute or crippled. When ordered by the mayor, the police force co-operates with the fire and health departments. Special policemen, as exigency may require, are appointed by the mayor, and while on duty have the same powers as members of the regular force. The annual cost of the police force in 1880 was $5,000.

BLOOMINGTON,

McLEAN COUNTY, ILLINOIS.

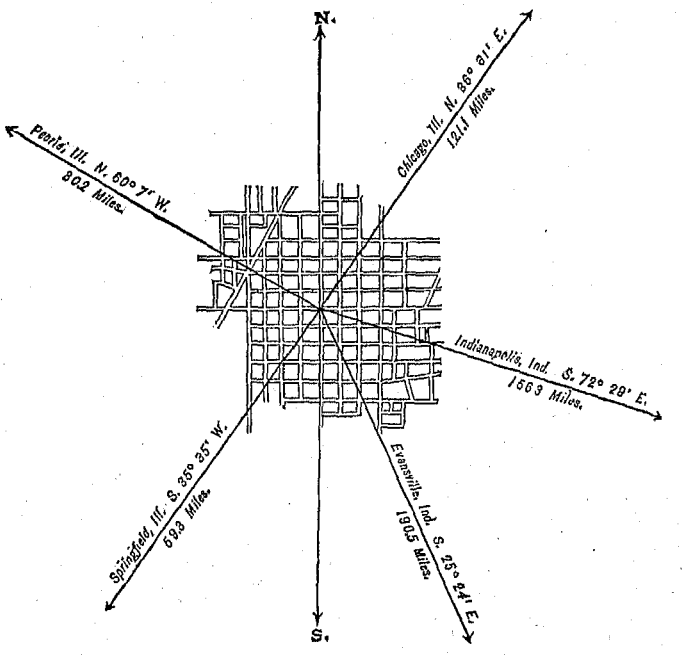
POPULATION

IN THE

AGGREGATE,

1850-1880.

	Inhab.
1790	.....
1800	.....
1810	.....
1820	.....
1830	.....
1840	.....
1850	1,594
1860	7,075
1870	14,590
1880	17,180



POPULATION

BY

SEX, NATIVITY, AND RACE,

AT

CENSUS OF 1880.

Male	8,443
Female	8,737
Native	13,689
Foreign-born	3,491
White	16,775
Colored	*405

*Including 4 Chinese.

Latitude: 40° 30′ North; Longitude: 89° (west from Greenwich); **Altitude: 796 feet** (average).

FINANCIAL CONDITION:

Total Valuation: $3,431,134; per capita: $200 00. Net Indebtedness: $221,463; per capita: $12 89. Tax per $100: $3 89.

HISTORICAL SKETCH.

At the first settlement of the region a great prairie extended over all this part of the state, broken by belts of timber along the larger streams and by isolated groves. One of the largest and finest of these isolated groves was called Blooming grove. It consisted of a miscellaneous growth of forest trees, some of them of remarkable size. The grove occupied between 40 and 50 square miles, being some 8 miles long north and south, and some 6 miles wide east and west. The prairie near it was of unusual elevation, and the locality was naturally very attractive as soon as settlers pushed back from the vicinity of navigable water.

The first settlement in the vicinity was made in 1822, and the town of Bloomington was laid out July 4, 1831, partly in the north edge of Blooming grove. Some twenty years later railroads were opened through the place and large machine-shops were established. Paper bags, boots, shoes, and plows are made to a considerable extent,

as well as drain-tile and coarse pottery. Bloomington has been visited by several severe conflagrations, one in October, 1855, loss $120,000; one in September, 1856, loss $50,000; one in October, 1867, when the railroad machine-shops were burned, loss $100,000; and one in 1871, loss $60,000. The damages occasioned by these fires were quickly repaired, and the buildings burned were replaced with others of brick or stone. The original population was from Kentucky and Ohio, but now people from all the states east and south are represented. Irish and Germans predominate among foreigners.

BLOOMINGTON IN 1880.

The following statistical accounts, collected by the Census Office, indicate, in part, the present condition of Bloomington:

LOCATION.

Bloomington lies in latitude 40° 30′ north, longitude 89° west from Greenwich, near the center of the state, and about 130 miles southwest from Chicago. It is the capital of McLean county, and is not on any navigable water. The average altitude above mean sea-level is 796 feet, with a difference of 80 feet between the highest and lowest points in the city.

RAILROAD COMMUNICATIONS.

Bloomington is touched by the following-named railroads:
The Chicago and Alton railroad, from Chicago, Illinois, to Saint Louis and Kansas City, Missouri.
The Illinois Central railroad, from Chicago to Cairo, Illinois.
The Indiana, Bloomington and Western railroad, from Peoria, Illinois, to Indianapolis, Indiana.
The Lake Erie and Western railroad, from Bloomington, Illinois, to Sandusky, Ohio.

TRIBUTARY COUNTRY.

The adjacent country is wholly agricultural. Corn is the staple grain, and many of the farmers are stock-raisers on an extensive scale.

TOPOGRAPHY.

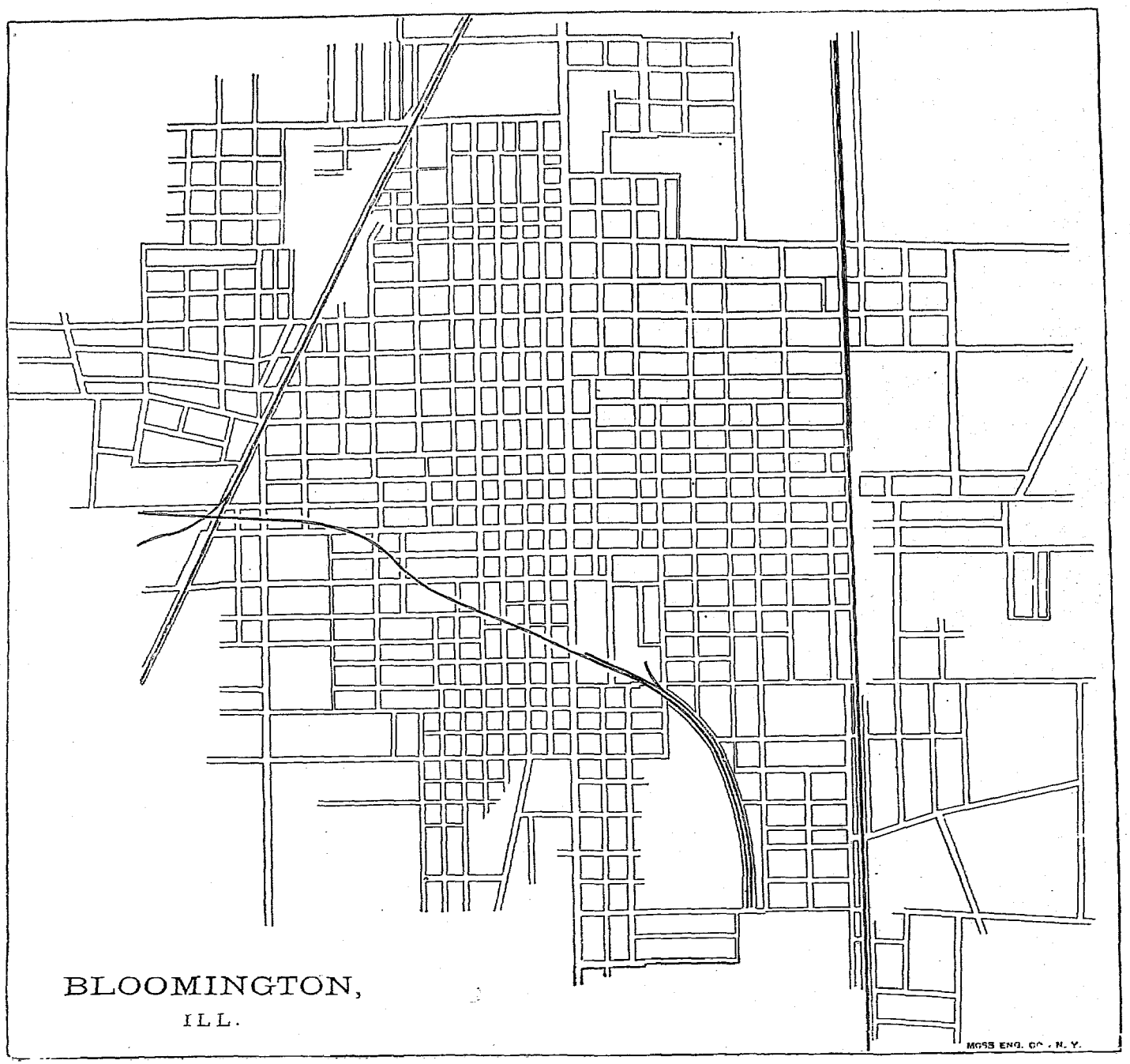
The city is built on a rolling prairie, the difference between the highest and lowest elevations being 80 feet. The drainage is by small streams from the northeast and southeast, joining in the western portion of the city and running west. The street grades vary from 10 inches to 5 feet in 100 feet. The soil is a black loam, underlying which is blue clay, yellow clay and quicksand. There is but little difference in elevation of surrounding country, and there are no marshes, ponds, or lakes. The country within a radius of 5 miles is mainly a rolling prairie, with planted groves, in addition to the original Blooming grove, and the soil is a black loam, from 1 to 3 feet deep.

CLIMATE.

Highest recorded summer temperature, 102°; highest summer temperature in average years, 85° to 90°. Lowest recorded winter temperature, —30°; lowest winter temperature in average years, about 0°. The only characteristic of the climate reported is that it is "changeable".

STREETS.

Total length of streets 86 miles, of which 4,174 feet are laid with stone blocks, 9,186 feet with broken stone, 4,000 feet with wood (which is to be taken up and laid with stone), and 300 feet with brick. The cost per square yard of each, as nearly as may be estimated, is, stone blocks, $1 15 to $1 40; broken stone, $1 50; wood, $1 75 to $2 25; brick, $1 13. The cost of keeping each in good repair is, for stone blocks one-half cent, and for broken stone 5 cents per square yard per annum. The brick pavement is the easiest to keep clean. The stone block, or merchant pavement, is constructed of stone and sand or cinders. The drainage is thrown toward the center of the street. The pavement is made by laying down 4 lines of flagging, the stones being 18 inches wide, not less than 6 inches thick, and from 3 to 8 feet in length. These stones form two continuous tracks for vehicles, and are laid 6 inches lower than the pavement. At the curb-lines, between the lines of flagging, and between the outside lines of flagging and the curb-lines, is a filling of stone blocks laid in a bed of from 4 to 6 inches of coal-cinders or sand. All interstices are filled with dry sand well brushed in, and the surface is thoroughly rammed. This street will clean itself on a grade of 1 in 100. The sidewalks are mostly wood, with some brick, and, in the business portion, some stone. The building of wooden sidewalks has, however, been prohibited by ordinance that took effect May 1, 1880. Gutters are paved only on paved streets, and are mostly of rubble-stone, but there is a mile of flat-stone gutters with rubble sides. Nearly every street in the city has a line of trees on the outside of the sidewalks, soft and hard


BLOOMINGTON,
ILL.
MOSS ENG. CO., N. Y.

maple and elm. The construction of streets is done by contract, while repairs are done by the day, and the annual expenditure for both ranges from $5,000 to $25,000. The city officials report a preference for contract work, as, when the city builds, the class of laborers employed is usually of the poorest kind.

HORSE-RAILROADS.

There are 3 miles of horse-railroads, with 6 cars and 32 mules, and giving employment to 6 men. The rates of fare are 5 and 10 cents. There are no regular omnibus lines, but 4 carriages, 2 omnibuses, and 2 baggage-wagons, with 26 horses, and employing 15 men, transfer passengers from the railroad station at rates of fare of 25 cents for each trip.

WATER-WORKS.

The water-works are owned by the city, and cost $100,000. The system is by pumping into a stand-pipe from a well sunk into a vein of sand, and the pressure is 75 pounds to the square inch in the highest part of the city. The average amount pumped per diem is 300,000 gallons, the greatest being 450,000 and the least 150,000 gallons. The total yearly cost of running the works, including salaries, is $3,670, and the yearly income from water-rates is $6,000. Water-meters are not used.

GAS.

The gas-works are owned by a private individual, and the daily average production was not stated. The charge per 1,000 feet is $2 for the city and $2 50 to private parties. The city has 521 street-lamps.

PUBLIC BUILDINGS.

The city owns and occupies wholly for municipal purposes one city hall that cost $12,000. The city and county buildings are not in common. The county court-house is a commodious edifice occupying the interior of a square whose outer sides are composed of business blocks, facing the streets that separate them from the court-house.

PUBLIC PARKS AND PLEASURE-GROUNDS.

There is but one park in the city, and this, as yet, is only a public ground with no improvements. Its area is 4.47 acres, and the land was donated. No money is spent on it for maintenance. It is controlled by the city council.

PLACES OF AMUSEMENT.

There are no regular theaters in Bloomington, but Durley hall, seating 1,500, and Schroeder's opera-house, with a seating-capacity of 1,000, are used by traveling theatrical companies. These halls pay no license, but all exhibitions pay $10 per night, or $15 for two performances. In addition to these there are Phœnix hall, seating 600, and Washington hall, seating 500, used for balls, political meetings, etc. There are no concert- and beer-gardens.

DRAINAGE.

Though there are sewers in Bloomington, no report on the system was made by the city authorities, and therefore this subject has to be omitted.

CEMETERIES.

There are 3 cemeteries connected with Bloomington, two of them being outside the city limits. One inside the city limits, with an area of 40 acres, is laid out in Blooming grove, with drives and walks, and is kept with care. Its slopes drain into a brook that runs through the city.

MARKETS.

There are no public or corporation markets in the city.

SANITARY AUTHORITY—BOARD OF HEALTH.

The chief sanitary authority of Bloomington is a committee of the city council, composed of 3 aldermen, with the mayor as chairman, and styled the board of health. There are no physicians on the board, and in ordinary times no expenses are incurred. In case of an epidemic the sum to be expended depends on the vote of the council. The board is controlled by the council, and its authority, either in presence or absence of an epidemic, is dependent on that body. The chief executive officer of the board is the health officer, salary $40 per month, who has police powers granted by the council to abate nuisances. No assistant health officers or inspectors are employed. The board meets once a week, and reports its action to the council. The health officer uses his best judgment regarding inspections, and is supposed to make them regularly all over the city. When nuisances are reported the council orders the health officer to abate them. The board has no custom regarding the inspection and correction of defective

house-drainage, privy-vaults, cesspools, sources of drinking-water, sewerage, street-cleaning, etc., nor are there any regulations regarding the burial of the dead or the pollution of streams. The health officer attends to the conservation and removal of garbage, while city ordinances regulate the removal of excrement. Small-pox patients are sent to the pest-house, which is situated in an isolated position, nearly a mile from the resident portion of the city. Scarlet-fever patients are not isolated, and the board does not take cognizance of the breaking out of contagious diseases either in public or in private schools. Vaccination is not compulsory, nor is it done at public expense. The registration of births, diseases, and deaths is kept by the county clerk, physicians reporting to him. The board reports to the city council, but its reports are not published.

MUNICIPAL CLEANSING.

Street-cleaning.—The mayor reports that as there are only about 3 miles of paving, there is no system of street-cleaning.

Removal of garbage and ashes.—Merchants place ashes and garbage in boxes on the edge of sidewalks, and the city cart removes the same, replacing the boxes. Garbage is carted outside the city limits, while the ashes are used on roads and to fill low places. This service, which seems to comprise only the business portions of the city, costs about $2 50 per day.

Dead animals.—Carcasses not taken by parties who render the same are buried outside the city limits. The cost of this service is trifling, not exceeding $50 per annum.

Liquid household wastes and human excreta.—In the thickly settled portion of the city most of the houses are connected with the sewers, and the liquid wastes are run into them; but as most of the houses in the rest of the city are built on large lots, the wastes are thrown on the ground, none going into the street-gutters, and only a small portion being deposited in vaults. The number of houses provided with water-closets is small, a large majority depending on privy-vaults. None of the vaults are even nominally water-tight, and they are required to be cleaned only when the health officer orders it. The night-soil is carted outside the city.

POLICE.

No information on this subject was obtained.

PUBLIC SCHOOLS.

The public schools are organized under a special charter. The school board consists of 7 members elected by the people. The municipal authorities act simply in a ministerial capacity to assess and collect the tax reported by the board as necessary to supplement the funds derived from other sources, and the whole of the revenues are under the direct control of the board. The superintendent of the schools, the principal of the high school, and all the remaining teachers are women.

CHICAGO,

COOK COUNTY, ILLINOIS.

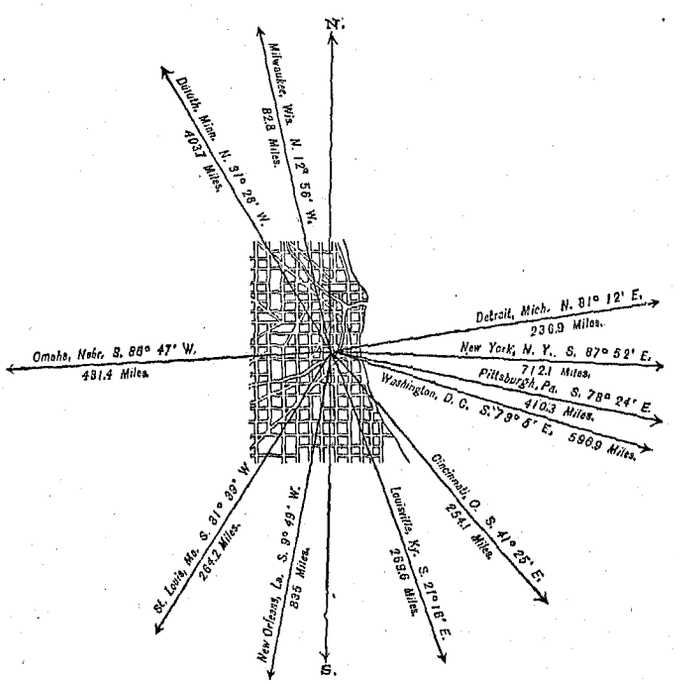
POPULATION

IN THE

AGGREGATE,

1840-1880.

	Inhab.
1790	.....
1800	.....
1810	.....
1820	.....
1830	.....
1840	4,470
1850	29,963
1860	112,172
1870	298,977
1880	503,185



POPULATION

BY

SEX, NATIVITY, AND RACE,

AT

CENSUS OF 1880.

Male	256,905
Female	246,280
Native	298,326
Foreign-born	204,859
White	496,495
Colored	*6,690

*Includes 171 Chinese, 2 Japanese, and 37 Indians.

Latitude: 41° 54′ North; Longitude: 87° 38′ (west from Greenwich,); **Altitude: 581 to 600 feet.**

FINANCIAL CONDITION:

Total Valuation: $117,970,035; per capita: $234 00. Net Indebtedness: $12,794,271; per capita: $25 43. Tax per $100: $4 34.

HISTORICAL SKETCH.(a)

Less than fifty years ago the site of the city of Chicago was a low prairie lying on the shore of lake Michigan, intersected by a sluggish stream known as the Chicago river. Fort Dearborn, a trading-house for the exchange of merchandise for skins and furs with the Indians, and a few scattered houses constituted all there was in the way of improvement.

The Chicago river, the main branch of which rises in Mud lake, west of the city and very near the Des Plaines river, is a deep stream, and up this river from lake Michigan, and across the short portage to the Des Plaines river, and through the latter to the Illinois river, and thence to the Mississippi, has, with the exception of the short portage from Mud lake to the Des Plaines, always been a water-way from lake Michigan to the Mississippi. As such it was used by the Indians, then by the French, and then by the French and English.

a Hon. I. N. Arnold, of Chicago, secured much of the detailed information regarding the city, and prepared the historical sketch with which this report is introduced.

In 1803 orders were issued by the War Department for the construction of a fort at the mouth of the Chicago river. These orders were executed by the construction of a stockade fort on the shore of lake Michigan, on the south side of the river, consisting of two block-houses, built of hewn timber, with a parade-ground and quarters inclosed by palisades. Chicago, Detroit, and Mackinaw were then the extreme outposts of the United States in the extreme Northwest.

John Kinzie settled at Chicago in 1804, and was engaged in the fur trade with the Indians, and they gave him the name of *Shaw-nee-an-kee*—the silversmith—probably because he paid them for their peltries in silver. The fort was named "Fort Dearborn", in honor of a gallant soldier of the Revolution, afterward Secretary of War.

Early in the war of 1812 fears were felt for the safety of fort Dearborn and its small garrison, so far from settlements and succor, and General Hull, in command at Detroit, sent orders to Captain Nathan Heald to evacuate the fort. On the 5th of August, 1812, the garrison of about 60 men, with a few settlers, including John Kinzie, left the fort and started on their march around the head of the lake. The family of John Kinzie, in a Mackinaw boat, set off at the same time by water for Saint Joseph, Michigan. The Indians, in ambush, attacked the party from the garrison, when about 2 miles south of the fort, near where Eighteenth and Twenty-second streets now terminate on the banks of lake Michigan. The Indians, 400 or 500 in number, most of them Pottawattamies, hiding behind the sand-hills until the party had entered the trap set for them, killed, with little resistance, most of the officers and soldiers. Mrs. Helm, Mrs. Holt, and Mrs. Heald were saved by Black Partridge, Waubansia, and other friendly chiefs. The fort was dismantled, and was burnt the next day. It was rebuilt in 1816.

That an important town would be built up at Chicago seems to have been anticipated from its very earliest settlement. The importance of connecting the great lakes with the Illinois and Mississippi rivers, and the facility with which it could be accomplished by a canal from the Chicago river, were obvious to the early explorers and first settlers of the country.

In 1814 President Madison recommended a ship-canal from lake Michigan to the Illinois river. The first government survey of the land into sections was made in 1821. In 1822, four years after Illinois was admitted into the Union as a state, Congress granted the right of way over the public lands for a canal from lake Michigan to the Illinois river. In 1827 the United States granted to Illinois each alternate section of land for a distance of 5 miles on either side of the contemplated canal, to aid in its construction.

On the 4th of August, 1830, canal commissioners, appointed by the state, laid out and platted the original town of Chicago. In 1831 the county of Cook, in which Chicago is situated, was organized. In the spring of that year Congress made the first appropriation for improving the harbor. The total tax at that time was $149 29. In 1836 the state authorized a loan of $500,000 for the opening of the canal, and on July 4 of that year ground was broken for its construction.

On the 10th of August, 1833, the people of Chicago organized as a town, under the laws of the state, and elected five trustees, there being at that time 28 voters.

On the 26th of September, 1833, a treaty was concluded between the United States and the Pottawattamie, Ottawa, and Chippewa Indians, by which 20,000,000 acres of land in northern Illinois and southern Wisconsin were ceded to the United States. On the same day the *Chicago Democrat*, the first newspaper published in Chicago, was issued. Only one mail per week was received at Chicago until late in 1834. In 1836 the first census was taken, and gave an aggregate population of 3,265. On March 4, 1837, Chicago received a city charter. The first election for city officers was held in May, 1837, and William B. Ogden was elected mayor, receiving 469 votes, against 237 cast for John H. Kinzie, a son of John Kinzie, the first settler.

From 1837 to 1842 was a period of great financial depression and depreciation in the value of property. In 1842 work upon the canal was abandoned; the state was largely in debt for money expended on the canal and other unfinished and unproductive works of internal improvement, and for a time suspended payment of interest on her obligations. In 1842 a proposition was made by the holders of canal bonds, which had been issued by the state and others interested, to advance the sum of $1,600,000, the amount then estimated as necessary to complete the canal. This money was to be advanced on condition that the state, as security for such advance, would place the canal lands and lots in the hands of trustees, who should proceed to finish the canal, and who, from the tolls and revenues and the proceeds of the canal lands and lots to be sold, should pay, "first, the amount so advanced; second, the canal debt," etc. This proposition was accepted by the state, laws were enacted under which it was executed, trustees were appointed, the money was advanced, and the canal was completed. In 1848 it was opened, and went into successful operation. From that time the growth of Chicago in population, wealth, and prosperity has been most rapid. The canal debt has been entirely paid, and the canal has reverted to the state.

The United States government from 1831 has, from time to time, made appropriations for the construction and improvement of the harbor at Chicago, and it has thus been made one of the most safe and convenient on the lakes. To secure appropriations for Chicago and other harbors on the great lakes, and also aid for the improvement of the navigation of the western rivers, there was held at Chicago, in July, 1847, a great harbor and river convention. Edward Bates, of Missouri, was president, with vice-presidents from 17 states. Letters in favor of appropriations

by the national government for the improvement of rivers and harbors, written by Daniel Webster, Silas Wright, Henry Clay, Thomas H. Benton, and many others, were read, and resolutions in favor of such appropriations were adopted.

The various railways centering in Chicago have contributed very largely to its prosperity and rapid growth. The territory west of lake Michigan and south of lake Superior, and extending west to the Rocky mountains, has been intersected by a network of railroads centering at this point. They always kept pace with, and often extended beyond, the line of settlement. The first railroad built from the city, northwest, was the Galena and Chicago Union railroad, incorporated in 1836, but nothing of importance was done toward its construction until 1847, when a few miles of strap rail was laid. In 1850 it reached Elgin, on the Fox river, 42 miles from Chicago. The Michigan Southern and the Michigan Central were the first to enter the city from the east, both reaching it in 1852. The Illinois Central was opened in 1852. From that time until the present the number of railroads terminating in Chicago has been constantly and rapidly increasing, so that now the city is one of the greatest railroad centers of the world.

The Illinois and Michigan canal, under a plan known as the "deep cut", was originally designed to be a ship-canal from lake Michigan to the Mississippi. This plan the state was compelled to abandon on account of its great cost, and it was finished on what was known as the "shallow cut", and supplied with water from the Des Plaines and Fox rivers and water pumped from the Chicago river. In 1866–'70 the canal was deepened by the city of Chicago, at an expense of $3,251,621, the highest level of 26 feet being cut down to 8½ feet below the ordinary level of lake Michigan. This greatly improved the navigation, and for a time carried off the sewage of the city to the Illinois river. After the great fire of 1871 the state refunded to the city the money expended in deepening the canal. This enlargement was not sufficient for the primary purpose of a ship-canal, nor has it created a sufficient current to dispose of the sewage of the city. But the great project of a ship-canal of a capacity to take steamboats and vessels from Saint Paul, Saint Louis, and New Orleans to the lakes, and which would enable gunboats to pass to and from the Mississippi and the lakes, has never been abandoned. President Lincoln, in December, 1861, in his annual message, called attention to the subject, and so much of his message as related to it was referred to a select committee of Congress, which reported unanimously in its favor. Francis P. Blair, jr., chairman of the committee of military affairs, at the same session of Congress, reported a bill which provided for a ship-canal for the passage of armed naval vessels from the Mississippi to lake Michigan.

In June, 1863, in pursuance of a call issued by Edward Bates, then Attorney General of the United States, and 80 senators and members of Congress, a canal convention was held at Chicago to aid the project. The convention passed resolutions in its favor, and a memorial to Congress was prepared and adopted, which, in December, 1863, was communicated to Congress by President Lincoln. The committee on roads and canals reported a bill which appropriated $5,000,000 of United States bonds to aid Illinois in the work. It provided for the enlargement and deepening of the channel so as to be navigable for ships and gunboats, and provided that, in consideration of such aid, the arms, gunboats, and all materials of war, also soldiers, should pass through such canal free. This bill passed the House of Representatives, but failed in the Senate.

On Sunday night of October 8, 1871, began the most destructive fire of modern times. The city had been rapidly built, and, to a very large extent, of pine lumber, so that there were miles of buildings and sidewalks of thoroughly seasoned pine.(a) For a long time there had been no rain, and when to this is added a violent southwest wind, conditions existed as favorable as can be conceived for a conflagration. The fire began in what is called the West division, near the South branch of the river, in the midst of pine shanties and lumber-yards. Crossing the river, it progressed with such rapidity that very shortly resistance was utterly powerless. Its fury, the rapidity of its progress, its appalling character, seemed to create a universal panic. The wind increased, and the fire rushed forward, east and west, sweeping all before it. Raging all Sunday night, and Monday and Monday night, it had not burnt out the material which it fed on until Tuesday afternoon. It destroyed every thing in its course from where it crossed the South branch of the Chicago river, south of Polk street and east to lake Michigan, and all between the lake and the river to its mouth; thence, crossing the main river, it laid in ashes all of north Chicago east of Market street, and north to Lincoln park, leaving only a solitary house standing in its path.

The area burnt was 3½ square miles, and the fire laid in utter ruin the entire business center and a very large proportion of all the residences in the city. The aggregate number of buildings destroyed was more than 18,000, and it left homeless more than 100,000 people. All the principal hotels, and all the public buildings, national, state, city, and county, were consumed. The vast warehouses, grain-elevators, steamboats, vessels in the river, bridges, railway stations, etc., were burnt. The total loss has been carefully estimated at $200,000,000, and 57 insurance companies were made insolvent by their losses in this fire. No adequate idea of the ruin and suffering caused by this fire can be conveyed; but as soon as knowledge of this overwhelming calamity was communicated, all the world hastened to furnish relief. Food, clothing, money, material for rebuilding, every thing needed, were generously and lavishly furnished from every part of America, from Europe, Asia, Africa, and the islands of the

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a The fire department was exhausted by a fire on the preceding night, which had burnt over some 20 acres west of the river. The blank space thus caused served to protect the west side in the great fire of the following days.

sea. In money alone the sum of $4,996,782 74 was sent to the Relief and Aid Society for distribution. While therefore, this was the greatest and most destructive fire of modern times, there has never been before, in the history of the world, such an exhibition of generous liberality.

The energy, activity, pluck, and enterprise of the people in rebuilding the city are also without a parallel Chicago was rebuilt far better, safer, with better material, greater convenience, and far greater magnificence than before—so much so that there can be found among its citizens those who insist that the great fire was to the city a blessing.

The financial crash of 1836–'37 was a sad blow to Chicago. Most of her citizens were forced into bankruptcy, and the value of property sank to merely nominal figures. Recovery and the increase of population were gradual until the completion of the Illinois and Michigan canal, in 1848, caused it to grow rapidly. The opening of railroads, in 1852–'58, greatly accelerated its progress in wealth and population, when the financial crash of 1857–'58 again brought its prosperity to a halt. But the stimulus of the war of the rebellion, 1861–'65, gave the city a tremendous impetus onward, as Chicago furnished the government with most of the food and other supplies for the army. On July 14, 1874, another great fire burnt over many acres on State street and Wabash avenue, destroying at least $2,000,000 of property. This loss made the financial crash of 1873 very disastrous. The depression in business and the value of property reached bottom in 1877. Since then business has been slowly but surely reviving, and Chicago is now marching steadily onward to her "manifest destiny"—to become (as her citizens fondly hope) the largest city upon the American continent.

The population of Chicago is composed of people from all the states east of the Mississippi, and from all the nations of Europe. No one nationality has supplanted another, but all are mixed up, as it is believed, to form one of the most energetic and powerful communities to be found on the surface of the globe.

CHICAGO IN 1880.

The following statistical accounts, mainly collected and forwarded through the kindness of Hon. I. N. Arnold, indicate the present condition of Chicago:

LOCATION.

Chicago lies in latitude 41° 54′ north, longitude 87° 38′ west from Greenwich, on the west side of lake Michigan, near its southern end, and in the northeastern part of the state of Illinois. The mean water-surface of the lake is 581.92 feet above sea-level. The city is in a nearly level plain, only a few feet above the lake, the elevations being, lowest point, surface of the lake; highest, 18 feet above. The city, being on the shore of lake Michigan, is on navigable water. The Chicago river, together with its branches, is already navigable for 12 miles, and is capable of being made so for 5 miles more, within the present limits of the city. Besides the river and branches, there exist already about 5 miles of docks on the lake and at the mouth of the river, thus affording a total wharf frontage of more than 40 miles for vessels. The depth of the navigable portion of the river varies from 16 to 11 feet, according to the force and direction of the wind, the height of the surface of the lake, due to the season or the period, and the condition of the channel itself, which in many places must be dredged to preserve the proper depth. Ordinarily vessels drawing 13½ feet of water have no difficulty in entering the river and going up 2 miles or more. Except when caused by heavy rains or strong winds, the currents of the river are very slight. The lunar tide is less than 2 inches.

The United States government has constructed a breakwater in front of the city. This is not quite completed, but will eventually form an outer harbor capable of furnishing 5 miles or more of wharf front for the largest class of lake vessels.

Chicago is connected by navigation with all of the great lakes, and, through the Welland canal and Saint Lawrence river, with Europe; but the small class of vessels capable of passing through the canal and the Saint Clair flats makes direct trade with Europe unprofitable. Westward the city is connected by the Illinois and Michigan canal and the Illinois river with the navigable waters of the Mississippi river and its tributaries.

RAILROAD COMMUNICATIONS.

The following railroads center in the city:

The Chicago and Northwestern, to Omaha, Nebraska, and Fort Pierre, Dakota, on the west, and to Milwaukee and lake Superior on the north.

The Michigan Central, to Detroit, Michigan, and, via connecting lines, to Buffalo and the East.

The Lake Shore and Michigan Southern, to Buffalo, New York, with branches to Detroit and Grand Haven, Michigan.

The Illinois Central, to Cairo, Illinois, connecting there with the New Orleans line, and to Keokuk and Sioux City on the west. A branch also runs to Saint Louis.

The Chicago, Burlington, and Quincy, between the points named, and to Rock Island, Keokuk, and Council Bluffs, Iowa, and Saint Louis, Missouri.

The Chicago, Rock Island, and Pacific, to Rock Island, Council Bluffs, and Keokuk, Iowa, and to Kansas City, Missouri, and Leavenworth, Kansas.

The Chicago, Alton, and Saint Louis, to Saint Louis on the south and Kansas City on the west.

The Chicago and Eastern Illinois, to Terre Haute, Indiana.

The Pittsburgh, Fort Wayne, and Chicago, operated by the Pennsylvania Company, to Pittsburgh, Pennsylvania.

The Chicago and Iowa, to Dubuque, Iowa.

The Chicago and Pacific, to Byron, Illinois; now operated by the Chicago, Milwaukee, and Saint Paul railroad.

The Pittsburgh, Cincinnati, and Saint Louis, between Cincinnati, Chicago, and Columbus.

The Louisville, New Albany, and Chicago, between the cities named.

The Chicago and West Michigan, to Pentwater, Michigan.

The Chicago, Pekin, and Southwestern, to Peoria, Illinois.

The Kankakee line (Cincinnati, Indianapolis, Saint Louis, and Chicago), from Cincinnati to Kankakee, coming into Chicago over the Illinois Central road.

The Chicago, Clinton, Dubuque, and Minnesota, operated by the Chicago, Milwaukee, and Saint Paul, to Sabula, Iowa.

The Chicago, Milwaukee, and Saint Paul, between the points named, and all over the Northwest. Its line is being now pushed toward Deadwood, Dakota.

The Baltimore and Ohio, to Baltimore and New York.

The Wabash, Saint Louis, and Pacific, from Toledo to Saint Louis and other points on the Mississippi, has a line to Kansas City and Saint Louis from Chicago.

The Grand Trunk railway, to Detroit, Toronto, Montreal, Quebec, and Portland.

TRIBUTARY COUNTRY.

The country tributary to Chicago includes all the grain-growing states and territories of the West and Northwest, and the hog- and cattle-producing sections of Indiana, Illinois, and Missouri. In fact, the whole country north, south, and west of the city, and touched by the many railroads centering here, seeks Chicago as a market, and in return draws supplies to a greater or less extent from here. For 10 miles toward the Des Plaines river the country is flat, but during the past 25 years it has been thoroughly drained, and is now well adapted for gardening and farming purposes. Factories of all kinds are springing up in the surrounding country, the entire local trade of which centers in the city.

TOPOGRAPHY.

Chicago is situated on a large and nearly level prairie, about 600 feet above tide-water, and about 18 feet above lake Michigan, on the water-shed between lake Michigan and the Mississippi valley. The Chicago river, a navigable stream, including its two branches that run nearly parallel with the shore of the lake, affords many miles of dockage and an outlet for the sewage of the city. The waters of this stream naturally reach the ocean at the gulf of Saint Lawrence, but by a canal they are more or less discharged into the gulf of Mexico via the Illinois and Mississippi rivers.

The condition of the surrounding country can better be appreciated by bearing in mind that the original site of Chicago was upon land lying flat and low, a level and, comparatively speaking, treeless plain, much of it marshy, and with but slight dip toward either the sluggish river or the neighboring lake. Indeed, the highest point above the level of lake Michigan, for 15 miles north, is only 38 feet, and southeast, for the same distance, only 23 feet.

Directly south of the city the surface is almost level, as the highest point in 16 miles is only 22 feet. The topography southwest is still more remarkable, as for 10 miles the highest point above the level of the lake is only 10 feet at the summit, where the waters of the Saint Lawrence run northeast and those of the Mississippi southwest. From the summit there is a gradual descent, until the ground is lower than the surface of the lake. At 20 miles it is only 1 foot above the lake.

Three miles directly west, the surface is 17 feet above the lake; 5 miles, 20 feet; and 7 miles, 27 feet. At Austin, where apparently was once the shore of the lake, and continuing 2½ miles farther to Oak Park, 8½ miles from Chicago, we find an elevation of 48 feet, the highest point in any direction within 10 miles of Chicago. Thence to Des Plaines there is a descent, the bottom of the river being 26 feet; there is at this point a marked increase in the ascent, so that at 15 miles the surface is 102, and at 20 miles 125 feet above the level of the lake. Northwest of the city, at a distance of 4 miles, we find an elevation of only 10 feet; at 7 miles of 27 feet, where we again apparently strike the original lake shore; at 10 miles, 40 feet; at 11 miles, 65 feet; at 12 miles, 82 feet; from this point there is a gradual descent to the Des Plaines river, where the elevation is 33 feet; thence the ascent is gradual, and at 20 miles is 96 feet.

The geological structure of the region embracing Chicago and the surrounding country is exceedingly simple. The underlying rock is the Niagara limestone, which has a general dip north-northeast, and consequently sinks deeper as traced lakeward. Upon this floor was originally deposited a mass of blue clay not less than 100 feet in thickness, but as traced toward the former rim of the lake it rapidly thins out. This rim is clearly defined in one or more terraces which are traceable from the head of the lake far into Indiana. To the west of the city, however, 8½ miles distant, at Oak Park, they constitute the "divide" between the waters of lake Michigan and those of the Mississippi.

While the lake has receded far below its former level, it has left behind a series of land ridges, the intervals between which were occupied by ponds, which, by reason of the sluggish flow of the water and their sheltered position, have proved favorable to the growth of the peat-producing plants, from whose decay have resulted large accumulations of humus, or vegetable matter. It is upon this ancient lake-bed that Chicago was founded.

In the vicinity of the lake, and generally parallel with its shores, are beds of sand and gravel that alternate with clay. Near the lake the sand predominates and forms a sandy soil. At the western and southwestern limits of the city the rock approaches near the surface and is quarried and used for quicklime or building stone. In sinking to the depth of 50 feet in the lake, and running thence by tunnel to the old water-works, no rock was reached. In extending the 6-mile tunnel on shore at a depth of 70 feet, the rock was first struck about 4 miles southwest of the crib.

Artesian wells are made by boring through this rock and the two groups next below—the Cincinnati and Trenton—into the Saint Peter's sandstone and Lower Magnesian limestone. Water is reached near the western limits of the city at a depth of about 700 feet. Farther east it is found at a depth varying from 1,000 to 1,500 feet.

CLIMATE.

Highest recorded summer temperature, 99°; highest summer temperature in average years, 93°. Lowest recorded winter temperature, −20°; lowest winter temperature in average years, −16°.

Dr. John H. Rauch, secretary of the Illinois state board of health, states the following regarding the influence of the lake and the winds on the climate here:

Of all the local conditions that obtain at Chicago, none exercise a greater influence on the climate than lake Michigan. It moderates the extreme cold of winter and the oppressive heat of summer, increases the humidity of the atmosphere and the quantity of rain that falls, and causes local currents of air, thus partially changing the prevailing winds of this latitude, producing necessarily local changes of temperature. These local undulations are most marked in the spring, owing to the fact that the specific heat of the land is only one-quarter that of the water, and is both absorbed and given out more rapidly, while water, on the other hand, absorbs it more slowly, owing, no doubt, to the difference in their conducting and radiating properties. It is mainly due to this fact that our springs are so cold, raw, and long-continued; that is, the water is not as soon heated as the land, thus giving rise to local changes of temperature and of winds. In the autumn the heat of the water is less readily abstracted than that of the land, thus causing the temperature in the immediate vicinity of the lake to be milder than even at localities farther south and west. The mean temperature of the lake is no doubt the same as that of the land for the year, differing only in the absorbing and parting powers of heat, as is evidenced by the fact that the freezing point obtains only a short distance from the shore. It will therefore be seen how for eight months of the year, and sometimes even for nine, the lake exercises a wholesome influence upon health, counteracting the great and sudden changes incident to our open and level topography, while, during the remaining months, it is injurious to health on account of the cold and chilling effect it has, in addition to causing sudden changes. Its agency in purifying the atmosphere by absorption it is hardly necessary to dilate upon in this connection.

The north wind, which is less frequent than any other, generally exercises a beneficial influence, and in the winter is the mildest, with the exception of the southeast and east winds. The northwest wind of March, April, and May is cold and moist, but during the summer months, when the heat is extreme, or in winter, when very cold, it is beneficial and salutary. The east wind, with the exception of the north, is the least frequent, and is more common in the spring than in any other season of the year. The lake exercises a marked influence on this wind and that from the northeast. Of all winds none is so depressing and enervating as the southeast wind. The south wind is more common than either the east or north wind, and exercises a beneficial influence in moderating the extreme cold of the westerly winds. The prevailing wind, not alone of Chicago but of the greater portion of the Mississippi valley, is the southwest wind. This wind, sweeping over a greater expanse than any other, necessarily exercises a great influence on health. There are years in which this is the hottest, and again it is the coldest. The west wind is the most frequent in winter, when it is the coldest and driest, while the northwest wind is cold, keen, and penetrating in winter; cold and bleak in spring; and in summer cool and refreshing.

STREETS.

Chicago covers an area of nearly 36 square miles, or 23,040 acres. There are 789 acres in the public parks; 385 acres in the river, its branches, the slips, and the Illinois and Michigan canal; and 5,200 acres in the streets, which have a total length of 651 miles, and are known by 907 names. Of the streets, 139 miles are paved with the following materials: Stone blocks, 1 mile; cinders, 9 miles; broken stone, 6 miles; wood, 115 miles, and gravel, 8 miles. The cost per square yard of each, as nearly as may be estimated, is: For stone blocks, $2 50; cinders, 15 inches deep, 60 cents; broken stone, 15 inches deep, $1; wooden blocks (average), $1 25; and gravel, 15 inches deep, 90 cents.

In all contracts awarded by the city the contractor is required to keep the pavement in repair for two years, free of cost. After that time the repairing is done by the city; but from the fact that the repair of all streets, whether improved or not, is paid for from one general appropriation, it is impossible to separate the different items

so as to give even an approximate estimate of the cost of keeping each kind of improved streets in repair. The wooden-block pavement, for from three to five years, is more easily cleaned than any of the other kinds of pavement in use, but after the expiration of that time there is little difference between it and the other classes of pavement, so far as cleaning is concerned. The stone-block pavement for streets subjected to heavy traffic seems to be the most economical. For streets with a moderate traffic, the cedar-block pavement, laid upon a foundation of 2 inch plank, the interstices filled with lake-shore gravel and paving composition, has proved very satisfactory; while for streets used for light driving, macadam of about 15 inches in depth with a top-layer of clean gravel or broken granite is, without much doubt, the most economical as well as the most satisfactory pavement that has been used here.

There are 756 miles of sidewalks. In the business portion of the city the sidewalks are principally of flagstones, while in the residence portion they are of flagstone, cement, concrete, and plank, the last-named predominating. The commissioner of public works, in his annual report for the year ending December 31, 1880, has the following regarding the sidewalks:

> Our sidewalks, like our streets, being generally constructed of wood, are in a like dilapidated and unsatisfactory condition. * * * Our present sidewalk system is very imperfect and unsatisfactory; the delays in having new sidewalks built, or old ones repaired, are so great that we have continually many places in the city where the sidewalks are not only unpleasant but unsafe to walk upon. I submitted a statement to the city council in November last, showing that it was costing the city an average of over $1,000 per month for damages because of injuries incurred through defective sidewalks. As with the streets so with the sidewalks, we should discard *wood* as rapidly as possible.

The gutters in all the wooden-block, stone, and cindered streets are composed of the same material as the roadway. On graveled and macadamized streets they are, in nearly every case, composed of cobble-stones. Tree-planting is entirely a private enterprise, the trees being always set along the sides of the streets. The construction on all improved streets is done almost exclusively by contract. All street improvements are made by special assessments on the property benefited, and the annual cost varies in accordance with the number of improvements ordered by the council. For the year 1877 the cost was $124,000; for 1878, $284,000; and for 1879, $642,000. The repair of streets is done by the city at an annual cost of about $50,000. Regarding the difference between contract and day work, Mr. H. J. Jones, superintendent of the special assessment department, says:

> In all specific work, such as paving and cleaning improved streets, when the exact amount to be done can be ascertained before the work is commenced, in my opinion the contract system is preferable, from the fact that a full and free competition will, in nearly every instance, bring the price as low, if not lower, than it could be done by any other method; while in such work as the repair of streets, where the amount to be done can never be correctly estimated in advance, it would be almost impossible to do it economically in any other manner than by the day.

A 16-ton steam-roller has recently been purchased for use on the streets.

HORSE-RAILROADS, ETC.

The horse-railroads in the city have a total length of 126 miles, use 675 cars and 4,007 horses or mules, and give employment to 2,450 men. The total number of passengers carried during the year is 48,776,790, and the average rate of fare is about 4¾ cents. There are no regular omnibus lines, but 50 transfer coaches, with 185 horses and employing 145 men, run between the railroad stations and the several hotels. The average number of passengers carried annually is 240,000, and the rate of fare is 50 cents, which includes the transfer of baggage.

TUNNELS.

The Chicago river, and its North and South branches, divide the city into three distinct parts—the north, west, and south divisions. To pass from the north to the south side one must cross the main river; from the north to the west side, the North branch must be crossed; and from the south to the west side, the South branch must be crossed. The travel between these different parts of the city, up to a recent time, had been by swing-bridges, which were constantly opened for the passage of vessels, thus causing more or less inconvenience to the public. This inconvenience was greatly lessened by the construction of a tunnel, consisting of a double-track roadway for vehicles and sidewalk for foot-passengers at Washington street. It is an arched tunnel, 920 feet long, and gives an unobstructed passage between the south and west divisions of the city. This proved so successful that another tunnel has been built at La Salle street, under the main river, by which communication can at all times be had between the north and south divisions.

In addition to the tunnels there are thirty-two bridges within the city limits, that cost on an average about $25,000 each.

WATER-WORKS.

Chicago has always been supplied with water from lake Michigan. In its days of village and town life, before it was organized as a city, water was obtained near the shore of the lake by dipping it into barrels and thus distributing it in carts drawn by horses. A chartered company began supplying the city with water in 1840. Its reservoir was on the corner of Lake street and Michigan avenue, with an iron pipe extending about 150 feet into the lake, through which water was pumped into the reservoir and distributed through large conduits, with a bore of 5 inches in diameter for the mains and 3 inches for the subordinate connections.

In 1851 a board of water commissioners was created by the state legislature with authority to construct water-works to supply the city with pure water. Under this act the city was supplied with water-works until its growth, and the question of sewage disposal, in 1862–'63, compelled the authorities to consider in what way an adequate supply of pure water could be obtained, to be drawn so far from the mouth of the Chicago river, into which the sewage of the city was discharged, as would furnish it without impurity. On February 13, 1863, the legislature conferred upon the city full power to extend "aqueducts or water-pipes into Lake Michigan far enough to be beyond river and shore impurities, so as to insure a full supply of pure water". Congress, on January 16, 1864, sanctioned this act, and the city, having obtained all necessary authority, finally adopted the plan, now in operation, for supplying water. Work was begun March, 1864, and the crib was launched July, 1865. The works on land were erected on the shore north of the east end of Chicago avenue, and consisted of the engine, the pumping apparatus, and the water tower. An iron shaft, 9 feet in diameter, was sunk near the shore to a sufficient depth below the level of the lake, and from this shaft a tunnel was excavated, at right angles with the shore, a little north of east, for 2 miles out under the surface of the lake, 5 feet wide by 5 feet 2 inches high, with top and bottom arched. The bottom of the inside of the tunnel, at its east end, is 66 feet below water-level, and has a slope toward the shore of 2 feet per mile. At the east end of the tunnel is a crib, constructed of logs 1 foot square, within which is fixed the iron cylinder, 9 feet in diameter, sunk to communicate with the tunnel from the shore, and is 64 feet below the surface of the water and 31 feet below the bottom of the lake at this point. The crib is 12 feet below the water-line, and over and upon it is built a house for those in charge. Thoroughly braced and strengthened, it has withstood without injury all storms. A water-tower 154 feet high was built west of the pumping-works, within which is a wrought-iron stand-pipe, 36 inches in diameter and 138 feet high, to the top of which water is raised. On March 25, 1867, water was let in and the works were inaugurated.

The supply was ample until 1870, when the rapid increase of the city demanded a greater quantity of water than could be supplied by one tunnel. Arrangements were accordingly made for a second tunnel, that should extend to a point in the southwestern part of the city, 31,490 feet distant from the crib. On July 12, 1872, the work was begun from the shore end, and on October 2 from the crib end, and was completed July 7, 1874, at a cost of $956,510. This tunnel is 7 feet in diameter and is lined with brick. It is parallel with the first tunnel and about 50 feet from it, and is connected with it by a cross-tunnel at the crib. After connecting with the pump-well at the shore end it is extended across the city and under the river 4 miles to the west-side pumping station. The cost of the new tunnel and the pumping works was $1,638,249 92. The total cost of the works for the water-supply of Chicago is $8,550,000. The system is by pumping direct into the mains or into a stand-pipe, the average pressure in the mains being 40 pounds to the square inch. The average amount of water pumped per diem is 57,384,337 gallons, the largest amount supplied in a single day being 73,000,000, and the smallest, 45,872,500 gallons. The average cost of raising 1,000,000 gallons 1 foot high is $5\frac{42}{100}$ cents. The total receipts from all sources for 1880 were $920,785 16, and the total expenditure, including interest on bonds, was $1,050,958 01. The excess of expenditures over receipts is caused by the retirement of $291,000 bonds, payable July 1, 1880. But for this large extra expenditure the receipts would be $160,827 15 over expenditures. There are 2,113 meters in use, and, where set, a considerable reduction in the consumption of water has been found to be the invariable rule. There are $455\frac{1}{2}$ miles of pipe and 3,361 hydrants connected with the works.

GAS.

Gas is supplied to Chicago by private corporations, the charge being $2 25 per 1,000 feet. There are 11,080 street-lamps. The city does not pay by the lamp, but by the number of feet burned, as ascertained by test-meters, being $1 65 per 1,000 feet for the north and south divisions, and $2 per 1,000 for the west side. This makes each lamp cost on the average about $17 32 a year—$13 for the gas, and $4 32 for lighting, repairs, etc.

PUBLIC BUILDINGS.

The buildings owned or occupied by the city for municipal purposes, wholly or in part, include the city hall, city hospital, small-pox hospital, house of correction, and the buildings owned by the fire, police, and school departments. The total cost of all buildings belonging to the city, exclusive of those connected with the water-works, is $2,117,985. The cost of the present city hall was $78,330, but a structure combining city hall and court-house, to cost $1,500,000, is now in process of construction by the city and county, and already $446,000 has been expended on it.

PUBLIC PARKS AND PLEASURE-GROUNDS.

The public parks of Chicago contain nearly 2,000 acres, of which 1,870 acres are in 6 large parks, and the remainder in 12 public squares and similar places. In addition to this a park scheme provides for more than 20 miles of parkways, locally termed "boulevards", of which 10 miles are 200 feet wide, and 10 miles 250 feet in width. The 6 parks are all on the outskirts of the city, and are well distributed north, west, and south. The boulevards are so located as to form a continuous chain, linking each park to the others. Besides these there are in the heart of

the city 7 miles of streets of the ordinary width, which form part of the park system, being under the same management, specially constructed to fit them for park travel, and all general traffic thereon prohibited. Street-car routes, on broad avenues, also extend in direct lines to the main entrances to each park, and easy access to the parks for all classes, from all parts of the city, is thus provided. There are 3 park districts, corresponding to the divisions of the city, and the cost of the construction and maintenance of each park or boulevard is borne by the district in which it is located; but the general plan of park improvement in each district has been designed with special reference to the others, so that all combine to form one harmonious public pleasure-ground for the whole city. The 6 larger parks are as follows:

Lincoln Park, area 250 acres, is situated on the shore of the lake, about 2 miles north of the harbor entrance, and extends northward until a little beyond the city limits. Out to its south border the city is quite compactly built up, and, as there is a large population in the immediate vicinity, this park is much frequented at all seasons, and occasionally crowded during fine days in summer. There are 7 miles of driveways (2 miles being along the lake shore) and 9 miles of walks, while near the middle of the park there is a pleasure-pond, covering 12 acres, which is fed by 2 artesian wells. A long pier, well shaded by a canvas canopy, stretches out into the lake, and in summer this is used as a health resort, chiefly for sickly and weak children. Only a small portion of this park remains to be improved, but the construction of a permanent breakwater to protect the shore-line and adjoining drive from damage by storms will be costly. The total cost of the land was $1,000,000, and so far $1,200,000 has been expended on improvements and annual maintenance. The park is controlled and managed by the board of commissioners of Lincoln park, composed of 5 members.

In the west district there are 3 parks, all inside the city limits, and about 5 miles back from the lake. They are situated about 1½ mile apart, on an irregular line from north to south. *Humboldt Park*, area 200 acres, is the most northerly; *Central Park*, area 185 acres, comes next, to the south; and *Douglas Park*, area 180 acres, is the most southerly. The plan and method of improvement have been, in their general features, quite similar in each park, and the water-supply in each is from artesian wells. The parks are all connected by boulevards that extend north and south to the limits of the district, while Washington street forms a parkway from the center of population to the main entrance of Central park. The total cost for land and improvements was $1,876,965 36, for all the parks, and $18,000 is expended each year for their maintenance. The names of the designers of these parks are Messrs. Jenney, Schermerhorn, and Bogart, and Mr. Oscar F. Dubois. The parks of the west side are managed and controlled by a board of commissioners, composed of 7 members, appointed by the governor of the state.

The lower division, or *Lagoon Park*, has an area of 593 acres. It is situated on the shore of lake Michigan, 6⅓ miles south of the court-house and outside the city limits. The upper division, or the *West Park*, has an area of 372 acres, and is situated north of Lagoon park, about 1¼ mile from the lake. These 2 parks are connected by a pleasure-way, called the "Midway Plaisance", 726 feet wide, and having an area of 90 acres. Three boulevards extend from the parks to the city limits, and the one to the west will be continued so as to be connected with the park system in that district. These parks were designed by Messrs. Olmstead, Vaux, & Company, and are now in process of construction. The total cost to date has been, for land $2,964,754 97 (with 250 acres more to be bought), and for construction, $2,222,763 65. The cost of boulevards for these parks, as well as for those connected with the other systems, is included in the above sums. The south-side parks are controlled by a board of 5 commissioners, appointed by the judges of the circuit court of Cook county. They hold office for five years, one being elected each spring. The following-named parks are controlled by the department of public works:

Lake Park embraces 41 acres, and is bounded by Randolph street, Lake Park place (Park row), Michigan avenue, and the Illinois Central Railroad lands. That part south of Madison street was dedicated as "public grounds" by the canal commissioners on their plat of fractional section 15, recorded July 20, 1836, while the northern portion is shown on the record of Fort Dearborn addition, made by the United States government in 1839.

Union Park was acquired by purchase in December, 1853, and February, 1854. It contains 14.8 acres, and is bounded by West Lake street, Bryan place, Ogden avenue, Warren avenue, and Ashland avenue.

Jefferson Park was purchased in 1850, contains about 5½ acres, and is located between Loomis and Throop, and West Monroe and West Adams streets.

Wicker Park is a triangular piece of ground, bounded by North Robey street, Fowler street, and Park street (or Wicker court), and covers an area of 4 acres.

Vernon Park, donated to the city by Henry D. Gilpin, October 17, 1859, embraces very nearly 4 acres, and is bounded by Macalester place, Gilpin place, Sibley street, and Lytle street.

Ellis Park was dedicated to the city by Samuel Ellis, March 21, 1855; contains 3⅜ acres, and lies between Vincennes and Cottage Grove avenues and north of Thirty-seventh street.

Washington Square, with an area of about 2¼ acres, was donated by O. Bushnell and others, September 14, 1842, and is bounded by La Fayette place on the north, Washington place on the south, North Clark street on the west, and Dearborn avenue on the east side.

Dearborn Park, lying east of Dearborn place, west of Michigan avenue, south of Randolph street, and north of Washington street, is shown on the recorded plat of Fort Dearborn addition as "public ground".

Congress Park was dedicated by F. W. and James L. Campbell in their subdivision of lots 13 to 24 of block 4, Rockwell's addition to Chicago, recorded April 8, 1873. It has an area of seven-tenths of an acre, and is situated between West Van Buren and West Harrison streets, about 200 feet west of Rockwell street.

Union Square was donated by H. O. Stone in his subdivision of Astor's addition, contains about one-half acre, and forms the northwest quarter of a block bounded by Goethe, Scott, Astor, and Stone streets.

Campbell Park, containing about one-half acre, is located between Woodbine place and Evergreen place, and extends from Leavitt street to Oakley avenue. It was dedicated July 28, 1871, as a public park by F. W. and James L. Campbell.

Aldine Square is situated in the north half of block 3, of Ellis' west addition, about 300 feet south of Thirty-seventh street, extending from Vincennes avenue west a distance of 330 feet. It was made a public park by the owner, and recorded as such April 26, 1875.

PLACES OF AMUSEMENT.

The following are the principal theaters in the city:

McVicker's, with a seating capacity of 2,180; Haverly's theater, seating 2,080; Hooley's theater, with a seating capacity of 1,400 persons; and Hamlin's theater, with a seating capacity of 1,000. There are also Olympic theater, on Clark street, between Lake and Randolph, seating 1,100; Academy of Music, on Halsted, near Madison, with a seating capacity of 1,500—this latter is devoted to variety and melodrama, and has the most brilliantly finished interior in the city, said to be one of the finest theaters of its class in the world; Halsted Street opera-house, corner of Halsted and Harrison streets, known as a "dime theater", seats 1,100; Lyceum theater, melodrama, on Des Plaines street, near Madison, seats 900; National theater, dime, on Clybourn avenue, seats 1,000; Müller's opera-house, dime, is situated on North avenue, and seats 800; the Stock Yards theater, at the stock-yards, has a seating capacity of 700, and charges a dime for admission; and the Twenty-second Street theater, dime, that seats 800, but is not open continuously. All theaters pay an annual license of $300 to the city. Of the concert-rooms and lecture-halls, not including those connected with churches, there are, Central music-hall, corner of State and Randolph streets, having 1,789 numbered seats and a total capacity of 3,100 persons; Fairbank hall, in the same building, with a seating capacity of 900; McCormick hall, Clark and Kinzie streets, seats 2,200; Farwell hall, on Madison street, seats 2,000; Brand's hall, Clark and Erie streets, seats 800; Turner hall, Clark and Chestnut streets; and Aurora Turner-hall, on Milwaukee avenue, seat 1,000 each; Twelfth Street Turner-hall has about the same seating capacity; Central hall, Wabash avenue and Twenty-second street, seats 800; and Standard hall, Michigan avenue and Thirteenth streets, seats 600. Of the above halls, Brand's, all the Turners', and the Standard are provided with stages and scenery.

The principal concert- and beer-gardens are, Baum's pavilion-garden, seating 800; Fisher's garden, with stage and music-stand, seating 1,000; Lincoln's Park pavilion, seating 1,000; Eagle garden, seating 1,500; Wabash Avenue pavilion, seating 1,200; and "a score of small affairs not worth mentioning".

DRAINAGE.

The ground on which Chicago is built is a level plain, once a prairie, lying only a few feet above the surface of lake Michigan. The soil is naturally a rich black loam. Along the shore of the lake it is underlaid with sand and gravel, but in parts of the city more remote from the shore the subsoil is stiff hard clay, almost impervious to water. In wet weather the level surface of the ground is saturated with water; the roads in the suburban and rural districts soon become a soft, black, bottomless quagmire, almost impassable, especially as travel is concentrated upon them near the city. But within the city limits streets and avenues made of such materials are useless at such times unless protected by pavement or other artificial means. Hence the amount and character of the pavements in a city like Chicago is of more than usual interest.

Much of the older part of the city along the shores of the Chicago river was built upon ground even lower than the adjacent prairie, some of the land being reclaimed from the river and filled to a height of only a few feet above its surface. In after years, as the city limits extended and it became necessary to provide for the drainage of more remote districts, it was discovered that there was not room enough beneath the pavement of the streets for the necessary sewerage works. In fact, houses and ground near the river could not be properly drained. The city at this time was rapidly growing. Miles of streets were already lined with lofty and expensive houses, all built from 3 to 6 or more feet too low, while every year the matter was becoming more serious and complicated. Not only the business part of the city, but even more remote districts devoted to residences, would have to be rebuilt on a higher level, or else all the houses would have to be raised and the streets and sidewalks graded up. The latter course was adopted. The work of raising the city extended over a period of several years. Those who lived in or visited Chicago while the work was going on remember how vast storehouses, hotels, business houses, and residences were lifted from 4 to 6 and sometimes 10 feet without serious interruption to the business carried on within them, and how streets, sidewalks, horse-car tracks, lamp-posts, hydrants, and sometimes shade-trees, were raised to conform with the new grade-lines.

The accompanying map shows in black shade the part of the city so raised. The district lies principally between State and Halsted streets, and extends from Twelfth street to Chicago avenue, covering an area of about 4 square miles.

Besides this, many other streets laid out and improved from year to year are in some places raised several feet above the level of the adjacent lots, as, for instance, Blue Island avenue, portions of Clybourne and Fullerton avenues, some of the streets above Humboldt park, and other places.

The process of grading up streets, undertaken by the city, may be described as follows: A stone wall is built on the curb-line, between the sidewalk and the gutters, to support the curb-stones at the required grade; the space between the curb-walls is filled in by the city with ashes, street-dirt, building-waste, and earth to support the pavement and gutters; the sidewalks are bridged over with plank, leaving the space beneath open to be used as vaults for storage of coal, etc., in front of the cellars or basements of houses; but when there are no houses the space is in open communication with the vacant lots adjacent. Streets treated in this way are said to be "improved", and the same term is applied whether they are graded up or simply paved upon the natural surface of the ground.

Of course, when streets are filled in to a depth of several feet and immediately paved, the pavements settle out of shape and have to be relaid. Sometimes this has to be done several times before the ground beneath is fairly settled. There are many miles of pavements in the city which are still passing through the transformation stage. If not promptly repaired, when they begin to fail they soon break up and disappear in a shapeless mass of wood, mud, and water.

PAVEMENTS.

The material used for street pavements is almost exclusively wood, as will be seen by the following:

Table showing extent of improved streets in Chicago January 1, 1880, *from annual report of the department of public works*, 1879.

Materials.	Miles.	Remarks.
Wooden blocks	114	82 per cent.
Cinders	0	
Gravel	8	
Macadam	0	
Stone pavement	0	$\frac{1}{10}$ of 1 per cent.
Three-inch plank	0	
Total number of miles	139	

That wooden pavements are not a thing of the past, and are not going out of use, will be apparent from the two following tables, taken from the same source, showing street improvements made during the years 1879 and 1880, where it appears that fully 80 per cent. of all the street improvements during that time consist of wooden pavements, and in the year 1879 that fully 70 per cent. of all the work done—estimated in miles of streets—consisted in relaying pavements already laid before, or, as the report says, "old improved" was "reimproved".

Table showing street improvements during the year 1879.

Materials.	Miles.
Wooden blocks	5
Medina stone	0
Cobble-stone	0
Macadam	0
Cinders	0
Three-inch oak planking	0
Total number of miles	6

Of the above, 4 miles of old improved was reimproved.

Table showing street improvements during the year 1880.

Materials.	Miles.
Wooden blocks	13
Macadam	2
Stone	0
Graveling	0
Oak planking	0
Curb wall and filling	1
Curbstone and filling	0
Total number of miles	18

The method of laying wooden pavements now in practice is to lay a plank floor 2 inches thick (sometimes on ground sills of heavier timber), forming the shape of the roadway and gutters. On this floor round blocks of cedar, formed by sawing off the logs in uniform lengths of from 6 to 8 inches, are placed standing on end; the spaces between the circular blocks are then filled with screened lake gravel, the pebbles being about as large as hazel-nuts or filberts; and over all is poured a composition of coal-tar boiling hot, and the whole is covered with fine lake-shore gravel, the pebbles about as large as grains of corn or coffee. Such a pavement when new is neat, pleasant, and beautiful, and is suitable for both light and heavy traffic, as carriages pass over it easily and noiselessly. In fact, one of the first things noticed in coming to Chicago from another city is the remarkable quiet of its busy streets, and the conspicuous absence of that increasing clang and din incident to cities where stone pavements are used.

The drainage of paved streets is accomplished by making the gutters descend toward the sewer-inlets, so that, while the center of the streets and the top of the curbstones and sidewalks maintain level lines, the bottom of the gutters gets deeper and deeper until it is not unusual to see it 18 inches or more below the sidewalk at the catch-basins.

Wooden pavements when new appear to give good drainage, but when they become worn and the surface becomes uneven they absorb water and filth until they are saturated, and soon decay and go to pieces. There are about 25 miles of wooden pavement in Chicago which may be classified as new and affording good drainage. There are fully 90 miles that are in various stages of dilapidation and do not afford good drainage.

If we could safely assume that pavements as now being laid would last eight years, it would be necessary to rebuild each year not less than 14 miles in order to maintain the present existing streets, aside from the paving of new ones. By reference to the tabular statements given above, it will be seen that in 1879 only 5½ miles were laid, and in 1880, 13½, but of these a large share was in new streets. At this rate the whole system of wooden pavements in Chicago will go to pieces in a few years. But there are still 500 miles of streets not paved at all. On this subject the commissioner of public works, in his annual report for 1879, says:

> The cheap and short-lived wooden pavements of the city are a species of shoddy that should not be encouraged. Cheap only in the first payment, in the long run, when aggregated, they are, in my opinion, the dearest and most unsatisfactory pavement the city has ever used.

And in his annual report for 1880 (page 17) he says:

> Surely the wretched condition of our streets to-day furnishes an unanswerable argument against continuing the system of laying wooden blocks. Millions of dollars have been expended in paving the city, and yet we are but little nearer the goal of well-paved streets now than at the commencement. A few of the latest paved streets with wooden blocks are temporarily good, but these must all be removed under a permanent system. With 651 miles of streets now, and the city rapidly growing, what possible hope can we have, under the present system of short-lived wooden pavements, ever to see our city well and universally paved? * * * If we use such material as will speedily decay and will necessitate being done again over every few years, can we ever hope to get through or to see our streets in much better condition than they are at present?

SEWERAGE.

The sewerage of Chicago appears to have been developed under one general plan, and is uniform in its design and execution throughout the city. There are no broad drainage areas from which the drainage is gradually concentrated to one great outlet, but rather numerous small subdistricts draining each to its own separate outfall. Nor are there any very long lines of sewers, as the streets are only 10 feet above the lake, and sewers of great length, with a reasonable descent, could not be kept below the pavement.

The general principle on which the system is based appears to be to lay a main sewer in each alternate street leading toward the river, and to drain the intermediate and cross-streets to these by short laterals on both sides. For instance, a main sewer in West Madison street begins at the Chicago river and extends in a straight line for a distance of 2¾ miles, receiving laterals from cross-streets, which drain also part of Washington street on one side and Munroe street on the other. A main sewer in West Adams street extends in a straight line from the river to Western avenue, about 2½ miles, and receives short laterals in the same manner as above, beginning on Munroe street on one side and Jackson street on the other, and discharging through each of the cross-streets.

The same may be said of Van Buren, Harrison, Polk, Tyler, and other streets on both sides of the Chicago river, and Clark street and others on the north side. In some instances two or more sewers, when they come near the river, are united and discharge at a single outfall, as, for instance, Rush and State streets, which are connected through Kinzie and discharge at Rush; Market and Wells, which are brought through Michigan street one square and discharged through Franklin street, on the north side. But these form the exceptions, and do not interfere with the general uniformity of design. The drainage into lake Michigan is arranged on the same plan, but the sewers are brought together and form systems of considerable extent, having in all only three outfalls, viz, at Twelfth street, at Twenty-second street, and at Douglas avenue.

Although the sewers of Chicago are not combined in comprehensive systems of mains and branches winding about through various streets, still it is not unusual for one outfall to drain a considerable extent of territory, through a good many miles of lateral sewers. For instance, in Harrison street a sewer 2.4 miles long in a straight line drains 300 acres of territory through a total length of 7.4 miles of sewers to an outfall 5 feet in diameter, the

total descent from the highest point to the outfall being 6.7 feet. A sewer in Madison street 5 feet in diameter at the outfall collects the drainage of 333 acres, the total descent being 8.3 feet. As an example of the larger drainage districts, that in the southerly part of the city may be mentioned, having an outfall to lake Michigan at the foot of Twenty-second street 6 feet in diameter. This drains an area of 620 acres, through a total length of 19 miles of sewers, the summit being 2.5 miles distant from the outlet and 12 feet above it—considerably more than the usual elevation. The longest system of sewers in Chicago leading to one outfall is that through Chicago and Milwaukee avenues and Kinzie street to the Chicago river. This has a combined length of mains and laterals of 26.6 miles, and drains 580 acres. The outfall is 6 feet in diameter, but there are several storm overflows along the line.

For convenience of reference on this subject the following table has been prepared from the records in the sewerage office of the department of public works, showing some very interesting statistics of a few of the larger drainage districts. By comparing the size of outfall, as shown in this table, with the rate of fall ($\frac{1}{2500}$ for large sewers) and the areas drained, it will be seen that provision is made for disposing of a rainfall of only about 0.15 inch per hour:

Rate of fall of sewers.

Diameter.	Rate.
From 4 to 6½ feet	$\frac{1}{2500}$
3½ feet	$\frac{1}{2000}$
3 feet	$\frac{1}{1667}$
2½ and 2 feet	$\frac{1}{1000}$
Pipe sewers, from 12 to 20 inches	$\frac{1}{800}$

Districts.	Area drained.	Length of sewers.	Diameter of outlet.	Elevation of bottom at outlet.	Elevation of bottom at summit.	Distance of summit from outlet.
	Acres.	*Miles.*	*Feet.*	*Feet.*	*Feet.*	*Miles.*
From Thirtieth street, through South Park avenue, Twenty-sixth, State, and Twenty-second streets, to lake Michigan.	620	19.0	6	.....	12.0	2.5
From York street, through Ashland avenue, to the Chicago river	300	8.3	5½	0.5	6.1	1.8
From Oakley avenue, through Harrison street, to the Chicago river	300	7.4	5	1.0	6.7	2.4
From Rockwell street, through Madison street, to the Chicago river	333	.....	5	.....	8.3	2.7
From Seymour street, through Fulton street, to the Chicago river	275	13.7	5	0.5	7.4	2.8
From North Hayne avenue, through Chicago and Milwaukee (*a*) avenues and Kinzie street, to the Chicago river.	580	26.6	6	.....	7.3	2.2
From Belden avenue, through Lincoln avenue and North Clark street, to the Chicago river.	400	14.0	6	.....	6.7	2.7

a The sewer in Milwaukee avenue has storm-overflows to the North branch of the Chicago river.

The accompanying map shows very clearly the principals described above, as it represents the main sewers in heavy lines and gives diameters in inches, expressed in small figures. About 44 miles of sewers have been built since this map was published. They are principally an extension of the same general plan demanded by the growth of the city.

Size and shape of sewers.—All sewers of Chicago are circular in cross-section, and are of sizes ranging from 1 to 6 feet in diameter. Those 2 feet or more in diameter are made of brick, and those less than 2 feet are of vitrified-clay pipe, mostly from Akron, Ohio. The system of sewerage is peculiarly adapted to the use of pipe sewers, as the mains run in parallel lines, to which side-streets can be drained by short laterals with good fall. Thirty-six and one-half per cent. of the entire sewerage of the city is of 12-inch pipe (123 miles), while of the various sizes of pipe nearly 42 per cent. of the total length of sewers in the city is composed of pipe from 12 to 20 inches in diameter.

Another favorite size is 2 feet diameter, formed of a single ring of brick laid in hydraulic cement. The cost of this sewer is no more than that of the larger size of pipe. There are about 103 miles of sewers of this size (2 feet) in the city, or about 30 per cent. of its entire length.

The largest sewers in Chicago, until within the past year or two, over 6 feet in diameter, consisted of two concentric rings of brick, each 4 inches thick, though some sewers of this size have been laid 10 inches thick (2½ bricks).

In the year 1879 a sewer 9 feet in diameter was begun on Twenty-second street, west of Leavitt street. The bottom of this sewer is 2½ feet below that of the Leavitt Street sewer, into which it now overflows, but it will eventually have a separate outlet to the south branch of the Chicago river, near the proposed sewage-pumping works, to the Illinois and Michigan canal. This large sewer will be built on a low grade, and is intended for the relief of a large district in the western part of the city too low to be drained by extending the present system of main sewers. It is intended also to intercept all drainage from above Twenty-second street, which would otherwise go into the small stream known as the "west branch of the South branch of the Chicago river".

Some of the main sewers draining large areas run full in time of heavy rains, but only at long intervals, and some show no signs of ever having been full. They usually carry from 8 to 14 inches of water, flowing at a very moderate velocity, apparently about 1 mile per hour.

The following table shows length of sewers of each size, December 31, 1880:

Size.	BUILT IN 1880.		TOTAL.	
	Feet.	Miles.	Feet.	Miles.
9 feet, brick	1,559	.....	1,559	0.29
6½ feet, brick	.....	.....	1,330	0.26
6 feet, brick	1,972	.....	12,512	2.37
5½ feet, brick	.....	.....	5,460	1.03
5 feet, brick	2,614	.....	72,889	13.80
4½ feet, brick	668	.....	73,917	14.00
4 feet, brick	995	.....	89,471	17.00
3½ feet, brick	.....	.....	29,552	5.60
3¼ feet, brick	.....	.....	665	0.12
3 feet, brick	2,113	.....	74,700	14.14
2½ feet, brick	4,905	.....	124,808	23.63
2¼ feet, brick	.....	.....	6,359	1.20
2 feet, brick	13,882	2.6	542,050	102.66
20-inch pipe	1,625	.....	1,625	0.30
18-inch pipe	10,886	2.06	10,886	2.06
15-inch pipe	13,446	2.5	81,287	15.39
12-inch pipe	24,463	4.6	651,571	123.40
Total	79,128	15.00	1,780,689	337.25
House-drains laid from sewer to curb line	138,691	26.3	1,841,362	348.74
Manholes	554		11,053	
Catch-basins	271		10,062	

Rates of fall of sewers.—The datum plane to which all elevations are referred is low water in the lake, which is 582 feet above tide-level.

Most of the sewers discharge at the level of the city datum. Some of those discharging into the Chicago river at a considerable distance from its mouth have their outlet a little higher, as, for instance, Ashland avenue, which is 5 feet, and Harrison street, 1 foot above datum.

Most of the large mains are built on the uniform grades of 1 foot in 2,500. As the size of the sewers diminishes, the rates of fall are increased, the descent of 2-foot sewers (which include about one-third of all the sewers in the city) is 1 in 1,000, except in localities where they can be made steeper near their summits and in high ground. The usual rate of fall for pipe sewers, except where they can be made steeper, is 1 in 500.

The question is, of course, naturally suggested whether or not sewers on such slight grades will keep themselves free from deposits, especially where they are built with circular cross-sections, as they all are in this city.

Flushing and cleaning out sewers.—The most troublesome thing encountered in the way of deposits is sand and fine gravel. Almost every thing else can be flushed out, but these form so solid a mass that water takes little effect upon them, and if once loosened and washed away they subside again as soon as the velocity of the flush is over. In some of the larger sewers deposits of this kind become so solid that they have to be removed with pick and shovel. Not many sewers collect sand, however, as it comes in principally from newly laid pavements or macadam roads, finding its way through the catch-basins or perforated manhole covers. Other deposits, such as organic matter or soft clay and street-dirt, readily yield to the appliances used in cleaning the sewers.

The interior condition of the sewers is well known, as they are constantly inspected, and are cleaned and kept in repair by a force of men regularly employed by the city, some of whom have been engaged in this work for many years.

Sewers less than 3 feet in diameter, and hence too small to be entered, are flushed by apparatus designed especially for the purpose. There are two of these flush-tanks belonging to the city, one holding 1,800 and the other 2,100 gallons of water. A tank is filled from the nearest fire-hydrant and hauled by four horses to the manhole, and the contents are discharged in from 40 to 60 seconds, filling the sewer completely and sometimes the manhole also, and in its rush clearing out all lighter deposits and washing the sewer clean. During the year 1880 there were 82 miles cleaned in this way. The force employed was a 4-horse team, 1 foreman and 3 men, and the time about 265 days. In 1879 there were 120 miles flushed at an expense of $7,000, and in 1877, 83 miles were flushed at a cost of $8,000. In other years, about the same. Deposits that will not yield to the action of water are removed from small sewers by the "derrick and chain machine". Manholes are about 75 feet apart; a chain is first passed through the sewer and around sheaves and up through the manholes. This chain, which carries an iron scraper, is operated by a derrick at each end by which it can be drawn either forward or backward. By this means the sand and gravel, or other obstructions, are brought to the manholes and thence passed up in buckets to the surface.

Sewers 3 feet or more in diameter are cleaned by men who go through them with scrapers and other suitable tools and buckets, the pick and shovel being used when necessary. The usual manner of cleaning the large mains

is by a scraper shaped to fit the bottom of the sewer, and drawn by a dozen or more men by means of a drag-rope. The action of the feet of so many men loosens the sediment and mixes it with the water so that it readily yields to the scraper, which is guided and controlled by one of the men. Those who do this work are regularly employed in the sewerage department of the city, and are usually occupied in cleansing out catch-basins and other work. They are employed with the understanding that they are to do this work when required. It is usually done in the winter when the lake is low, and occupies only a few days in each year.

The amount of work done and the money expended in keeping the sewers cleaned for the past twenty years is shown in the following table. It does not include cost of cleaning catch-basins. Other information on this subject may be found in the annual report of the department of public works for the year 1879, and in other reports. From these sources of information it appears that about 46 per cent. of the entire length of the sewers has to be cleaned each year, supposing that the work reported does not include cleaning the same sewer more than once in each year.

The superintendent states that when a sewer is once thoroughly cleaned it requires no more attention for four or five years.

	FOR EACH YEAR.				For 19 years ending December 31, 1870.
	1877.	1878.	1879.	1880.	
Total cost of cleaning sewers	$17,576 16	.....	$12,352 69	.....	$267,891 64
Annual cost per mile, based on the miles of sewers in use at beginning of year	66 00	.....	42 00	.....	94 69
Total number of miles of sewers in use at beginning of year	265 75	$278 05	294 73	$322 27	2,820 20
Number of miles cleaned during the year	122 10	.....	136 60	106 31	1,370 60
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
Percentage of sewers cleaned to the total number of miles in use at the beginning of the year	46	.....	46	33	48½

EXAMINATION OF THE INTERIOR OF SEWERS.

A careful examination has been made of the interior of sewers, selecting for the purpose those in all parts of the city, examining some by looking or going down into the manholes, and others by walking through the sewers.

The greatest possible courtesy has been shown by the superintendent in this matter, and every facility offered for a careful and complete examination. All necessary appliances for comfort and convenience were provided, and men who have been for many years in the department appeared to take pride in exhibiting the result of their care and attention.

East Twelfth Street sewer, from Michigan avenue to the lake. This sewer, 5 feet in diameter, is the outlet of three sewers, each 3 feet in diameter, forming a three-way junction, which is a fine piece of brick masonry. One of the 3-foot sewers contained about 5 inches of soft sand, the other two were clear. The 5-foot main was clear most of the way and the bottom was smooth and slippery. The water was about 10 inches deep at the junction, and increased to 2 feet at the outlet, as the lake was a little higher than usual on the day when the inspection was made.

East Twenty-second Street sewer, from Cottage Grove avenue to the lake, was examined. The outlet of this sewer in former years was often obstructed by sand and gravel washed in from the lake. To prevent this, a cut-stone chamber has been built around it, with a temporary 36-inch iron-pipe outlet extending beyond the breakwater. The top of the chamber is covered with a wooden hood, and the sewer outfall is further protected from back-action of waves by a wrought-iron trap covering the outlet. This structure appears to be effective in protecting the outfall from sand and gravel, but it interferes with the ventilation of the sewer, and appears also to retard the outflow, causing a deposit of from 3 to 5 inches of soft matter on the bottom of the sewer. This sewer is evidently laid in wet ground, as there is a considerable drip from the top, while the arch and sides are considerably incrusted with hard crystalline matter. The water is 18 inches deep, and the flow is apparently about 1 mile per hour. There is a more noticeable odor in this sewer, probably because the outlet is closed. It drains an area of a little more than 600 acres, lying betweeen Sixteenth street, State street, Thirtieth street, and lake Michigan, and has a combined length of sewers of 19 miles. Some of the manhole-covers are perforated and some catch-basins are not trapped. There is very little, if any, circulation of air.

Douglas Avenue sewer is laid very deep in a sandy soil saturated with water. The depth of the sewer at Cottage Grove avenue is about 20 feet. The flow of water is from 12 to 14 inches deep, and quite rapid. In one or two places a slight deposit of not more than 2 or 3 inches was noticed, but most of the way the bottom was clean and smooth. This sewer has been built about seventeen years, and is in a good state of preservation; the grade is true and the alignment is good. The brick-work is smooth and even and well finished, and there seems to be no good reason why it should not last as long as it will be wanted.

Examinations have also been made in the west and north divisions of the city. A sewer in Leavitt street was entered and examined. This has recently been built, and affords a good example of brick masonry, is true to line

and grade, smooth, and well finished, and has some fine junctions, especially at Blue Island avenue. The storm-overflow into it from the 9-foot sewer in Twenty-second street, recently built, is well constructed. There is but little water in this sewer, and it flows over a deposit of mud about 8 inches deep. The mud is very soft, and the foot readily sinks through it and finds a firm footing on the bottom of the sewer. The deposit is not sticky, and when disturbed it does not give off bubbles of gas as if it contained organic matter, but only the sulphurous smell characteristic of fresh-water meadow-muck. It has probably been washed in from the river at high water.

As a fair example of the sewers in the more densely populated part of the city, the one in Fulton street was selected and examined. On throwing off the manhole cover some steam escaped, and steam was also noticed in the catch-basin at the corner of Union street. There was very little deposit in this sewer, and that only at intervals. Several gas-pipes pass through it (crosswise), and these were heavily festooned with paper, rags, etc.; in one place a piece of plank was found which appeared to have been used by the workmen when cleaning out the sewer. It was loosened by one of the men and floated away with the current. The atmosphere of this sewer was stifling, which some of the workmen said was caused by fumes from the lead-works which drain into it.

On the north side the Market Street sewer was selected as a fair example of those in that vicinity. The long curve from Market street into Michigan street was noted, and shows a fine piece of brick-work, true to line, with an even, regular curve, and a smooth bottom. The brick-work is evenly laid, and presents a smooth surface. The air of this sewer was not particularly oppressive, although it drains a large area and the manhole covers had to be dug up from beneath a mass of street mud. There was very little deposit of mud in this sewer, and that only at intervals, and but 2 or 3 inches deep anywhere. The diameter of the sewer is 5 feet in Market street and 4 feet in Wells street. The two unite after flowing through Michigan street, and discharge through Franklin street in a sewer 6 feet in diameter.

One thing was noticeable throughout the inspection, and that was the readiness shown by the men to throw off the covers and go directly into any of the sewers without any apparent fear of danger from bad air or from explosion of gas. Only one instance of explosion appears to be known, and that was occasioned by a defective street gas-pipe. This conduct on the part of the men leads one to think that the atmospheric condition of the sewers is not dangerous, and the appearance of the men who have worked for many years inspecting and cleaning sewers indicates strength and health, and they make no complaint of any ill-effects of the work.

A very noticeable feature of all sewers examined was the excellent quality of masonry, the great care bestowed upon the alignment and grades, and especially the skill and attention bestowed upon building the junctions where laterals were brought into the mains, or where sewers of nearly equal size were brought together. The amount of deposits found in the mains was not large, while that in the laterals was evidently kept down by the constant use of flushing and other apparatus.

The sewers of Chicago are not self-cleaning, but they are kept in good condition by constant supervision and continual labor, the amount of which can best be judged from the amount of money expended, and by the apparatus and appliances invented for the purpose, described and noted above.

Manholes and catch-basins.—The only thing peculiar about the manholes which has been noticed is their wooden covers and frames. These are made of 3-inch plank in three thicknesses, the upper course of oak, forming a frame 9 inches thick and about 4 feet in diameter. The cover itself is of oak, and is usually perforated with five holes, 2 inches in diameter. These covers cost about $6 each, will last a good many years, are comfortable to drive over, and are regarded by the authorities as economical, although in many streets permanently improved, iron frames and covers have been put in. Catch-basins are built beneath the gutters at the street corners or at other convenient places, and are covered with wooden frames and covers precisely like those of manholes described above. Catch-basins now being constructed are not trapped, but open directly to the sewers.

HOUSE-DRAINS.

Private drains are from 6 to 9 inches in diameter, and are brought into the sewers at an angle of about 40 degrees. Connections with brick sewers already built are made by means of an oblique junction-piece of vitrified pipe, the sewer around being carefully rebuilt and pointed upon the inside and all rubbish and bats removed. Drain-pipes are carefully laid, under the supervision of the city, to true lines and grades, with a descent not less than 1 in 200, and a record of their location is kept in the office of the sewerage department. Sewers now being built are provided with branches extending to the curb-line of the sidewalk. In streets, also, where macadam or pavements are to be laid, such branches are also laid, so that connections can be made in future without disturbing the streets or gutters. Many miles of such drains have been laid within the past few years, and their total length is now greater than that of the public sewers, amounting, January 1, 1881, to 348.74 miles, while the length of the public sewers at the same time was 337.25 miles.

The city ordinances of Chicago forbid the discharge of kitchen or laundry slops directly to the sewers, but require a grease-trap to be constructed to receive such water, like a tight cesspool, with an overflow to the sewer. Thus the most troublesome fouling mentioned is kept out of the sewers and accumulated nearer to the houses.

The sewers of Chicago have been built by the city by general tax and appropriation, and are regarded as the exclusive property of the city, under the care and control of its proper officers. Private parties may use the sewers for their legitimate purposes by conforming to the prescribed regulations. Persons who are not willing to use the city property reasonably, but persist in turning in any thing likely to obstruct or destroy the sewers, or to prevent their proper inspection and care (as, for instance, steam or hot water), may have their drainage cut off.

SEWAGE DISPOSAL.

That part of the city provided with sewers is shown on the accompanying map. The part draining directly into lake Michigan covers about 1,200 acres, on the south side, below Van Buren street and east of Clark street. The remainder of the city drains into the Chicago river.

This was originally a small stream running in a direction nearly parallel with the lake shore, except for the last mile or less of its course, where the united branches turned to the lake through a changeable channel. The North branch is about 30 miles long and the South branch 5 miles long. There are no correct topographical maps by which the water-shed of this stream can be determined, but from an inspection of the ordinary maps it seems to drain an area of about 300 square miles. Its flow was always sluggish, and the last mile afforded the harbor for the commerce of early Chicago. This river, within the city limits, has been widened and deepened by dredging, and numerous slips and basins have been made along its line, until now there are 29 miles of river-frontage and 12 miles of slip and basin frontage, making 41 miles of water-frontage in the inner harbor. This broad water-surface has no daily tide from the lake to supply it with clean water, and receives but little from the stream draining so small an area. What water it does receive from this source is more or less contaminated before it reaches the city. The inner harbor is estimated to contain about 54,000,000 cubic feet of water. The city water-works supply about 7,000,000 cubic feet daily, which is used by half a million people and discharged in the form of sewage. At this rate this long and narrow basin of slack-water receives daily about 13 per cent. of its volume of sewage, besides other and perhaps greater sources of contamination from the distilleries, packing-houses, and manufacturing establishments along its shores. To rid itself of the nuisance thus created has been the great sanitary problem of Chicago for many years.

For the relief of the North branch of the river a tunnel 12 feet in diameter was built beneath Fullerton avenue and extended into lake Michigan. Water is forced through this tunnel by means of two propeller screws, capable, at the ordinary rate of speed at which they are run, of forcing 15,000,000 cubic feet of water daily either from the river into the lake, or, by reversing the action of the machinery, from the lake into the river. These works have been in operation since January, 1880. They are intended to draw off the foul water, assuming that its place would be supplied by a current of clean water coming in from the lake through the river, and up the stream in a direction contrary to the natural flow. In order to reverse the current of the water in this way it is necessary first to pump out all the water coming down the stream from its source, together with the discharge from the sewers along the shore between the pumping station and the mouth of the river. The excess of water pumped out above that furnished from these two sources, would then be supplied, either from the lake or from the South branch of the river. As a matter of fact, some of the foul water does flow in from the South branch, but still it is claimed, by those who have observed the effect of the pumping-works, that the condition of the river is considerably benefited by them at times of low water, when their action is most needed.

For the relief of the South branch of the river many suggestions have been made. The most important thing yet accomplished was the cutting down of the summit of the Illinois and Michigan canal to secure a constant current of water out of the South branch through the canal to the Des Plaines river at Joliet, and thence ultimately to the Mississippi river. By this means the canal and the small streams and mill-ponds below it have been made the receptacles of the filth and waste of Chicago.

The cutting down of the canal did not, however, afford the desired relief, and, as the city increases, the nuisance of its inland basin of foul water increases with it. A discussion of this subject may be found in a paper read by Dr. John H. Rauch for the Illinois state board of health, 1880, entitled "The Sanitary Problems of Chicago".

The state board of health, in view of the pollution of the canal and small streams below it, advised that the city provide pumping machinery to lift a large quantity of water into the canal, and so, by increasing the flow of water, dilute the sewage of the city until the present nuisance shall be remedied.

In accordance with this recommendation the city has entered into contract for machinery capable of pumping 60,000 cubic feet per minute or 86,000,000 cubic feet per day into the canal.

The "Citizens' Association" also appointed a committee of its members, known as the "Main Drainage Committee", which examined various means for abating the nuisance of the inner basin of the Chicago river, which, in its present condition, is little better than a sewage reservoir. It was concluded that the Illinois and Michigan canal, or, in fact, a ship-canal, if constructed, would not be able to carry the amount of water necessary to dilute the sewage, if discharged in that way, without having so rapid a current as to impede navigation, and the committee recommended a main sewer to be constructed from Chicago to Joliet, 31 miles, in the form of an

open conduit, 20 feet wide at one end and 49 at the other, at a total cost of about $12,000,000. The sewage conduit proposed by them has not yet been begun. Its capacity, according to the engineer who made the plans, is but one-half that of the pumping machinery provided by the city to pump into the Illinois and Michigan canal. Most of those who have made a study of the drainage of Chicago appear to agree that the foul water from the Chicago river can not be forced into lake Michigan without polluting the whole city lake-front, and at the same time endangering the water-supply, and that the only alternative left will be to pump it into the Des Plaines river and let it flow thence away toward the Mississippi river and the gulf of Mexico, and to send along with it a sufficient quantity of pure water from the lake to prevent the pollution of the streams along its course. This amounts practically to making an artificial river to receive the sewage of Chicago, using lake Michigan as a reservoir of supply, and pumping the water to a height of about 10 feet. This river must of course be large enough to receive all the sewage of the city and enough clean water to dilute it to such an extent that it will not become a nuisance or destroy the usefulness of the streams along its course, which are used as a water-supply for the cities on their banks.

CEMETERIES.

No information on this subject was furnished.

MARKETS.

There are no public or corporation markets in the city, all supplies being obtained from private shops or stores.

SANITARY AUTHORITY—COMMISSIONER OF HEALTH.

In 1876 the board of health of Chicago was abolished, and all the powers and duties of that body were relegated to one officer, called the commissioner of health, who is appointed by the mayor, subject to the confirmation of the common council, for a term of two years, or until his successor is appointed. He appoints and removes all the employés of the health department, and receives an annual salary of $3,000. He is a physician. In ordinary times the annual expenses of the department are about $80,000, being, according to the estimate of the commissioner for 1880, for salaries, medicines, supplies, disinfectants, printing, stationery, incidentals, and scavenger-work. This last item aggregates $39,000, or nearly half the annual expenditures. During epidemics this amount can be increased to any extent, as the ordinances direct that all expenses incurred by the commissioner in case of pestilence or epidemic disease must be met by the mayor and common council. Where there is no declared epidemic the commissioner of health has authority to do, or cause to be done, all things which promote or preserve the health, safety, and sanitary condition of the city, that are not inconsistent with the constitution or laws of the state. In case of an epidemic he has power to adopt such measures as he may from time to time deem necessary to prevent the spread of the disease; can disinfect houses or premises, or close the same; can isolate persons; can prescribe the time and mode of abating nuisances, etc. The commissioner is on duty all the time, the health office being open every day.

ASSISTANTS.

The force of the department consists of 1 secretary at $1,000 a year; 1 registrar at $1,500 a year; 1 clerk at $1,000 a year; 3 medical inspectors at $500 a year each; 6 special inspectors at $800 a year each; and 5 meat inspectors and 20 sanitary policemen at $800 a year each. Four of the above are physicians, while the meat inspectors and sanitary policemen are invested with full police powers. The city is divided into sections, and certain officers are placed in charge of each. These officers make daily reports to the commissioner—coming to the health office at 4 p. m. in winter and 5 p. m. in summer for the purpose—of work done during the day, and receive instructions for the next day.

NUISANCES.

Inspections are made regularly in all parts of the city, and all complaints received at the office are promptly attended to. When a nuisance is either reported or described, the officer of the section in which the nuisance is said to be, examines the same within twenty-four hours, and if he finds the complaint is well founded he orders the nuisance abated within a reasonable time. If this is not done, suit against the owner of the property is brought in the police courts, or the commissioner can have the work done, and the cost assessed against the property. This latter plan is resorted to when no owner, agent, or occupant of the property where the nuisance exists can be found.

Defective house-drainage, privy-vaults, cesspools, etc., are treated as nuisances and corrected accordingly. Defective sewerage is treated as a nuisance, while street-cleaning is under the direction of the department of public works. The commissioner exercises full control over the conservation and removal of garbage and the removal of excrement.

BURIAL OF THE DEAD.

No removal or interment of any dead body can take place in the city without a permit from the commissioner of health. These permits are granted after a certificate, setting forth cause of death, etc., and signed by a physician, has been filed with the registrar at the health office.

INFECTIOUS DISEASES.

All cases of small-pox found before the suppurating stage are removed to the pest-house, which is situated near the western limits of the city, in grounds having an area of 12 acres, and surrounded by a high and strong board fence. If found after the suppurating stage, the patient remains in his domicile, with a police officer always present to insure quarantine. When the patient is removed or has recovered, the premises, clothing, furniture, etc., are fumigated with sulphurous acid gas.

Scarlet-fever patients are neither isolated nor quarantined at home, but a large red card, with the words "scarlet fever here", is placed on the door of the house where a case exists, and this card must remain there for from 20 to 30 days after convalescence has begun.

The commissioner of health takes cognizance of the breaking out of contagious diseases either in public or in private schools, and no child living in a house where a case of contagious disease exists is permitted to attend school until all danger of infection is passed, or until permission is granted by the commissioner.

Vaccination is made compulsory when small-pox is threatening, and for those who are unable to pay it is done at the public expense.

REGISTRATION AND REPORTS.

A record of all births and deaths is kept by the registrar of vital statistics. Physicians or professional advisers are required to report each death, stating name, residence, color, sex, nativity, with date, hour, and cause of death; and every physician, midwife, or other person who may assist at a birth must report the same to the health officer.

The commissioner of health reports annually to the common council, and publishes his report with funds provided for the purpose, and included in the annual appropriation.

MUNICIPAL CLEANSING.

Street-cleaning.—The streets are cleaned at the expense of the city, the work being done both by contract and by the city's own force. The improved streets are cleaned by contract, sweeping-machines being used, while the unimproved streets are cleaned by the city's force, wholly by hand. Of the improved streets, those in the business portion are cleaned twice a week, and those outside once a week, while the unimproved streets are cleaned when ordered by the commissioner of public works. The cleaning is reported to have been well done during 1879 and 1880. During the past year 1,683 miles of streets were cleaned by contract, at the rate of $26 50 per mile, making the cost $44,599 50, and 385 miles of unimproved streets were cleaned, graded, and otherwise worked upon, at a cost of $113,223 77, the cost of cleaning the unimproved streets not being kept separate. The sweepings are used for filling low places, being generally mixed with ashes and sand.

Removal of garbage and ashes.—This service is performed both by the city and by householders. So much as is done by the former is done with its own force under supervision of the commissioner of health, forty-two 2-horse teams being constantly employed. Those householders, generally in the suburbs, who attend to the removal themselves, employ scavengers. While awaiting removal the garbage must be kept in suitable vessels unmixed with ashes, and placed either in the alley or on the sidewalk in front of the house. Such garbage as is not suitable for feeding swine is taken outside the city limits and buried. The ashes are used for filling, unless mixed with garbage; in the latter case they are disposed of in the same manner as garbage that is not used for feed. The annual cost of this service is about $37,000. No nuisance or probable injury to health is reported to result from either the keeping or handling of the garbage, nor are any ill-effects perceived from the manner of its final disposal. Regarding the defects of the system, Dr. De Wolf says: "Garbage and ashes oftentimes mixed; garbage not promptly removed. It would require $100,000 at least to properly (promptly) remove garbage from every house."

Dead animals.—By city ordinances all dead animals must be removed at least 4 miles beyond the city limits. The contractor for the present year (1880) promptly gathers the carcasses of all dead animals, with such materials from the markets as ordered by the commissioner of health, and removes them by railroad, twice a day, to a rendering establishment 26 miles from the city. The annual cost of this service is $3,500 to the city. During the past year the following carcasses, which does not include the dead animals taken from the stock-yards, were removed: 1,500 horses, 400 cattle, and between 8,000 and 12,000 dogs. Though the system is reported as being excellent, so far as Chicago is concerned, complaints are made by those who live in the neighborhood of the rendering establishment.

Liquid household wastes.—Chamber and kitchen slops and laundry wastes are all disposed of in the same way; *i. e.*, in all sewered streets they go into the public sewers, and, where the sewers do not extend, into the street-gutters. Cesspools or dry wells are not often found in the city. The street-gutters are flushed two or three times a week during the hot months, except in localities so much below grade that the water will not run off. Referring to the contamination of drinking-water by the overflowing or underground escape of the contents of privy-vaults, etc., Dr. De Wolf says:

Not a well in use within the city limits. Lake water is taken to every domicile. This water, drawn from the lake 2 miles from shore, is very perfect. Twice in the four years past it has been contaminated by sewage being carried out from the mouth of the river

to the "crib". This accident can only occur when water is so high in the river as to change the direction of the flow. It can be prevented in future by keeping all sewage out of the river, or by extending the tunnel 2 miles further from shore. The result of this contamination was extensive diarrheal troubles for a few days in April, 1877, and April, 1880.

Human excreta.—It is estimated that nearly half the houses in the city are provided with water-closets, and, as there are very few cesspools, nearly all these deliver into the sewers. About one-half of the privy-vaults are said to be nominally water-tight. They must be constructed under the direction of the health department, and must be emptied by licensed scavengers when so ordered by the commissioner of health. The night-soil is taken outside the city limits and buried in trenches, the whole matter being controlled by the commissioner of health.

Manufacturing wastes.—There do not appear to be any rules governing the disposal of either liquid or solid manufacturing wastes, as there is "very little of it within the city limits".

POLICE.

The police force of Chicago is appointed and governed by the general superintendent of police, who is appointed by the mayor, with the concurrence of the city council, for a term of two years; he directly controls the force, sees that the laws and ordinances of the city are executed, preserves the peace, order, and cleanliness of the city, and sees that the rights of persons, property, etc., are respected; his salary is $3,780 per annum. The number of the force in the several grades, with the salaries of each, is as follows: 1 secretary at $2,625 per annum, 1 custodian at $1,260 per annum, 3 clerks at from $1,000 to $1,500 per annum each, 6 captains at $1,785 per annum each, 19 lieutenants at $1,365 per annum each, 15 sergeants at $1,050 per annum each, 20 detectives at $1,155 per annum each, 31 station-keepers at $970 per annum each, 390 patrolmen at $945 per annum each. The uniform is in the metropolitan style, made of blue-black police cloth, and each man furnishes his own, the cost of the suit complete, including overcoat, being $75 50. Each patrolman is equipped with a baton, pistol, nippers, star, and belt. Their hours of active service average twelve per day, but they are always considered on duty, and they patrol 600 miles of streets.

During the past year 28,480 arrests were made by the force, the principal causes being—

Assault (various)	1,235	Burglary	629
Carrying concealed weapons	443	Drunk	2,113
Drunk and disorderly	2,229	Disorderly	9,952
Inmates of houses of ill-fame	1,237	Inmates of disorderly houses	1,081
Inmates of gaming-houses	352	Larceny	2,313
Robbery	382	Violating city ordinances	3,850

In the final disposition of the persons arrested, 12,868 were fined in the police courts, 1,406 were sent to the house of correction, 2,135 were held for trial, 10,253 were discharged, etc. During the year, property to the value of $142,599 41 was reported to the police as either lost or stolen, and of this, $123,509 35 was recovered and returned to the owners. The number of station-house lodgers during 1880 was 13,172, as against 8,629 in 1879. During the year 30,672 meals were furnished to prisoners and lodgers, at a cost of $1,840. The police force is required to co-operate with all the city departments and to attend all fires. Its chief duties at fires are to guard the limits set by the fire marshal, to protect persons and property, to preserve order, to prevent crowds from obstructing the firemen, etc. Special policemen are appointed by the general superintendent, upon the application of any person showing the necessity thereof, for duty at any fixed place within the city. They are subject to the rules of the force, but are paid by the persons at whose request they are appointed. During the past year there were 2 deaths in the force, and 29 policemen were more or less injured while in discharge of their duty. The yearly cost of the police (1880) is $493,672 38.

The police telephone and signal system has recently been introduced, and is now in operation in what is known as the Twelfth Street district, and may be briefly described as follows: The district connected with a station is divided into any number of posts or beats. On each of the beats there is erected a box or house, similar to a sentry-box, octagonal in shape, 2 feet 5 inches in diameter and about 7 feet high, painted a bright color, and having a sign on the door—"Police-alarm No. —." The doors of the boxes are secured by a patent trap-lock that retains the key, and as none but police officers are in possession of the release key, the person opening any of them must await the arrival of an officer or lose his key; and as each of the keys is numbered and a record kept of the name and residence of the person holding it, any one giving a false alarm can easily be detected. Inside the house or sentry-box described there is a box, about the size of a fire-alarm box, and through an opening in the end of this box projects a lever; inside the box there is a telephone with the usual mechanical contrivance for transmitting the arbitrary call. None but officers are in possession of keys for the inside boxes. All the inside boxes are connected with the station in the same manner as the fire-alarm, and the signal is registered on the same kind of a register in use in all electric fire-alarm systems. A person desiring the services of a policeman opens the outside door and pulls down the lever at the side of the box; the signal is immediately registered in the station, where there is a detail of 3 men with a horse and wagon, who are furnished with all facilities for quick hitching, and who immediately respond to all calls. The officer on post is required to report by telephone once an hour at

night and once every half-hour during the day-time. He can also receive information of crime committed in any other part of the city, and is required to report all that comes to his notice of any importance, at any time during the day or night, without leaving his post. In cases of emergency he can use the arbitrary call, which will bring the patrol-wagon to any box, or he can use the telephone, and have assistance at any place that he may designate.

FIRE DEPARTMENT.

The manual force of the fire department of Chicago consists of 1 fire marshal and chief of brigade, 9 assistant fire marshals—1 as inspector, 1 as secretary, and 7 as chiefs of battalion—2 clerks, 1 veterinary surgeon, and 357 men, divided into 43 companies. The apparatus now in active service consists of 31 steam fire-engines, 31 hose-carts, 9 hook-and-ladder trucks complete, and 3 chemical engines. There are 178 horses and 41,485 feet of hose in the department.

The following comparative statement shows the expenses of the department since 1870:

Year.	Number of companies.	Total.
1870	26	$366,700 66
1871 *a*	28	182,023 15
1872	35	423,057 34
1873	41	586,018 96
1874	43	624,795 22
1875	43	411,245 12
1876	41	478,340 22
1877	42	507,001 12
1878	42	389,692 36
1879	41	420,308 82
1880	43	454,304 18

a Six months.

The following table shows the number of fires, and the losses and insurance, during the past seventeen years:

Years.	Number of fires.	Number of false alarms.	Amount of loss.	Amount of insurance.	Loss for each fire.
1863–'64	186	16	$355,660	$272,500	$1,912
1864–'65	193	32	651,798	585,300	3,403
1865–'66	243	21	1,216,466	941,002	5,006
1866–'67	315	20	2,487,073	1,043,445	7,898
1867–'68	315	57	4,315,332	3,417,288	8,185
1868–'69	405	67	500,169	463,248	1,383
1869–'70	600	45	871,905	660,061	1,453
1870–'71	667	35	2,447,845	2,183,498	3,658
1871–'72 *a*	489	44	972,800	745,000	1,989
1872–'73	441	44	680,099	3,703,275	1,542
1873–'74	466	68	1,013,240	3,041,735	2,174
1874–'75 *b*	473	83	2,345,684	6,789,300	4,959
1875 *c*	332	67	127,014	2,328,150	383
1876	477	128	387,951	3,780,060	811
1877	445	132	1,044,097	6,173,575	2,340
1878	478	88	306,317	3,327,348	641
1879	638	135	572,082	5,112,631	896
1880	804	154	1,135,816	5,409,480	1,411

a The great fire not included. *b* The large fire included.
c Nine months ending December 31, 1875.

The fire-alarm telegraph is in charge of 1 superintendent, with a force of 4 operators, 5 repairers, 1 batteryman, and 2 linemen. The system includes 3,176 poles, 498 miles of wire (28 miles being underground, in cables), and 501 alarm-boxes.

PUBLIC SCHOOLS.

The earliest records of the public schools to be found among the official documents of the city begin with the incorporation of Chicago as a city in 1837, and it is stated in the reports for the quarter ending November 1 of that year that there were 400 pupils enrolled in five out of the seven districts.

The following table shows the growth of the public-school system from 1837 to 1879:

For year ending—	Total population of the city.	Number under 21 years of age.	Total enrollment in the public schools.	Average daily membership.	Number of teachers.	Total amount paid for tuition.	Total amount paid for all current expenses.
1837	4,170	.....	.....	.....	.....	.....	.....
1840	4,470	2,109	317	.....	.....	.....	.....
1841	.....	.....	410	.....	5	$1,880 82	$2,676 75
1842	.....	.....	531	.....	7	2,280 88	3,225 99
1843	7,580	2,694	808	.....	7	2,879 38	3,099 97
1844	.....	.....	915	.....	8	2,363 32	3,106 22
1845	12,088	.....	1,051	.....	9	2,277 53	5,413 45
1846	14,169	.....	1,107	.....	13	.....	5,635 87
1847	16,859	7,603	1,317	.....	18	.....	4,248 76
1848	20,023	.....	1,517	.....	18	.....	5,790 82
1849	23,047	.....	1,704	.....	18	5,195 50	.....
1850	29,963	.....	1,919	1,224	21	.....	6,037 97
1851	.....	12,021	2,287	1,409	25	6,021 17	7,398 97
1852	.....	.....	2,404	1,521	29	9,107 64	10,704 04
1853	59,130	17,404	3,086	1,795	34	10,820 58	12,129 59
December 31, 1854	.....	.....	3,500	.....	35	13,316 79	14,254 72
December 31, 1855	80,000	31,235	6,826	.....	42	15,026 73	16,546 13
December 31, 1856	84,113	.....	8,577	3,688	.....	23,365 00	29,720 00
February 1, 1858	.....	.....	10,786	4,464	81	36,079 00	45,701 00
February 1, 1859	.....	.....	12,873	5,516	101	43,000 89	58,086 80
February 1, 1860	100,206	52,861	14,199	6,649	123	49,612 43	60,630 53
December 31, 1861	.....	.....	16,547	7,582	139	60,994 46	81,533 75
December 31, 1862	.....	.....	16,441	8,217	160	68,007 97	86,755 32
December 31, 1863	138,186	58,955	17,521	8,062	187	75,326 18	92,378 86
August 31, 1864	.....	.....	21,188	10,820	212	88,111 56	113,305 24
August 31, 1865 *a*	178,492	82,996	29,080	12,688	240	131,034 91	176,003 78
August 31, 1866	200,418	89,150	24,851	14,609	265	162,383 79	219,198 66
July 1, 1867	.....	.....	27,260	16,392	319	227,524 97	296,672 80
July 1, 1868	242,373	.....	29,954	18,322	401	278,133 06	352,001 80
July 1, 1869	252,054	109,583	34,740	22,838	481	350,515 43	446,786 56
July 1, 1870	306,605	136,333	38,039	25,755	537	414,655 70	527,741 60
July 1, 1871	.....	.....	40,832	28,174	572	444,634 53	547,461 74
July 1, 1872 *b*	367,396	152,470	38,035	24,539	476	378,670 55	479,444 44
July 1, 1873	.....	.....	44,091	28,832	504	430,462 64	524,702 09
July 1, 1874	.....	.....	47,963	32,777	640	492,893 17	588,043 11
July 1, 1875	395,408	175,549	49,121	34,983	700	552,327 37	662,093 47
July 1, 1876 *c*	407,661	184,499	51,128	38,081	762	588,721 41	710,628 19
July 1, 1877	.....	.....	53,529	39,495	730	459,252 46	551,621 17
July 1, 1878	436,731	200,473	55,109	41,569	707	490,402 64	579,508 68
July 1, 1879 *d*	.....	.....	56,587	43,741	851	529,164 45	630,711 17

a Embraces one year and a half.
b The falling off in enrollment, membership, etc., was occasioned by the great fire of October 8 and 9, 1871.
c Extra teachers were dispensed with this year.
d A general reduction of about 25 per cent. in salaries was made during this year.

The school fund is now estimated in value at over $3,000,000. In addition to the pupils in the public schools there are about 15,000 pupils in the fifty Roman Catholic schools, and the twelve large schools under the supervision of the German Lutherans.

COMMERCE AND NAVIGATION.

[From the reports of the Bureau of Statistics for the fiscal years ending June 30.]

Customs district of Chicago, Illinois.	1879.	1880.
Total value of imports	$272,766	$847,935
Total value of exports:		
Domestic	$2,829,582	$3,438,671
Foreign	$6,980	$6,708
Total number of immigrants	59	388

Customs district of Chicago, Illinois.	1879.		1880.	
	Number.	Tons.	Number.	Tons.
Vessels in foreign trade:				
Entered	214	72,169	349	127,189
Cleared	286	94,972	418	145,943
Vessels in lake trade and fisheries:				
Entered	10,078	3,547,185	12,457	4,207,204
Cleared	10,613	3,506,706	12,495	4,193,802
Vessels owned in district	390	78,219	384	76,478
Vessels built during the year	5	180	1	37

MANUFACTURES.

The following is a summary of the statistics of the manufactures of Chicago for 1880, being taken from tables prepared for the Tenth Census by Charles Randolph, chief special agent:

Mechanical and manufacturing industries.	No. of establishments.	Capital.	Average number of hands employed.			Total amount paid in wages during the year.	Value of materials.	Value of products.
			Males above 16 years.	Females above 15 years.	Children and youths.			
All industries	3,519	$68,830,885	62,431	12,185	4,798	$34,653,462	$179,209,610	$249,022,948
Agricultural implements	3	3,110,000	981	.....	40	559,532	1,642,748	2,699,480
Awnings and tents	8	10,350	20	24	1	13,540	46,872	72,031
Baking and yeast powders (see also Drugs and chemicals)	3	135,000	75	37	1	44,134	485,000	635,000
Baskets, rattan and willow ware	11	107,750	119	.....	14	48,750	54,225	120,400
Billiard tables and materials	4	263,200	300	.....	.....	137,225	283,900	665,400
Blacksmithing (see also Wheelwrighting)	146	110,375	335	.....	11	169,689	123,609	482,029
Bookbinding and blank-book making	26	176,100	208	163	39	165,102	203,725	481,131
Boots and shoes, including custom work and repairing	133	997,475	1,387	358	66	770,101	1,355,208	2,479,805
Boxes, cigar	6	54,800	40	43	22	36,268	114,099	179,411
Boxes, fancy and paper	12	66,200	68	178	32	81,550	116,400	254,792
Boxes, wooden packing	14	525,000	802	.....	95	414,053	1,271,682	1,883,079
Brass castings	11	442,500	517	.....	.....	232,125	361,700	737,500
Bread and other bakery products	118	553,200	680	150	37	398,081	1,817,078	2,613,186
Brick and tile (see also Terra-cotta ware)	35	342,800	1,176	13	61	454,557	128,573	800,400
Bridges	3	348,000	642	.....	.....	311,763	1,473,000	1,974,000
Brooms and brushes	41	243,200	255	106	46	132,830	271,337	517,324
Carpentering	171	442,050	1,733	1	58	893,642	1,337,890	2,598,508
Carpets, rag	5	1,275	3	1	.....	1,700	2,843	6,450
Carriages and wagons (see also Wheelwrighting)	40	1,361,080	1,152	35	123	590,166	702,532	1,800,759
Cars, railroad, street, and repairs	5	421,500	562	.....	20	286,742	675,291	1,043,682
Clothing, men's	102	6,430,050	4,101	4,001	374	3,530,169	11,031,764	17,842,207
Clothing, women's	19	258,500	72	1,488	23	394,885	1,017,720	1,585,090
Coffee and spices, roasted and ground	10	477,900	185	40	45	137,496	2,342,021	2,808,879
Coffins, burial cases, and undertakers' goods	5	179,050	107	12	2	67,020	164,500	290,600
Confectionery	24	413,200	310	163	132	211,604	1,424,830	1,953,558
Cooperage	65	325,500	680	.....	20	313,977	644,380	1,137,094
Coppersmithing (see also Tinware, copperware, and sheet-iron ware)	3	3,100	10	.....	.....	4,460	4,820	14,200
Cork cutting	3	45,800	24	15	17	22,103	125,038	217,220
Cutlery and edge tools (see also Hardware; Tools)	12	113,700	135	8	27	69,581	49,670	177,000
Dentistry, mechanical	48	87,000	28	2	2	14,000	25,000	144,000
Dentists' materials	3	11,000	18	5	.....	11,300	12,000	46,000
Drugs and chemicals (see also Baking and yeast powders; Patent medicines and compounds)	14	408,500	165	45	11	93,440	617,800	959,850
Dyeing and cleaning	16	78,350	74	13	7	47,023	46,815	140,461
Dyeing and finishing textiles	11	60,850	72	13	7	40,510	45,505	135,521
Electrical apparatus and supplies	3	271,200	127	25	.....	100,603	143,587	543,000
Electroplating	9	24,800	31	2	6	18,045	9,820	59,000
Engraving and die-sinking	5	18,000	22	3	.....	17,397	13,550	49,000
Engraving, wood	16	35,825	66	3	8	51,785	12,070	116,775
Flavoring extracts	4	71,200	65	40	5	36,730	334,500	461,500
Flouring- and grist-mill products	12	652,100	176	.....	.....	103,542	1,930,709	2,217,564
Food preparations	5	89,000	27	12	8	15,910	58,500	119,000
Foundery and machine-shop products (see also Iron work, architectural and ornamental; Steam fittings and heating apparatus)	133	4,455,417	4,736	6	145	2,371,361	5,088,619	8,934,029
Fruits and vegetables, canned and preserved	5	93,000	113	40	27	58,700	417,415	587,223
Furnishing goods, men's	13	586,100	144	1,110	47	302,700	1,143,275	1,835,507
Furniture (see also Mattresses and spring beds; Upholstering)	149	2,443,175	4,160	57	347	2,028,371	2,996,088	6,177,114
Furniture, chairs	6	216,500	278	.....	57	121,200	139,440	334,072
Furs, dressed	10	160,500	49	88	2	51,058	227,000	370,000
Gas and lamp fixtures	3	17,100	46	1	2	18,600	41,225	96,000
Gas machines and meters	3	45,500	42	.....	.....	19,723	28,884	64,800
Glass, cut, stained, and ornamented	6	39,000	76	1	3	47,545	38,564	113,612

Mechanical and manufacturing industries.	No. of establishments.	Capital.	Average number of hands employed.			Total amount paid in wages during the year.	Value of materials.	Value of products.
			Males above 16 years.	Females above 15 years.	Children and youths.			
Gloves and mittens (see also Hosiery and knit goods)	7	$50,200	36	109	5	$40,075	$110,150	$170,400
Gold and silver leaf and foil	3	22,000	34	45	2	25,750	41,000	85,000
Grease and tallow	6	117,000	111	.....	.....	64,044	1,123,025	1,327,000
Hairwork	15	48,650	8	110	.....	26,782	65,300	135,015
Hand-knit goods	7	14,000	4	106	9	14,065	43,470	64,072
Handles, wooden	3	2,850	4	.....	2	1,950	4,485	9,000
Hand-stamps	4	5,500	11	1	1	7,140	11,600	20,050
Hardware (see also Cutlery and edge tools; Tools)	13	134,870	136	.....	31	70,293	89,305	244,018
Hardware, saddlery	3	30,100	32	1	20	18,200	48,200	87,000
Hats and caps, not including wool hats	11	18,950	34	27	7	28,226	36,500	88,200
Hosiery and knit goods (see also Gloves and mittens)	7	57,800	121	341	63	66,966	184,831	300,577
Ink	3	33,750	18	2	12	11,450	15,000	61,000
Iron and steel	11	3,875,000	2,871	.....	125	1,477,563	8,006,970	10,441,891
Iron doors and shutters	3	7,500	18	.....	.....	11,720	19,200	40,500
Iron forgings	4	135,800	115	.....	.....	56,130	349,337	485,581
Iron railings, wrought	5	10,000	27	.....	.....	15,500	17,400	42,884
Iron work, architectural and ornamental (see also Foundery and machine-shop products).	11	64,000	133	.....	12	68,201	170,900	303,900
Japanning	3	9,100	26	.....	1	6,300	5,000	17,100
Jewelry	11	48,600	67	.....	5	45,396	73,380	192,004
Lamps and reflectors	4	453,500	345	25	55	159,250	648,408	1,051,346
Lasts	3	16,500	34	.....	2	19,988	34,075	61,700
Leather, curried	9	481,002	225	.....	.....	129,196	1,762,756	2,146,500
Leather, tanned	19	1,932,998	981	99	20	541,184	3,796,522	4,914,550
Liquors, distilled	7	1,175,000	750	.....	.....	330,000	2,961,281	4,387,545
Liquors, malt	18	3,395,500	892	.....	.....	445,891	1,886,165	3,429,375
Lithographing (see also Printing and publishing)	13	494,150	307	12	11	220,955	263,549	608,387
Lock- and gun-smithing	14	10,400	20	.....	1	10,481	7,155	34,094
Looking-glass and picture frames	52	338,675	787	31	156	357,625	600,540	1,268,855
Lumber, planed (see also Sash, doors, and blinds; Wood, turned and carved).	15	471,008	686	.....	56	207,730	3,441,100	4,080,000
Malt	16	870,200	230	.....	1	108,709	1,583,019	1,960,786
Marble and stone work	43	491,150	891	.....	14	456,014	583,015	1,275,355
Masonry, brick and stone	59	241,250	1,613	.....	10	759,843	1,616,845	2,623,137
Mattresses and spring beds (see also Furniture)	24	216,950	281	63	48	131,286	333,000	739,938
Millinery and lace goods	12	108,100	48	289	65	85,280	244,000	430,000
Mineral and soda waters	13	120,150	196	.....	6	84,380	182,810	406,000
Models and patterns	16	11,400	57	.....	1	31,380	8,251	64,272
Musical instruments, organs and materials	9	81,500	177	.....	23	105,307	195,028	376,040
Musical instruments, pianos and materials	5	20,300	27	.....	.....	16,002	11,800	37,015
Oil, lard	3	190,000	82	.....	3	42,600	928,000	1,107,000
Oil, linseed	5	655,000	143	4	9	85,005	1,590,500	1,967,013
Oleomargarine	3	208,800	63	.....	7	21,310	328,500	437,840
Painting and paperhanging	134	280,207	963	1	33	519,973	549,015	1,403,926
Paints (see also Varnish)	12	785,500	251	18	7	153,128	2,110,845	2,700,000
Patent medicines and compounds (see also Drugs and chemicals)	12	176,050	94	32	2	45,878	510,500	674,280
Paving materials	3	58,500	81	.....	.....	36,787	244,500	307,000
Photographing	47	181,625	115	57	7	100,738	81,885	325,078
Pickles, preserves, and sauces	6	27,000	49	5	2	25,400	216,470	288,200
Pipes, tobacco	5	6,700	4	.....	1	3,050	3,025	14,200
Plumbing and gasfitting	86	108,201	302	2	54	100,114	253,038	503,012
Pocket-books	3	22,300	61	28	.....	31,890	95,840	150,590
Printing and publishing (see also Lithographing)	135	2,886,400	2,750	453	316	1,930,881	2,451,360	5,950,295
Printing materials	4	20,200	24	.....	7	17,452	26,300	61,000
Roofing and roofing materials	15	102,521	221	.....	.....	82,351	422,827	593,431
Rubber and elastic goods	3	10,500	8	10	.....	4,540	25,750	35,000
Saddlery and harness	82	219,250	329	100	62	179,574	403,625	746,247

Mechanical and manufacturing industries.	No. of establishments.	Capital.	Average number of hands employed.			Total amount paid in wages during the year.	Value of materials.	Value of products.
			Males above 16 years.	Females above 15 years.	Children and youths.			
Sash, doors, and blinds (see also Lumber, planed; Wood, turned and carved).	27	$1,213,538	1,793	16	190	$805,233	$1,649,555	$2,961,508
Saws	6	40,300	26	.....	.....	18,283	12,300	43,500
Scales and balances	4	51,450	74	.....	.....	40,500	111,250	217,000
Sewing-machine cases	6	70,800	339	.....	26	100,706	79,085	262,355
Sewing-machines and attachments	11	91,300	147	4	6	59,906	130,800	259,513
Shirts	28	156,150	111	417	7	132,020	420,677	721,167
Shipbuilding	21	355,000	347	.....	.....	181,075	358,820	659,133
Show-cases	11	55,100	107	.....	8	59,076	111,500	227,000
Silk and silk goods	5	82,000	67	135	57	72,195	125,895	244,150
Slaughtering and meat-packing, not including retail butchering	70	8,455,200	7,180	.....	298	3,392,748	74,540,319	85,324,371
Soap and candles	16	1,230,800	492	33	79	199,202	3,135,047	3,627,310
Springs, steel, car, and carriage	5	45,500	64	.....	1	30,740	151,000	222,500
Stationery goods	3	5,000	6	4	3	4,100	17,050	25,500
Steam-fittings and heating apparatus (see also Foundery and machine-shop products).	11	99,700	220	.....	6	115,590	411,780	580,530
Stereotyping and electrotyping (see also Type founding)	3	25,000	45	.....	12	23,072	18,300	65,554
Straw goods	8	144,000	85	335	19	119,514	207,744	484,009
Surgical appliances	4	20,500	16	12	.....	10,700	17,200	48,800
Terra-cotta ware (see also Brick and tile)	3	28,000	81	.....	13	26,500	22,576	68,000
Tinware, copperware, and sheet-iron ware (see also Coppersmithing)	106	657,875	919	108	154	513,329	1,157,831	2,164,496
Tobacco, chewing, smoking and snuff (see also Tobacco, cigars and cigarettes).	4	287,500	142	97	15	77,060	1,206,187	1,387,598
Tobacco, cigars and cigarettes (see also Tobacco, chewing, smoking, and snuff).	287	538,350	1,489	134	101	701,573	1,058,916	2,315,174
Tools (see also Cutlery and edge tools; Hardware)	5	15,300	15	.....	.....	6,200	4,850	19,224
Trunks and valises	12	155,000	212	.....	10	102,170	295,700	508,300
Type founding (see also Stereotyping and electrotyping)	4	290,000	127	95	96	109,300	86,000	314,000
Umbrellas and canes	6	2,775	8	.....	2	2,516	2,100	7,000
Upholstering (see also Furniture)	19	43,000	110	21	9	51,383	121,691	226,195
Varnish (see also Paints)	4	207,000	32	.....	1	24,646	302,000	389,000
Vinegar	18	196,300	63	.....	4	36,189	179,900	328,338
Watch and clock repairing	28	26,950	49	1	1	31,174	8,537	63,194
Wheelwrighting (see also Blacksmithing; Carriages and wagons)	118	184,205	426	.....	21	218,500	165,040	532,794
Whips	4	2,300	8	3	1	3,325	3,950	11,369
Window blinds and shades	4	11,500	12	8	9	6,550	32,000	51,250
Wirework	24	311,122	213	.....	39	108,294	753,786	1,065,860
Wood, turned and carved (see also Lumber, planed; Sash, doors, and blinds).	14	86,010	106	10	21	54,767	79,587	181,840
All other industries (a)	74	4,114,271	2,207	461	318	1,258,133	8,060,254	10,787,109

a Embracing axle-grease; bags, other than paper; bags, paper; belting and hose, leather; cleansing and polishing preparations; cordage and twine; corsets, cotton goods; envelopes; explosives and fireworks; fancy articles; files; fire extinguishers, chemical; glass; glue; gold and silver, reduced and refined; iron bolts, nuts, washers, and rivets; iron nails and spikes, cut and wrought; iron pipe, wrought; ivory and bone work; jewelry and instrument cases; labels and tags; lapidary work; lard, refined; lead, bar, pipe, sheet, and shot; lightning rods; lime; mantels, slate, marble, and marbleized; matches; mixed textiles; musical instruments and materials (not specified); oil, essential; perfumery and cosmetics; photographic apparatus; pumps; refrigerators; regalia and society banners and emblems; safes, doors, and vaults, fire-proof; screws; shoddy; soda-water apparatus; stencils and brands; stone- and earthen-ware; stamped ware; telegraph and telephone apparatus and supplies; toys and games; vault-lights; washing-machines and clothes-wringers; watch cases; and wooden ware.

From the foregoing table it appears that the average capital of all establishments is $19,561 49; that the average wages of all hands employed is $436 36 per annum; and that the average outlay in wages, in materials, and in interest (at 6 per cent.) on capital employed is $61,947 51.